UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Atomic Safety and Licensing Board

Before Administrative Judges:

ASLBP BOARD 09-876-HLW-CAB01 William J. Froehlich, Chairman Thomas S. Moore Richard E. Wardwell	ASLBP BOARD 09-877-HLW-CAB02 Michael M. Gibson, Chairman Lawrence G. McDade Nicholas G. Trikouros	ASLBP BOARD 09-878-HLW-CAB03 Paul S. Ryerson, Chairman Michael C. Farrar Mark O. Barnett

In the Matter of	)	Docket No. 63-001-HLW
	)	
U.S. DEPARTMENT OF ENERGY	)	
	)	
(High-Level Waste Repository	)	
Construction Authorization Application)	)	

NYE COUNTY'S RESPONSE TO THE ANSWERS OF NRC STAFF AND THE DEPARTMENT OF ENERGY.

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I. INTRODUCTION AND OVERVIEW OF NYE COUNTY'S POSITION

Nye County, Nevada ("Nye County" or "County") is the "unit of local government within whose jurisdiction" the geological repository is proposed to be located under the Nuclear Waste Policy Act of 1982 ("NWPA"), as amended. See, e.g., 42 U.S.C. § 10137(d)(2008); 42 U.S.C. § 10101 (31)(2008).[1] As such, Nye County has party standing to intervene as a matter of right in the licensing proceeding. 10 CFR § 2.1001; 2.309(c)(2008).[2] The health and safety of Nye County's citizens, as well as their property, natural resources, and environmental rights, are all within the zone of interests expressly recognized and protected by the NWPA. Simply stated, because the proposed Yucca Mountain repository will be located in Nye County, the potential impact from its construction and operation, both negative and beneficial, will be felt first and foremost by the citizens of the County. Should a radiological release or other emergency occur at Yucca Mountain, Nye County will have to respond. Therefore, the County seeks status as a full party, not only to support its own contentions and proposed remedial actions, but also to participate in the hearing concerning all safety and environmental aspects of the license application, other petitioners' contentions, and adjudication of any issues that have the potential to injure or otherwise impact the health, safety and welfare of Nye County's citizens or Nye County's natural resources and environment.

So long as the Yucca Mountain repository is constructed and operated in a manner that adequately protects the health and safety of the citizens of Nye County, and its natural resources and environment, the County has no objection to issuance of a license to DOE for the proposed facility. Therefore, if the specific issues raised in the contentions filed by Nye County are adequately addressed by NRC and DOE, in the timely manner specified in each contention, Nye County does not object to DOE's license application. It should also be noted that Nye County's contentions, although identifying deficiencies in the DOE work completed to date, specifically identified remedies that could expeditiously correct each deficiency. Unlike several other petitioners, the County does not claim that a repository at Yucca Mountain cannot be constructed and operated safely. Nye County seeks only to safeguard the health, safety, natural resources,

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[1] For simplicity sake, these provision and others in the NWPA which refer to the "affected local government unit" or the "local government unit within whose jurisdiction" the repository is to be located will be referred to as the "host County" provisions.

[2] That regulation states that the "local governmental body...that wishes to be a party in a proceeding for a facility within its boundaries need not address the standing requirements". Moreover, Nye County has legal standing to participate in this licensing proceeding under well-established United States Supreme Court principles of standing, as was demonstrated in Nye's Petition to Intervene.

and property rights of its citizens, who will be living in close proximity to Yucca Mountain and the proposed repository in perpetuity.

II. REPLY TO DOE'S GENERAL ARGUMENTS IN OPPOSITION TO NYE COUNTY'S PETITION TO INTERVENE AND CONTENTIONS

DOE's January 15, 2009, Answer to Nye County's Petition to Intervene and Contentions (hereinafter "DOE ANSWER") challenges the County's right to intervene and fully participate as a party in the licensing proceedings, even though DOE at the same time states that it "does not object to Nye County's legal standing…." DOE ANSWER at 2. Despite its concession regarding legal standing, DOE asks NRC to deny Nye County's petition for intervention as a party based upon the inaccurate and legally unsupportable assertion that none of Nye County's proffered contentions are admissible. As will be demonstrated below, each of Nye County's contentions is, in fact, admissible. Therefore, Nye County has fulfilled all of the regulatory requirements to participate as a full party in the proceedings, even under a restrictive interpretation of the intervention regulations cited by DOE. Nevertheless, DOE's assertion is legally unsound as a threshold matter because Nye County has full party status, and standing, as a matter of law, regardless of the ultimate admissibility of its proffered contentions.

A. Nye County Has Fulfilled All of the Legal Requirements to Intervene and Participate as a Full Party in the Repository Licensing Proceeding

1. Although Nye County has in fact filed admissible contentions in a timely manner, Nye County has full party status, and standing, as a matter of law, regardless of the ultimate admission of its proffered contentions.

Nye County's standing as party with rights to fully participate in the licensing proceedings stems from its status as the host County for the repository, which is recognized throughout the NWPA and NRC's regulations pertaining to the repository. The County's right to participate as a party is further supported and affirmed by well-established legal principles of intervention as a matter of right. Ultimately, Nye County's status as a full party to the proceedings is tied to the acknowledged and undeniable fact that Yucca Mountain sits in Nye County, that all activities at Yucca Mountain will take place in Nye County, and that those activities have direct potential to impact the public health, safety, and the environment of the County and its citizens.

Failure to grant Nye County's petition to intervene and allow full participation in the licensing proceeding would go beyond non-compliance with the NWPA and NRC's regulatory requirements; it would deny the citizens of the County their right to meaningful representation during the licensing proceedings in violation of their procedural and substantive due process rights guaranteed by the 5th Amendment to the United States Constitution. *Matthews v. Eldridge*, 424 U.S. 319 (1976) (a fundamental requirement of due process is the opportunity to be heard in a meaningful timeframe and in a meaningful manner when rights are impacted by government action). The Supreme Court has examined the principles of judicial and administrative intervention, and stated that special consideration should be accorded governmental entities in their role as representatives of citizens within their borders. *Washington v. Washington State Commercial Fishing Vessel Ass'n*, 443 U.S. 658, 692-693 n. 32 (1979). There is a presumption that a governmental entity acting in its representative capacity will adequately represent its citizens. *Edwards v. City of Houston*, 78 F.3d 771, 774 (7th Cir. 2007) (en banc).

The provisions of the NWPA recognize the unique status and role of Nye County as the host county for the repository, and as the local unit of government that will be affected by construction and operation of the proposed repository. *See, e.g.*, 42 U.S.C. § 10137(d)(2008); § 10101 (31)(2008). So crucial is the role of Nye County as host to the repository that the NWPA expressly provided for "onsite oversight" of the project by the County, and provided for grant assistance to the County so it could effectively execute that role. 42 U.S.C. §§ 10137(d)(2008), 10134-37 (2008). Similar statutory recognition has been determined by the courts to grant an absolute right to intervene and participate as a party in licensing proceedings, even where intervention failed to strictly adhere to the agency's procedural requirements for the licensing proceedings. See *WFTL Broadcasting Co. v. FCC*, 376 F.2d 782, 784-85 (D.C. Cir. 1967)(under 47 U.S.C. § 309, the D.C. Circuit remanded case to the F.C.C. to determine whether intervention was proper where applicant attempted to intervene after 30-day time limit had expired). Moreover, under the NWPA and NRC's specialized rules for the repository licensing proceeding, Nye County became a full party upon the mere "filing of a list of contentions..." with its petition to intervene on December 19, 2008. See 10 CFR § 2.1001; § 2.309(c)(2008).

DOE in essence concedes that the constitutional and administrative standards for party standing in this proceeding have been met by Nye County. Therefore, failure to allow Nye County to intervene not only contravenes the above cited requirements of NWPA and

constitutional principles--it makes no practical sense, as examination of judicial standards for intervention make plain. Even in the absence of a statutory authority granting a right to intervene, federal courts allow intervention as a matter of right if the intervenor demonstrates (1) an interest in the subject matter of the litigation; (2) absent intervenor's participation, those interest will be impaired or impeded; and (3) the existing parties to the action inadequately represent the intervenor's interest. *See* Fed. R. of Civ. Pro. 24(a)(2). Where, as here, Nye County is in a unique and exclusive position to represent the interests of its citizens, there can be no doubt such standards are satisfied. The NWPA itself repeatedly recognizes Nye County's interest in the repository and the licensing proceeding, and that Nye's participation, and indeed oversight of the repository site, construction, and operation, are necessary to insure those interests are protected. The County's contentions are disputed and opposed by DOE and at odds with contentions filed by those who oppose the granting of the repository license. Given these facts and the unique oversight authority granted to the County by the NWPA, Nye County's interest cannot be adequately represented by anyone else in the licensing proceeding.

2. Nye County has clearly satisfied both the requirements for standing and for intervention, and therefore has a right to fully participate in the licensing proceeding

The Supreme Court has not definitively ruled on the question of whether satisfying standing requirements automatically satisfies the requirements for intervention in litigation. See *Diamond v. Charles*, 476 U.S. 54, 61-64 (1986). However, in the D.C. Circuit, an intervenor's demonstration of a direct interest and stake in a proceeding is the same for purposes of satisfying Article III standing as it is for purposes of satisfying requirements for intervention in a civil judicial proceeding. In the D.C. Circuit's view, the two requirements are equivalent. *See Southern Christian Legal Conference v. Kelley*, 747 F. 2d 777, 779-781 (D.C. Cir. 1984); *Roeder v. Islamic Republic of Iran*, 333 F. 3d 228, 233-234 (D.C. Cir. 2003)(applicant who meets requirements for intervention also met Article III requirements for standing). Other courts have held that the bar set for standing under Article III of the Constitution is higher than that for intervention;[3] thus, meeting the higher standing requirements necessarily satisfies intervention requirements. Therefore, DOE's concession that the County has standing is tantamount to a legal admission that the County has intervenor status as a party also.

[3] *See generally*, MOORE'S FEDERAL PRACTICE § 24.03[2][d].

NRC recognized similar principles in *Nuclear Engineering Co.* (Sheffield, Illinois Low-Level Radioactive Waste Disposal Site), ALAB-473, 7 NRC 737, 743 (1978). In that case, the Appeal Board addressed the participation of an intervenor in the licensing action initiated by another party, and concluded that even support for the application did not preclude intervention or standing.

The Appeal Board stated:

> Standing to intervene hinges neither upon the litigating posture the petitioner would assume if allowed to participate nor on the merits of its case. *Association of Data Processing Service Organizations v. Camp*, 397 U.S. 150, 153 (1970). ***Rather, the test is whether a cognizable interest of the petitioner might be adversely affected if the proceeding has one outcome rather than another.*** (emphasis added)

More recently, the Licensing Board cited this decision in allowing participation by the Skull Valley Band of the Goshute Indians, who supported the license, in the proceeding related to a proposed commercial used fuel storage facility. *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 172 (1998). Accordingly, based on Nye Count's contentions that seek to avoid adverse affects from any NRC licensing outcome that does not take the County's contentions into account, and based upon its lack of objection to the license and other considerations described above, Nye County has standing as a matter of right to intervene and fully participate in this proceeding.

B. DOE's Claim That Nye County Has Not Demonstrated That its Contentions Are Material to the Licensing Proceeding is Factually Inaccurate and Unsupportable as a Matter of Law.

Since DOE's Answers raises a nearly identical materiality defense to each of Nye County's contentions, the County will, for ease of response, address most of DOE's common arguments on materiality here. DOE ANSWER at 3-27. However, the County will discuss other DOE materiality arguments, as needed.

In each of its contentions, Nye County has demonstrated, in detail, why the contention raises issues that are material to this proceeding, citing appropriate technical and legal bases for the contention. Section IV of DOE's Answer comprises a generic treatise on the Department's views regarding the legal requirements for the admissibility of contentions, including the materiality requirement. DOE ANSWER at 3-27. While first recognizing the *sui generis* nature

of this proceeding, DOE then ignores that fact and packs the treatise with self-serving statements and numerous citations from previous unrelated licensing proceedings that are inapplicable to the specific NRC regulatory process for considering the Yucca Mountain application. *Id.* at 20-27.

Generally speaking, 10 C.F.R. Part 63 requires the NRC to make findings regarding construction, operation, closure, and post-closure safety of the repository. 10 C.F.R. §§ 63.1 to 63.343 (2008). Part 63 also specifies many programmatic elements that must be adequately completed in order for NRC to make those findings, including preclosure safety analysis, environmental assessments, performance assessment, performance confirmation, quality assurance, emergency management, operator training, radiation protection, material control and accounting, safeguards and security, and others. See, e.g. 10 C.F.R. § 63.21 (2008). Inadequate detail or failure to provide the necessary commitments regarding any of these elements can render the NRC unable to make the required findings of reasonable assurance or reasonable expectation, regardless of whether this failure directly affects compliance with the numerical performance objectives

DOE incorrectly paraphrases the construction authorization findings that NRC must make in order to authorize repository construction. Specifically, DOE asserts:

> [i]n short, the NRC must determine the validity of DOE's conclusions concerning the ability of the repository design to limit exposure to radioactivity, both during the construction and operation phase of the repository (i.e., preclosure phase) and during the phase after the repository has been filled, closed, and sealed (i.e., postclosure phase). DOE ANSWER at 15.

DOE goes on to conclude, "[t]herefore, contentions that either independently or cumulatively, fail to demonstrate an increase in the mean dose above regulatory limits are immaterial and inadmissible because they would not 'make a difference in the outcome of the proceeding.' " *Id.* DOE's conclusions are seriously flawed and utterly without legal support.

Even though Nye County does not seek rejection of the license application, the County's contentions identify deficiencies in the application that would preclude the NRC from making the required findings unless they are corrected. The County's contentions are directed at corrective actions that can be made conditions to the license that must be fulfilled by DOE prior to issuance of construction authorization. Therefore, correction of the deficiencies identified by

Nye County clearly "make a difference in the outcome of the proceeding" and enhances the safety and health assurances that are provided to the citizens of Nye County.

The courts have rejected the notion that the sole test of a contention's materiality is a direct calculation of the contention's radiation dose consequence in the event that the contention is accepted. See *Massachusetts v. NRC*, 924 F.2d 311, 323 (D.C. Cir. 1991). Contentions that allege a fundamental failure of DOE to submit a license application that meets NRC's regulations, such as those pertaining to emergency response, are material contentions **without a direct demonstration of a reduction in potential radiation exposure**. *Id.* Alleged failures to comply with such standards are material, and must be assessed by NRC to determine whether the license should be accepted, rejected, or conditioned in some way, without resort to direct examination of the dose consequences. In fact, NRC itself has rejected intervenor's expert testimony on dose consequences of alleged deficiencies in license applications where dose or safety consequences under-gird mandatory NRC emergency response and other safety standards. *Id.*

Further, DOE's analysis leaves the entire performance confirmation program and plan unnecessary, redundant, and immaterial. If conducted after issuance of construction authorization, no performance confirmation program can make a material difference to the construction authorization. Performance confirmation, to be material, requires a feedback mechanism that can modify the ongoing construction and/or the intended operation of the repository during pre-closure and/or the duration of the pre-closure time period. This concept is reflected in the NRC requirement that "[t]he program must have been started during site characterization, and it will continue until permanent closure." 10 C.F.R. § 63.131(b). It is also espoused in the nature of the performance confirmation activities required during repository construction and operation. 10 C.F.R. §§ 63.132, 133 (2008).

Moreover, DOE's proposed definition of materiality flies in the face of the APAPO Case Management order that required focused, single-issue contentions. See Case Management Order Concerning Petitions to Intervene, Contentions, Responses and Replies, Standing Arguments and Referencing or Attaching Supporting Materials (June 20, 2008), in PAPO-001, ASLBP No. 08-861-01-PAPO-BD01 Assuming that DOE's incorrect standard was the appropriate way to view the admissibility of contentions, breaking multi-part associated contentions down into their single issue subparts virtually guarantees that few, if any, individual contentions can meet the

heightened standard advocated by DOE. When contentions are subdivided into their component parts, very few individual contentions can be expected to affect the overall outcome of the TSPA or PSCA.

C. DOE's Claims Regarding Nye County's Compliance with NRC Procedural Requirements Are Similarly Without Merit.

DOE states that it has no reason to believe that Nye County is not in compliance with the Licensing Support Network (LSN) requirements at 10 CFR § 2.309. 10 C.F.R. § 2.309 (2008). Nevertheless, DOE devotes many pages of its DOE ANSWER to the LSN requirements and complains that Nye County failed to submit a certification of compliance with those requirements as a part of its petition to intervene.[4] As DOE well knows, Nye County in fact has fully complied with all LSN requirements. With the exception of legal citations and similar exempt materials, Nye County has timely submitted every other document relied upon in its contentions for inclusion in the LSN. Furthermore, on January 31, 2008, Malachy R. Murphy filed a certification of compliance with the LSN requirements on behalf of Nye County, and has certified Nye County's supplementation of it LSN each month subsequently, rendering the failure to include it with the petition at most a harmless error.

[4] DOE discusses the role of the LSN in providing "participants with the opportunity to frame focused and meaningful contentions." DOE ANSWER at 4-6. DOE then belabors the fact that it "first made documentary material available on the LSN in 2004, when it publically released approximately 1.3 million documents" and then "made another 2.1 million documents publically available on the LSN in April, 2007- more than a year before it submitted the LA." DOE ANSWER at 5. DOE notes that it submitted its certificate of compliance for the LSN in October 2007. DOE states that its "extensive production [of documents] substantially heightens Nye County's ability – and its corresponding obligation – to proffer focused and adequately supported contentions in this proceeding." DOE ANSWER at 6. DOE fails to document how Nye County's contentions have not met the test of being focused and adequately supported. DOE also fails to acknowledge that for the issues raised in most of Nye County's contentions, the relevant documentary material was not made available until 2008. In addition, there was no way to verify whether the information presented by DOE in the LA complied with Commission requirements, or the extent to which DOE relied upon any particular reference, until after the LA was submitted on June 3, 2008. Contentions were required to be filed by December 22, 2008, less than seven months later. With respect to the contentions related to performance confirmation, for example (see NYE-SAFETY-1, 2, and 3), relevant references included: Addendum 01 to the Simulation of Net Infiltration for Present-Day and Potential Future Climates, January 2008; MDL-NBS-HS-000023 REV 01 ADD 01, LSN DEN001570570]; Addendum 01 to the Performance Confirmation Plan, February 2008 [TDR-PCS-SE-000001 REV 05 ADD 01, LSN DEN001584610]; Revision 01 of the Postclosure Nuclear Safety Design Bases, February 2008 [ANL-WIS-MD-000024 REV 01, LSN DEN001580576]; and Addendum 01 to the Total System Performance Assessment, March 2008 [MDL-WIS-PA-000005 REV 00 ADD 01, LSN DEN001579005]. In addition, the independent evaluations of the Applicant's infiltration model conducted by The U.S Nuclear Waste Technical Review Board [LSN DEN001573555] and the Oak Ridge Institute for Science and Education [LSN DEN001595302] were not available until December 2007 and April 2008, respectively. It is irrelevant that the Applicant made over 3.5 million documents available on the LSN by the end of 2007 (Answer at 6), since these documents do not make up the principal basis for the majority of the contentions proffered by Nye County.

III. REPLY TO DOE'S ARGUMENTS IN OPPOSITION TO NYE COUNTY'S SAFETY CONTENTION #1 (UNB)

DOE's Answers to Nye County Safety contentions Nye-Safety-1, Nye-Safety-2, and Nye-Safety-3, all of which challenge compliance of DOE's proposed performance confirmation program with Commission requirements, are essentially the same. For the sake of brevity the County will respond to those arguments here, and not repeat these same arguments in response to DOE's Answer as it pertains to Nye Safety 2 and Nye Safety 3.

A. General response to the common arguments in the DOE ANSWERs pertaining to Contentions Nye-Safety-1, 2, 3.

Nye County Safety contentions Nye-Safety-1, Nye-Safety-2, and Nye-Safety-3 all challenge the compliance of DOE's proposed performance confirmation program with Commission requirements. In all three cases DOE "expresses no legal objection" to the information provided by the County regarding four[5] of the six specified admissibility requirements for contentions. See10 CFR § 2.309(f)(1) (2008). DOE advocates rejection of all three contentions on the basis of (1) materiality of the contention and (2) whether a genuine dispute exists on a material issue of law or fact. 10 CFR § 2.309(f)(1)(iv) and (vi) (2008). Although the County addressed many of DOE's materiality arguments in Section II (B) above, and incorporates those arguments here where applicable, a specific discussion to this part of DOE's materiality arguments follows.

1. Response to DOE's ANSWERs pertaining to the Materiality of Contentions Nye-Safety-1, 2, 3.

DOE incorrectly contends that "Nye County must demonstrate that there is no reasonable expectation that the overall objective would be met" (DOE ANSWER at 30, 38, and 46) and, by extension, that, in each case the contention is inadmissible "[b]ecause of Nye County's failure to address the dose effects of the claimed omissions in the performance confirmation program… ." DOE ANSWER at 31, 39, and 47. Nye County asserts that, because of the omissions identified in its contentions regarding the performance confirmation program, the program is not in compliance with the Commission requirements as stated in Section 63.21(c)(17) and subpart F, specifically Section 63.131(a)(2). 10 C.F.R. § 63.21(c)(17)(2008); 10 C.F.R. § 63.131(a)(2) (2008). By definition, the performance confirmation program "is conducted to evaluate the

[5] The statement of the issue of law or fact to be controverted; the explanation of the basis for the issue, whether the issue is within the scope of the proceeding; and the statement of alleged facts or expert opinion supporting the County's position and supporting references. 10 CFR §§ 2.309(f)(1)(i), (ii), (iii), and (v) (2008);

adequacy of the information used to demonstrate compliance with the performance objectives in subpart E." 10 C.F.R. § 63.2 (2008). Performance Confirmation is intended to "evaluate the adequacy of assumptions, data, and analyses that led to the findings that permitted construction of the repository." 10 C.F.R. § 63.102(m)(2008). If the performance confirmation program does not comply with the Commission's requirements, then it will not be adequate to permit the Commission to "evaluate the adequacy of assumptions, data, and analyses that led to the findings that permitted construction of the repository." 10 C.F.R. § 63.102(m)(2008). In such a case, the Commission would not be able to make the required finding of reasonable expectation and the contentions, as written, are material to the proceeding.

DOE argues that it conducted a "completeness evaluation" of the performance confirmation program and, as a result of this evaluation, concluded "that no additional activities needed to be added to the performance confirmation program." DOE ANSWER at 31, 39, and 47. DOE further asserts that Nye County's performance confirmation program contention "is incorrect and does not controvert DOE's position as documented in its completeness evaluation." DOE ANSWER at 35, 43, and 51. DOE is incorrect. The County's contentions assert that, despite any evaluation conducted by DOE, the performance confirmation program omits activities necessary to gather information critical to the Commission's ability to "evaluate the adequacy of the information used to demonstrate compliance with the performance objectives in subpart E" and "the adequacy of assumptions, data, and analyses that led to the findings that permitted construction of the repository." 10 C.F.R. §§ 63.2, 63.102(m)(2008).

2. Response to DOE's ANSWERs pertaining to the treatment of uncertainty of Contentions Nye-Safety-1, 2, 3.

DOE incorrectly mischaracterizes the County's contentions as challenges to the Commission's treatment of uncertainty in making a finding of reasonable expectation. DOE ANSWER at pp. 29, 37, and 45. Nye County takes no issue with the Commission's criteria for consideration of uncertainties in reaching a finding of reasonable expectation as stated at Section 63.101(a)(2). 10 C.F.R. § 63.101(a)(2) (20008). Nor does the County take issue with the definition of reasonable expectation set forth in Section 63.304. 10 C.F.R. § 63.304 (2008); DOE ANSWER at 30, 38, and 46. A finding of reasonable expectation will be based on "the record before the Commission, that the postclosure performance objectives will be met." 10 C.F.R. § 63.101(a)(2) (2008). The concept of a performance confirmation program, as it relates

to the postclosure performance objectives established in Sections 63.113(b) and (c), is set forth in Section 63.102(m). 10 C.F.R. §§ 63.102(m), 63.113(b) and (c)(2008). DOE asserts that its proposed performance confirmation program is adequate. *See, e.g.* DOE ANSWER at pp. 31, 35, 39, 43, 47, and 51. Conversely, Nye County believes that there are serious omissions in that program. Further, the County asserts that these omissions preclude the Commission from being able to "evaluate the adequacy of the information used to demonstrate compliance with the performance objectives in subpart E" and "the adequacy of assumptions, data, and analyses that led to the findings that permitted construction of the repository." see 10 C.F.R. §§ 63.2, 63.102(m) (2008), respectively. As a consequence, the Commission will not be able to make the required finding of reasonable expectation and the contentions, as written, are material to the proceeding.

3. Response to DOE's Answers pertaining to whether Contentions Nye-Safety-1, 2, 3 raise a genuine dispute on a material issue of law or fact.

DOE additionally argues that Nye County Safety 1, Safety-2, and Safety-3 each "fails to raise a genuine dispute on a material issue of law or fact." DOE ANSWER at pp. 32, 40, and 48. DOE cites the "list of alleged 'gaps' " provided by the County in each contention and the "additional site specific activities and data gathering to address the gaps identified," but goes on to assert that because the basis for the County's contentions is importance to barrier capability, the County has failed to address two of the three criteria cited for the methodology used in the "risk informed performance-based process for performance confirmation activities. DOE ASNSWER at 32-33, 40-41, and 48-49. The issue here is not the precise methodology employed by DOE and the results that formed the original basis for the identification of "over 300 activities, parameters, and data acquisition methods" (DOE ANSWER at pp. 33, 41, and 49), although the County notes that neither the methodology not the results cited by DOE (DOE ANSWER 33, 41, and 49) are included in the Performance Confirmation Plan, Rev 05 AD 01, issued in February 2008 (LSN DEN001584610), that is relied upon as the basis for the performance confirmation program described in the LA in compliance with 10 C.F.R. § 63.21(c)(17) and 10 C.F.R. § 63 subpart F. The issue in dispute is the adequacy of the proposed performance confirmation program to comply with the Commission requirements at 10 C.F.R. § 63.21(c)(17) and 10 C.F.R. § 63 subpart F. DOE asserts that the program is adequate and Nye County, as documented in its contentions, demonstrates that the program is not adequate

to demonstrate compliance with the stated requirements. As a consequence, the Commission will be unable to make a finding of reasonable expectation based on the record presented.

4. Response to DOE's Answers pertaining to Nye-Safety-1.

DOE states that "Nye County's assertions about the alleged omissions in the performance confirmation program are incorrect." DOE ANSWER at 33. In support of this statement, DOE cites a list of performance confirmation activities from SAR Table 4-1 that are claimed to be applicable to the upper natural barrier (UNB). *Id*. at 33-34. Nye County assumes that this list is presented to demonstrate the extensive nature of the performance confirmation activities that DOE asserts are applicable to the UNB and the adequacy of the proposed program. DOE's presumption is mistaken.

The County's contention and its bases clearly relate to the need to obtain information necessary to evaluate the adequacy of assumptions, data, and analyses for features and processes that are not covered by the activities listed in SAR Table 4-1. LSN DEN001592183. Several of the activities DOE lists are either not relevant or are of limited relevance, to what information is needed to evaluate the adequacy of the bases for modeling infiltration, unsaturated zone (UZ) flow, and seepage. Nye County Petition at 9. As explained in the Petition, UZ testing at the repository level focuses on radionuclide transport processes and is not relevant to the issues raised here. *Id*. at 16. Only one of the five aspects described for subsurface mapping is potentially relevant and that relates to obtaining information on near-field hydrologic characteristics (Performance Confirmation Plan at 3-56, LSN DEN001584610), which might be useful in evaluating the adequacy of the basis for the seepage model. Seal and backfill testing is not relevant to the issues raised, as should be clear from a careful reading of the Performance Confirmation Plan. Performance Confirmation Plan at 3-67 to 3-69, LSN DEN001584610. DOE lists precipitation monitoring and seepage monitoring as included activities, but completely misses the arguments presented (Nye County Petition at 10-14) to the effect that information on present-day precipitation and potential seepage, which is not anticipated based on modeling results, provide essentially no information that can be used to evaluate the assumptions, data, and analyses that are the bases for infiltration, UZ flow, and seepage modeling.

DOE asserts that "Nye's alleged 'gaps' in the list of activities related to the UNB in the performance confirmation program are not required activities and do not indicate a deficiency in

the performance confirmation program." DOE ANSWER at 34. DOE is incorrect; Nye County does not assert that the NRC requires specific activities. The County contends that the Commission requires a performance confirmation program that is adequate to permit the Commission to "evaluate the adequacy of the information used to demonstrate compliance with the performance objectives in subpart E" (see 10 C.F.R. § 63.2) and "the adequacy of assumptions, data, and analyses that led to the findings that permitted construction of the repository." See 10 C.F.R. § 63.102(m)(2008). The requirement is not on specific activities, as perceived by DOE, but on the inclusion of activities in the performance confirmation program that are necessary and sufficient to address important aspects of the basis for the Commission findings and that permit the Commission to evaluate the adequacy of the information that led to these findings. Nye County has demonstrated that the program proposed by DOE is not adequate in this regard, and that the processes listed by DOE based on Nye County's contention need to be included in the performance confirmation program. DOE ANSWER at 34.

IV. REPLY TO DOE'S ARGUMENTS IN OPPOSITION TO NYE COUNTY'S SAFETY CONTENTION #2 (LNB)

DOE argues that "Nye County's assertions about the alleged omissions in the performance confirmation program are incorrect." DOE ANSWER at 41. In support of this incorrect assertion, DOE cites a list of performance confirmation activities from SAR Table 4-1 that are claimed to be applicable to the lower natural barrier (LNB). *Id*. at 41-42. Nye County assumes that this list is presented to demonstrate the extensive nature of the performance confirmation activities that DOE asserts are applicable to the LNB and the adequacy of the proposed program. DOE's presumption is based upon an imprecise reading of the contention and its bases, which clearly relate to the need to obtain information necessary to evaluate the adequacy of assumptions, data, and analyses for features and processes that are not covered by the activities listed in SAR Table 4-1. LSN DEN001592183. Had DOE read the contention carefully, DOE would have seen that several of the activities it lists are either not relevant, or are of limited relevance, to the issue at hand, which is the omission of activities to obtain the information needed to evaluate the adequacy of the bases for modeling unsaturated zone (UZ) flow and transport below the repository, and saturated zone (SZ) flow and transport below the repository from the water table to the accessible environment. Nye County Petition at 23. As the County explained, the proposed mapping and UZ transport testing at the repository level is not an adequate replacement for testing to obtain information that can be used to evaluate the adequacy of the bases for the UZ flow and transport models in specific hydrogeologic units below the repository. *Id*. at 29-30. Similarly, the proposed monitoring of SZ water levels and water chemistry, fault zone testing, and alluvial transport testing although useful activities, provide limited information that can be used to evaluate the adequacy of the basis for key elements of the UZ and SZ flow and transport models. *Id*. The need for additional activities should be clear from a careful reading of the contention and cited references. Nye County Petition 23-27.

DOE asserts that "the alleged 'gaps' in the list of activities related to the LNB in the performance confirmation program are not required activities and do not indicate a deficiency in the performance confirmation program." DOE ANSWER at 34. The County does not argue that the Commission requires specific activities. The County contends that the Commission requires an adequate performance confirmation program to permit the Commission to "evaluate the adequacy of the information used to demonstrate compliance with the performance objectives in

subpart E" (10 C.F.R.§ 63.2) and "the adequacy of assumptions, data, and analyses that led to the findings that permitted construction of the repository." 10 C.F.R. § 63.102(m)(2008). The requirement is not on specific activities, as perceived by DOE, but on the inclusion of activities in the performance confirmation program that are necessary and sufficient to address important aspects of the basis for the Commission findings and that permit the Commission to evaluate the adequacy of the information that led to these findings. Nye County has demonstrated that the program proposed by DOE is not adequate in this regard and that the processes listed in Nye County's contention need to be included in the performance confirmation program.

V. REPLY TO DOE AND NRC STAFF'S ARGUMENTS IN OPPOSITION TO NYE COUNTY'S SAFETY CONTENTION #3 (Site Scale Model)

A. Response to DOE's Answer Pertaining to Nye-Safety-3.

DOE denies that there are any omissions in the performance confirmation program. DOE ANSWER at 49. To support this position, DOE cites a list of performance confirmation activities from SAR Table 4-1 (the same list cited for Nye-Safety-2, DOE ANSWER at 41-42) that are claimed to be applicable to the lower natural barrier (LNB). DOE ANSWER at 49-50. Nye County assumes that this list is presented to demonstrate the extensive nature of the performance confirmation activities that DOE believes are applicable to the LNB and, likewise, the adequacy of the proposed program. DOE misses the point. The contention clearly relates to the need to obtain information necessary to evaluate the adequacy of assumptions, data, and analyses for features and processes that ***are not covered*** by the activities listed in SAR Table 4-1. LSN DEN001592183; Nye County Petition at 33, 42. Had DOE read the contention precisely, it would have seen that none of the activities it lists are relevant to the issues at hand - the information needed to evaluate the adequacy of the assumptions, data, and analyses that are the bases for the site-scale model that is used in the overall evaluation of the capability of the saturated zone (SZ) feature of the LNB. Nye County Petition at 36-41. The County asserts that a series of wells should be drilled on the site model boundaries, particularly the northern and eastern boundaries, to obtain site-specific data that can be used to evaluate the adequacy of the bases for the site-scale model. *Id*. at 41-42. The activities included in DOE's proposed performance confirmation program will all be conducted well within the boundaries of the site-scale model and will, therefore, provide no useful information concerning the boundary conditions for that model that can be used to evaluate the adequacy of the bases for the model. The need for additional activities is clear from the contention and cited references. Nye County Petition 36-41.

DOE asserts that "the alleged 'gaps' in the list of activities related to the SZ feature of the LNB in the performance confirmation program are not required activities and do not indicate a deficiency in the program." DOE ANSWER at 34. The County does not argue that the Commission requires specific activities. The County contends that the Commission requires an adequate performance confirmation program to permit the Commission to "evaluate the adequacy of the information used to demonstrate compliance with the performance objectives in subpart E" (10 C.F.R. § 63.2) and "the adequacy of assumptions, data, and analyses that led to

the findings that permitted construction of the repository." 10 C.F.R. § 63.102(m)(2008). The requirement is not on specific activities, but on the inclusion of activities in the performance confirmation program that are necessary and sufficient to address important aspects of the basis for the Commission findings and that permit the Commission to evaluate the adequacy of the information that led to these findings. Nye County has demonstrated that the program proposed by DOE is not adequate in this regard and that the processes listed by DOE based on Nye County's contention need to be included in the performance confirmation program. Nye County Petition at 42, DOE ANSWER at 50.

B. Response to NRC Staff's Answers Pertaining to Nye-Safety-3.

The NRC Staff asserts that this contention is "virtually identical" to Nye-Safety-2. NRC STAFF ANSWER at 1034. The Staff also assert that Nye County "fails to provide any fact or expert opinion that explains why [the] alleged inadequacies show that the performance confirmation program proposed by DOE associated with the SZ is inadequate," (*Id*. at 1035) and that the County "fails to indicate why the performance confirmation program DOE proposes is not adequate for the intended purpose." NRC STAFF ANSWER at 1036. The Staff fails to recognize the separate issues raised by Nye County in the two contentions that concern omissions in the Applicant's proposed performance confirmation program as it relates to the saturated zone (SZ) feature of the lower natural barrier (LNB).

Nye-Safety-2 focuses on the adequacy of DOE's proposed performance confirmation program activities to obtain information needed to evaluate the capability of the SZ feature of the LNB that includes the fractured volcanic rocks from below the repository to approximately 12 to 14 km southeast and south of Yucca Mountain and the saturated alluvium at the water table from the volcanic aquifer to the accessible environment, approximately 18 km from the repository. Nye County Petition at 25. All of the performance confirmation program omissions cited in Nye-Safety-2 concern additional activities that need to be conducted well within the defined boundaries of the site-scale model, which is the focus of Nye-Safety-3. Nye County Petition at 30. The site-scale model covers an area that is approximately 30 km from east to west, centered on the repository, and approximately 45 km from north to south, extending well to the south of the compliance boundary, 18 km from the repository. *Saturated Zone Site-Scale Flow Model*. MDL-NBS-HS-000011 REV 03. 2007. (at 6-3 to 6-5, and Figure 6-1) LSN DN2002478808.

The site-scale model domain was selected to be:

> "(2) sufficiently large to reduce the effects of boundary conditions on estimating permeabilities and calculated flow fields near Yucca Mountain; (3) sufficiently large to assess groundwater flow at distances beyond the 18-km compliance boundary from the repository area; (4) small enough to minimize the model size for computational efficiency and to include structural feature detail affecting flow; (5) thick enough to include part of the regional Paleozoic carbonate aquifer [below the volcanic aquifer] (the bottoms of the site- and regional-scale models are equal at -4,000 m below sea level); and (6) large enough to include borehole data from the Amargosa Desert at the southern end of the modeled area."

Saturated Zone Site-Scale Flow Model. MDL-NBS-HS-000011 REV 03. 2007 (at 6-3); LSN DN2002478808. The site-scale model domain, therefore, covers an area and depth considered to be sufficient for use in evaluating the capability of the SZ feature of the LNB to limit the movement of radionuclides within a more limited area and depth, from the repository to the accessible environment. As such, use of the model relies upon the assumptions, data, and analyses that support the basis for and calibration of the model itself – the focus of Nye-Safety-3 (Nye County Petition at 40-42) - and the assumptions, data, and analyses that support representation of conditions that affect flow and transport internal to the model – which was the focus of Nye-Safety-2. Nye County Petition at 30. DOE proposes no activities to evaluate the adequacy of the assumptions, data, and analyses that are the basis for the much larger site-scale model domain.

The omissions cited by Nye County in Nye-Safety-3 with respect to DOE's proposed performance confirmation program all relate to the additional information needed to determine conditions along the boundaries of the site-scale model. Nye County Petition at 32, 39, 40-42. This information is necessary to evaluate the adequacy of the assumptions, data, and analyses that are the bases for the site-scale model. Such information is important because transport of radionuclides by groundwater in the SZ is the principal means of release to the accessible environment. The site-scale model plays a critical role in evaluating the capability of the SZ with respect to processes that limit the movement of radionuclides to the accessible environment and in evaluating compliance with the performance objectives at 10 C.F.R. 63, subpart E. Nye County Petition at 35. As noted in the contention, there are only two widely spaced wells in the vicinity of the eastern boundary of the model domain, one located on the north, and one on the extreme northwest boundary. *Id*. at 39. "Nye County proposes that a series of wells be drilled on the site model boundaries, particularly the northern and eastern boundaries, to allow accurate

measures of hydraulic gradients and that each well be tested to provide accurate measures of key aquifer parameters. It is only through direct measurement that discrepancies between the [site-scale and regional] models can be resolved and the adequacy of the basis for the site-scale model evaluated. The collection of this additional data will preclude the need to use inputs from the regional model in calibrating the site-scale model and allow the site-scale model to stand alone." Nye County Petition at 42.

Nye County proposed drilling a series of wells along the eastern boundary of the site-scale model as part of the most recent five-year proposal for the County's Independent Scientific Investigation Program, covering the period 2007-2011 (NWRPO-2007-02, at 11, attached hereto as Attachment "B;" Nye County Assession number nye_rid7593_01_00.pdf), which was submitted to DOE on April 3, 2007, as the basis for funding under a cooperative agreement. Information from the proposed drilling program would have addressed at least a portion of the additional work cited in the contention. Nye County Petition at 42. The work was not conducted because of funding limitations outside of DOE's control. The County's position, as stated in the contention, is that this work must be included in the performance confirmation program.

The Staff seems to be mistaken about the crux of the County's Contention, believing that the County was attacking the Site Scale Model itself, stating:

> "Nye county asserts that additional information is needed to assess the capability of the site-scale model used by DOE to evaluate the capability of the SZ and that that information should be generated through the performance confirmation program" and that "Nye County provides no facts or expert opinion to support NYE-SAFETY-3." NRC STAFF ANSWER at 1034.
>
> Nye County takes issue with DOE's use of the site-scale model to evaluate the capability of the SZ feature of the LNB to limit the movement of radionuclides into the accessible environment. (NYE Petition at 32)." NRC STAFF ANSWER at 1034.
>
> Nye County "claims that DOE's performance confirmation activities associated with the SZ zone [sic] are insufficient to assess the adequacy of the site-scale model. NYE Petition at 33, 35. NRC STAFF ANSWER at 1034-1035.
>
> Nye County appears to raise issues concerning the models themselves and fails to show how the alleged inadequacies in the model demonstrate that the performance confirmation program is inadequate. NRC STAFF ANSWER at 1036.

A more careful reading of the County's contention (Petition at 32, 33, 35) demonstrates that the County takes issue with the lack of activities in the Applicant's proposed performance confirmation program that would provide the additional information needed to "determine conditions along the boundaries of the site-scale model to assess the adequacy of the basis for this model in evaluating the capability of the SZ." Nye County Petition at 32. The key phrase in this regard, in all instances cited and in the contention in general, is "adequacy of the ***basis***" for the site-scale model, rather than the adequacy of the model itself, as the Staff's Answer implies. In only one instance does the contention use the phrase "adequacy of the site-scale model" (Petition at 41) and this usage resulted from the inadvertent omission of the key words "the basis for". In all other instances, the issue raised in the contention is consistently characterized as a concern about the adequacy of the "basis for," or the "information," or the "assumptions, data, and analyses" that are the "basis for" or "support" the site-scale model. Nye County Petition at 32, 33, 35, 39, 40, 41, 42.

The Staff asserts that the contention "fails to provide sufficient information to show that a genuine dispute exists with the applicant on a material issue of law or fact." NRC STAFF ANSWER at 1035. The issue posed in Nye-Safety-3, is material to the Commission's requirements for performance confirmation. Performance confirmation means the "program of tests, experiments, and analyses that is conducted to evaluate the adequacy of the information used to demonstrate compliance with the performance objectives of subpart E." 10 C.F.R. § 63.2 (2008). The performance confirmation program will be "conducted to evaluate the adequacy of assumptions, data, and analyses that led to the findings that permitted construction of the repository and subsequent emplacement of the wastes." 10 C.F.R. § 63.102(m)(2008). The performance confirmation program must provide data that indicate, where practicable, whether: "Natural and engineered systems and components required for repository operation, and that are designated or assumed to operate as barriers after permanent closure, are functioning as intended and anticipated." 10 C.F.R. § 3.131(a)(2)(2008). The information presented in the contention demonstrates:

(1) the importance of the site-scale model to the evaluation of the capability of the SZ feature of the LNB and, by extension, to the evaluation of compliance with the postclosure performance objectives at 10 C.F.R. § 63.113;

(2) the existence of sufficient questions and uncertainty to warrant the inclusion of activities in DOE's performance confirmation program that will provide the

information needed to evaluate the adequacy of the assumption, data, and analyses that are the basis for the site-scale model; and

(3) the lack of the requisite activities in the proposed performance confirmation program. Nye County Petition at 33, 36-42.

The adequacy of the proposed performance confirmation program's compliance with the Commission requirements at 10 C.F.R. § 63.21(c)(17) and 10 C.F.R. § 63 subpart F is the issue in dispute. DOE believes that the program is adequate (DOE ANSWER at 50-51) and Nye County has demonstrated in its contention that the program is not adequate to demonstrate compliance with the stated requirements as they relate to obtaining information needed to evaluate the adequacy of the assumptions, data, and analyses that are the basis for the site-scale model. Nye County Petition at 36-41. As a consequence, the Commission will be unable to make a finding of reasonable expectation based on the record presented, and the contention is clearly admissible.

VI. REPLY TO DOE'S AND NRC STAFF ARGUMENTS IN OPPOSITION TO NYE COUNTY'S SAFETY CONTENTION #4 (Radon)

Nye County's concerns have and continue to be the adequate protection of our citizens in the vicinity of the repository. We do not believe that Nye County citizens will be adequately protected without a rigorous airborne radiation monitoring program, because DOE freely admits in its Supplemental Environmental Impact Statement ("SEIS") that it would increase the radiation dose to an individual at the southern site boundary by 7.5 mrem for decades. Repository SEIS Section 4.1.7.2.6, Table 4-24, page 4-68, LSN DEN001593669. DOE and the NRC Staff have essentially disregarded a main point of this contention due to their narrow interpretation of the term "naturally occurring." Radon and other radiation releases resulting from the construction and ventilation of the repository are specifically the result of man's activity, not natural actions. Nye County finds the response of DOE and the NRC staff -- that DOE has no legal responsibility for regulating a radiation dose that is 99.8% of the public dose caused by the repository construction and preclosure operations -- to be both dangerous and callous. DOE is responsible for building a facility that is after closure estimated to cause less than a 3 mrem annual dose to any individual for a million years. DOE admits that the construction and operation of the repository will cause a 7.5 mrem annual dose to Nye County residents beginning within the next 20 years and continuing for decades until the repository is closed. Repository SEIS Section 4.1.7.2.6, Table 4-24, page 4-68, LSN DEN001593669. Nye County asserts that this anticipated 7.5 mrem actual dose is not due to "naturally occurring" radiation, but instead results directly from the construction and operational activities of DOE at Yucca Mountain and requires additional monitoring to protect our citizens and communities. Nye County answers to the DOE and NRC responses to contention Nye-Safety-4 are generally organized to follow points a through f on DOE's Answer, followed by responses to the NRC Staff's Answer.

A. Nye County Response to DOE's Answer concerning Nye-Safety-4.

DOE expressed no legal objection to Nye-Safety-4 with respect to subsections "a" or "b" of the contentions provisions. DOE ANSWER at 52.

DOE states that "NRC is not required to regulate and has no jurisdiction to regulate the public's exposure to naturally occurring radon." *Id*. DOE asserts that the Environmental Protection Agency (EPA) Yucca Mountain repository standard (40 C.F.R. § 197.4) and the

substantively identical NRC regulation (10 C.F.R. § 63.204) set the preclosure safety standard for the repository as regulations dealing with storage of "radioactive material" by DOE in the Yucca Mountain repository and at the Yucca Mountain site. DOE ANSWER at 53; 10 C.F.R. § 63.204 (2008); 40 C.F.R. § 197.4 (2008). DOE further states the basis for its exclusion of consideration of naturally occurring radon is because neither the EPA nor the NRC regulations include radon in the definition of "radioactive material." DOE ANSWER at 52 and 53. DOE also argues that the Atomic Energy Act (AEA) does not give the NRC authority to regulate naturally occurring radioactive material. DOE ANSWER at 53.

Both DOE and the NRC Staff apply an unwarranted limitation on the requirements of 40 C.F.R. Part 197 (and 10 C.F.R. Part 63 by extension) that simply does not exist. 40 C.F.R. Part 197 (2008); 10 C.F.R. Part 63 (2008). Section 197.1 ". . . covers the ***storage*** of radioactive material by DOE in the Yucca Mountain repository and on the Yucca Mountain site." 40 C.F.R. § 197.1 (2008)(emphasis added). "[S]torage is defined identically by both the EPA and the NRC as: retention (and any associated activity, operation, or process necessary to carry out successful retention) of radioactive material . . .." Nye County Petition at 46, citing 40 C.F.R. § 197.2 (2008). DOE includes excavation and ventilation of the repository tunnels as part of its definition of repository construction and operations. SAR Section 1.3.5, page 1.3.5-1, LSN DEN001592183. Moreover, the radon which is released by construction and operation of the repository should not be equated with the background level of radon found in residential areas where uranium, its daughter and decay products, and radon exist in the undisturbed soil, thus leading to the term "naturally occurring." Accordingly, those repository activities and operation associated with storage are the subject of the EPA standard to which the corresponding NRC regulations (10 C.F.R. Part 63) must also conform. As noted in our petition to intervene, DOE freely admitted that "naturally occurring" radon and its decay products will be released into the atmosphere and will result in radiation dose to the public. Nye County Petition at 46; Repository SEIS section 4.1.7.2.6, Table 4-24, page 4-68, LSN DEN001593669. In short, it is the activity, operation, and process of storing the radioactive material that is being regulated, not just the radioactive material itself. The operation and activity at the repository will, according to DOE's own analysis, result in significant radiation exposure to Nye County residents. Accordingly, those same operations and activities must also be regulated.

Nye County does not claim that the AEA establishes jurisdiction for the NRC to directly regulate naturally occurring radon. However, the EPA is well known to have the authority to regulate naturally occurring radon.[6] Additionally, the Nuclear Waste Policy Act, as amended by the Energy Policy Act of 1992 at Section 801, 42 USC 10141, requires the EPA to set the radiation safety standards for the Yucca Mountain repository. 42 U.S.C. § 10141 (2008). The NRC is required to promulgate standards consistent with the EPA standard. 42 U.S.C. § 10141(a)(2008), see also http://www.nrc.gov/waste/hlw-disposal.html. The EPA chose to implement a standard for storage as including "any activity, operation, or process necessary to carry out successful retention" of radioactive material, not just releases from the material itself. 40 C.F.R. § 197.2 (2008). Therefore, the NRC's mandate to regulate all sources of radiation to protect public health and safety is derived from the Energy Policy Act of 1992, based on the following facts:

1) EPA has the authority to set standards to regulate naturally occurring radon,

2) EPA does not exempt consideration of naturally occurring radon in its 40 C.F.R. Part 197 definition of "storage,"

3) the Energy Policy Act of 1992, Section 801(a)(1) requires the EPA to set the only standard applicable to the Yucca Mountain site, and

4) the Energy Policy Act of 1992, Section 801(b)(1) requires the NRC to set requirements by rule ". . . to be consistent with the Administrator's [EPA] standards promulgated under subsection (a)"

DOE believes that "even if radon fell within NRC's authority . . . the contention would be beyond the scope of this proceeding because 10 CFR 63.204 and 40 CFR 197.4 apply to doses received from management and storage of radioactive material, and not to doses received from background radiation and naturally occurring radioactive material." DOE ANSWER at 53-54. DOE quotes its obligation under Section 63.204 and notes the provisions of 40 C.F.R. § 197.4 are "substantively identical." *Id*. DOE goes on to say that naturally occurring radon is not being managed or stored, and therefore radon is not subject to 40 C.F.R. §§ 191.2 or 191.3(a) or 10 C.F.R. § 63.204. *Id*. at 54. Nye County disagrees with DOE's analysis.

Section 197.2 defines storage as follows:

[6] Section 112(b) of the Clean Air Act lists "radionuclides (including radon)" as hazardous pollutants that EPA has the authority to regulate. 42 U.S.C. § 7412 (2008).

> Storage means retention (***and any associated activity, operation, or process necessary to carry out successful retention***) of radioactive material with the intent or capability to readily access or retrieve such material. (emphasis added).

40 C.F.R. § 197.2 (2008). The NRC uses the identical definition to define storage. See 10 C.F.R. § 63.202. Thus, "storage" includes not only the retention of radioactive material, but also all of the associated activity, operation, or process necessary to carry out successful retention or retrieval of such radioactive material. 40 C.F.R. § 197.2 (2008). Therefore, all of the activities, operations, or processes that are associated with retention of radioactive materials at the repository are also defined as storage. *Id*.

DOE plans to ventilate the excavated repository during its excavation and operation of the repository. SAR Section 1.3.5, page 1.3.5-1. Ventilation of the repository is necessary to excavate and carry out operations in the repository. Ventilation of the excavated repository will cause radon to escape from the exposed rock surfaces, remove the radon from large areas involved in the construction and operation of the repository, and expel it into the air in concentrated plumes where it will escape off the repository site into publicly accessible areas of Nye County. SEIS sections 4.1.7.2.2, 4.1.7.2.3, and 4.1.7.2.4, pp. 4-63 through 4-65. Because the definition of storage includes "any associated activity, operation, or process," it necessarily includes ventilation of the excavated repository. Accordingly, radon released from Yucca Mountain as a result of that excavation and ventilation is, by definition, considered the result of retention and storage at the repository.

Sometimes a chart is better than words. See Figure 1, below.

Regulation of Storage of Radioactive Materials	**=**	**40 C.F.R. Part 197 (EPA)** **10 C.F.R. Part 63 (NRC)**
Storage	**=**	**Retention + any associated activity, operation or process necessary to retain radioactive material** **(40 C.F.R. §197.2)**
Excavation +Ventilation	**=**	**an associated activity, operation or process necessary to retain radioactive material**
Storage	**=**	**Retention +Excavation + Ventilation**

Figure 1

DOE's statements regarding the management and storage of naturally occurring radon are irrelevant, as is DOE's discussion of the various provisions of 40 C.F.R. Part 191. Radiation releases from within ***the excavated repository*** (as defined in 40 C.F.R. § 197.2) are subject to the requirements of Section 197.4(b), not Section 197.4(a) which deals with the surface facilities. 40 C.F.R. §§ 197.4 (a) and (b) (2008). Since the County's contention is based upon activities and operations taking place inside the excavated repository - ventilation of the excavated repository - not its surface facilities, 40 C.F.R. Part 191 has no bearing on this contention.

DOE argues that "Nye County has cited no precedent for taking doses from background radiation sources into account when evaluating compliance with regulatory radiological protection standards, and there is no such precedent." DOE ANSWER at 54. Nye County acknowledges that Part 20 has a precise definition of background radiation that excludes all naturally occurring sources. 10 C.F.R. Part 20 (2008). But since DOE has both admitted and calculated the radiation dose from naturally occurring radon ***above and beyond what occurs now without repository excavation and ventilation,*** the County does not consider the ***additional*** radiation dose caused by DOE's repository operations to be "background." The 10 mrem ALARA constraint in 10 C.F.R. § 20.1101(d) does not apply to radon releases from repository ventilation, because Section 20.1101(d) specifically defines background as not including naturally occurring radiation sources. 10 C.F.R. § 20.1101(d) (2008); Nye County Petition at 48. However, as previously stated, the concentrated radon that will be pulled from the repository and expelled in several concentrated plumes by the ventilation system cannot be simply written off as background. When the radon is physically collected from the excavated repository and expelled forcefully from one or more ventilation shafts in a concentrated plume, it is then technically enhanced by man-made activities. The County included a discussion of Part 20 in our petition simply to show the precedent for NRC to apply ALARA airborne radiation annual goals of 10 mrem to activities the NRC regulates. 10 C.F.R. Part 20 (2008). Nye County finds it incomprehensible that DOE plans to expose the public to a 7.5 mrem annual rate for decades (75% of an established ALARA goal), yet makes a flawed legal argument as to why it should not be required to monitor for and limit exposure to those same Nye County residents.

As noted previously, EPA has the authority under the Clean Air Act to regulate naturally occurring radon. The EPA website states "EPA used the CAA to develop National Emission Standards for Hazardous Air Pollutants (NESHAPS) [to] limit releases of TENORM

[Technically enhanced naturally occurring radioactive material] to the air from both the phosphate industry and uranium mines." http://www.epa.gov/rpdweb00/tenorm/regs.html#caa. The EPA website also states "TENORM is produced when radionuclides that occur naturally in ores, soils, water, or other natural materials are concentrated or exposed to the environment by activities, such as uranium mining or sewage treatment." http://www.epa.gov/rpdweb00/tenorm/about.html. Therefore, radon released from Yucca Mountain as a result of storage activities constitutes TENORM, EPA does have the authority to regulate it, and there is precedent for such regulation, despite DOE's protestations to the contrary. DOE ANSWER at 54. Because 40 C.F.R. § 197.4 (b) does not specifically exclude radon released from Yucca Mountain as a result of DOE's ventilation activities, it is included. 40 C.F.R. § 197.4 (b) (2008). As noted by DOE, 10 C.F.R. § 63.204 and 40 C.F.R. § 197.4 have "substantively identical provisions." DOE ANSWER at 54.

DOE asserts that the requirements of Section 63.112 apply only to event sequences and not normal operations. 10 C.F.R. § 63.112 (2008); DOE ANSWER at 55. Nye County notes that DOE has not adequately implemented Section 63.112 and various other 10 C.F.R. Part 63 subsections listed in our petition to intervene because DOE has failed to consider the hazards of TENORM (radon) emitted from the repository. It is somewhat perplexing that DOE would argue that only event sequences need be considered in preclosure safety analysis (PCSA) and not normal operations, as well. DOE ANSWER at 55. To shed some light on why the preclosure safety analysis must consider normal operations, one need look no further than Section 63.111(c), which provides:

> (c) *Preclosure safety analysis*. A preclosure safety analysis of the geologic repository operations area that meets the requirements specified at 63.112 must be performed. This analysis must demonstrate that:
>
> (1) The requirements of section 63.111(a) will be met; and
>
> (2) The design meets the requirements of section 63.111(b). 10 C.F.R. § 63.111(c) (2008).

Section 63.111(a)(2) states:

> (a) During normal operations, and for Category 1 event sequences, the annual TEDE (hereafter referred to as "dose") to any real member of the public located beyond the boundary of the site may not exceed the preclosure standard specified at section 63.204. 10 C.F.R. § 63.111(a)(2)(2008).

However, DOE's Answer to this contention did not extend to its PCSA actions. DOE did, in fact, consider radiation dose from normal operations in its PCSA, not just in its event sequence analysis. The heart of this contention is simply stated: the EPA standard does not exclude naturally occurring radon, and since the NRC regulation is required to conform to the EPA standard, then the NRC conforming regulation cannot exclude TENORM.

DOE mischaracterizes the Nye County contention by stating, "Nye County acknowledges that the NRC does not regulate naturally occurring radon." DOE ANSWER at 55. Although the County's contention acknowledged that "NRC typically […] does not regulate the radiological dose from naturally occurring radon" (Nye County Petition at 49), we went on to explain that EPA does regulate radon, and was mandated by the Energy Policy Act of 1992 to set the Yucca Mountain standards. The EPA ***chose not to exclude naturally occurring radon***, and the NRC was, therefore, mandated to conform to the EPA standard. *Id* at 49-50.

DOE continues by restating that 10 C.F.R. Part 20 excludes radiation doses from naturally occurring radon. DOE ANSWER at 56. We have already acknowledged that the 10 mrem ALARA constraint in 10 C.F.R. § 20.1101(d) does ***not apply*** to radon releases resulting from repository ventilation, because that regulation specifically defines background as not including naturally occurring radiation sources. Nye County Petition at 48. We included discussion of 10 CFR 20 in our petition simply to show the precedent for NRC to apply ALARA airborne radiation annual goals of 10 mrem to activities that it regulates.

DOE summarizes at the end its Section c arguments:

> . . . the contention should be dismissed because (a) the NRC does not have jurisdiction under the AEA to regulate naturally occurring radon under Part 63, and (b) the contention impermissibly challenges NRC regulations. DOE ANSWER at 56.

Nye County's response is the same:

1) EPA has the authority to set standards to regulate naturally occurring radon (TENORM),

2) EPA *does not limit* consideration of naturally occurring radon in its 40 C.F.R. Part 197 definition of "storage,"

3) the Energy Policy Act of 1992, Section 801(a)(1), requires EPA to set the only standard applicable to the Yucca Mountain site, and

4) the Energy Policy Act of 1992, Section 801(b)(1), requires NRC to set requirements by rule ". . . to be consistent with the Administrator's [EPA] standards promulgated under subsection (a)."

In fact the NRC regulations of 10 C.F.R. Part 63 do conform to 40 C.F.R. Part 197. NRC substantively copied the preclosure safety requirements of 40 C.F.R. Part 197 into its regulations at 10 CFR Part 63. 10 C.F.R. §§ 63.202 and 63.204(b) (2008); 40 C.F.R. §§ 197.2 and 197.4(b) (2008). It's the Energy Policy Act mandate that NRC regulations conform to the EPA standard that provides the jurisdiction to NRC to regulate TENORM in this case, not the AEA.

DOE also argues that the contention does not meet the requirements to support our position or provide adequate supporting references. DOE ANSWER at 57. DOE's rationale provides:

(1) the analysis in the contention does not reference any documents, other than the license application and DOE's supporting documents;

(2) the contention contains only unsupported assertions of counsel; and

(3) the contention does not reference any expert opinion." *Id.*

Nye County asserts that there is no technical issue here. DOE's own SEIS is cited in the contention regarding an annual radiation dose to a member of the public (a Nye County resident) of 7.5 mrem per year going on for decades during repository construction and operations. DOE does not contest the technical basis for Nye County's contention. Therefore, only legal arguments are necessary. The issue is whether or not 40 C.F.R. Part 197 requires the NRC to regulate the TENORM resulting from DOE's Yucca Mountain repository construction and operations. EPA put no exclusion on naturally occurring radon or TENORM in its Yucca Mountain repository safety standard. Despite DOE's stated belief regarding the jurisdiction of NRC to regulate naturally occurring radon in this case, DOE has completely ignored the TENORM factor which Nye County believes has direct bearing on the validity and importance of this contention because it results in the emission of concentrated plumes of radon and radon decay products, not the generalized release which is called to mind by the term "naturally occurring."

DOE challenges the Nye County petition regarding the need for an offsite radiological monitoring program as it relates to radon, stating that the County's premise for the radon monitoring program is "erroneous" and does not suffice to establish a genuine dispute of material

fact or law because DOE is not regulated by NRC for naturally occurring radon. DOE ANSWER at 58. DOE does not dispute the added 7.5 mrem annual dose from ventilated radon that will occur because of construction and operation of the repository. This part of DOE's response also hinges on whether or not radon is regulated by the EPA standard and therefore the conforming 10 CFR 63. The basis for Nye County's disagreement has been articulated in our contention and the preceding pages.

DOE states that the contention fails to establish a genuine dispute on a material issue of fact or law because we didn't address specific deficiencies in DOE's radiation monitoring program discussed in various SAR sections,[7] and we should have acknowledged DOE's discussion of the environmental radiological monitoring system in "SAR Section 5.11.3.11 (pages 5.11-14 to 5.11-15, SAR Rev 0)." DOE ANSWER at 58. DOE's Answer conveniently ignores the fact that the County cited several applicable SAR Sections in its contention, specifically SAR Figure 5-20; SAR Tables 1.1-10 through 1.1-18; SAR Tables 1.1-27 through 1.1-63; and SAR pages 1.8-3, 2.8-10, 5-140, 1.1-200 through 1.1-217, and 1.1-222 through 1.1-297. Nye-Safety-4 at 52. We did not attempt to cite every possible instance of the redundant information in DOE's multi-thousand page license application, nor were we compelled to do so.

The SAR sections noted in DOE's Answer provide no additional relevant information beyond the citations contained in the Nye County contention. Additionally, the discussion of the environmental radiological monitoring system in SAR section 5.11.3.11 (pages 5.11-14 and -15) provides only a promise to develop such a system and does not include monitoring for offsite doses. Significantly, this SAR section does not discuss monitoring for radon and its decay products, because DOE's promise for a radiological monitoring program is only for what it considered necessary for regulatory purposes and, therefore, does not apply to radon released because of storage activities. DOE's monitoring program did not consider the plumes of concentrated radon (TENORM) that result from the repository ventilation during construction and operation. These concentrated plumes are far from the generalized "naturally occurring" radon to which DOE refers. By ignoring the effect of these radon plumes DOE has based its monitoring program on an erroneous concept which, if unresolved, will subject Nye County citizens to ***the*** primary source of public radiation exposure resulting directly from repository construction and storage activities. DOE's statement that it is not legally obligated to do so

[7] SAR Section 1.1.3.1 (pages 1.1-26 to 1.1-27); SAR Section 1.1.3.1.1 (page 1.1-28, SAR Rev 0); SAR Figure 1.1-12, page 1.1-349.

appears to indicate that DOE is more interested in technical legal skirmishes than it is with the actual public safety consequences of its proposed activities.

B. Response to NRC Staff's Answer pertaining to Nye Safety-4.

The NRC staff argues that this contention is not material, does not provide alleged facts or expert opinions, and does not demonstrate that a genuine dispute exists with the applicant. NRC STAFF ANSWER at 1038. The Staff goes on to argue that NRC does not have jurisdiction to regulate naturally occurring radon and that the wording of 40 C.F.R. Part 197 (and the conforming wording of 10 CFR Part 63) do not apply to the radon released during repository storage activities because the definition of radioactive material in those regulations and the AEA does not include naturally occurring radon. NRC STAFF ANSWER at 1039-1040.

Nye County's responses to the DOE ANSWER on this contention are equally applicable to the NRC staff response to this contention and should be applied as such. To summarize, Nye County never contended that the AEA specifies jurisdiction to NRC to regulate naturally occurring radon. Nor do we contend that the definition of "radioactive material" included naturally occurring radon. As discussed above, both DOE and NRC are applying a restriction on the requirements of 40 C.F.R. Part 197 (and 10 CFR Part 63 by extension) that does not exist. Section 197.1 states "[t]his subpart covers the storage of radioactive material by DOE in the Yucca Mountain repository and on the Yucca Mountain site." 40 C.F.R. § 197.1 (2008). "[S]torage is defined identically by both the EPA [197.2] and the NRC [63.202] as: retention (and ***any associated activity, operation, or process necessary to carry out successful retention***) of radioactive material . . . ." Nye County Petition at 46 (emphasis added). Because DOE has defined excavation and ventilation tunnels as part of repository construction and operations, that activity and operation is the subject of the EPA standard to which the corresponding NRC regulations (10 CFR Part 63) must conform. DOE freely admitted in its repository SEIS that radon and its decay products will be released into the atmosphere and will result in radiation dose to the public. Nye County Petition at 46. Repository SEIS section 4.1.7.2.6, Table 4-24, page 4-68, LSN DEN001593669. Stated bluntly, the activity, operation, and process of storing the radioactive material is being regulated, not just the radioactive material itself. According to DOE's own analysis, the activity and operation of ventilating the repository results in significant radiation exposure to Nye County residents.

Nye County does not claim that the AEA establishes jurisdiction for the NRC to regulate naturally occurring radon. However, EPA is well known to have the authority to regulate naturally occurring radon (Section 112(b) of the Clean Air Act lists "radionuclides (including radon)" as hazardous pollutants that EPA has the authority to regulate). Additionally, the Nuclear Waste Policy Act, as amended by the Energy Policy Act of 1992 at Section 801.42 USC 10141, requires EPA to set the radiation safety standards for the Yucca Mountain repository. NRC is required to promulgate standards consistent with the EPA standard. EPA chose to implement a standard for storage defined in 197.2 as including "any activity, operation, or process necessary to carry out successful retention" of radioactive material, not just releases from the material itself. Therefore, NRC's mandate to regulate all sources of radiation to protect public health and safety comes from the Energy Policy Act of 1992 based on the following facts:

1) EPA has the authority to set standards to regulate naturally occurring radon,

2) EPA does ***not limit*** consideration of naturally occurring radon in its 40 CFR Part 197 definition of "storage,"

3) the Energy Policy Act of 1992, Section 801(a)(1) requires EPA to set the only standard applicable to the Yucca Mountain site, and

4) the Energy Policy Act of 1992, Section 801(b)(1) requires NRC to set requirements by rule ". . . to be consistent with the Administrator's [EPA] standards promulgated under subsection (a)"

The NRC Staff's response continues by stating:

> Nye County also cites EPA's preclosure safety standard, 40 C.F.R. section 197.4. This standard applies to the management and storage, as defined by 40 C.F.R. section 191.2, of radioactive material outside of the repository but within the Yucca Mountain site and storage, as defined by 40 C.F.R. section 197.2, of radioactive material inside the repository. NRC STAFF ANSWER at 1040.

The NRC Staff discussion goes on to say, "Naturally occurring radon does not fit the definition of either of these." *Id*. It then repeats its argument about the definition of radioactive material not including radon and conclude at the top of page 1041, "Therefore, neither the EPA nor the NRC preclosure safety standard takes into account naturally occurring radon."

Nye County reiterates that we never asserted that radon was radioactive material according to the definitions in the AEA, 10 C.F.R. Part 63 or 40 C.F.R. Part 197. 10 C.F.R. Part 63 (2008); 40 C.F.R. Part 197 (2008). However the activity being regulated is storage in the

repository. The definition of "storage", not "radioactive material", is what is pertinent to this contention because storage includes "any associated activity, operation, or process necessary to carry out successful retention" including ventilation of the excavated repository. Radon released only as a result of excavation and ventilation activity that occurs as part of the operational requirements for retention must necessarily be included in the definition of storage.[8] Management and storage pursuant to 40 C.F.R. § 191.2 is only applicable to storage activities "***outside*** of the repository but within the Yucca Mountain site." 40 C.F.R. § 191.2 (2008)(emphasis added). Because our contention concerns storage activities ***within*** the repository, Part 191 is irrelevant to this contention. 40 C.F.R. Part 191 (2008). Pursuant to 40 CFR § 197.4, radiation releases from within the repository as defined in Section 197.2 are subject to the requirements of Section 197.4(b), which does not point back to 40 C.F.R. Part 191, while Section 197.4(a) does. 40 C.F.R. Part 191; 40 C.F.R. §§ 197.2, 197.4 (2008). 40 C.F.R. § 197(b) applies here because our contention addresses activities (storage) in the excavated repository, not the surface facilities.

NRC Staff asserts that 10 C.F.R. § 20.1101(d) applies to Yucca Mountain, but that ". . . the exclusion of Radon-222 and its daughters from consideration in the dose from air emissions is applicable." NRC STAFF ANSWER at 1041. Nye County did not mean to imply in our contention that Part 20, including section 20.1101(d), did not apply to Yucca Mountain. 10 C.F.R. Part 20 (2008). We intended only to acknowledge that Part 20 has a precise definition of background radiation that excludes all naturally occurring sources.

However, Nye County does not believe that radon is always considered "background", and that a review of the circumstances in which it is found or released to the public environment is necessary in order to make that determination. Radon released through ventilation due to the construction and operation of the repository cannot be considered background in the common usage of that term. The acts of construction and ventilation will greatly increase both the amount and the concentration of radon ***in a specific location***, which means it is no longer background or naturally occurring at the location where Nye County residents will be exposed. Since DOE has admitted and calculated the public radiation dose from the naturally occurring radon above and

[8] This is not a situation where Radon that has been passively accumulating inside the repository is escaping the facility on its own and finding its way to Nye County over time. Here we are talking about Radon that is being pulled from the drift walls and excavated material and then forcefully expelled from the repository through the ventilation system and exhausted in plumes into the air above the repository.

beyond what occurs now (without repository excavation and ventilation), Nye County does not consider the additional radiation dose caused by the repository storage activities to be "background." Repository SEIS Section 4.1.7.2.6, Table 4-24, page 4-68, LSN DEN001593669. We acknowledged in our petition to intervene that the 10 mrem ALARA constraint in 10 C.F.R. § 20.1101(d) does not apply to radon releases from repository ventilation because that regulation specifically defines background as not including naturally occurring radiation sources. Nye County Petition at 48; 10 C.F.R. § 20.1101(d)(2008). We noted in our contention that the "reporting requirement in 10 CFR 20.1101(d), from Radon-222 releases are not literally applicable to the repository according to the scope of 10 CFR 20." Nye County Petition at 48. 10 C.F.R. Part 20 does not take into account that EPA has defined TENORM as subject to regulation, nor does it in any way limit our contention because 40 C.F.R. Part 197 and the conforming 10 C.F.R. Part 63 do not exclude radon as was done in 10 C.F.R. Part 20 for the reasons discussed above. 10 C.F.R. Part 20 (2008); 40 C.F.R. Part 197 (2008); 10 C.F.R. Part 63 (2008). Nye County included the discussion of 10 C.F.R. Part 20 in our petition simply to show the precedent for NRC to apply ALARA airborne radiation annual goals of 10 mrem to activities it regulates. It is beyond Nye County's comprehension why DOE now proposes operations that would expose the public at a 7.5 mrem annual rate for decades (75% of an established ALARA goal) without taking appropriate precautions to ensure that our Nye County residents are adequately protected from radiation exposure resulting from its storage activities.

NRC staff states "the petitioner makes assertions in this section of the contention that should be supported by expert opinions or references to specific sources or documents but are not.", and then concludes "the portions of the contention dealing with the adequacy of monitoring should be excluded because they are not supported by facts or expert opinion." NRC STAFF ANSWER at 1042.

Nye County notes that DOE did not include radon monitoring in its license application at all because of its stated position that it was not required to do so. The ventilation required for the construction and operation of the repository will result in concentrated plumes (TENORM) of radon emitted from the ventilation shafts. Secondly, the excavation activity necessary to constructing the repository will increase the exposed surfaces of the rock which will greatly increase the quantity of radon which will be released. When taken together, the increased quantity of released radon and its concentration and removal via the ventilation system

(TENORM) becomes a significant factor. Therefore, any monitoring that is discussed is inadequate. The SAR discussion of the environmental radiological monitoring system in SAR section 5.11.3.11 (pages 5.11-14 and -15) is only a promise to develop such a system and does not include monitoring for offsite doses. Particularly it does not discuss monitoring for radon and its decay products because even DOE's promise for a radiological monitoring program is only for regulatory purposes and it does not believe any regulation applies to radon released because of storage activities. By ignoring its creation of radon plumes when ventilating the repository, DOE has demonstrated an inadequacy in its monitoring program and its stated intention to protect Nye County citizens from the primary source of public radiation exposure from its repository storage activities because it believes it is not legally obligated to do so.

The NRC Staff's Answer concludes:

> "while Nye County has cited regulations it claims support its position, they do not, in fact, support its assertion that DOE must consider the dose from naturally occurring radon in its preclosure safety analysis. Therefore, the petitioner has not established a genuine dispute regarding the application, and the contention is inadmissible." NRC STAFF ANSWER at 1042.

DOE is – by ventilating the repository – removing the radon from its naturally occurring state and concentrating it in specific areas (TENORM). Nye County believes that EPA has indicated that TENORM can and should be monitored and regulated.

For the reasons discussed above, Nye County respectfully disagrees with both the DOE and NRC staff responses regarding contention Nye-Safety-4. Nye County's concerns have and continue to be the adequate protection of our citizens in the repository vicinity. We believe the EPA standard (and thus the conforming NRC regulations) require protection of our citizens from DOE's repository storage activities, that include radon releases specifically resulting from ventilation of the repository during its construction and operation. Our citizens must not receive excessive radiation dose as a result of the Yucca Mountain repository, regardless of the source of radionuclides. DOE freely admits that it will increase the radiation dose to an individual at the southern site boundary by 7.5 mrem for decades. Nye County finds it unacceptable for DOE and the NRC staff to say they have no legal responsibility for regulating radiation dose that amounts to 99.8% of the public dose caused by the repository storage activities (ventilation of the excavated repository).

VII. REPLY TO DOE'S AND NRC STAFF'S DOE ANSWER CHALLENGING NYE-JOINT-SAFETY – 5 (NIMS)

Nye County is focused on the safety of our citizens and our ability to respond quickly and effectively to incidents which impact that safety. To this end, we raised the issue of DOE's failure to include the post-9/11 interoperability requirements of the National Incident Management System (NIMS) within emergency planning in the Yucca Mountain Repository Safety Analysis Report (SAR). The inclusion of NIMS in all emergency planning – which directly impacts all governmental agencies and communities in the vicinity of the Repository – is required by Homeland Security Presidential Directive (HSPD) 5, dated February 28, 2003. Homeland Security Presidential Directive/HSPD-5 (February 28, 2003) LSN NYE000002223. DOE seeks to dismiss the contention based solely upon a strict interpretation and legal argument involving pre-9/11 regulations and mandates. DOE's response to this contention provides the main reason for NRC to consider and act favorably upon it. Of concern also is the fact that DOE has essentially agreed to implement NIMS for the repository's transportation routes, yet refuses to consider doing so for the repository itself – even though such an agreement would involve some, but not all, of the same agencies involved in the transportation coordination effort. DOE published a notice of a revised policy to set forth its plans for establishing technical assistance and funding related to emergency response training associated with safe transportation of spent nuclear fuel and high-level radioactive waste to the repository. 73 Fed. Reg. 64933 (October 31, 2008). This proposed policy addresses the radioactive waste being shipped to the repository and is related to implementation of Section 180(c) of the Nuclear Waste Policy Act of 1982, as amended. In the background section of that proposed policy, DOE states:

> This policy is intended to be consistent with Homeland Security Presidential Directives Number 5, ''Management of Domestic Incidents,'' issued February 28, 2003, and Number 8, ''National Preparedness,'' issued December 17, 2003; the Department of Homeland Security's National Preparedness Goal, issued December 2005; the National Preparedness Guidance issued April 27, 2005; the National Incident Management System, issued March 1, 2004; and the National Response Plan, issued December 2004. *Id*. at 64934.

DOE is committing to the NIMS requirements now associated with emergency response for shipments to the repository, but is unwilling to make an equivalent commitment regarding emergency response at the repository. Had DOE simply and unequivocally stated that NIMS requirements would be included in all emergency planning, the contention could have been dismissed as moot.

A. Nye County Response to DOE's Answer to Nye-Joint-Safety-5.

DOE's failure to include NIMS in current repository planning indicates not only a basic failure in the emergency management planning process but also a disregard for requirements and hard-learned 9/11 lessons. When key interoperability and communications issues are not addressed in early emergency planning, both precedent and organizational inertia will dictate that they either not be considered or be given only lip service at a later date. Nye County believes it is imperative that NIMS criteria be included in all planning, since these actions have a direct impact upon not only the County's emergency response organizations, but also upon the communities and residents around the Repository Site.

1. Brief Explanation of Basis

DOE states that the contention must be dismissed because it "fails to provide 'sufficient foundation' to 'warrant further exploration' of the issues presented." DOE ANSWER 60, citing *Pub. Serv. Co. of N.H.* (Seabrook Station, Units and 2), ALAB-942, 32 NRC 395, 428 (1990). DOE is incorrect.

DOE is a department of the federal government, and has ignored and is not in compliance with Presidential Directives, which in-so-far as DOE is concerned have the force of law, which requires NIMS implementation. Among other requirements, Part 72 requires that DOE's emergency plans include: (i) arrangements for requesting and *effectively using offsite assistance on site* and provisions that exist for using other organizations capable of augmenting the planned onsite response; (ii) provisions that exist for prompt communications among principal response organizations to offsite emergency personnel who would be responding onsite; and (iii) adequate emergency facilities and equipment to support emergency response onsite are provided and maintained. 10 C.F.R. § 72.32(b)(15)(2008). Failing to include the NIMS requirements for interoperability of equipment and communications in the emergency plans brings into question DOE's commitment to meet these requirements and, more importantly, DOE's ability to effectively and efficiently work together with offsite response units in an emergency situation. 9/11 fully demonstrated the adverse results of not adequately incorporating these concepts before an emergency. Nye County's responsibility to the safety of its constituents necessitates that all possible steps be taken to enable all emergency response agencies and equipment to effectively and efficiently operate and communicate together at all times. Incorporating NIMS requirements

at all levels of emergency planning is basic to achieving this objective. Nye County believes that DOE, by refusing to incorporate NIMS requirements, does not in fact meet the intent and requirements of Part 72. Put quite simply, what this contention alleges is that DOE has so far failed to comply with a mandatory federal requirement of emergency planning. Accordingly, DOE cannot properly address the protection of Nye County citizens in the event of an emergency or incident. Homeland Security Presidential Directive/HSPD-5 (February 28, 2003) LSN NYE000002223.

2. Whether the Issue is Within the Scope of the Proceeding.

DOE states that this issue is outside the scope of the proceeding because nothing in the contention demonstrates that NIMS concepts relate to construction, and we requested only that DOE provide the additional information before DOE receives and possesses radioactive material. DOE ANSWER at 60. Nye County agrees - incorporation of NIMS interoperability and communications requirements must be done prior to the granting of a license to receive and possess radioactive material. However, for DOE to imply that we deem NIMS not be included in construction is incorrect and ignores the basic premise of the contention. Implementation of NIMS has been required of federal departments since 2003. Homeland Security Presidential Directive/HSPD-5 (February 28, 2003) LSN NYE000002223. In this regard, Nye County is ***not*** attacking NRC regulations and policies – we simply ask that DOE be required to comply with the ***additional*** NIMS requirements that apply to it. Indeed, the NIMS requirement could be said to apply with equal force to the Commission, thus making NIMS not only within the scope of the hearing, but its inclusion within any Emergency Plan supporting a license or construction authorization a mandatory requirement of licensing.

3. Whether the Issue is Material to the Findings that the NRC Must Make.

Nye-Joint-Safety-5 is material for a very simple reason. Without it the DOE LA is not compliant with a presidential directive that has the force of law. The contention will thus clearly have a "impact on the outcome" of these proceedings, simply by requiring a condition be met that is not yet included in or otherwise been met by the DOE LA and supporting documents.

4. Statement of Alleged Facts or Expert Opinion Supporting Petitioner's Position and Supporting References.

DOE states that this contention should be dismissed because:

> (1) "… the contention does not reference any documents, other than the application and various documents issued by the President and the U.S. Department of Homeland Security that have no direct relationship to NRC licenses; (2) the contention contains only unsupported assertions of counsel; and (3) the contention does not reference any expert opinion."

DOE ANSWER at 64. DOE does not dispute the fact that there is no reference or other indication that it is in compliance or attempting to comply with those Presidential and Homeland Security documents that are directive in nature and that apply to DOE as well as other federal departments for emergency planning and actions. Nye County is only asking that DOE be required to comply with those documents to ensure our constituents receive the highest level of protection we can provide. There is no need for any expert testimony here. Either NIMS is applicable to DOE in this proceeding or it is not. There is no dispute that DOE has not included NIMS in its Emergency Plan commitments. Nor is there any need for any expert testimony as to the difficulties facing first responders without interoperability, etc. HSPD-5 applies to DOE under these circumstances, and the department has so far failed to meet its obligations under that directive. For that reason alone this contention is admissible.

5. Existence of a Genuine Dispute on a Material Issue of Law or Fact, With Supporting references to the License Application

Nye County takes the position that DOE(1) has failed to include or comply with NIMS requirements as directed by Presidential and Homeland Security documents that *have directed the inclusion of NIMS since 2003*; (2) has based their emergency planning on rules and regulations which have since been shown by 9/11 to fall short of the necessary requirements in current emergency planning; and (3) has asserted there is no reason to include NIMS because it does not fall within the purview of the NRC. This is the heart of the Nye County contention.

B. Nye County Response to NRC Staff's Answer to Nye-Joint-Safety-5.

NRC staff states that Nye-Joint-Safety-5 disputes whether DOE has met requirements that fall outside of 10 C.F.R. Part 63, and so is not within the scope of the proceeding. NRC STAFF ANSWER at 1044. However, 10 C.F.R. § 63.32(a) states "the Commission shall include any conditions it considers necessary to protect the health and safety of the public, the common

defense and security, or environmental values." 10 C.F.R. § 63.32(a) (2008). 10 C.F.R. § 63.21(c)(21) requires "A description of the plan for responding to, and recovering from, radiological emergencies that may occur … as required by §63.161." 10 C.F.R. § 63.21(c)(21) (2008). Section 63.31(a)(3)(v) also requires the emergency plan that DOE has referenced in SAR Section 5.7 Emergency Planning to comply with the criteria contained in subpart I of this part (§63.161, which states "the emergency plan must be based upon the criteria of § 72.32(b) of this chapter"). 10 C.F.R. § 63.31(a)(3)(2008). DOE's plan includes the participation of offsite emergency response personnel and organizations.

The critical point, which Staff seems to completely discount, is that a department of the federal government has ignored the requirement that NIMS be included in emergency planning even though required by Presidential directive, and then argued that it cannot be compelled to comply. The County is not disputing the granting of a license for the construction of the Repository. It is disputing the failure to include provisions that an applicable Presidential Directive clearly requires, directly affecting the safety and efficient operation of personnel and equipment required to respond to emergency situations. Viewed from this perspective, it is almost inarguably an issue possibly affecting "the common defense and security" that may "constitute an unreasonable risk to the health and safety of the public" (§63.41(c)) and which could adversely affect "adequate protective measures … in the event of a radiological emergency …." 10 C.F.R. §63.41(d) (2008). DOE's failure to include language that would increase the effectiveness of its emergency plan and to implement the requirements of a Presidential directive which has immediate bearing upon emergency planning all demonstrate the admissibility of this contention.

The Staff argues that "a contention that does not directly controvert a specific portion of the application, or identify specific additional information that the petitioner argues was improperly omitted must be dismissed." NRC STAFF ANSWER at 1044. As indicated above, Nye County asserts that, by failing to include the requirements of NIMS in its emergency planning, DOE may have met the letter of the *legal requirements* of 10 C.F.R. Parts 63 and 72. However, it has not met the ***intent*** of those provisions, because it fails to address current realities concerning emergency planning requirements. To fail to learn from and respond to the circumstances made public by and resulting from 9/11, and to argue that it does not need to do so because regulations promulgated prior to 9/11 do not require it to do so is to repeat the same

errors which were so dramatically shown, and to put Repository and emergency responder personnel – as well as the public – at greater risk. DOE's failure to include NIMS requirements after they have been pointed out, in contravention of Presidential and other directives, demonstrates a disregard for public safety that the NRC must address.

VIII. REPLY TO DOE'S AND NRC STAFF'S DOE ANSWER CHALLENGING NYE-JOINT-SAFETY – 6 (Aircraft Overflights)

Nye County's concerns have and continue to be the adequate protection of our citizens in the repository vicinity. We remain unconvinced that DOE possesses the ***authority*** to assure that the United States Air Force ("USAF" or "Air Force") overflight restrictions assumed in the repository safety analysis will be implemented. If repository construction proceeds before the flight restrictions assumed in the safety analysis are guaranteed, the safety of the facilities in the event of an aircraft crash is not reasonably assured. Although repository construction is at least three years away, there is no legitimate reason to wait until after the facilities have been constructed to guarantee that the required flight restrictions will be implemented.

A. DOE Misunderstands the Nature of the Contention which focuses on DOE's Authority to Restrict Overflights, Not on DOE's Method or the Results of DOE's Calculations.

Nye County does not contest the need for or the quantification of the flight restrictions which are a foundational underpinning of DOE's license application. Nye County concedes that ***if*** the flight restrictions included in the Procedural Safety Controls (PSCs) in Table 1.9-10 of the SAR are implemented, then DOE's safety analysis is valid. However, simply including the flight restrictions in a table of necessary PSCs is of no value unless DOE has the authority to implement such controls. Despite DOE's condescending rhetoric, it has not demonstrated such authority, or provided a binding commitment from the Air Force that flight restrictions will be implemented during the period of repository surface facility operations.

Section 5.c of Nye County (Joint) Safety - 6 states:

> Contrary to these requirements, DOE has failed to provide any justification or basis for its assumption that it can achieve a binding agreement with the USAF to prescribe flight restrictions on its operations in the vicinity of the repository. DOE merely makes the unsupported assumption that, "The accident analysis conducted assumed that such flight restrictions would occur." Nye County Petition at 47, 48.

DOE responded to this deficiency by stating that the flight restrictions will not be needed until operations of its facilities, and later quotes section 5.8.3 of the SAR saying that the defined PSCs are commitments and will be implemented "prior to receipt of a license to receive and possess SNF and HLW." DOE ANSWER at 68, 69. Nye County appreciates that DOE considers the listed PSCs in the SAR to be commitments, and is aware that "a docketed

commitment can satisfy a licensee's regulatory obligation." DOE ANSWER at 69. Nye County simply asks DOE to provide firm evidence that the assumed flight restrictions can and will be implemented when needed. Together with DOE's commitment, the demonstration either of such authority or an agreement with the Air Force, which has the authority to limit overflights, would resolve this contention.

DOE goes on to say, "commitments need not necessarily be reduced to a license condition, particularly where, as here, the relevant license is the matter of another, future NRC licensing proceeding." DOE has convinced Nye County that there is not much difference between an enforceable commitment and a license condition. However, because DOE has not demonstrated the authority to implement Air Force flight restrictions either as a commitment or a license condition, neither a commitment or a license condition is adequate to resolve this issue. DOE must show that it has the authority to implement the assumed flight restrictions to resolve this contention.

DOE's Answer goes on to discuss the legal aspects of binding agreements with the Air Force. DOE ANSWER at 70. DOE misses the point. DOE has not demonstrated that it has the authority to implement its assumed flight restrictions – restrictions that form the basis of the aircraft crash component of its safety analysis. Nye County acknowledges that the demonstration of the requisite authority does not necessarily have to be in the form of a binding agreement with the Air Force.

DOE then cites 10 CFR 63.121(c) regarding the requirement for DOE to exercise jurisdiction or control of activities necessary to ensure the requirements of Section 63.111(a) and (b) are met. Later, DOE goes on to imply that Nye County believes the regulation "requires DOE to implement such controls now . . . ." DOE is incorrect. Nye County never indicated the overflight controls should be implemented now or even at the time of construction authorization. However, the authority to implement such controls must itself be demonstrated before construction authorization, because DOE is designing and has plans to build facilities that are not designed to withstand aircraft crashes. Otherwise, a new safety analysis assuming no flight restrictions would need to be retrofitted to the constructed facilities. DOE has years before construction authorization to obtain the authority necessary to implement its assumed flight restrictions. If DOE cannot demonstrate such authority before construction authorization, why

should Nye County, the NRC, or anyone else to believe it can demonstrate such authority afterwards?

DOE states Nye County has not provided adequate rationale for our claim that "DOE has not provided adequate justification for crediting the flight restrictions specified in SAR Section1.6.4.3.1." DOE ANSWER at 71. We are somewhat at a loss to explain our contention in plainer language than we already have. The LA includes the assumption of limited USAF overflights, but DOE does not explain the source of its explicit authority to implement such flight restrictions as related to the repository at Yucca Mountain. Nye County stated in our contention that we believed a binding agreement with the Air Force could serve that purpose. Alternatively, if DOE can show the applicable authority, that is acceptable to Nye County as well.

DOE asserts that "[a]t its core, the contention seeks to challenge DOE's ability to implement the flight-restricted airspace and operational controls credited in the aircraft hazard analysis and identified in the SAR. However, nowhere in the contention does Nye County directly and credibly challenge DOE's authority or ability to implement the aircraft-related PSCs listed in SAR Section 5.8.3." DOE ANSWER at 72. DOE is incorrect.

Contrary to DOE assertion, Nye County directly challenged DOE's authority or ability to implement aircraft-related overflights in several sections of Nye-Joint-Safety-6. For example, Section 1 of the County's contention provides as follows:

> Contrary to the requirements of 10 C.F.R. Part 63 to provide the technical basis for the inclusion or exclusion of specific human-induced hazards in the repository preclosure safety analysis, the Department of Energy (DOE) has merely assumed the U.S. Air Force (USAF) will restrict their activities in the repository vicinity. No basis or justification for that assumption is provided by DOE in its repository License Application (LA) or supporting documents. Nye County Petition at 47, 48.

Section 2 of Nye-Joint-Safety-6 also contains the following statement regarding DOE's authority or ability to implement restrictions:

> In the same SAR section on page 1.6-22, DOE states, "The accident analysis conducted assumed that such flight restrictions would occur." No further basis or justification of this critical assumption is discussed. *Id*. at 67.

Section 5.b of Nye-Joint-Safety-6 also contains this direct statement regarding DOE's authority or ability to implement restrictions:

> Contrary to these requirements, DOE has failed to provide any justification or basis for its assumption that it can achieve a binding agreement with the USAF to prescribe flight restrictions on its operations in the vicinity of the repository. DOE merely makes the unsupported assumption that, "The accident analysis conducted assumed that such flight restrictions would occur."[9] *Id*. at 70.

Section 5.c of Nye-Joint-Safety-6 contains this statement regarding DOE's authority or ability to implement restrictions:

> At a minimum, DOE should be required to provide justification and basis for its assumption showing that there is reasonable assurance, such as documentation from the USAF, that such an agreement with the USAF is forthcoming with a prescribed implementation date or milestone. Nye County Petition at 71.

Nye County now recognizes that there may be mechanisms other than a binding agreement with the USAF that could provide DOE the necessary authority or ability to implement such restrictions.

DOE comments that ". . . the SAR amply demonstrates DOE's authority to implement the additional flight restrictions discussed therein." DOE ANSWER at 72. DOE then goes on to discuss existing airspace restrictions on the Nevada Test Site (NTS), noting that:

> . . . the repository surface facility is located in restricted area R-4808N. . . As the controlling authority, DOE allows military aircraft to transit R-4808N…
>
> * * *
>
> As discussed above, additional flight restrictions have been identified in SAR Sections 1.6.3.4.1 and 5.8.3 for the airspace above the repository surface facilities. ***As the controlling authority for that airspace, DOE has full authority to implement the additional restrictions when needed.*** DOE ANSWER at 72-73 (emphasis added).

The above statement regarding DOE's full authority is not contained in its license application. More importantly, Nye County believes it may be inaccurate.

The existing over flight restrictions cited are not the same as those assumed in the SAR analysis for repository safety. The SAR section that DOE cites describing NTS airspace clearly states on page 1.1-14:

[9] However, Nye County now recognizes that there may be mechanisms other than a binding agreement with the USAF that could provide DOE the necessary authority or ability to implement such restrictions.

> The Nevada Test Site airspace is controlled by the DOE for Nevada Test Site activities and is not part of the Nevada Test and Training Range. However, agreements with the U.S. Air Force and the Federal Aviation Administration allow specific uses by military and civilian aircraft as described below (BSC 2007a, Section 6.1). SAR Section 1.1.1.3.2.1 at 1.1-14.

DOE's authority to restrict any use of the NTS is by virtue of its operation of the Nevada Test Site, **not** a repository proximately located next to and overlapping with the test site. Additionally, even though the SAR section above refers to agreements with the Air Force and the FAA concerning overflights by military and civilian aircraft, those agreements are not contained in or cited in either DOE's reference materials or its LSN. DOE should be compelled to produce these agreements and put them in its LSN.

DOE then provides additional information that was not included in its license application about its activities with the USAF resulting in changes to final, but unimplemented Air Force Instructions. DOE goes on to say:

> These restrictions will be implemented in the same manner as the current avoidance areas in R-4808N. Specifically, DOE will ***require*** the Air Force to revise the formal Air Force Instructions to include the restrictions. DOE ANSWER at 73 (emphasis added).

Unfortunately, DOE provided no citation to either the documentation instituting restricted area R-4808N or the avoidance areas in R-4808N. Nor has DOE provided documentation concerning its authority to direct the Air Force to revise its instructions based upon repository activities. DOE should also produce these documents and put them in its LSN.

The applicable regulations defining and implementing Special Use Airspace (SUA), including restricted areas, are set forth in Title 14, Part 73 of the Code of Federal Regulations. 14 C.F.R. §§73, et seq (2008). Section 73.13 provides:

> No person may operate an aircraft within a restricted area between the designated altitudes and during the time of designation, unless he has the advance permission of
>
> (a) The using agency described in section 73.15; or
>
> (b) The controlling agency described in section 73.17.

14 C.F.R. §73.13(a) and (b)(2008). Pursuant to Section 73.17, ". . . the controlling agency is the FAA facility that may authorize transit through or flight within a restricted area in accordance

with a joint-use letter issued under section 73.15." 14 C.F.R. § 73.17. Therefore, DOE's statement that it is the "controlling authority" for restricted area R-4808N appears to be inaccurate.

Section 73.15 (a)(1) defines a "using agency" as "[t]he agency, organization, or military command whose activity within a restricted area necessitated the area being so designated." 14 C.F.R. §73.15(a)(1)(2008). According to this definition, DOE would currently be the using agency, because of its NTS activities, not the controlling agency. 14 C.F.R. §73.15(a)(1). Section 73.15 goes on to say:

> (b) Upon the request of the FAA, the using agency shall execute a letter establishing procedures for joint use of a restricted area by the using agency and the controlling agency may grant permission for transit through the restricted area in accordance with the terms of the letter.
> The ***using agency shall*** –
> (1) Schedule activities within the restricted area;
> (2) ***Authorize transit through, or flight within, the restricted area as feasible***; and
> (3) Contain within the restricted area all activities conducted therein ***in accordance with the purpose for which it was designated***. 14 C.F.R. §73.15(b)(1), (2), (3) (2008). (emphasis added).

Thus DOE, as owner and administrator of the NTS, has the authority to restrict or allow activities, including flights, "for the purpose for which it was designated" – NTS operations. What is not at all clear is whether or not the current air space restriction will remain in effect if the repository site is withdrawn from public use for the purposes of constructing, operating, and eventually closing a repository for high-level radioactive waste and spent nuclear fuel. The current restriction is for NTS purposes, "the purpose for which it is designated," not for construction of a repository.

If a new air space restriction is required for repository purposes following land withdrawal of the repository site, FAA Order JO 7400.2G, Procedures for Handling Airspace Matters (April 10, 2008) would be applicable. FAA Order JO 7400.2G, Procedures for Handling Airspace Matters (April 10, 2008), attached hereto as Attachment "A;" Nye County Assession No. nye_rid7592_01_00.pdf. The procedure cited above in section 21-1-4 states that the designation of restricted areas is a "rulemaking action." Section 21-1-5 #32 states, "FAA Headquarters is the final approval authority for all permanent and temporary SUA" [including restricted areas]. FAA Order JO 7400.2G, Procedures for Handling Airspace Matters (April 10,

2008). Section 21-1-13 has public notice / comment provisions as part of the process for designation of restricted air space. *Id*. The process does not presume that every proposal for restricted airspace will be granted. Because the USAF and DOE NTS are the only organizations utilizing the air space in question for over flights, DOE's assumption of flight restrictions is premature without evidence from these organizations that the restrictions assumed in the SAR safety analysis will not be contested.

Significantly, DOE admits that the current restricted air space in sector R-4808N does not cover the entire airspace restriction assumed in the DOE safety analysis. DOE ANSWER at 74. Yet, DOE goes on to say, "[i]f necessary to support repository operations, DOE also can seek an additional special-use airspace designation from the FAA for the southwest portion of the 4.9 nautical mile radius airspace that currently is not special-use airspace." *Id*. Whether for this currently unrestricted airspace or for a totally new airspace restriction after DOE has control of the repository site, the above discussion regarding FAA processes to designate such restrictions would be applicable. The process does not guarantee that the using agency's request for airspace restrictions would be granted.

DOE makes several assertions that Nye-Joint-Safety-6 was fatally deficient and should be dismissed:

- because the County made "no attempt to engage the specifics of DOE's frequency analysis of aircraft hazards, as referenced in the SAR . . . ." DOE ANSWER at 74.
- that "Nye County's conclusory assertion that 'an aircraft crash into repository facilities would be much more probable and categorized as a category 2 event sequence per 10 CFR 63.2' is insufficient to warrant admission of the contention." DOE ANSWER at 74, 75.

Each of these arguments reflects that DOE has misread Nye-Joint-Safety-6. Nye County never took exception to DOE's calculations or the need to include the assumption of flight restrictions in those calculations. DOE based its safety analysis on overflight restrictions at Yucca Mountain. Nye County simply agreed with DOE that the flight restrictions are necessary to avoid the need for aircraft crash consequence calculations; hence, there is no reason for Nye County to perform its own probability calculations. It is noteworthy that DOE's response does not contest the need for the flight restrictions to meet NRC safety requirements; just that Nye County failed to raise a genuine dispute because we did not refute DOE's probability

calculations. DOE ANSWER at 74, 75. Nor is there any reason for Nye County to provide expert testimony regarding the adequacy of the flight restrictions or DOE's calculations. Neither the adequacy of DOE's restrictions nor DOE's calculations are being contested; it is DOE's ***authority to implement the assumed*** restrictions that is in question.

B. NRC Staff Misunderstands the Nature of the Contention which focuses on DOE's Authority to Restrict Overflights, Not on DOE's Method or the Results of DOE's Calculations.

The NRC Staff Answer to Intervention Petitions (NRC STAFF ANSWER) asserts that the County failed to "provide sufficient facts or expert opinions to support the petitioners' position on the issue, and it does not demonstrate that a genuine dispute exists with DOE on a material issue of law or fact." NRC STAFF ANSWER at 1046. Nye County disagrees. We do not contest the adequacy of the restrictions or DOE's ability to perform calculations. The County questions DOE's authority to implement the required overflight restrictions. Accordingly, there is no reason for Nye County to provide expert testimony regarding either the adequacy of the flight restrictions or DOE's calculations.

NRC staff response quotes from our contention that "[w]ithout the flight restrictions assumed by DOE, its calculation of aircraft crash event sequence probability would likely have significantly different results." NRC STAFF ANSWER at 1047. It goes on to say that this presumption is not adequate to support our contention. *Id*. DOE, not Nye County, identified the need for the flight restrictions as a basis for DOE's safety analysis. SAR Section 1.6.4.3.1 at 1.6-21 and 1.6-22. The County does not dispute this need. We note also that DOE's response to this same contention does not contest the need for the flight restrictions to meet NRC safety requirements; just that Nye County did not perform its own calculations. Nye County continues to believe that no such independent calculations were or are necessary to support this contention, since DOE included the assumed restrictions in its preclosure safety analysis and clearly stated that the flight restrictions are necessary. If DOE removes the flight restriction assumption from its safety analysis and is still able to show the repository facilities meet aircraft crash safety requirements, Nye County will consider this contention resolved.

NRC staff also argues "the petitioners do not address SAR Section 1.9.3, Table 1.9-10, or SAR Section 5.8.3. In SAR Section 1.9.3, DOE states that "[p]rocedural safety controls are activities performed by both repository and nonrepository personnel whose actions affect

repository activities to ensure the operations are within the analyzed conditions of the PCSA [preclosure safety analysis] and TSPA." NRC STAFF ANSWER at 1047. The NRC staff further cites SAR section 5.8.3 as follows:

> Prior to receipt of a license to receive and possess SNF and HLW, and in accordance with 10 CFR 63.121(c), controls will be implemented to ensure that the requirements of 10 CFR 63.111(a) and (b) are met. The site boundary, as shown in Figure 5.8-2, will be considered as the boundary of the preclosure controlled area under the definition of 10 CFR 20.1003. Such land use controls will include ensuring that U.S. Air Force flight activities in the proximity of the GROA remain within the repository performance analysis considerations of existing and projected U.S. Air Force flight activity. (Section 1.6.3.4.1). *Id*. at 1048.

The NRC staff then concludes:

> [t]he petitioners do not reference these portions of the license application or address why these explanations are not adequate to justify DOE's treatment of U.S. Air Force activities over the proposed flight restricted airspace. Consequently, the petitioners have failed to establish a genuine dispute on a material issue of fact or law, and the contention is inadmissible on this basis. NRC STAFF ANSWER at 1048 (citation omitted).

Nye County disagrees with the Staff's conclusion because the SAR sections cited have little, if any, bearing on this contention. The crux of contention was clearly stated as follows:

> . . . DOE has failed to provide any justification or basis for its assumption that it can achieve a binding agreement with the USAF to prescribe flight restrictions on its operations in the vicinity of the repository. DOE merely makes the unsupported assumption that, "The accident analysis conducted assumed that such flight restrictions would occur." Nye-Joint-Safety-6 at 70.

Notwithstanding the Staff's assertions to the contrary, the County has never disputed (1) the need for the flight restrictions, (2) the appropriate identification of procedural safety controls (PSCs), or (3) the statements in section 5.8.3 of the SAR. Nor does the County dispute DOE's ability to identify the necessary controls or even to commit to such controls. All that we seek is firm evidence that DOE has the authority to implement the assumed flight restrictions. Simply stated, commitments to overflight limitations without the authority to implement them are meaningless.

Nye County is encouraged that following submission of its license application, DOE has worked with the USAF to begin implementing the flight restrictions that are assumed in DOE's

safety analysis. The USAF instructions cited in DOE's Answer to this contention that incorporate the flight restrictions show that the USAF currently is willing to work with DOE, as necessary regarding flight restrictions.

However, since DOE has admitted that it does not have control over all of the airspace in and around Yucca Mountain, and because circumstances can change in the relationship between Federal agencies, Nye County remains unconvinced that DOE has justified the basis for its claimed authority to implement flight restrictions for USAF flights over and near a repository at Yucca Mountain. Nye County believes that such a demonstration of authority should take place before construction of repository facilities, recognizing that implementation would not be necessary until nuclear operations begin. DOE's clear demonstration of the requisite authority with citations to the documents that prescribe such authority coupled with its commitments in the SAR would also resolve this contention. Absent such demonstration, DOE has not shown an adequate basis for a key input to the repository preclosure safety analysis required by 10 C.F.R. § 63.112. 10 C.F.R. § 63.112 (2008).

IX. REPLY TO DOE'S ANSWER CHALLENGING NYE-NEPA-1

DOE's generic challenges to the County's filed contentions are particularly strained when applied to Nye-NEPA-1. NRC's regulations implementing the National Environmental Policy Act ("NEPA") require that the DOE's license application for the repository must be accompanied by an adequate Environmental Impact Statement ("EIS") prepared in accordance with the Nuclear Waste Policy Act, 10 C.F.R. § 63.21(a), and further provide that NRC may not adopt any environmental impact statement prepared by DOE for a geologic repository if there is "significant and substantial new information or new considerations [that would] render such environmental impact statement inadequate." 10 C.F.R. § 51.109(c)(2) (2008).

As detailed in Nye-NEPA-1 and its accompanying affidavit, the failure of DOE's 2002 Environmental Impact Statement and the 2008 Repository Supplemental EIS (collectively "EISs") to completely and adequately characterize potential contaminant releases to groundwater, and from surface discharges, as well as to adequately characterize the potential impacts on the environment from those releases and discharges, constitute significant new and additional considerations that render the EISs inadequate pursuant to the related legal requirements' of NEPA itself, 42 U.S.C. §§ 4332(C); the Nuclear Waste Policy Act, 42 U.S.C. § 10134(f) provisions pertaining to NEPA compliance for the repository; DOE's regulations implementing NEPA, 10 CFR Part 1021; and NRC's regulations implementing NEPA, 10 CFR Part 51 & 63. See 10 C.F.R. Part 1021 (2008); 10 C.F.R. Part 51 (2008); C.F.R. Part 63 (2008).

NRC staff reviewed DOE's EISs and the factual record regarding groundwater releases and surface water discharges and reached the same conclusion as Nye County has regarding the adequacy of the EISs regarding cumulative impacts to groundwater and from surface discharges. The staff determined that additional analysis is necessary and EIS supplementation is required before the EISs can be adopted by NRC pursuant to 10 CFR § 51.109(c)(2). See generally, U.S. Nuclear Regulatory Commission Staff's Adoption Determination Report for the U.S. Department of Energy's Environmental Impact Statements for the Proposed Geologic Repository at Yucca Mountain, September 5, 2008, LSN NRC000029699. DOE has now committed to correct the deficiencies identified by the NRC staff and supplement the record. Nevertheless, DOE's Answer claims that the inadequacies identified by Nye County are immaterial to the proceeding. Because Nye-NEPA-1 incorporates and expands upon NRC' staffs conclusions about the

inadequacies of the EISs and the need for supplementation before NRC can adopt them, DOE's assertions to the contrary are clearly erroneous and possibly disingenuous. DOE states that "the requirement that the petitioner must demonstrate that a materially different outcome would likely result means that the contention, if true, would severely impact the EIS such that it could not be adopted unless formally supplemented by NRC or DOE." DOE ANSWER at 26. This is, in fact, the case as documented in the Commission staff's adoption determination report, which concludes that it is not practicable to adopt DOE's FEIS and SEIS without supplementation. U.S. Nuclear Regulatory Commission Staff's Adoption Determination Report for the U.S. Department of Energy's Environmental Impact Statements for the Proposed Geologic Repository at Yucca Mountain, September 5, 2008, LSN NRC000029699, at 3-12. The issues raised by the staff overlap with those raised by Nye County in its contention at NYE-NEPA-1.

The contention is also clearly material, contrary to DOE's assertions, because it has potential to impact the adoption by the NRC of the DOE EIS under Section 114 (f)(4) of the NWPA, 42 USC 10134(f)(4) and 10 CFR Part 51, to alter the contents of the EIS, and to change the conditions ultimately placed on any license issued by the NRC, including monitoring requirements. 42 U.S.C. § 10134(f)(4) and 10 C.F.R. Part 51(2008). That a dispute exists between DOE and Nye County is manifest on the face of the contention and DOE's Answer. Nye County maintains that DOE's EISs have serious omissions, and therefore must be supplemented before they can be adopted by NRC. NRC staff agrees. Moreover, the NRC staff's Answer and Response to Nye County contentions did not include a negative response to Nye County's NEPA contention and affidavit, which also included references to cumulative impacts from other releases at the Nevada Test Site. Significant individual and cumulative impacts have been excluded and must be considered by DOE during its supplementation. *Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976); *Oregon Natural Resources Council v. Marsh*, 832 F. 2d 1489, 1498 (9th Cir. 1987), on appeal, *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 375 (1989). DOE denies there are deficiencies requiring correction. Therefore, a dispute clearly exists.

Nye-NEPA-1 raises the legal issue of whether DOE has complied with the NRC regulations at 10 C.F.R. §§ 51.67(a), 63.21(a), 63.24(c), and 63.31(c), the National Environmental Policy Act at 42 U.S.C. § 4332, as well as case law involving environmental impact statements, which apply to Yucca Mountain, and clearly falls within the scope of the

hearing as specified in section II, paragraph 1 of the Notice of Hearing. 10 C.F.R. § 63.31(c) provides that a construction authorization will not issue until the NRC weighs the environmental, economic, technical, and other benefits against environmental costs in the EIS. This contention alleges non-compliance with these regulatory provision and case-law requirements, and therefore raises a material issue within the scope of the licensing proceeding.

An environmental impact statement must contain a reasonably thorough discussion of the significant probable environmental consequences and must discuss the significant environmental impacts of the proposed action. The purpose and intent of the EIS is to focus the attention of the federal government and the public on a proposed action, so that the consequences of the action can be studied **before** the action is implemented. 42 U.S.C. § 4321; 40 C.F.R. § 1501.10 (2008); *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 371 (1989). NEPA's mandate to federal agencies, is "essentially procedural… It is to insure a fully informed and well-considered decision…." *Vermont Yankee Nuclear Power Corp. v. NRDC,* 435 U.S. 519, 558 (1978).

DOE's analysis of the post-closure behavior of the repository recognizes that the release of contaminants to groundwater can be expected to occur over a very long period of time (DOE, 2008b, Chapter 5). Based upon available scientific evidence, this is a reasonably foreseeable outcome for the repository as it is currently characterized. The EISs consider impacts to groundwater, and discharges to the surface, but the analysis does not provide adequate discussion of the cumulative amounts of radiological and non-radiological contaminants that may be released to the groundwater or discharged to the surface over time.

The EISs also fail to adequately discuss how these contaminants, individually and collectively, would behave in the aquifer, on the surface, and in the associated environment. They also fail to fully consider the potential for cumulative impacts of the omitted releases when combined with other releases and discharges from the Nevada Test Site. Therefore, the discussions of groundwater impacts and surface discharges in the EISs are incomplete as a matter of law and inconsistent with well-established NEPA requirements, as well as DOE's and NRC's own regulations which require a complete and adequate discussion of environmental consequences of the proposed action. See, e.g., 10 CFR Part 63.21(a); 10 CFR Part 51 & Appendix A(6)-(7); 10 CFR §§ 1021.310; .314(2008)

Based upon these identified gaps in required information, the standards for "reopening" contained in 10 CFR § 2.326 are also met, despite DOE's claims to the contrary. DOE incorrectly introduces the issue of reopening a **closed record** with respect to contentions on DOE's final EIS and supplemental EIS for the repository. DOE ANSWER at 23-25. Such records are not closed in this instance because DOE has not issued a record of decision with respect to the repository based on either document. Separate and limited decisions, supported by records of decision, were made on national and Nevada transportation-related issues, but no formal decisions have been made by DOE with respect to the repository. See, 69 Fed. Reg. 18557 (April 8, 2004); 73 Fed. Reg. 60247, (October 10, 2008). Such a decision will not be made until and unless the Commission issues a construction authorization supported by the requisite NEPA documents.

Nye County has alleged significant omissions in DOE's assessment of environmental and health impacts from possible releases and has explained how supplementation is a "materially different result" of the new evidence and analysis, that could lead to further conditions in the license, particularly with respect to monitoring requirements. *Private Fuel Storage, LLC* (ISFSI Storage Installation), CLI-06-3, 63 NRC 19, 25 (2006)

The failure to completely and adequately characterize such releases and cumulative impacts constitute an omission of a significant environmental considerations, irrespective of the magnitude of the potential environmental and health impacts quantified by further analysis. Given the importance of groundwater as a natural resource in Nye County and the arid Yucca Mountain region, supplementation is required pursuant to 42 U.S.C. § 10134(f) and 10 CFR § 6.51.109(c)(2) to ensure the 2002 EIS and the Repository Supplemental EIS adequately consider groundwater and surface water impacts.

Therefore, failure to consider cumulative environmental consequences such as those described above and analyzed in detail in Nye-NEPA-1 are clearly material to DOE's compliance with NEPA and NRC's adoption of DOE's EIS. NEPA requires a full examination of possible significant impacts, and does not presume the magnitude of the impacts on radiation doses or other metrics used to determine whether an action is safe or environmentally sound. DOE must give the requisite "hard look" at the significant environmental consequences of the project. *See Strycker's Bay Neighborhood Council v. Karlen*, 444 U.S. 223, 227-28 (1980) (citing *Vermont Yankee Nuclear Power Corp*, 435 U.S. at 558). *See also Public Service Electric & Gas Co.*

(*Hope Creek Generating Station)*, ALAB-518, 9 NRC 14 (1979); and *Florida Power & Light Co. (Turkey Point Units 3 & 4)*, LBP-81-14, 13 NRC 677 (1981). Having failed to do that with respect to certain releases, it must supplement its EIS before proceeding.

Rather than meet the contention head on, DOE instead assails the affidavit of Ms. Maryellen Giampaoli filed in support Nye-NEPA-1. DOE again states that the affidavit fails to demonstrate that result would be "materially different" if the contention is accepted. DOE ANSWER at 77. The material difference is that all significant potential environmental impacts will have been considered and the EIS will be supplemented as required by law, regardless of whether or not the license is ultimately issued. Additional groundwater monitoring may be required, and made a condition to the issuance of the license. Neither Ms. Giampaoli nor Nye County can predetermine what the results of that review will be; reassessment of omitted impacts and supplementation of the EISs are the material differences sought by Nye County, and required by NEPA and NRC regulations, as detailed above.

Surprisingly, DOE claims that the affidavit and the contention do not set forth the "factual or technical basis" for the contention. DOE ANSWER at 77. The Department's reviewers could not have carefully read Nye-NEPA-1 and the supporting affidavit and made such a claim. Nearly ten pages of the affidavit, and all of sections 5 (a) through (r) of the contention itself, are devoted directly to that effort. DOE further contends that NRC's additional requirements for NEPA contentions have not been met—such as the required showing that significant and substantial new information or new considerations exist that would render such environmental impact statement inadequate. Yet the affidavit explicitly addresses this point at paragraph 36 and details the new information in paragraphs 37-81. Nye-NEPA-1, Exhibit A at 6-11. NRC staff reaches the same conclusion in its Report. U.S. Nuclear Regulatory Commission Staff's Adoption Determination Report for the U.S. Department of Energy's Environmental Impact Statements for the Proposed Geologic Repository at Yucca Mountain, September 5, 2008, LSN NRC000029699, at 3-15.

In summary, Nye-NEPA-1 is well supported by law, technical facts, and expert opinion in the form of an affidavit and therefore is clearly an admissible contention that can be fully corrected during the EIS supplementation that DOE is currently undertaking. DOE's three page response is a legally unsupportable grasping at straws—a miscalculated effort to prevent Nye County from participating as a full party on NEPA-related issues. The Department would be better served by

recognizing that Nye's identification of the problems are readily corrected by supplementation now. Adequate supplementation will avoid unnecessary delay should NRC direct DOE to correct additional NEPA deficiencies after the hearing is concluded.

X. CONCLUSION

Nye County seeks status as a full party to the licensing proceeding, not only to support its own contentions and proposed remedial actions, but also to participate in the hearing concerning all safety and environmental aspects of the license application, other petitioners' contentions, and adjudication of any issues that have the potential to injure or otherwise impact the health, safety and welfare of Nye County’s citizens or Nye County’s natural resources and environment. As the host County for the proposed nuclear waste repository, the NWPA, its implementing regulations, and relevant judicial and NRC decisions all accommodate the County's unique status and provide for Nye County's ongoing oversight of the repository and for full participation in the licensing proceedings, as was previously demonstrated.

The responses filed by DOE and NRC Staff to specific Nye County contentions lack merit and should not be accepted by the Board as a basis for finding the contentions inadmissible. The County's detailed replies, presented above, to the DOE and NRC Staff responses demonstrate that each of the contentions filed by Nye County are material to the proceedings and definitely are in dispute. Unlike some other petitioners, Nye County does not seek denial of the requested license. Rather, it simply requests that NRC direct certain steps be taken by DOE to finalize monitoring, performance confirmation plans, environmental assessments, and other safety features of the repository prior to construction authorization. The County has limited its request to those safety and environmental features that have significant potential for impacting the health, safety, and the environment in Nye County. In each case, the County has proposed a measured remedial action which can be taken to achieve the desired safety or environmental goal without unduly delaying the project.

For all of the foregoing reasons, Nye County asks that its Petition to Intervene as a full party be granted and that each of its contentions be admitted.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARDS

In the Matter of	)	
	)	
U.S. DEPARTMENT OF ENERGY	)	Docket No. 63-001-HLW
	)	ASLBP Nos. 09-876-HLW-CAB01
	)	09-877-HLW-CAB02
(High-Level Waste Repository)	)	09-878-HLW-CAB03
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing, Response To The Answers Of NRC Staff and Department Of Energy dated, this 24th day of February, have been served upon the following persons by Electronic Information Exchange.

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FAA Order JO 7400.2G, Procedures for Handling Airspace Matters (April 10, 2008)

Attachment "A"

U.S. Department
of Transportation

**Federal Aviation
Administration**

Order JO 7400.2G

Procedures for Handling Airspace Matters

April 10, 2008

**An electronic version of this publication is on the internet at
http://www.faa.gov/atpubs**

Distribution: ZAT-740 (ALL)

**Initiated By: AJR-0
Vice President, System Operations Services**

RECORD OF CHANGES

DIRECTIVE NO. JO 7400.2G

CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL	CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL

FAA Order JO 7400.2G
Procedures for Handling Airspace Matters
Explanation of Changes

Direct questions through appropriate facility/service center office staff to the Office of Primary Interest (OPI).

a. Table 1–2–1. FAA ORDER ABBREVIATIONS

This is an effort to uniformly reference the term Aeronautical Information Management in this order. The "AIM" abbreviation has been incorporated into Table 1–2–1, and throughout the remainder of the order.

b. 9–1–1. AUTHORITY; and 9–2–1. ADMINISTRATIVE PROCESSING

This chapter contains guidelines and procedures for processing a request for discretionary review of a determination of hazard/no hazard issued by the OES in response to an aeronautical study.

c. Editorial/format changes were made where necessary throughout the order. Revision bars were not used in all cases because of the insignificant nature of the changes.

FAA Order JO 7400.2G
Procedures for Handling Airspace Matters

Foreword

This order specifies procedures for use by all personnel in the joint administration of the airspace program. The guidance and procedures herein incorporate into one publication as many orders, notices, and directives of the affected services as possible. Although every effort has been made to prescribe complete procedures for the management of the different airspace programs, it is impossible to cover every circumstance. Therefore, when a situation arises for which there is no specific procedure covered in this order, personnel shall exercise their best judgement.

The order consists of six parts. Part 1 addresses general procedures applicable to airspace management. Part 2 addresses policy and procedures unique to Obstruction Evaluation. Part 3 addresses policy and procedures unique to Airport Airspace Analysis. Part 4 addresses policy and procedures unique to Terminal and En Route Airspace. Part 5 addresses policy and procedures unique to Special Use Airspace. Part 6 addresses policy and procedures regarding the integration of Outdoor Laser Operations, High Intensity Light Operations, and integration of Rockets and Space–Vehicle Operations into the National Airspace System.

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Order JO 7400.2G
Procedures for Handling Airspace Matters

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Part 1. General Procedures for Airspace Management

Chapter 1. Basic

Section 1. Introduction

1–1–1. PURPOSE

a. This order prescribes policy, criteria, guidelines, and procedures applicable to the System Operations Services, System Operations Airspace and AIM; Technical Operations ATC Spectrum Engineering Services; the Office of Airport Planning and Programming, APP; the Office of Airport Safety and Standards, AAS; Technical Operations Aviation System Standards; and the Flight Standards Service, AFS.

b. This order also applies to all regional, service area, and field organizational elements involved in rulemaking and nonrulemaking actions associated with airspace allocation and utilization, obstruction evaluation, obstruction marking and lighting, airport airspace analysis, and the management of air navigation aids.

c. While this order provides procedures for handling airspace matters, additional procedures and criteria to supplement those contained herein may be set forth in other directives and should be consulted.

1–1–2. DISTRIBUTION

This order is distributed to select offices in Washingtonheadquarters; the Office of Commercial Space Transportation; regional Flight Standards; Airports Divisions; service area offices; the William J. Hughes Technical Center; the Mike Monroney Aeronautical Center; Technical Operations Aviation System Standards; all field facilities; international aviation field offices; and interested aviation public.

1–1–3. CANCELLATION

This order cancels Federal Aviation Administration Order (FAAO) 7400.2F, Procedures for Handling Airspace Matters, dated February 16, 2005.

1–1–4. EFFECTIVE DATE

This order is effective on April 10, 2008.

1–1–5. EXPLANATION OF CHANGES

a. This order has been revised to incorporate changes due to the new Air Traffic Organization and previously issued Policy Memorandums. Further, several editorial changes have been made to reflect organizational, policy, and procedural changes.

b. If further information is desired, please direct questions through the appropriate facility/service area/regional office to the headquarters office of primary responsibility.

1–1–6. CHANGE AUTHORITY

The Director of System Operations Airspace and AIM will issue changes to this directive after obtaining concurrence from the affected Headquarters offices/services/service units listed in the foreword.

Section 2. Authority and Order Use

1–2–1. POLICY

The navigable airspace is a limited national resource that Congress has charged the Federal Aviation Administration (FAA) to administer in the public interest as necessary to ensure the safety of aircraft and its efficient use. Although the FAA must protect the public's right of freedom of transit through the airspace, full consideration shall be given to all airspace users, to include national defense; commercial and general aviation; and space operations. Accordingly, while a sincere effort shall be made to negotiate equitable solutions to conflicts over the use of the airspace for nonaviation purposes, preservation of the navigable airspace for aviation shall be the primary emphasis.

1–2–2. AUTHORITY AND APPLICABILITY

The authority for the procedures and associated rules and regulations addressed in this order are provided in 49 U.S.C. Subtitle VII, Aviation Programs, Part A – Air Commerce and Safety, and Part B – Airport Development and Noise:

a. Section 40101, Policy.

b. Section 40102, Definitions.

c. Section 40103, Sovereignty and Use of Airspace, and the Public Right of Transit.

d. Section 40106(a), Deviations From Regulations.

e. Section 40109, Authority to Exempt.

f. Section 40113, Administrative.

g. Section 44501(a), Long Range Plans and Policy Requirements.

h. Section 44502, General Facilities and Personnel Authority.

i. Section 44502(c), Military Construction, Rockets, and Missiles.

j. Section 44718, Structures Interfering with Air Commerce.

k. Section 44719, Standards for Navigational Aids.

l. Section 44720, Meteorological Services.

m. Section 44721, Aeronautical Maps and Charts.

n. Section 46104(e), Designating Employees to Conduct Hearings.

o. Section 46301, Civil Penalties.

p. Section 46308, Interference with Air Navigation.

q. Chapter 471, Airport Development – All of Subchapters I and II.

r. Chapter 475, Noise – All of Subchapters I and II.

1–2–3. TITLE 14 CODE OF FEDERAL REGULATIONS (CFR) REFERENCES

a. Part 11, General Rulemaking Procedures.

b. Part 71, Designation of Class A, B, C, D, and E Airspace Areas; Air Traffic Service Routes; and Reporting Points.

c. Part 73, Special Use Airspace.

d. Part 77, Objects Affecting Navigable Airspace.

e. Part 91, General Operating and Flight Rules.

f. Part 93, Special Air Traffic Rules.

g. Part 95, IFR Altitudes.

h. Part 97, Standard Instrument Approach Procedures.

i. Part 101, Moored Balloons, Kites, Unmanned Rockets and Unmanned Free Balloons.

j. Part 152, Airport Aid Program.

k. Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports.

l. Chapter III, Commercial Space Transportation.

m. Chapter V, National Aeronautics and Space Administration.

1–2–4. FUNCTIONAL RESPONSIBILITIES

Functional responsibilities of headquarters and regional/service area organizations referred to in this order are detailed in Order 1100.1, FAA Organization – Policies and Standards; Order 1100.2, Organization – FAA Headquarters; and Order 1100.5, FAA Organization – Field.

1–2–5. WORD USAGE

The concept of word usage and intended meaning as used in this order is set forth below:

a. "Shall" or a command verb is used when application is mandatory.

b. "Shall not" is used when an action is prohibited.

c. "Should" is used when application is recommended.

d. "May" and "need not" are used when application is optional.

e. "Will" is used only to indicate futurity, never to indicate any degree of requirement for application of a procedure.

f. "Navigable airspace" is airspace at or above the minimum altitudes of flight prescribed by the Code of Federal Regulations, and shall include airspace needed to ensure safety in the takeoff and landing of aircraft. By policy, the term "airspace above minimum altitudes of flight" is interpreted to mean "airspace at or above minimum flight altitudes."

g. "Controlled airspace" is a generic term used to describe Class A, Class B, Class C, Class D, and Class E airspace.

1-2-6. ABBREVIATIONS

As used in this manual, TBL 1-2-1 contains abbreviations found in this order and their meanings.

1-2-7. ORDER CHANGES

a. This order will be updated semiannually.

b. The responsibility associated with processing and coordinating revisions to this order is delegated to the Manager, Airspace and Rules.

c. Proposed changes or recommended revisions must be submitted, in writing, to Airspace and Rules. The proposal should include a description of the proposal, and the language to be inserted in the order.

d. When appropriate, Airspace and Rules may convene a workgroup for the purpose of reviewing, clarifying, editing, or revising recommendations received to revise this order. Composition of the workgroup will be determined by the subject matter, and the expertise required. Airspace and Rules is responsible for the selection of the members of the workgroup, and for appointing the chairperson of the group.

e. The workgroup shall study the proposal, and, when appropriate, provide their recommendation to the Obstruction Evaluation (OE) Executive Council no later than 90 days after the workgroup adjourns. The Executive Council shall consist of the directors of the service units and the service managers/directors of the lines of business within the FAA who have responsibility for administering the obstruction evaluation program.

f. The Executive Council shall approve, reject, revise, or return the recommendation to the workgroup for further study. If approved by the Executive Council, the recommendation shall be published and effective in the next revision of this order.

g. When revised, reprinted, or additional pages are issued, they will be marked as follows:

1. Each revised or added page will show the change number and effective date of the change.

2. Bold vertical lines in the margin of the text will mark the location of substantive procedural, operational, or policy changes (e.g., when material that affects the performance of duty is added, revised, or deleted).

TBL 1-2-1

FAA Order Abbreviations

A/FD	Airport/Facility Directory
AAS	Office of Airport Safety and Standards
ADO	Airport District Office
AE	Airport Elevation
AFS	Flight Standards Service
AFSS	Automated Flight Service Station
AGC	Office of the Chief Counsel
AGL	Above Ground Level
AIM	Aeronautical Information Management
ALP	Airport Layout Plan
APO	Office of Aviation Policy and Plans
APP	Office of Airport Planning and Programming
ARP	Airport Reference Point
ARSR	Air Route Surveillance Radar
ARTCC	Air Route Traffic Control Center
ARU	Airborne Radar Unit
ASR	Spectrum Policy and Management

AST	Office of Commercial Space Transportation
ATC	Air Traffic Control
ATCAA	Air Traffic Control Assigned Airspace
ATCRBS	Air Traffic Control Radar Beacon System
ATCSCC	David J. Hurley Air Traffic Control System Command Center
ATCT	Airport Traffic Control Tower
ATO	Air Traffic Organization
ATREP	Air Traffic Representative
CARF	Central Altitude Reservation Function
CDRH	Center for Devices and Radiological Health
CFA	Controlled Firing Area
CFZ	Critical Flight Zone
CFR	Code of Federal Regulations
CP	Construction Permit
DF	Directional Finder
DME	Distance Measuring Equipment
DMS	Docket Management System
DNE	Does Not Exceed
DNH	Determination of No Hazard
DOD	Department of Defense
DOH	Determination of Hazard
EBO	Exceeds But Okay
EMI	Electromagnetic Interference
ERP	Effective Radiated Power
FAAO	Federal Aviation Administration Order
FACSFAC	Fleet Area Control and Surveillance Facility
FCC	Federal Communications Commission
FDA	Food and Drug Administration
FL	Flight Level
FPO	Flight Procedures Office
FSDO	Flight Standards District Office
FSS	Flight Service Station
GAO	Government Accountability Office

HIL	High Intensity Light
IAP	Instrument Approach Procedure
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IR	IFR Military Training Route
IRAC	Interdepartmental Radio Advisory Committee
J	Joule
L/MF	Low/Medium Frequency
LFZ	Laser Free Zone
LLWG	Local Laser Working Group
LMM	Middle Compass Locator
LOA	Letter of Agreement
LOD	Letter of Determination
LOM	Outer Compass Locator
LSO	Laser Safety Officer
MAJCOM	Military Major Command
MCA	Minimum Crossing Altitude
MCP	Minimum Crossing Point
MEA	Minimum En Route Altitude
MHA	Minimum Holding Altitude
MIA	Minimum IFR Altitude
MLS	Microwave Landing System
MOA	Military Operations Area
MOCA	Minimum Obstruction Clearance Altitude
MPE	Maximum Permissible Exposure
MRAD	Milliradian
MRU	Military Radar Unit
MSA	Minimum Safe Altitude
MSL	Mean Sea Level
MTR	Military Training Route
MVA	Minimum Vectoring Altitude
NACO	National Aeronautical Charting Group
NAD	North American Datum
NAS	National Airspace System

NASA	National Aeronautics and Space Administration
NAVAID	Navigational Aid
NDB	Nondirectional Radio Beacon
NEPA	National Environmental Policy Act
NFDD	National Flight Data Digest
NFZ	Normal Flight Zone
NM	Nautical Mile
NPH	Notice of Presumed Hazard
NOHD	Nominal Ocular Hazard Distance
NOTAM	Notice to Airmen
NPIAS	National Plan of Integrated Airport Systems
NPRM	Notice of Proposed Rulemaking
NR	Nonrulemaking
NRA	Nonrulemaking Airport
NSA	National Security Area
NWS	National Weather Service
OE	Obstruction Evaluation
OE/AAA	Obstruction Evaluation/Airport Airspace Analysis
OFZ	Obstacle Free Zone
PAPI	Precision Approach Path Indicator
PFC	Passenger Facility Charge
PL	Public Law
PSR	Project Status Request
RBS	Radar Bomb Site
REIL	Runway End Identifier Lights

RNAV	Area Navigation
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RVR	Runway Visual Range
RVV	Runway Visibility Value
SFZ	Sensitive Flight Zone
SIAP	Standard Instrument Approach Procedure
SMO	System Maintenance and Operations
SR	Scientific/Research Lasers
STAR	Standard Terminal Arrival Route
SUA	Special Use Airspace
TERABA	Termination/Abandoned Letter
TEREXP	Termination/Expired Letter
TERPS	United States Standard for Terminal Instrument Procedures
TERPSR	Termination Project Status Letter
TOFA	Taxiway Object Free Area
USC	United States Code
UTC	Coordinated Universal Time
VASI	Visual Approach Slope Indicator
VFR	Visual Flight Rule
VGSI	Visual Glide Scope Indicator
VOR	Very High Frequency Omnidirectional Range
VORTAC	Very High Frequency Omni-Directional Radio Range and Tactical Air Navigation Aid
VR	VFR Military Training Route

Chapter 2. Rulemaking/Nonrulemaking Airspace Cases

Section 1. Ex Parte Communications

2–1–1. DEFINITION

An ex parte contact is any communication between the FAA and a party outside the government related to a specific rulemaking proceeding, before that particular proceeding is finalized. A rulemaking proceeding does not close until all received comments have been addressed, and a final rule is published. "Ex parte" is a Latin term that is interpreted to mean "one sided," and indicates that not all parties to an issue were present when it was discussed. Because some interested persons, including the general public, are excluded from an ex parte communication, such a contact may give rise to the appearance of impropriety.

NOTE–
Written comments submitted to the docket are not considered ex parte contacts because they are available for inspection by all members of the public.

2–1–2. SCOPE

Whether ex parte contacts are initiated by the FAA or by a member of the public (including affected industry), they are improper if they affect the basic openness and fairness of the decision making process. Because of this possibility and because of the possible appearance of impropriety, the FAA's policy on ex parte contacts is very strict. This policy, however, does not significantly restrict the gathering of information needed to make an intelligent decision.

2–1–3. POLICY

The FAA encourages full public participation in rulemaking actions. This policy allows for appropriate ex parte contacts when necessary to ensure adequate public comment. Persons directly responsible for the rulemaking/nonrulemaking action should, in addition to providing the public the opportunity to respond in writing to proposed actions and/or to appear and be heard at a hearing, undertake such contacts with the public as will be helpful in resolving questions of substance and justification. Responsible persons should be receptive to proper contacts from members of the public who are affected by, or interested in, the proposed action. Contacts with the public to obtain up–to–date information needed for the rulemaking action or to clarify written comments, are also permissible.

2–1–4. DISCLOSURE

While this policy recognizes the importance of ex parte contacts, it also contains a strict mandate to disclose these contacts. Specifically, the FAA has an obligation to conduct its rulemaking activities in a public manner, whereby interested members of the public are afforded adequate knowledge of such contacts. This is necessary to ensure all interested members of the public are afforded the opportunity to make their views known to the FAA. Without such disclosure, other interested members of the public and the FAA may be deprived of informed and valuable comments.

2–1–5. PERMITTED CONTACT

The kind of ex parte contacts permitted and the procedures to be followed depend on when the contact occurs. Any questions regarding the following authorized contacts should be addressed by the Office of the Chief Counsel.

a. Before the issuance of any rulemaking and/or nonrulemaking action, ex parte contacts are authorized when needed to obtain technical and economic information. Each contact that influenced the specific effort shall be included in a report discussing each contact or group of related contacts. This report shall be placed in the project's docket/case file.

b. During the comment period, ex parte contacts are strongly discouraged, since requests for information can be submitted in writing or at a public meeting. The only information that should be released is that contained in the proposed rule and any other information made generally available during a public meeting. Information, such as facts not presented in the rulemaking/nonrulemaking

notification or at a public meeting, or the agency's preliminary thinking on the final rule, should not be discussed. Persons who contact the agency by telephone or in person seeking to discuss the proposal should be advised that the proper avenue of communication during the comment period is by written comment submitted to the docket. When the agency determines that it would be helpful to meet with a person or group during the comment period, the meeting must be announced in the Federal Register and all interested persons must be invited.

c. In a formal public hearing, the testimony is usually recorded and the transcript added to the docket. Summaries of all substantive oral communications and copies of materials provided that could affect the agency position must be placed in the docket. Individuals who have made oral comments at meetings should be encouraged to also submit those comments to the docket in writing.

d. Persons who contact the agency simply to obtain information regarding the proposal may be provided with information that has already been made available to the general public. No record of such a contact is required.

e. Once the comment period has closed, subsequently received written communications should also be placed in the docket. Inform those who wish to submit such "late filed" comments (in accordance with Part 11), their comments will be given consideration to the extent that they cause no undue expense or delay.

f. If the agency determines that it would be helpful to meet with a person or group after the close of the comment period, the meeting must be announced in the Federal Register. Moreover, consideration should be given to reopening the comment period. Substantive oral communications other than formal meetings are discouraged. If it is discovered that such a contact has occurred, a summary of the contact must be placed in the docket if it could be perceived as influencing the rulemaking process. Such a summary must be accompanied by copies of any material distributed during meetings between the FAA and interested parties.

g. Contacts after the close of the comment period should be avoided. However, if an ex parte communication occurs that could substantially influence the rulemaking after the comment period has closed, it is the FAA's policy to consider reopening the comment period. Important information should not be disregarded simply because it was late. However, because contacts after the close of the comment period may result in reopening the comment period, they should be avoided. Written comments received after the closing date do not require reopening the comment period unless the agency is substantially and specifically influenced by the comment.

2–1–6. RECORDING CONTACTS

A record of a contact or series of contacts need only be made when it is determined that the contact influenced the agency's action. The record of a contact or series of contacts may be made at any time after the contact, but must be made before issuance of the final action. The record of ex parte contacts need not be a verbatim transcript of the communication. However, a mere recitation that on a stated day a meeting or telephone conversation was held with listed persons to discuss a named general subject is inadequate. The report of the meeting or contact should contain at a minimum:

a. The date and time of the meeting or conversation.

b. A list of the participants.

c. A summary of the discussion (more than a simple list of the subjects discussed).

d. A specific statement of any commitments made by any FAA personnel. A copy of any documents discussed should be attached to the record. Any questions on the preparation of the record should be directed to the Office of the Chief Counsel.

2–1–7. ADVICE FROM COUNSEL

Questions concerning the propriety of ex parte contacts, or the actions to be taken after such contacts, should be directed to the Office of the Chief Counsel. Ex parte contacts must be handled correctly to prevent unwarranted delay and legal challenge.

2–1–8. RELEASE OF RULEMAKING AND/OR NONRULEMAKING TEXTS

The agency policy is to not provide outside parties the texts of rulemaking/nonrulemaking documents before official release. Such disclosures may give the

appearance that the agency is seeking outside party approval and may give an advantage to some parties over other members of the public. There is one exception to this policy. It may be necessary to discuss possible specific regulatory provisions under consideration to obtain information on technical, operational, and economic impacts needed for agency deliberations. Avoid discussion of specific language unless needed information cannot be obtained without discussion of the precise technical language to be used. When necessary, limit discussion and disclosure to the minimum amount of rule text necessary to accomplish the task. Preamble text is not to be distributed before publication.

Section 2. Executive Order 10854

2–2–1. SCOPE

a. Executive Order 10854 extends the application of 49 U.S.C. Section 40103 to the overlying airspace of those areas of land or water outside the United States beyond the 12–mile offshore limit in which the United States, under international treaty agreement or other lawful arrangements, has appropriate jurisdiction or control.

b. Under the provisions of Executive Order 10854, airspace actions must be consistent with the requirements of national defense, international treaties or agreements made by the United States, or the successful conduct of the foreign relations of the United States.

NOTE–
The full text of Executive Order 10854 is detailed in FIG 2–2–1.

2–2–2. POLICY

Any rulemaking or nonrulemaking actions that encompass airspace outside of the United States sovereign airspace (e.g., beyond 12–miles from the United States coast line) require coordination with the Departments of Defense and State. All Executive Order 10854 coordination shall be conducted at the FAA headquarters level by Airspace and Rules.

FIG 2–2–1
Executive Order 10854

EXECUTIVE ORDER 10854
EXTENSION OF THE APPLICATION OF THE FEDERAL AVIATION ACT OF 1958
By virtue of the authority vested in me by section 1110 of the Federal Aviation Act of 1958 (72 Stat. 800: 49 U.S.C. 1510), and as President of the United States, and having determined that such action would be in the national interest, I hereby order as follows:
The application of the Federal Aviation Act of 1958 (72 Stat. 731; 49 U.S.C. 1301 et seq.), to the extent necessary to permit the Secretary of Transportation to accomplish the purposes and objectives of Titles III and XII thereof (49 U.S.C. 1341–1355 and 1521–1523), is hereby extended to those areas of land or water outside the United States and the overlying airspace thereof over or in which the Federal Government of the United States, under international treaty, agreement or other lawful arrangement, has appropriate jurisdiction or control: Provided, that the Secretary of Transportation, prior to taking any action under the authority hereby conferred, shall first consult with the Secretary of State on matters affecting foreign relations, and with the Secretary of Defense on matters affecting national–defense interests, and shall not take any action which the Secretary of State determines to be in conflict with any international treaty or agreement to which the United States is a party, or to be inconsistent with the successful conduct of the foreign relations of the United States, or which the Secretary of Defense determines to be inconsistent with the requirements of national defense.
Dwight D. Eisenhower
The White House, November 27, 1959

Section 3. Airspace Planning and Analysis

2–3–1. BACKGROUND

a. Airspace management functions historically have been widely dispersed. Responsibility for airspace management has resided with the regions/service area offices, while airspace changes for operational considerations have been handled by field facilities. The focus on airspace change and redesign has been local in scope and centered, for the most part, on single areas. It is apparent that changes in airspace configuration, architecture, or structure have national implications for air traffic control, for traffic flow management, and for the user community. Therefore, changes in the use or allocation of the airspace need to be coordinated at the national level.

b. The details involved in airspace design must be centrally located. It is essential that efforts expended on airspace studies and proposed airspace changes be coordinated at the national level. This coordination will ensure that resources are effectively prioritized and optimized for the efficient use of the nation's airspace.

2–3–2. POLICY

The air traffic planning and analysis policy uses an interdisciplinary approach to ensure the effective management of national airspace changes. This policy requires national implementation strategies, especially for changes designed to enhance user operations, maintain the highest standards of safety, generate new efficiencies, and effectively use our resources. With this policy in mind, Airspace and Rules is designated as the air traffic office that will provide national oversight for:

a. Formulating airspace efficiency policy.

b. Establishing guidelines for airspace architecture and structural changes.

c. Analyzing current and proposed operations for efficiency.

Section 4. Processing Rulemaking Airspace Actions

2–4–1. PURPOSE

This section prescribes procedures to be followed when taking rulemaking actions to establish, modify, or revoke regulatory airspace.

2–4–2. RESPONSIBILITY

a. Airspace and Rules is responsible for processing the following actions: Class A, B, and C airspace areas; special use airspace; offshore airspace areas; airways; jet routes; and those Class D and E airspace areas that overlie U.S. territories and possessions.

b. The Operations and Air Traffic Law Branch, AGC–220, is responsible for ensuring that the airspace cases listed in paragraph a, above, meet the requirements of the Administrative Procedures Act.

c. Service area offices are responsible for processing all Class D and E airspace area cases.

d. The Assistant Chief Counsel for each region is responsible for ensuring that all regional airspace cases meet the requirements of the Administrative Procedures Act.

2–4–3. DOCKETS

a. Docket Location.

1. The official docket for both Headquarters' and regional/service area office rulemaking cases shall be maintained at the Docket Management System, U.S. Department of Transportation, Room Plaza 401, 400 Seventh Street, SW., Washington, DC 20590–0001.

2. The Docket Management System (DMS) can also be accessed on the internet at http://dms.dot.gov.

b. Docket Identification.

1. Rulemaking cases shall be identified by two docket numbers. The first, an FAA docket number, includes the acronym FAA; the current year; and a consecutively assigned number (e.g., FAA–2003–14010). The second, an airspace docket number, includes the last two digits of the calendar year; the abbreviation of the originating office; and a consecutively assigned number (e.g., 00–ASW–46).

2. Numbers shall run consecutively within each calendar year.

c. Docket Content. The official docket shall include all petitions, notices, rules, comments, correspondence, and related material concerning the case (other than working files).

2–4–4. FLIGHT PROCEDURAL DATA

a. If an airspace docket requires a procedure change and/or flight inspection, service area office shall coordinate the proposed effective date with the regional Flight Procedures Office, (FPO). The proposed effective date must consider the time needed to process procedural changes and allow ample time for flight inspection, if required. The FPO shall notify the service area office of any problems that could affect the proposed effective date. See Order 8260.26, Establishing and Scheduling Standard Instrument Procedure Effective Dates, for scheduled processing and publication dates.

b. If a rule without notice is to be issued and flight check data is required, the service area office shall inform the responsible FPO of the action and specific data requested.

2–4–5. SUBMISSION OF AIRSPACE CASES TO HEADQUARTERS

a. The service area office shall review the action proposed and submit a complete technical description of the proposed airspace (e.g., establishment, modification, or revocation) package to Airspace and Rules.

b. All background information including charts, proper justification and appropriate recommendations shall be submitted.

c. If an airspace action needs to be completed by a specific date, the service area office shall coordinate with the FPO and any other FAA offices as necessary to ensure that sufficient lead–time exists for meeting normal airspace procedural processing and charting requirements, and instrument approach procedure development.

d. The service area office shall submit to Airspace and Rules written comments received in response to the proposed action, analysis of the comment(s), and

any recommendations within 30 days after the comment closing date. If applicable, a statement concerning the status of the flight procedures data (e.g., Minimum En Route Altitude, MEA; or Change Over Point, COP) for en route cases shall be included.

2–4–6. EFFECTIVE DATE OF FINAL RULES

a. Amendments to parts 71 and 73 shall be made effective at 0901 Coordinated Universal Time (UTC) and shall coincide with en route charting dates as furnished by Airspace and Rules. Exceptions are as follows:

1. Safety or national interest actions that require an earlier effective time or date.

2. Editorial changes.

3. 700–foot floor Class E airspace areas that underlie existing 1,200–foot Class E airspace areas.

4. Actions that lessen the burden on the public (e.g., revocation of restricted areas).

5. Class B and C airspace areas shall be made effective on days that coincide with the appropriate sectional aeronautical charting dates.

b. Cutoff dates are established to allow sufficient time for charting and chart distribution purposes. Rules should be signed on or before the applicable cutoff date.

2–4–7. PUBLICATION IN FEDERAL REGISTER

An original Notice of Proposed Rulemaking (NPRM) and three copies, or an original final rule and seven copies shall be forwarded to AGC–200 for publication in the Federal Register.

2–4–8. DISTRIBUTION

Distribution of airspace dockets (NPRMs and final rules) shall be consistent with the procedures set forth in Order 1720.18, FAA Distribution System.

Section 5. Processing Nonrulemaking Airspace Actions

2–5–1. PURPOSE

This section prescribes procedures to be followed when establishing, modifying, or revoking nonrulemaking airspace (e.g., Military Operations Area, warning areas, etc.).

2–5–2. IDENTIFICATION

Identify nonrulemaking cases by a study number that includes the last two digits of the calendar year, the abbreviation of the appropriate regional or airports district office, a consecutively assigned number within each calendar year, and "NR" (nonrulemaking), "NRA" (nonrulemaking airport), or "OE" (obstruction evaluation) as appropriate.

EXAMPLE–

1. *00–AWP–1–NR for studies involving navigational aids and nonrulemaking Special Use Airspace (SUA) cases (i.e., Alert Areas, Controlled Firing Areas, MOAs, and Warning Areas).*

2. *00–ASO–1–NRA for studies involving airports.*

3. *00–AGL–1–OE for studies involving surface structures.*

4. *00–ORL–1–NRA for studies processed by an airports district office.*

2–5–3. CIRCULARIZATION

a. Except for NRA airspace proposals, nonrulemaking airspace proposals shall be circularized by the service area office unless procedures for processing particular types of proposals allow exemptions to circularization. Each notice shall contain a complete, detailed description of the proposal including charts, if appropriate, that will assist interested persons in preparing comments. Circularization lists shall include, but not be limited to, all known aviation interested persons and groups such as the state aviation agencies; regional military representatives; national and local offices of aviation organizations; local flight schools, local airport owners, managers, and fixed base operators; and local air taxi and charter flight offices. Normally, a 45–day comment period should be provided. Other parts in this order contain additional guidance regarding circularization.

b. Identify in the nonrulemaking circular any regulatory changes (e.g., part 71) that will be effected if the nonrulemaking proposal is adopted. Describe the regulatory changes in as much detail as is known at the time (e.g., radials, distances, and coordinates).

c. Regions/service area offices shall coordinate with their respective state aviation representatives to ascertain which nonrulemaking circulars each state is interested in receiving. If various agencies within a state government request copies of particular circulars, the region/service area office may request that one agency be designated to receive and distribute the requested copies.

d. Send one copy of each nonrulemaking circular to Airspace and Rules.

e. Except for Class B and Class C airspace actions, when a nonrulemaking action is ancillary to a rulemaking action, the nonrulemaking proposal may be included in the NPRM. In this instance, a nonrulemaking circularization need not be made. The NPRM will satisfy the circularization requirement and present the full impact of both the rule and nonrule proposal.

2–5–4. CIRCULARIZATION DOCUMENTATION

All notices of aeronautical studies, informal airspace meetings, and determinations issued for obstruction evaluation and airport airspace analysis studies require certificates of mailing. The certificate shall be recorded in each case file as follows:

AERONAUTICAL STUDY [NUMBER]
CERTIFICATE OF MAILING
I HEREBY CERTIFY THAT A COPY OF THE ATTACHED [notice/determination] WAS MAILED TO EACH OF THE ADDRESSEES LISTED ON THE ATTACHED [mailing list/distribution list number] THIS [date] DAY OF [month/year].
SIGNED: [specialist/mail clerk/etc.]

2–5–5. EFFECTIVE DATE OF NONRULEMAKING ACTIONS

Nonrulemaking actions shall be made effective at 0901 UTC and shall coincide with en route charting dates as furnished by Airspace and Rules. Exceptions are as follows:

a. Safety or national interest actions that require an earlier effective time or date.

b. Editorial changes.

c. Actions that lessen the burden on the public (e.g., revocation of special use airspace).

2–5–6. PUBLICATION OF NONRULEMAKING ACTIONS

Nonrulemaking actions are published in the National Flight Data Digest (NFDD) on or before the applicable charting cutoff date.

Section 6. Informal Airspace Meeting

2–6–1. PURPOSE

This section prescribes the procedures to be followed for all notices of informal airspace meetings held in advance of rulemaking/nonrulemaking airspace actions.

2–6–2. POLICY

a. It is the policy of the FAA to hold, if at all practicable, informal airspace meetings to inform the affected users of planned airspace changes. The purpose of these meetings is to gather facts and information relevant to the planned rulemaking or nonrulemaking action being studied.

b. Notwithstanding paragraph 2–6–2.a. informal airspace meetings shall be held for any planned changes to Class B and Class C airspace areas prior to issuing an NPRM.

2–6–3. CLASS B AND C AIRSPACE AREAS NOTIFICATION PROCEDURES

a. The regional/service area office shall submit a draft notice of informal airspace meetings to Airspace and Rules for processing and publication in the Federal Register. The notice shall describe the proposal in sufficient detail, including charts, if necessary, to enable interested persons to prepare comments prior to the meeting. The notice shall identify the name and address of the office where additional information can be obtained.

b. Airspace and Rules shall process and submit the notice for publication in the Federal Register. For Class B airspace areas, the notice shall be published a maximum of 90 days, and a minimum of 60 days in advance of the meeting.

c. For Class C airspace areas, the notice shall be published a maximum of 60 days, and a minimum of 30 days in advance.

d. In addition to the above, notices of informal airspace meetings shall be sent to all known licensed pilots, state aviation agencies, airport managers/operators, and operators of parachute, sailplane, ultralight, and balloon clubs within a 100–mile radius of the primary airport for Class B airspace actions; and within a 50–mile radius of the primary airport for Class C airspace actions.

e. Distribution of these notices may be accomplished through the facilities of the Airmen Certification Branch, AFS–760. The regional office should coordinate this distribution with the regional Aviation Safety Program Manager. It should be noted that AFS–760 needs a lead–time of 16 days from the receipt of material until mailing. Sufficient lead–time must be provided to allow processing and distribution in time to meet the above minimum advance notice requirements (e.g., 60/30 days).

f. When known or anticipated controversy warrants, the above procedures may also be used for informal airspace meeting notices concerning obstruction evaluation, airport airspace analysis, special use airspace, and the commissioning/decommissioning of navigational aids.

2–6–4. OTHER AIRSPACE ACTIONS

a. Every effort shall be made to notify all aviation organizations and/or persons that may be affected by, or interested in, the planned action. The meeting notice shall explain that the purpose of the meeting is to solicit aeronautical comments on the proposal's effect on the planned action.

b. The notice shall describe the planned action in sufficient detail, including charts if necessary, to enable interested persons to prepare comments prior to the meeting. Notice of the meeting should be distributed at least 30 days prior to the meeting date.

c. Regional/service area offices are also encouraged to make use of electronic media, local newspapers, radio, and television to supplement the dissemination of notices and information.

2–6–5. LOCATION

Informal airspace meetings should be held at times and locations that are most conducive for gathering facts relative to the planned or proposed action under study. The chairperson shall represent the Regional Administrator. Each informal airspace meeting should be numbered consecutively and dated (e.g., "Meeting No. 50, February 15, 2000").

2–6–6. AGENDA ITEMS

Agenda items may be included in the notice of informal airspace meeting or distributed separately. Agendas may also include airspace matters of a rulemaking and/or nonrulemaking nature. When not included in the notice of informal airspace meeting, they should be distributed at least 15 days before the meeting. Agendas involving Class B airspace proposals, shall be distributed at least 30 days prior to the meeting. Items concerning aeronautical studies not on the agenda should not be discussed except when the chairperson considers them appropriate.

2–6–7. RECORD OF MEETINGS

a. Official transcripts or minutes of informal airspace meetings shall not be taken or prepared. However, the chairperson shall prepare a memorandum for each of the discussed aeronautical study files listing attendees and a digest of the discussions held.

b. Written statements received from attendees during and after the informal airspace meeting shall also be included in the study files.

c. Forward one copy of the memorandum to Airspace and Rules.

Chapter 3. Aeronautical Information

Section 1. General

3–1–1. POLICY

All geographic (latitude and longitude) and vertical data submitted or used in airspace matters shall be based on current North American Datum (NAD) criteria.

3–1–2. RESPONSIBILITY

a. Aeronautical Information Management (AIM) is responsible for coordination with charting agencies and chart producers.

b. AIM shall furnish appropriate aeronautical chart cutoff and publication dates. Cutoff dates are 9 weeks (10 weeks for action involving flight check) in advance of the publication date to allow sufficient time for charting and chart distribution purposes.

c. Any information pertinent to the development of aeronautical information (e.g., validation of geographical coordinates, airport geographic positions, true radials, etc.) shall be obtained from AIM.

3–1–3. TRUE/MAGNETIC DIRECTIONS

All radials, courses, and bearings specified in an NPRM shall be stated both as true and magnetic, except magnetic need not be stated in terminal airspace notices.

3–1–4. NAVIGATIONAL AID COORDINATES

When a navigational aid (NAVAID) is used as a reference point in a controlled airspace description, its geographic coordinates shall be included in degrees, minutes, and seconds.

3–1–5. DIRECTIONS

Directions shall be described as follows:

338° True – 022° True = North
023° True – 067° True = Northeast
068° True – 112° True = East
113° True – 157° True = Southeast
158° True – 202° True = South
203° True – 247° True = Southwest
248° True – 292° True = West
293° True – 337° True = Northwest

Section 2. Charted Reporting Points

3–2–1. POLICY

a. Charted reporting points should be established only when necessary to provide minimum en route altitude (MEA) changes or to assist in the separation of aircraft.

b. Reporting points should not be established solely for the purpose of communication handoffs (transfer of aircraft control from one sector/facility to another to define an approach control area of jurisdiction).

3–2–2. CHART SERIES SELECTION

The request to have a reporting point charted should be limited to the chart series necessary for its intended use. For example, a reporting point established for the high altitude structure should not appear on the low altitude charts.

3–2–3. FAA FORM 8260–2, RADIO FIX AND HOLDING DATA RECORD

a. Visual Flight Rules Fix. The appropriate air traffic field facility shall forward the completed FAA Form 8260–2 through the service area office to AIM.

b. Instrument Flight Rules Fix. FAA Form 8260–2 shall serve as a request form, a checklist for flight inspection in response to a request for charted reporting points, and a record of action taken to publish the data. The appropriate air traffic field facility shall request flight inspection action by completing the FAA Form 8260–2, Radio Fix and Holding Data Record, and submitting it to the FPO through the service area office. It should be forwarded through the respective service area office when necessary to establish, modify, or cancel an intersection that is used as a reporting point, or to establish, modify, or cancel a holding pattern.

3–2–4. PREPARATION OF FORM 8260–2

Instructions for preparation of FAA Form 8260–2 are contained in Order 8260.19, Flight Procedures and Airspace.

Section 3. Naming of NAVAIDs, Aeronautical Facilities, and Fixes

3–3–1. GENERAL

a. All fixes located at a common point shall have the same name/code regardless of type, altitude, or route structure.

b. If one of the collocated fixes is a NAVAID, the other fixes shall be assigned the same name and three–letter identifier.

3–3–2. RESPONSIBILITY

a. Service area office are responsible for assigning and changing names of NAVAID and aeronautical facilities, and shall follow the instructions contained herein and in FAAO JO 7350.8, Location Identifiers, Chapter 1.

b. AIM is responsible for issuing five–letter names for radio fixes, waypoints, marker beacons, and compass locators. Five–letter names shall be issued by AIM to the National Flight Procedures Office, Major Military Commands (MAJCOM) and Air Route Traffic Control Centers (ARTCC) for future assignments.

c. AIM in conjunction with the respective service area office, shall ensure that no duplication in location name exists.

3–3–3. NAMING OF NAVAIDs

a. The NAVAID name selected should represent a city, town, or prominent geographic landmark that is depicted on a sectional aeronautical chart at or near the site. If one is neither available nor suitable, a local memorial name may be used. A common, easily understood word should be selected for the NAVAID name.

b. The name shall not sound similar to an existing NAVAID/fix location name within the originating ARTCC's area, the adjacent ARTCC's area, or within a 300 NM radius from the NAVAID involved.

c. Unduly long names should not be used.

d. A navigational aid with the same name as the associated airport should be located on that airport. However, in existing situations, a NAVAID off the airport with the same name as the airport may retain the airport name provided there is no other NAVAID with the same name. If retention of the airport name at an off–airport NAVAID could lead to a potentially confusing situation, the name should be changed. Only one NAVAID located on the airport may be assigned the airport name.

NOTE–
For the purpose of this paragraph only, a compass locator shall be considered as a separate NAVAID.

e. Instrument Landing Systems (ILS).

1. Inner/middle fan markers (without collocated nondirectional radio beacons (NDBs) or compass locators) and localizer equipment are not normally assigned names. Localizers are identified with the associated airport name and applicable runway number in official writings.

2. All outer markers shall be assigned names/codes. If the outer marker is to be situated at the same geographic location as a fix, it shall adopt the fix names/code.

3. All outer compass locators (LOM) and middle compass locators (LMM) shall be assigned names/codes. If co–located with a fix, they shall also adopt the fix name/code.

f. Names/codes assigned shall be the "chart names" that will appear on aeronautical charts, in airspace dockets, and other official publications and records.

3–3–4. NAMING OF WAYPOINTS, INTERSECTIONS, AND DME FIXES

a. To decide whether a fix needs to be named, see Order 8260.19, Flight Procedures and Airspace.

b. Names assigned for waypoints, intersections, Air Traffic Control (ATC) coordination, and Distance Measuring Equipment (DME) fixes not co–located with a navigational aid shall consist of a single five–letter pronounceable name. These five letters shall serve as the name, identifier, and computer code.

c. Regional/service area office requests for specific five-letter names for radio fixes and waypoints should be avoided, but may be granted by AIM if feasible.

d. Five-letter names that are assigned by National Flight Procedures Office and major commands will be coordinated with the associated ARTCC to preclude similar sounding fix names.

e. AIM shall not duplicate any radio fix, waypoint, marker beacons or compass locators names.

f. A fix or waypoint name change is required if the fix/waypoint is moved 5 nautical miles (NM) or more unless operational requirements dictate otherwise.

Chapter 4. NAVAIDs

Section 1. General

4–1–1. PURPOSE

This chapter provides guidelines and procedures for nonrulemaking actions related to requests for the establishment, relocation, modification, and discontinuance of NAVAIDs.

4–1–2. POLICY

a. Various types of NAVAIDs are in use today, each serving a specific purpose in the National Airspace System (NAS). These aids have varied owners and operators, but the FAA has statutory authority to prescribe standards for the operation of any of these aids that are used as part of the NAS.

b. Dates for commissioning, discontinuance, or conversion of NAVAIDs that are part of the NAS shall coincide with associated aeronautical charting dates.

4–1–3. RESPONSIBILITY FOR FREQUENCY SELECTION

The Interdepartmental Radio Advisory Committee (IRAC), which is composed of representatives of various Federal agencies, has delegated to the FAA the responsibility to manage frequency selections/assignments for all NAVAIDs. The frequency is selected by the regional Frequency Management Office as set forth in the FAA's 6050 series of Orders. Military and other government proponents apply for frequency authorization to the FAA through their respective headquarters. Non–Federal proponents must file with the Federal Communications Commission (FCC) and shall only be notified of the frequency selected after the FCC/IRAC action is completed.

4–1–4. GOVERNING CRITERIA

Order 7031.2, Airway Planning Standard Number One – Terminal Air Navigation Facilities and Air Traffic Control Services; Order 7031.3, Airway Planning Standard Number 2 –Air Route Traffic Control; and other pertinent agency orders contain criteria governing the establishment of NAVAIDs.

4–1–5. LONG–RANGE PLANNING

Service area offices, Technical Operations service area offices, the Technical Operations ATC Facilities, Implementation Services, and the FPO, shall work in concert to maintain a long–range plan for the provision of NAVAIDs and associated air traffic control services.

4–1–6. PROPOSED CHANGES

The service area office and/or FPO shall submit to Technical Operations ATC Facilities, Implementation Services proposed changes to NAVAIDs that are of a magnitude to require advance budgetary planning and/or user coordination at the national level.

Section 2. FAA NAVAIDs

4–2–1. POLICY

a. Site locations for the establishment or relocation of NAVAIDs require approval by the appropriate Technical Operations service area offices, FPO, service area offices, Airports, and Flight Standards Divisions.

b. The Technical Operations service area offices' airspace focal point shall request the appropriate service area office to initiate a nonrulemaking study of the selected site.

c. The Technical Operations service area office must concur with the site location before the request for study is made.

4–2–2. COORDINATION

The service area office shall coordinate the proposed site with AIM, FPO, Flight Standards and Airports Divisions, as well as affected air traffic control facilities. The NAVAIDs purpose must be considered and, as appropriate, a preliminary decision made regarding:

a. The establishment of instrument procedures;

b. Airways/routes;

c. Designation of controlled airspace;

d. The ability to provide essential air traffic services;

e. The effect of the site on facility performance; and

f. The effect on the location or configuration of an airport. If all offices agree with the selected site, then the service area office should circularize the proposal, as determined necessary, for comment from the aviation community.

4–2–3. INFORMAL AIRSPACE MEETINGS

Convene an informal airspace meeting in accordance with the procedures detailed in chapter 2, section 6, of this Order. Informal airspace meetings may not be practical for time critical changes or in those cases where delay will adversely affect aviation safety. At such meetings, agency representatives should explain the planned use of the NAVAIDs, including instrument approaches or other terminal procedures or airspace planning, and any action will be subsequently handled by airspace rulemaking procedures. However, care should be taken that the agency's ex parte policy is not violated during these informal proceedings.

4–2–4. APPROVAL AUTHORITY

The service area office is responsible for coordination and final approval or disapproval of sites selected for installation of en route NAVAIDs. The regional FPO is responsible for coordination and final approval or disapproval of sites selected for installation of terminal NAVAIDs. The approval or disapproval determination shall be issued by memorandum to the appropriate Technical Operations service area office. Any disapproval issued shall include the reasons why a site is not acceptable. Agency personnel are reminded that en route site approval does not constitute approval of instrument approach procedures or controlled airspace planning to be processed under rulemaking action.

4–2–5. DISTRIBUTION

The service area office shall distribute a copy of the approval or disapproval determination to all FAA offices that participated in the site study and to ARN–1.

4–2–6. COMMISSIONING DATE

The responsible Technical Operations service area office is authorized to proceed with installation of the NAVAID upon receipt of the site approval. As soon as possible thereafter, an estimated date of commissioning shall be agreed upon by the service area office, FPO, Technical Operations service area office, and any other concerned FAA offices. To the extent possible, the date of commissioning shall coincide with the associated aeronautical charting dates.

4–2–7. PROCESSING REGULATORY ACTIONS

The FPO shall process the necessary instrument procedures and the service area office shall process airspace rulemaking actions to be effective with the associated aeronautical charting date.

Section 3. Military NAVAIDs

4–3–1. POLICY

Military NAVAID proposals may affect airspace or airport utilization and the availability of interference protected frequencies. Consequently, military proposals involving the establishment or relocation of military NAVAIDs are forwarded to the service area office for nonrulemaking studies. Such proposals should contain the following information:

a. Site of the NAVAIDs using geographical coordinates to the nearest hundredth of a second.

b. Equipment type.

c. Power output.

d. Frequency range.

e. Any other pertinent information.

4–3–2. COORDINATION WITH MILITARY

The service area office is authorized to coordinate with the originating military organization to obtain any additional information needed for the nonrulemaking study.

4–3–3. EVALUATION BY TECHNICAL OPERATIONS SERVICES OFFICE

The regional Frequency Management Office shall evaluate the military proposal to determine frequency availability and frequency protection. This evaluation shall be provided to the responsible service area office.

4–3–4. CIRCULARIZATION

If the frequency evaluation report is favorable, the service area office shall complete coordination with the appropriate Airports, Flight Standards, and other Technical Operations service area offices, and the FPO. If appropriate, circularize the proposal to user groups and other interested persons for comment. If the public comments indicate further discussion is warranted, then consideration should be given to holding an informal airspace meeting to discuss the proposal.

4–3–5. DETERMINATION RESPONSIBILITY

The responsibility to determine the acceptability of the military proposal is delegated to the service area office after coordination with the FPO, Technical Operations service area office, Flight Standards, and Airports Divisions. Any problems with, or objections to, the proposal shall be resolved at the regional/service area office level prior to issuance of the decision. The determination shall be issued in memorandum form stating that the FAA has “no objections” or “objects” to the installation of the NAVAID. Airports Divisions are cautioned to ensure that site locations for the establishment or relocation of NAVAIDs on obligated airports are in accordance with FAA approved Airport Layout Plans. Any restrictions or reasons why the proposal is objectionable shall be clearly set forth in the memorandum.

4–3–6. NOTIFICATION AND DISTRIBUTION

The appropriate service area office shall normally address the determination to the military organization that originated the proposal. When the request for the study originated from FAA headquarters, then the determination should be directed to the office requesting the study or relayed to the Military Command through FAA/Department of Defense (DOD) coordination procedures. Forward copies of the memorandum to ARN-1, the Technical Operations ATC Spectrum Engineering Services, Spectrum Assignment and Engineering Services, and those regional/service area offices that participated in the study.

Section 4. Non–Federal NAVAIDs

4–4–1. POLICY

The FAA's role regarding non–Federal NAVAIDs is to assist sponsors proposing to establish or relocate such aids by providing technical planning, minimum equipment and operational standards, and processing requirements for such proposals. The operation of non–Federal navigation facilities involving the approval of Instrument Flight Rules (IFR) and air traffic control procedures shall be in accordance with minimum requirements set forth in Part 171 and the FAA's 6700 series of Orders.

4–4–2. REQUEST FOR ESTABLISHMENT

The proponent requesting the establishment or relocation of a non–Federal NAVAIDs, as defined in Part 171, should provide the following information:

a. The site of the NAVAIDs using geographical coordinates to the nearest hundredth second.

b. Equipment type.

c. Power output.

d. Frequency range.

e. Any other pertinent information.

4–4–3. RESPONSIBILITY

Requests received for establishment of a non–Federal NAVAID shall be forwarded to the appropriate Technical Operations service area office for initial processing.

a. Technical Operations Services, Technical Operations service area offices are responsible for the overall regional/service area office coordination with the sponsor. Advice should be provided to sponsors on the minimum equipment and operational performance standards, siting requirements, and the conditions prerequisite to use of the navigational facility for any IFR procedure. Additionally:

1. Evaluate the proposal to determine frequency availability, the potential interference effects on existing/planned electronic and visual aids to navigation, and possible electromagnetic interference to radio communications frequencies.

2. Forward the proposal to the service area office, FPO and the Airports Divisions for appropriate evaluation and nonrulemaking action.

3. Request the sponsor to submit any additional information needed for the study.

4. Request the FPO to complete the necessary processing of the proposed IFR procedure.

5. Coordinate with Flight Inspection Operations office as necessary to complete appropriate flight inspection.

b. Air traffic. If the sponsor has requested establishment and approval of an IFR procedure predicated on the proposed facility, the service area office shall:

1. Ensure that the necessary ATC communications can be satisfied.

2. Request the appropriate Airports, Technical Operations service area office, and Flight Standards Divisions, and FPO to study the proposal.

3. Examine the proposal regarding utilization of the airspace, aeronautical operations, and air traffic control procedures.

c. Airports Programs. The appropriate Airports Division shall evaluate the proposal in reference to existing airports and planned airport development on file with the agency.

d. Flight Standards. The appropriate Flight Standards Office is the focal point for studying the effect of the proposed non–Federal NAVAID on existing or proposed VFR operations.

e. FPO. The appropriate FPO is the focal point for studying the effect of the proposed non–Federal NAVAID on existing or proposed IFR operations. In developing IFR procedures, FPO personnel are responsible for:

1. Determining whether their respective requirements outlined in part 171 and Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), have been satisfied.

2. Advising the appropriate air traffic office of the results of its study.

3. Initiating development of required IFR procedures.

4–4–4. EXTERNAL COORDINATION

The appropriate service area office shall circularize the proposal to all interested persons for comment if the Technical Operations service area office, Airports Division, and FPOs responses are favorable. Any internal FAA problem with the proposal shall be resolved prior to the circularization.

4–4–5. INFORMAL AIRSPACE MEETING

When public comments indicate that further discussion is warranted, consideration should be given to scheduling an informal airspace meeting to solicit additional input on the proposal.

4–4–6. APPROVAL AND NOTIFICATION PROCESS

The appropriate service area office shall, based upon the results of the study, determine whether there are any objections to the installation or relocation of the NAVAID and so advise the originating Technical Operations service area office. The Technical Operations service area office shall then forward the determination approval or disapproval to the sponsor. If the determination is favorable, the service area office shall initiate the airspace regulatory action necessary for the IFR procedure.

4–4–7. DISTRIBUTION

Copies of the determination issued to the sponsor shall be forwarded to ARN–1, Spectrum Assignment and Engineering Services, and to the Support Services Branch of the FCC.

Section 5. Discontinuance of FAA NAVAIDs

4–5–1. POLICY

Operational requirements, air traffic demand, and budgetary limitations are normally the basis for the retention or decommissioning of FAA NAVAIDs. Since economics are a necessary consideration, a NAVAID becomes a candidate for decommissioning when the activity level, or factors other than activity level on which it may have been justified, are eliminated or changed significantly. Discontinuance criteria are contained in the appropriate Airway Planning Standards (Orders 7031.2, Terminal, and 7031.3, En Route). Any discontinuance should be in accordance with the Federal Radio Navigation Plan.

4–5–2. RESPONSIBILITIES

a. En Route and Oceanic Services and Terminal Services shall ensure that FAA–funded NAVAIDs are allocated so that they benefit the greatest number of users consistent with safety and operational efficiency. The service area office shall also evaluate the need for the retention of en route NAVAIDs and recommend candidates for decommissioning when their need can no longer be justified.

b. The FPO shall ensure that FAA–funded NAVAIDs are allocated so that they benefit the greatest number of users consistent with safety and operational efficiency. The FPO shall also evaluate the need for the retention of terminal NAVAIDs and recommend candidates for decommissioning when their need can no longer be justified.

c. ARN–1 shall recommend navigational facilities to the Director of System Operations Airspace and AIM as candidates for decommissioning when their function can be equally or better provided by more economically efficient alternatives.

4–5–3. COORDINATION OF PROPOSALS

A navigational facility selected for decommissioning shall be the subject of a nonrulemaking study. The appropriate service area office shall coordinate the proposed action with personnel from the Technical Operations service area office, FPO, Airports Division, Flight Standards Division, and the regional military representative. If all concur, the service area office shall circularize the proposed decommissioning to all interested persons for comment. Include in the circularization a brief description of the decommissioning effect on airspace and instrument procedures.

NOTE–
Advanced coordination should be accomplished with Transport Canada regarding facilities that would affect transborder operations. This coordination may be handled through headquarters, regional/service area offices, or direct facility to facility.

4–5–4. OBTAINING APPROVAL

In accordance with Order 1100.1, FAA Organization – Policies and Standards, Paragraph 15, certain closings, consolidation, and decommissioning may require approval of the Administrator. Upon completion of the nonrulemaking study, if applicable, the appropriate regional/service area office shall forward the study with a summary of comments and a recommendation to the Administrator through the concerned office or service.

4–5–5. DISCONTINUANCE ACTION

Delay initiating steps for discontinuance of a navigational facility that requires approval from the Office of the Administrator until 10 working days after receipt of such approval.

4–5–6. CANCELLATION OF CONTROLLED AIRSPACE AND INSTRUMENT PROCEDURES

The appropriate air traffic office shall ensure that the designated airspace based on the NAVAID is revoked or modified. The Flight Procedures Office shall coordinate the cancellation of any instrument approach procedure predicated on that NAVAID before the decommissioning date.

4–5–7. DECOMMISSIONING DATE

To the extent possible, the date of decommissioning should coincide with the associated aeronautical charting dates.

4–5–8. DISCONTINUANCE OF NAVAIDs INCLUDED IN ICAO PLANS

To meet the operational requirements of United States and foreign aircraft, certain United States NAVAIDs are included in the Caribbean, North Atlantic, and Pacific Regional Air Navigation Plans of the International Civil Aviation Organization (ICAO). By international agreement, amendments to these plans cannot be made until the necessary coordination is effected through ICAO with all interested contracting states and international organizations.

4–5–9. INTERNATIONAL STAFF NOTIFICATION

The Operations Planning, International, Operations and ATM Services, is the liaison on international issues between the FAA and U.S. Government elements and international organizations. Before action is initiated to discontinue any NAVAID included in an ICAO Air Navigation Plan, the appropriate air traffic office shall notify Operations and ATM Services of the proposed action. Notification shall be made at least 90 days before the proposed effective date.

Section 6. Discontinuance of Military and Non–Federal NAVAIDs

4–6–1. POLICY

When notice of discontinuance of a military, other government, or non–Federal NAVAID is received, it shall be forwarded to the appropriate service area office for processing.

4–6–2. RESPONSIBILITY

Upon receipt of the notice, the responsible service area office shall, in conjunction with the Technical Operations service area office, Airports Division, and the FPO, determine if:

a. The NAVAID forms part of the Federal airway/route system.

b. An airspace designation is predicated upon the NAVAID.

c. The NAVAID is used for a published civil instrument procedure.

4–6–3. ACTION PRIOR TO DISCONTINUANCE

a. If none of the conditions in paragraph 4–6–2 exist, the air traffic office shall notify user groups and other interested persons of the name of the facility, its location, and the date of discontinuance without resorting to the nonrulemaking process.

b. If any of the conditions in paragraph 4–6–2 exist, the appropriate air traffic office shall:

1. Initiate the nonrulemaking process by circularizing a proposal to user groups and other interested persons for comment.

2. Coordinate with Technical Operations Services to determine feasibility of FAA takeover.

3. If discontinuance of the NAVAID is to be pursued, ensure that the airspace designated on the NAVAID is revoked or modified and that instrument procedures predicated on that NAVAID are canceled before the effective date of discontinuance.

4–6–4. DISCONTINUANCE OF NAVAIDs INCLUDED IN ICAO PLANS

Refer to paragraphs 4–5–8 and 4–5–9 of this order for requirements applicable to the discontinuance of NAVAIDs that are referenced in ICAO Air Navigation Plans.

Part 2. Objects Affecting Navigable Airspace

Chapter 5. Basic

Section 1. General

5–1–1. PURPOSE

The guidelines, procedures, and criteria detailed in this part supplement those contained in part 77, Objects Affecting Navigable Airspace, and address the following:

a. The performance of functions relating to the processing of notices of proposed construction or alteration.

b. The conduct of aeronautical studies of any existing or proposed object affecting the navigable airspace.

c. The conduct of aeronautical studies of the electromagnetic radiation effect of proposed or existing objects on the operation of air navigation facilities.

d. The conduct of aeronautical studies of the physical effect of proposed or existing objects on the line-of-sight view of all runways, taxiways, and traffic pattern areas from the airport traffic control tower.

e. The conduct of aeronautical studies regarding the physical effect of proposed or existing objects on airport approach lighting systems.

5–1–2. AUTHORITY

a. The FAA's authority to promote the safe and efficient use of the navigable airspace, whether concerning existing or proposed structures, is predominantly derived from Title 49 U.S.C. Section 44718 (Section 44718). It should be noted however, that Section 44718 does not provide specific authority for the FAA to regulate or control how land (real property) may be used in regard to structures that may penetrate navigable airspace.

b. Title 14 of the Code of Federal Regulations (14 CFR) part 77, Objects Affecting Navigable Airspace, was adopted to establish notice standards for proposed construction or alteration that would protect aircraft from encountering unexpected structures.

5–1–3. POLICY

The prime objective of the FAA in administering Section 44718 and 14 CFR part 77 in conducting obstruction evaluation studies is to ensure the safety of air navigation and efficient utilization of navigable airspace by aircraft.

5–1–4. SCOPE

a. 49 U.S.C. Sections 40103 and 44718, and part 77 apply only to structures located within any state, territory, or possession of the United States, within the District of Columbia, or within territorial waters (12 NM) surrounding such states, territories, or possessions.

b. Structures that are subject to study requirements associated with 49 U.S.C. Section 40103, 44718, and part 77 may be man made (including mobile structures) or of natural growth and terrain whether existing, proposed, permanent, or temporary.

5–1–5. RESPONSIBILITY

The responsibility for managing the obstruction evaluation program for those structures that may affect the navigable airspace is delegated to the Obstruction Evaluation Service (OES).

5–1–6. SENSITIVE CASES REFERRED TO WASHINGTON

The OES Manager, or designated representative, shall brief sensitive or high profile cases to the Manager, Airspace and Rules before issuing, revising, or extending the determination.

5–1–7. AUTOMATION

a. To the extent practicable, the obstruction evaluation/airport airspace analysis (OE/AAA) automated programs shall be used in lieu of manual processing.

b. Automated obstruction evaluation (OE) correspondence forms shall be used.

5–1–8. OE/AAA AUTOMATED SYSTEM AIRPORT/RUNWAY DATABASE

a. To ensure the automated part 77 obstruction criteria and the military part 77 obstruction criteria conflict analysis programs consider all known plans on file, the regional Airports Division is responsible for maintaining the automated airport/runway database.

1. Either the Airports Division or the Airports District Office shall enter the ultimate airport reference point for any proposed public–use or military airport into the database within two working days from receipt of the information.

2. Either the Airports Division or the Airports District Office shall enter any change of airport status from private–use to public–use into the database within two working days from receipt of the information. As workload permits, information on private–use airports shall also be entered into the database.

3. Either the Airports Division or the Airports District Office shall enter all other public–use and military airport/runway information in the database within 10 working days from receipt of the information.

b. Airports shall resolve and correct any discrepancies that have been identified in the automated airport/runway database.

c. Any required corrections shall be forwarded to AIM.

5–1–9. TRAINING

Employees involved with the OE/AAA program shall attend the Basic Obstruction Evaluation and Airport/Airspace Analysis Course offered by the FAA Academy.

5–1–10. RELEASE OF INFORMATION

Requests from the public for access to or copies of information contained in obstruction evaluation study files are occasionally made to the regional offices. Such requests shall be processed in accordance with the provisions of the Freedom of Information Act (5 U.S.C. 552), as implemented by part 7 of the Department of Transportation Regulations and Order 1270.1, Freedom of Information Act Program. Information should not be released on any case until a final determination has been made.

Section 2. Notices

5–2–1. REQUIREMENTS

a. Requirements for notifying the FAA of proposed construction or alteration are contained in Sections 77.13 (see FIG 5–2–1, FIG 5–2–2, FIG 5–2–3, and FIG 5–2–4) and 77.15. Advisory Circular 70/7460–2, Proposed Construction or Alteration of Objects that May Affect the Navigable Airspace, provides the public guidance on the application of these notice requirements.

b. No notice is required, as specified in Section 77.15(c), for certain equipment installations "of a type approved by the Administrator" when the equipment is installed in accordance with the established FAA siting criteria. Equipment installed in compliance with the siting criteria without waivers and which do not affect other runways do not have to be considered under part 77 criteria.

c. Examples of equipment not requiring notice are:

1. Wind equipment (except supplemental wind cones).

2. Transmissometers (Runway Visibility Value (RVV) and Runway Visual Range (RVR) equipment).

3. Instrument Landing Systems (ILS).

4. Visual Glide Slope Indicators (VGSI).

5–2–2. PROCESSING

a. Air traffic personnel shall administer obstruction evaluation studies with the coordinated assistance of Airports, Technical Operations Services, Frequency Management, Flight Standards, Flight Procedures Office, and military representatives.

b. The OES shall process notices received under the provisions of Sections 44718 and part 77 as OE cases. The exception to this is notices received under those provisions that pertain to structures located on a public–use airport which shall be processed by the Airports Division as a nonrulemaking airport (NRA) case (defined in part 3, Airport Airspace Analysis, of this order).

c. However, if the notice pertains to a temporary structure or a structure that radiates a frequency, the Airports Division may request that air traffic process the notice as an OE case.

d. If notice is required by any other FAA regulation, the appropriate division shall process the notice under that regulation.

5–2–3. FAA FORMS

Standard FAA forms are established for use in conducting obstruction evaluation studies. The standard FAA forms are:

a. FAA FORM 7460–1, Notice of Proposed Construction or Alteration (OE notice).

b. FAA FORM 7460–2, Notice of Actual Construction or Alteration (Supplemental Notice).

FIG 5-2-1

NOTICE OF CONSTRUCTION OR ALTERATION

§77.13(a)(1) – A notice is required for any proposed construction or alteration that would be more then 200 feet in height above the ground level at its site.

§77.13(a)(1) – Notice Requirement Anywhere

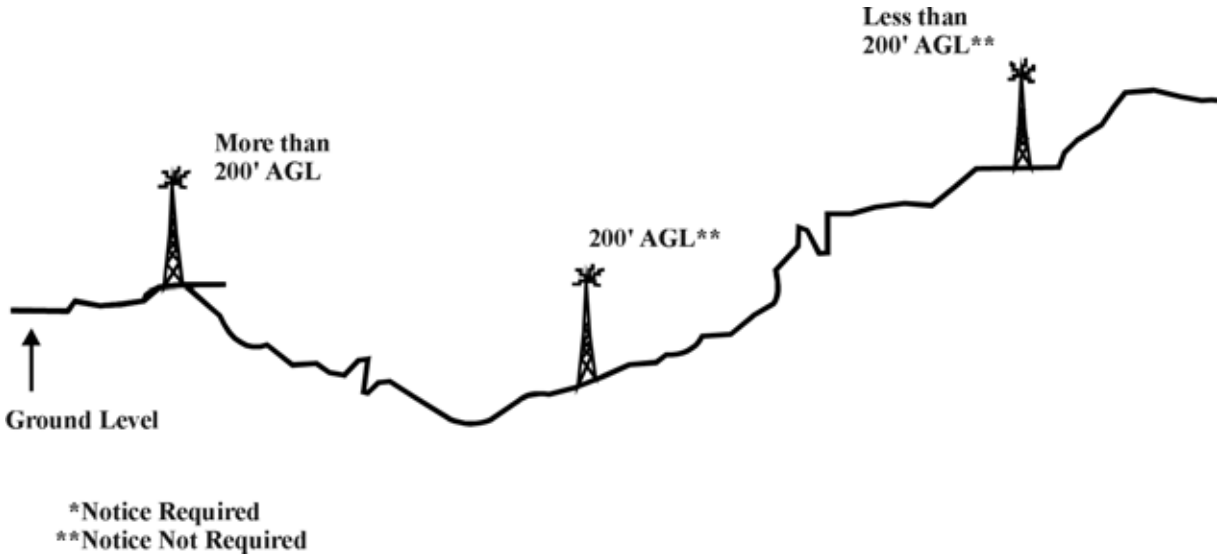
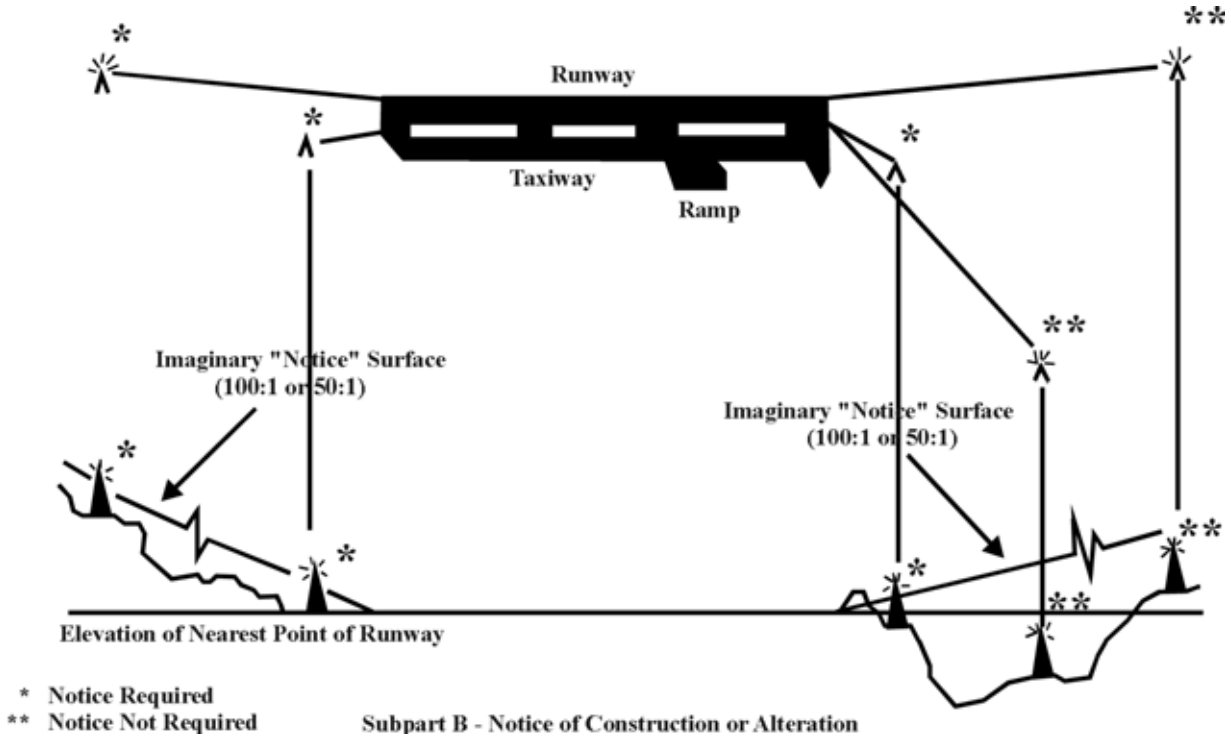


FIG 5-2-2

NOTICE REQUIREMENT RELATED TO AIRPORTS



NOTE:
Each airport must be available for public use and listed in the Airport/Facility Directory or in either the Alaska or Pacific Chart Supplement; under construction and the subject of a notice or proposal on file with FAA, and except for Military airports, it is clearly indicated that airport will be available for public use, or op erated by an armed force of the United States. (Heliports and sea plane bases without specified boundaries are excludes.)

§77.13(a)(2) – A notice is required for any proposed construction or alteration that would be of greater height than an imaginary surface extending outward and upward at one of the following slopes–

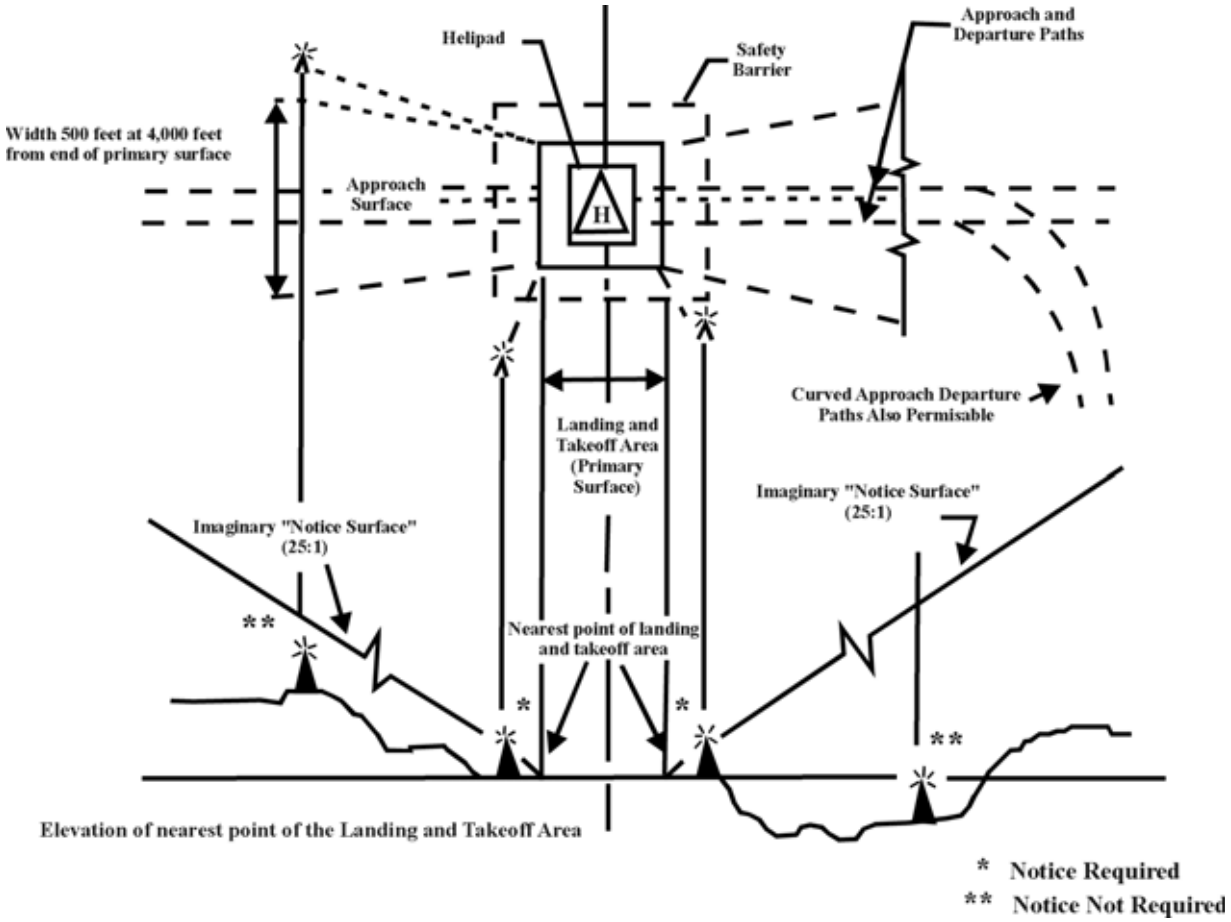
(i) 100 to 1 for a horizontal distance of 20,000 feet from the nearest runway of each airport with at least one runway more than 3,200 feet in actual length.

(ii) 50 to 1 for a horizontal distance of 10,000 feet from the nearest point of the nearest runway of each airport with its longest runway no more than 3,200 feet in actual length.

(Note: §77.13(a)(5) requires notice of any proposed construction or alteration on each airport, including heliports)

FIG 5-2-3

NOTICE REQUIREMENT RELATED TO HELIPORTS



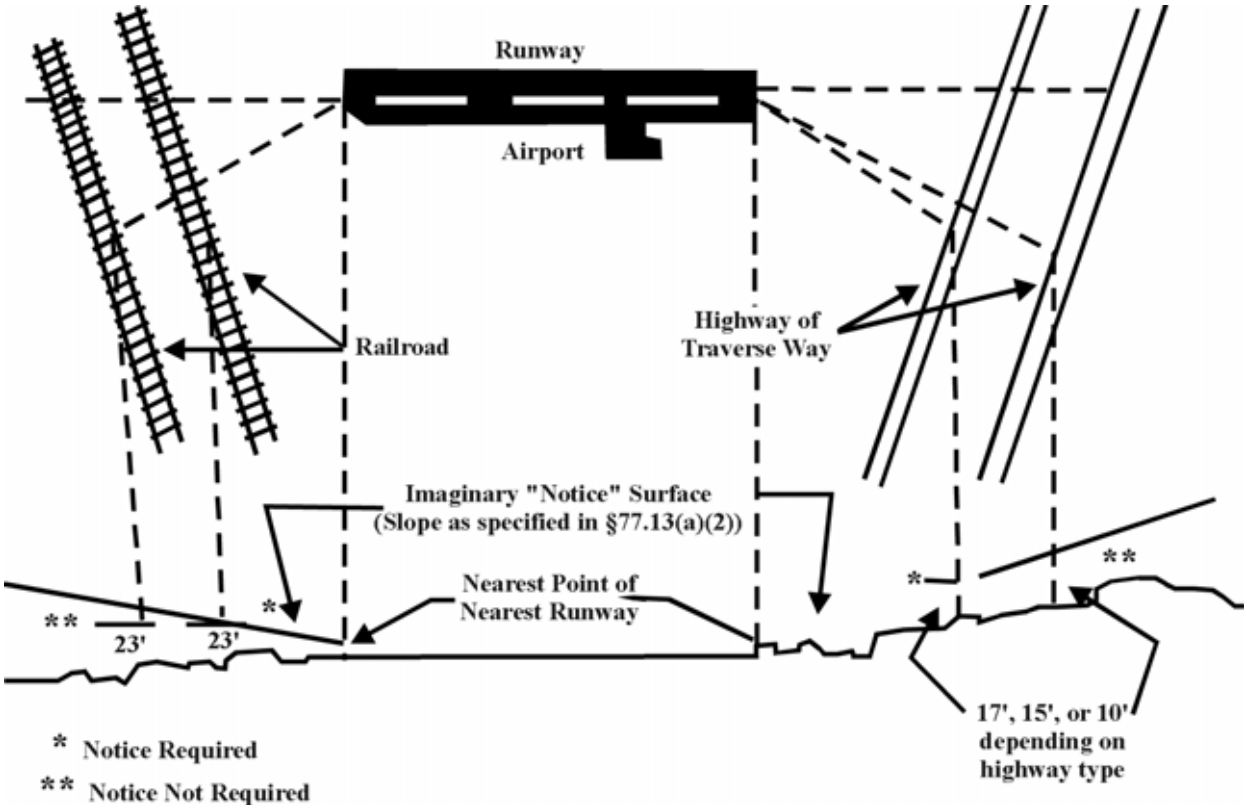
<u>Subpart B – Notice of Construction or Alteration</u>

§77.13(a)(2) – A notice is required for any proposed construction or alternation that would be of greater height than an imaginary surface extending outward and upward at the following slope:

(iii) 25 to 1 for a horizontal distance of 5,000 feet from the nearest landing and takeoff area of each heliport, available for public use listed in the Airport/Facility Directory or in either the Alaska or Pacific Chart Supplement; is under construction and is the subject of a notice of proposal on file with the FAA and except for military heliports, it is clearly indicated that heliport will be available for public use, or operated by a Federal Military agency.

FIG 5-2-4

NOTICE REQUIREMENT RELATED TO TRAVERSE WAYS



Subpart B – Notice of Construction or Alteration

§77.13(a)(3) – Notice is required for any proposed construction or alternation of any highway, railroad, or other traverse way for mobile objects if of greater height than the standards of §77.13(a)(1) or (2) after their height has been adjusted upward by one of the following:

17 Feet for an Interstate highway that is part of National System of Military and Interstate Highways,
15 feet for any other public roadway,
10 feet or the height mobile object that would normally traverse the road, whichever is greater, for a private road.
23 feet for a railroad.
For a waterway or any other traverse way, an amount equal to the height of the highest mobile object that would normally use it.

Chapter 6. Aeronautical Studies

Section 1. General

6–1–1. POLICY

An obstruction evaluation study shall be conducted for all complete OE notices received.

6–1–2. AERONAUTICAL STUDY NUMBERS

For ease of use of the OE/AAA automated obstruction programs and correspondence, a separate aeronautical study number shall be assigned and a separate obstruction evaluation study shall be conducted for:

a. Each site (location), structure (height), or sponsor.

1. At times, a single sponsor may file notice for multiple sites. Each site shall be assigned a separate aeronautical study number and a separate obstruction evaluation study shall be conducted.

2. At times, a single FAA Form 7460–1 may be received for a single project that covers multiple structures such as an antenna array, windmill clusters, housing development, cluster of buildings, utility poles, or catenaries. Each structure shall be assigned a separate aeronautical study number and a separate obstruction evaluation study shall be conducted. However, a single determination addressing all of the structures may be issued.

3. At times, multiple sponsors may be competing for the same FCC license in the same market area and may file notice for the same communications band/frequency/channel using the same effective radiated power at the same location and height. A separate FAA Form 7460–1 should be submitted for each sponsor with information specific to the structure and sponsor. Separate aeronautical study numbers shall be assigned and separate obstruction evaluation studies conducted.

NOTE–
A single structure with multiple points of interest, such as a building, may be processed as a single obstruction evaluation study provided that all information including items such as maps, blue prints, elevations, etc., are coordinated with each division for evaluation. In the automated obstruction evaluation case screen, the highest site elevation, or finished floor elevation should be recorded as the site elevation. The tallest point on the structure should be recorded as the above ground elevation, and the closest point of the structure to the closest runway should be recorded as the latitude/longitude. This information would be considered worst case and should be used for recording purposes. For analysis purposes, it may be necessary to use specific information for each point of interest.

b. Changes to marking/lighting recommendations.

c. Revisions or corrections to coordinates or elevations after the study has been verified and made available for evaluation by other FAA divisions. This would include revisions or corrections to a notice received from the sponsor; revisions or corrections made necessary by the FAA due to mistakes; revisions or corrections as a result of “as–built” surveys; and revisions or corrections due to receipt of supplemental notice.

d. Aeronautical studies that supersede previous studies shall include a reference to the previous aeronautical study number.

6–1–3. STUDY OF EXISTING STRUCTURES

a. The authorities for conducting aeronautical studies of existing structures is contained in Section 40103, Section 44718, and part 77. These studies are conducted when deemed necessary by the FAA to determine the physical or electromagnetic effect on the use of the navigable airspace and air navigation facilities. Obstruction evaluation studies may be initiated as a result of:

1. Information received or a situation observed (e.g., structures reported by flight inspection crews).

2. A request for a study from another FAA component, another agency, or a person with a valid interest in the matter.

3. A notice received under the provisions of part 77 for proposed construction or alteration that

has already been started and, therefore, must be considered an existing structure.

4. A structure blocking all or portions of runways, taxiways, or traffic patterns from being seen from an airport traffic control tower.

5. Other situations for which such an aeronautical study would be appropriate.

b. Situations that may require obstruction evaluation of existing structures include, but are not limited to:

1. Determining the effect of a change in aeronautical procedures.

2. Determining the effect of a proposed runway construction, extension, or realignment.

3. Determining the need for providing technical assistance in the design and development of airports.

4. Determining whether the FAA should recommend that an existing structure be altered or removed.

5. Determining whether the FAA should recommend that an existing structure be made conspicuous by marking and/or lighting in accordance with current standards.

6. Determining whether the marking and/or lighting display on an existing structure can be removed or reduced without adversely affecting aviation safety or should be increased to more effectively make its presence known to airmen.

7. Determining whether an existing structure has an electromagnetic effect upon an air navigation or communications facility, or obstructs the required line of sight from an airport traffic control tower.

8. Providing recommendations to FCC concerning dismantling abandoned antenna structures.

9. Providing technical assistance or information to a person, or government organization (Federal, state or local) expressing an interest in the structure and the FAA's responsibility associated with the structure's effect on the safe and efficient use of the navigable airspace.

c. Conduct an aeronautical study for an existing structure in the same manner as proposed structures except as specifically noted in this order.

6–1–4. PROPOSALS UNDER CONSTRUCTION

A proposal for which construction has already started shall be studied as an existing structure. Construction is considered to have started if actual structural work has begun such as the laying of a foundation but not including excavation.

6–1–5. STRUCTURES EXCEEDING 2,000 FEET

Any proposed structure that would exceed a height of 2,000 feet above ground is presumed to have a substantial adverse effect upon the safe and efficient use of navigable airspace and shall be determined to be a hazard to air navigation unless the sponsor, at the time of filing, makes a clear and compelling showing to the contrary.

a. Notices proposing a structure greater than 2,000 feet in height above the ground that are accompanied with the detailed graphic required in Section 77.17(c) shall be processed in the normal manner with one exception. The Obstruction Evaluation Services (OES) shall advise the office of Airspace and Rules when an aeronautical study for a proposed structure exceeding 2,000 feet is being conducted.

b. Notices received without the detailed graphic shall be responded to with a determination stating that the proposed structure is presumed to be, inherently, a hazard to air navigation and the sponsor has the burden of overcoming this presumption in accordance with Section 77.17(c).

6–1–6. FEASIBILITY STUDIES

a. A feasibility study is a limited aeronautical review based on very broad, estimated, or general information supplied for the structure. The study usually addresses only certain issues; e.g., feasibility of height at a general location, feasibility of frequency and power at a general location.

b. Requests for feasibility studies should be accommodated to the extent existing resources and workloads allow. The need for coordination with other divisions will be based on the type of information supplied for the structure.

c. A feasibility study shall result in a report rather than an official determination.

6–1–7. TOWER OWNERSHIP

While the FAA must maintain a means of contacting parties responsible for filing FAA Form 7460–2, it is not responsible for tracking changes in tower ownership. The FCC antenna structure registration program is specifically intended to register and maintain current files with regards to ownership of antenna structures. Therefore, if the FAA receives ownership changes it shall not make those corrections to issued determinations. However, the ownership change should be noted in the automated and/or manual case file. Additionally, request that the sponsor notify the FCC, and, for assurance, forward a copy of the change to the FCC.

6–1–8. INFORMAL AIRSPACE MEETINGS

Informal airspace meetings may be held with interested parties to discuss the obstruction evaluation study and to gather additional facts or information relevant to the study.

Section 2. Initial Processing/Verification

6–2–1. VERIFICATION/E–FILING

a. The OES shall verify each obstruction evaluation case to ensure that the submitted site elevation and coordinates appear to be correct and that all necessary information has been included. Verification shall include, as a minimum, the following actions:

1. Compare the submitted site depiction to the submitted coordinates when plotted.

2. Compare the submitted site elevation to the ground contour elevations in the area of the submitted coordinates when plotted.

3. If a survey is submitted, compare the information contained on the survey, with the submitted information and the site as plotted.

4. If the submission involves an existing structure, compare the submitted information to the digital obstacle file, with the previous aeronautical study (if any), and possibly the FCC tower registration information.

5. Ensure that the submission provides a complete description and clearly explains the reason for submission. The submission should include sufficient information to allow each division/service area office to accomplish its specialized portion of the obstruction evaluation.

6. If the submission involves a structure that would normally radiate frequencies, ensure that the frequencies and effective radiated power are included.

7. If the submission involves a structure over 200 feet AGL, ensure marking and/or lighting preferences are part of the submission. Sponsors shall be required to specifically request the type of marking and/or lighting they desire when submitting FAA Form 7460–1. They should be encouraged to become familiar with the different type of lighting systems available. The sponsor should obtain information about these systems from the manufacturers. The sponsor can then determine which system best meets his/her needs based on purchase, installation, and maintenance costs. The FAA will consider the sponsor's desired marking and/or lighting system when conducting the aeronautical study.

b. If the submission contains errors, discrepancies, or lack of information, the OES shall request resolution by the sponsor and/or the sponsor's representative. If the sponsor does not resolve the issues within 30 days of the written request, the OES may terminate the aeronautical study.

c. If the submission passes verification and there are no unresolved issues, initiate evaluation by other divisions by changing the status in the OE/AAA automation program to "WRK."

NOTE–
It is imperative that all data in the automated OE case file is reviewed and verified for accuracy before proceeding to "Division/Service Area Office Coordination." Any correction or change to the heights and/or coordinates after the divisions/service area offices begin evaluation shall require initiating a new aeronautical study.

6–2–2. VERIFICATION/PAPER–FILING

a. Prior to assigning an aeronautical study into the OE/AAA automation program, review the submission for completeness. The following information should be considered:

1. Ground elevation of the site (site elevation).

2. Above ground elevation of the structure (AGL).

3. Latitude and longitude of the structure.

4. A 7.5–Minute U.S.G.S. Topographic Map (Quadrangle Chart) depicting the site of the structure.

b. If the submission package contains all of the required information, assign an aeronautical study number and initiate an obstruction evaluation study. Exceptions may be made for emergency situations in accordance with 77.17(d).

c. If the submission package does not contain the required information, the entire package may be returned to the sponsor with a clear explanation and a request for the sponsor to provide the information necessary to initiate the study.

d. For submission packages pertaining to structures that may be time critical, an effort should be made to obtain the required information by telephone. Information received by telephone conversation should be added to case notes. If

written confirmation is received from the sponsor, it should be faxed/scanned into the file.

6–2–3. DIVISION COORDINATION

Each division described in paragraph 5–2–2 shall evaluate all notices of proposed construction or alteration received regardless of whether notice was required under part 77, except as follows:

NOTE–
For the purpose of division/service area office coordination, Frequency Management (FM) will be considered separately in addition to Technical Operations Services. It should also be noted that FM responds separately.

a. Side Mounted Non–Microwave Antennas. Airports, Technical Operations Services, Airway Facilities and the military normally are not required to review OE cases that involve the addition of antennas to a previously studied structure that does not increase in overall height of the structure. FM will continue to evaluate these cases. The FAA must have previously studied the structure and the data of the present case and it must exactly match the data of the previously studied case.

b. Side Mounted Microwave Dishes. Airports, Flight Standards, and the military normally shall not be required to review OE cases that involve the addition of microwave dishes to a structure that does not increase in overall height. FM will continue to evaluate these cases. The FAA must have previously studied the structure and the data of the present case and it must exactly match the data of the previously studied case.

c. Marking and Lighting Changes. Airports, Flight Standards, Flight Procedures, FM, Technical Operations Services, and the military normally are not required to review OE cases which involve only marking and lighting changes. The FAA must have previously studied the structure and the data of the present case and it must exactly match the data of the prior case.

d. Temporary Structures. Airports, Flight Standards, FM, and the military normally shall not be required to review OE cases which involve temporary structures of a 6 month or less duration. All appropriate divisions/service area offices shall review temporary structures of a longer duration.

e. Flight Procedures normally shall not be required to review OE cases that are beyond 14 NM from the airport reference point of the nearest public–use or military airport and the height of the structure is not more than 200 feet above ground level.

f. Airports normally shall not be required to review OE cases that are beyond 3 NM from the airport reference point of the nearest public–use or military airport.

g. Flight Standards shall review OE cases that are circularized for public comment.

h. FM normally shall only be required to review OE cases, that involve transmitting frequencies.

6–2–4. ADDITIONAL COORDINATION

Air traffic may request any division to review an OE case on a case–by–case basis. For instance, Flight Standards should be requested to review a marking and lighting change, the military should be requested to review a temporary structure if the closest airport is a military base, or FM should be requested to review a temporary structure if it radiates a frequency.

Section 3. Identifying/Evaluating Aeronautical Effect

6–3–1. POLICY

a. The prime objective of the FAA in conducting OE studies is to ensure the safety of air navigation, and the efficient utilization of navigable airspace by aircraft. There are many demands being placed on the use of the navigable airspace. However, when conflicts arise concerning a structure being studied, the FAA emphasizes the need for conserving the navigable airspace for aircraft; preserving the integrity of the national airspace system; and protecting air navigation facilities from either electromagnetic or physical encroachments that would preclude normal operation.

b. In the case of such a conflicting demand for the airspace by a proposed construction or alteration, the first consideration should be given to altering the proposal.

c. In the case of an existing structure, first consideration should be given to adjusting the aviation procedures to accommodate the structure. This does not preclude issuing a "Determination Of Hazard To Air Navigation" on an existing structure when the needed adjustment of aviation procedures could not be accomplished without a substantial adverse effect on aeronautical operations. In all cases, consideration should be given to all known plans on file received by the end of the public comment period or before issuance of a determination if the case was not circularized.

6–3–2. SCOPE

Part 77 establishes standards for determining obstructions to air navigation. A structure that exceeds one or more of these standards is presumed to be a hazard to air navigation unless the obstruction evaluation study determines otherwise. An obstruction evaluation study shall identify:

a. The effect the proposal would have:

1. On existing and proposed public–use and military airports and/or aeronautical facilities.

2. On existing and proposed visual flight rule (VFR)/instrument flight rule (IFR) aeronautical departure, arrival and en route operations, procedures, and minimum flight altitudes.

3. Regarding physical, electromagnetic, or line–of–sight interference on existing or proposed air navigation, communications, radar, and control systems facilities.

4. On airport capacity, as well as the cumulative impact resulting from the structure when combined with the impact of other existing or proposed structures.

b. Whether marking and/or lighting is necessary.

6–3–3. DETERMINING ADVERSE EFFECT

A structure is considered to have an adverse aeronautical effect if it first exceeds the obstruction standards of part 77, and/or is found to have physical or electromagnetic radiation effect on the operation of air navigation facilities. A proposed or existing structure, if not amended, altered, or removed, has an adverse effect if it would:

a. Require a change to an existing or planned IFR minimum flight altitude, a published or special instrument procedure, or an IFR departure procedure for a public–use airport.

b. Require a VFR operation, to change its regular flight course or altitude. This does not apply to VFR military training route (VR) operations conducted under part 137, or operations conducted under a waiver or exemption to the CFR.

c. Restrict the clear view of runways, helipads, taxiways, or traffic patterns from the airport traffic control tower cab.

d. Derogate airport capacity/efficiency.

e. Affect future VFR and/or IFR operations as indicated by plans on file.

f. Affect the usable length of an existing or planned runway.

6–3–4. DETERMINING SIGNIFICANT VOLUME OF ACTIVITY

The type of activity must be considered in reaching a decision on the question of what volume of aeronautical activity is "significant." For example, if one or more aeronautical operations per day would be affected, this would indicate regular and continuing

activity, thus a significant volume no matter what the type of operation. However, an affected instrument procedure or minimum altitude may need to be used only an average of once a week to be considered significant if the procedure is one which serves as the primary procedure under certain conditions.

6–3–5. SUBSTANTIAL ADVERSE EFFECT

A proposed structure would have, or an existing structure has, a substantial adverse effect if it causes electromagnetic interference to the operation of an air navigation facility or the signal used by aircraft, or if there is a combination of:

a. Adverse effect as described in paragraph 6–3–3; and

b. A significant volume of aeronautical operations, as described in paragraph 6–3–4, would be affected.

6–3–6. RESPONSIBILITY

The FAA's obstruction evaluation program transcends organizational lines. In order to determine the effect of the structure within the required notice period, each office should forward the results of its evaluation within 15 working days to the service area office for further processing. Areas of responsibility are delegated as follows:

a. Air traffic personnel shall:

1. Identify when the structure exceeds Section 77.23 (a)(1) (see FIG 6–3–1 thru FIG 6–3–8) and apply Section 77.23(b) (see FIG 5–2–4).

2. Identify the effect on existing and planned aeronautical operations, air traffic control procedures, and airport traffic patterns and making recommendations for mitigating adverse effect including marking and lighting recommendations.

3. Identify when the structure would adversely affect published helicopter route operations as specified in paragraph6–3–8subparagraph e., of this order, and forward the case to Flight Standards.

4. Identify whether obstruction marking/lighting are necessary and recommend the appropriate marking and/or lighting.

5. Identify when negotiations are necessary and conduct negotiations with the sponsor. This may be done in conjunction with assistance from other division/service area office personnel when their subject expertise is required (e.g., in cases of electromagnetic interference).

6. Identify when circularization is necessary and conduct the required circularization process.

7. Evaluate all valid aeronautical comments received as a result of the circularization and those received as a result of the division evaluation.

8. Issue the determination (except as noted in paragraph 7–1–2, subparagraph b).

b. Regional Airports Division personnel shall:

1. Verify that the airport/runway database has been reviewed, is correct, and contains all plans on file pertaining to the OE case.

2. Identify the structure's effect on existing and planned airports or improvements to airports concerning airport design criteria including potential restrictions/impacts on airport operations, capacity, efficiency and development, and making recommendations for eliminating adverse effect. Airports Divisions are not required to perform evaluations on OE cases that are further than 3 NM from the Airport Reference Point (ARP) of a public–use or military airport.

3. Determine the effect on the efficient use of airports and the safety of persons and property on the ground. Airports will resist structures and activities that conflict with an airport's planning, design, and/or recommendations from other divisions/service area offices.

c. FPO personnel shall:

1. Identify when the structure exceeds Sections 77.23(a)(3), and 77.23(a)(4).

2. Identify the effect upon terminal area IFR operations, including transitions; radar vectoring; holding; instrument departure procedures; any segment of a standard instrument approach procedure (SIAP) or special SIAP, including proposed instrument procedures and departure areas; and making recommendations for eliminating adverse effect.

NOTE–
This paragraph applies to any IAP and Special SIAP at public–use and private–use airports.

3. Identify the effect on minimum en route altitudes (MEA); minimum obstruction clearance

altitudes (MOCA); minimum vectoring altitudes (MVA); minimum IFR altitudes (MIA); minimum safe altitudes (MSA); minimum crossing altitudes (MCA); minimum holding altitudes (MHA); turning areas and termination areas; and making recommendations for eliminating adverse effect.

4. Coordinate with air traffic and technical operations services personnel to determine the effect of any interference with an air navigation facility on any terminal or en route procedure.

5. State what adjustments can be made to the procedure/structure to mitigate or eliminate any adverse effects of the structure on an instrument flight procedure.

d. Regional Flight Standards personnel shall identify the effect on fixed-wing and helicopter VFR routes, terminal operations, and other concentrations of VFR traffic. When requested by air traffic, the Flight Standards Division shall also evaluate the mitigation of adverse effect on VFR operations for marking and/or lighting of structures.

e. Technical Operations Services personnel shall identify any electromagnetic and/or physical effect on air navigation and communications facilities including:

1. The presence of any electromagnetic effect in the frequency protected service volume of the facilities shown in FIG 6-3-18, FIG 6-3-19, and FIG 6-3-20.

2. The effect on the availability or quality of navigational or communications signals to or from aircraft including lighting systems (e.g., VGSI), and making recommendations to eliminate adverse effect.

3. The effect on ground-based communications and NAVAID equipment, and the signal paths between ground-based and airborne equipment, and making recommendations to eliminate adverse effect.

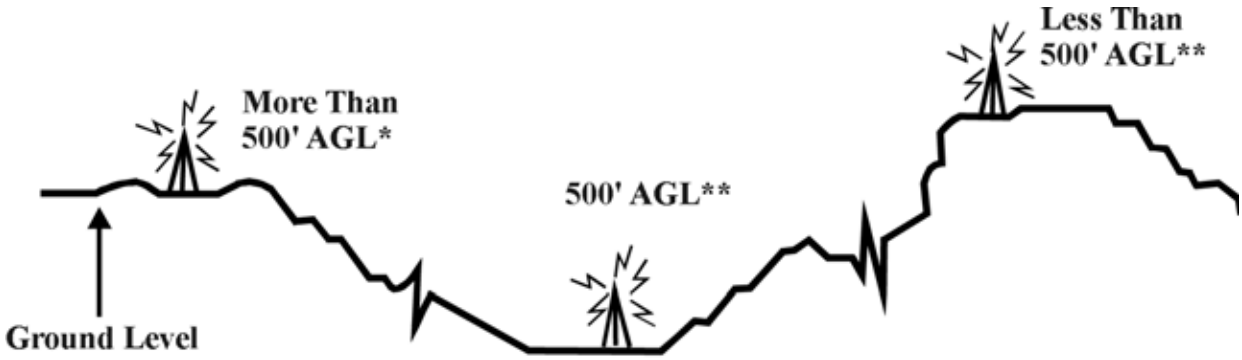
4. The effect on the availability or quality of ground-based primary and secondary radar; direction finders; and air traffic control tower line-of-sight visibility; and making recommendations to eliminate adverse effect.

5. The effect of sunlight or artificial light reflections, and making recommendations to eliminate adverse effect.

f. Military personnel are responsible for evaluating the effect on airspace and routes used by the military.

g. Other applicable FAA offices or services may be requested to provide an evaluation of the structure on a case-by-case basis.

FIG 6-3-1
ANYWHERE



* Obstruction to Air Navigation
** Not an Obstruction to Air Navigation

FIG 6-3-2

NEAR AIRPORTS

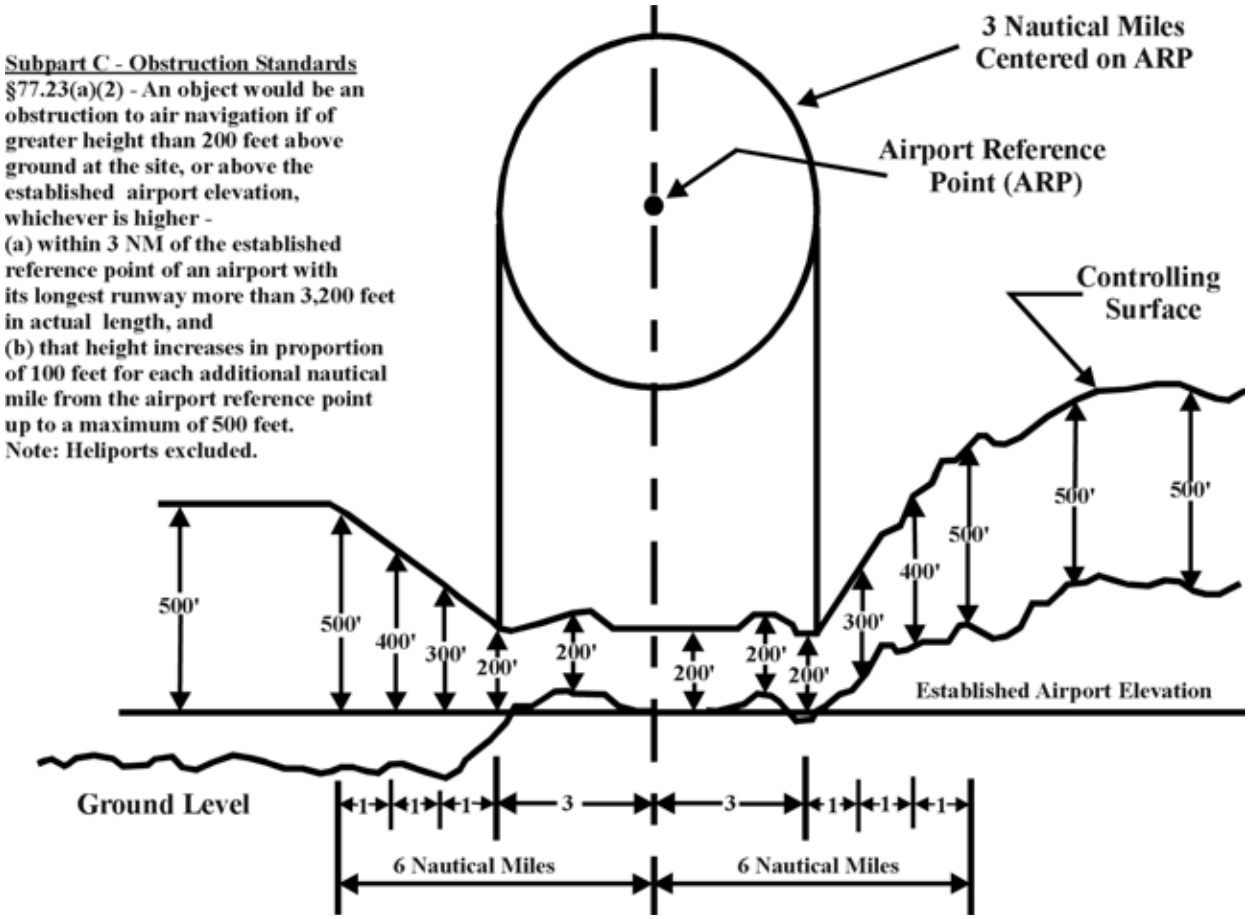
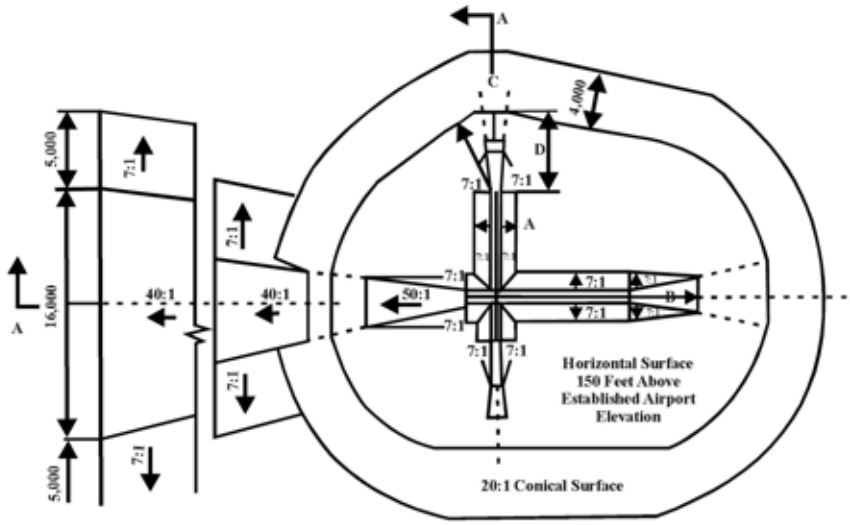


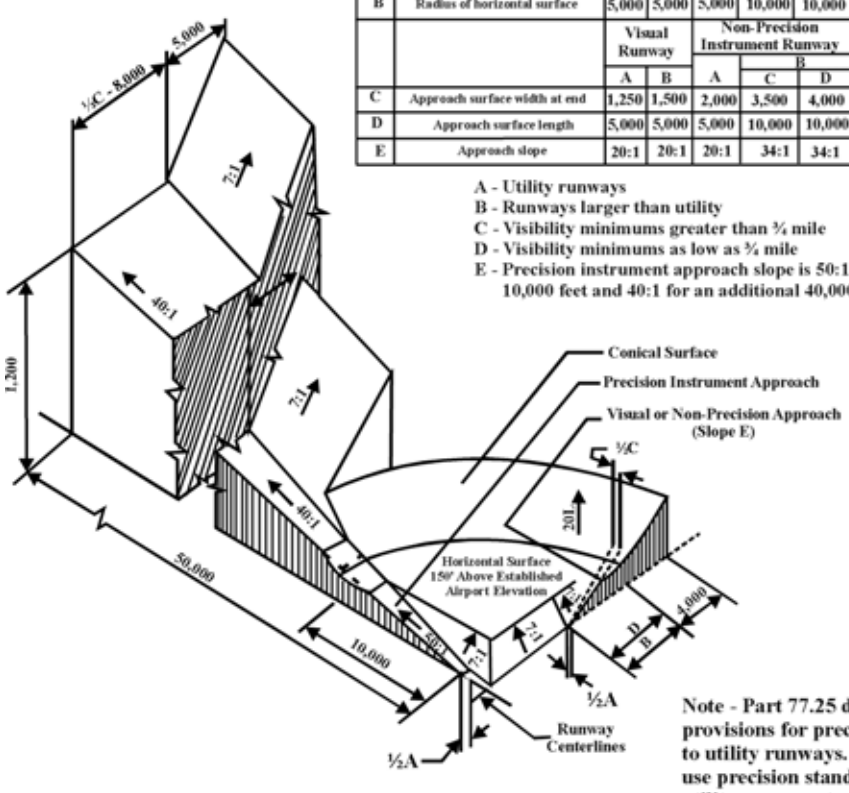
FIG 6-3-3

CIVILIAN AIRPORT IMAGINARY SURFACES



DIM	ITEM	Dimensional Standards (Feet)					
		Visual Runway		Non-Precision Instrument Runway			Precision Instrument Runway
					B		
		A	B	A	C	D	
A	Width of primary surface and approach surface width at inner end	250	500	500	500	1,000	1,000
B	Radius of horizontal surface	5,000	5,000	5,000	10,000	10,000	10,000
		Visual Runway		Non-Precision Instrument Runway			Precision Instrument Runway
					B		
		A	B	A	C	D	
C	Approach surface width at end	1,250	1,500	2,000	3,500	4,000	16,000
D	Approach surface length	5,000	5,000	5,000	10,000	10,000	*
E	Approach slope	20:1	20:1	20:1	34:1	34:1	*

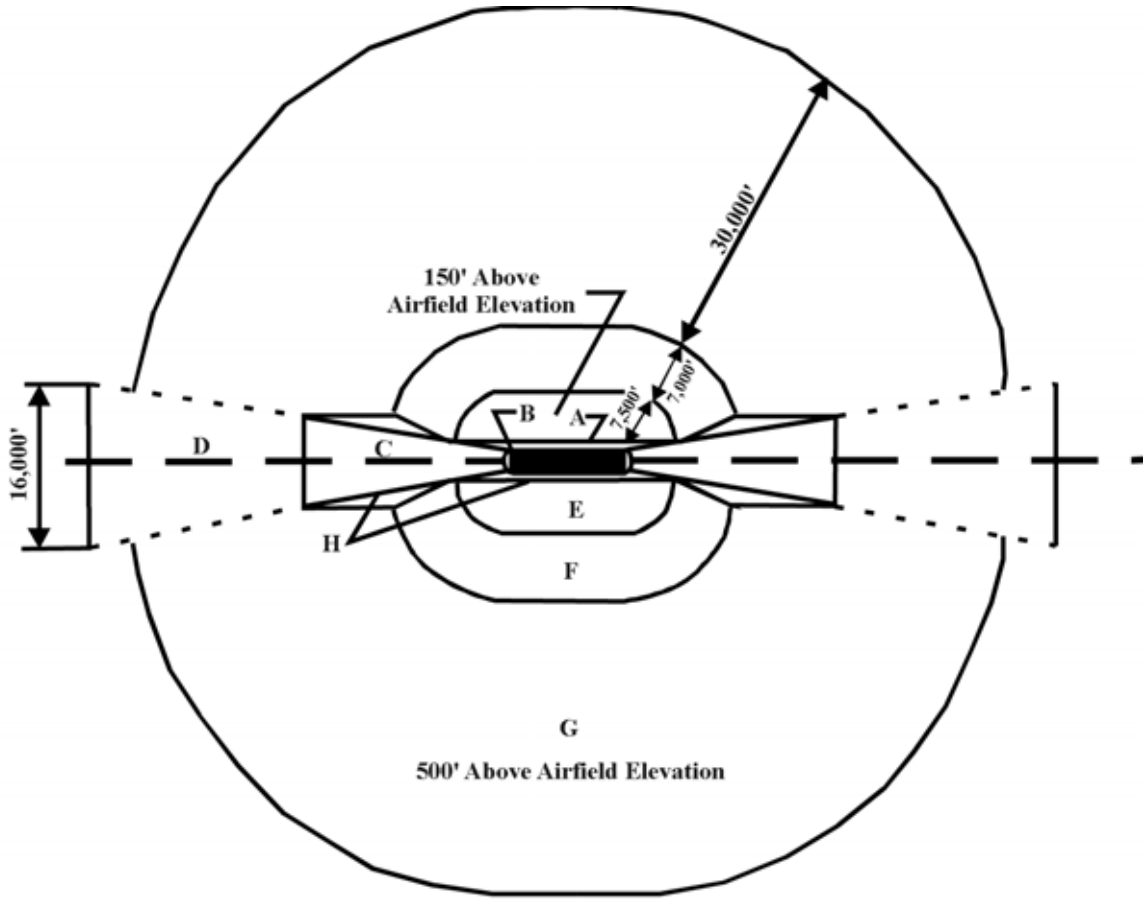
A - Utility runways
B - Runways larger than utility
C - Visibility minimums greater than ¾ mile
D - Visibility minimums as low as ¾ mile
E - Precision instrument approach slope is 50:1 for inner 10,000 feet and 40:1 for an additional 40,000 feet



Note - Part 77.25 does not make provisions for precision approaches to utility runways. In these situations, use precision standards for other than utility runways to develop the primary, approach, and transition surfaces.

Isometric View of Section A - A

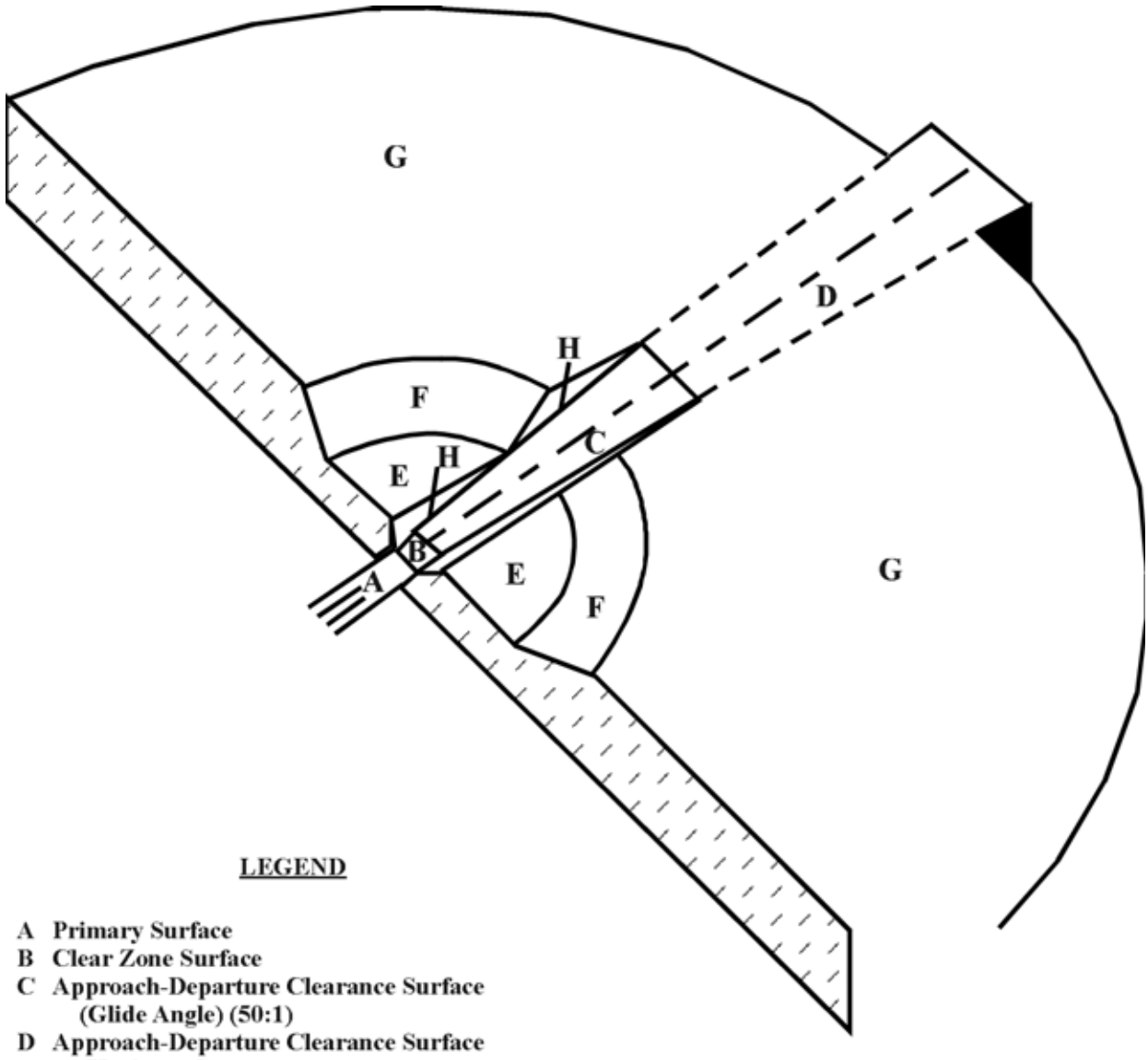
FIG 6-3-4
MILITARY AIRPORT IMAGINARY SURFACES



Legend

A Primary Surface
B Clear Zone Surface
C Approach-Departure Clearance Surface (Glide Angle)
D Approach-Departure Clearance Surface (Horizontal)
E Inner Horizontal Surface
F Conical Surface
G Outer Horizontal Surface
H Transitional Surface

FIG 6-3-5
MILITARY AIRPORT IMAGINARY SURFACES



LEGEND

A Primary Surface
B Clear Zone Surface
C Approach-Departure Clearance Surface (Glide Angle) (50:1)
D Approach-Departure Clearance Surface (Horizontal)
E Inner Horizontal Surface
F Conical Surface (20:1)
G Outer Horizontal Surface
H Transitional Surface (7:1)

FIG 6-3-6
MILITARY AIRPORT IMAGINARY SURFACES

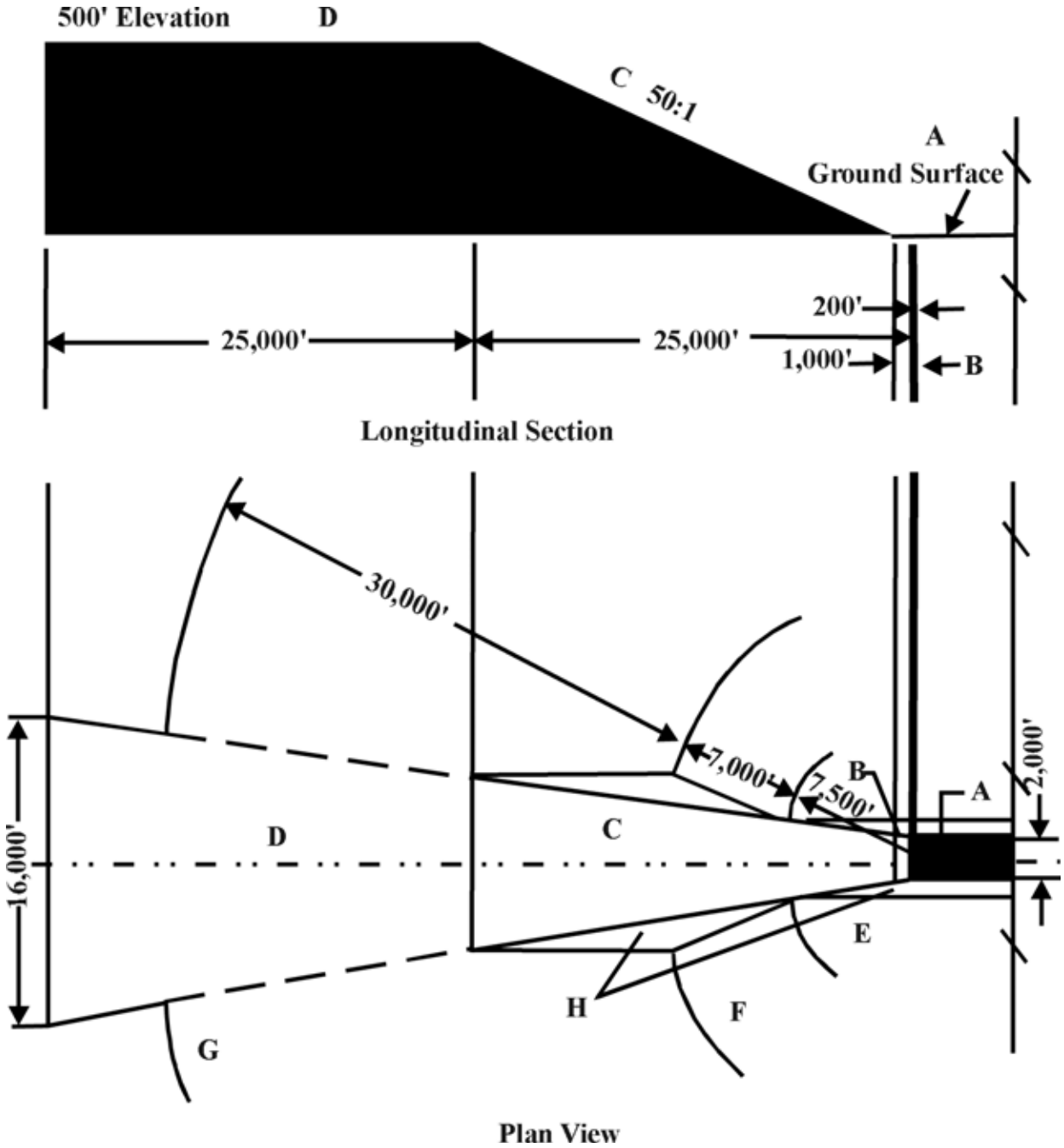


FIG 6-3-7
CLEAR ZONE - MILITARY

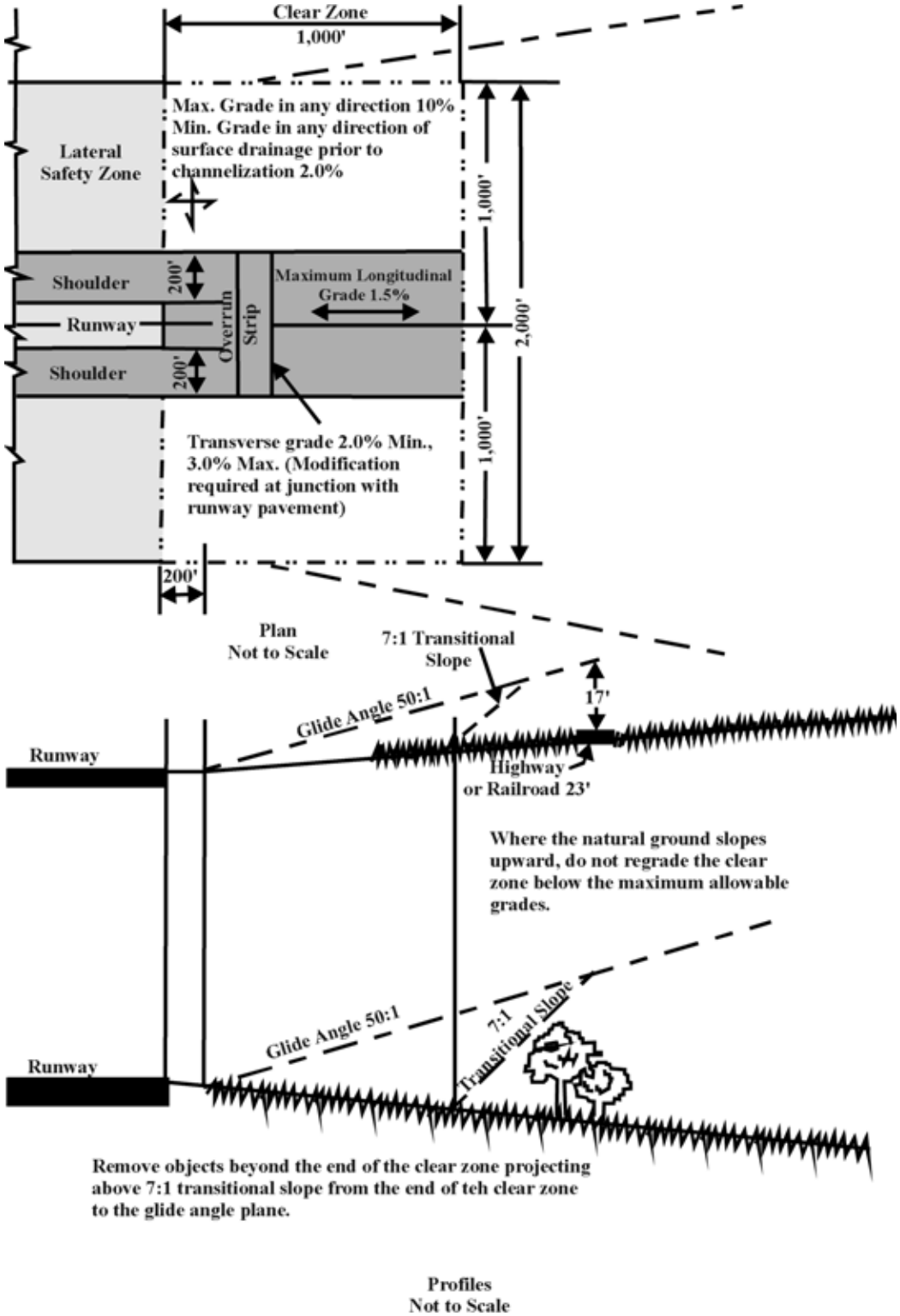


FIG 6-3-8

AIRPORT IMAGINARY SURFACES FOR HELIPORTS

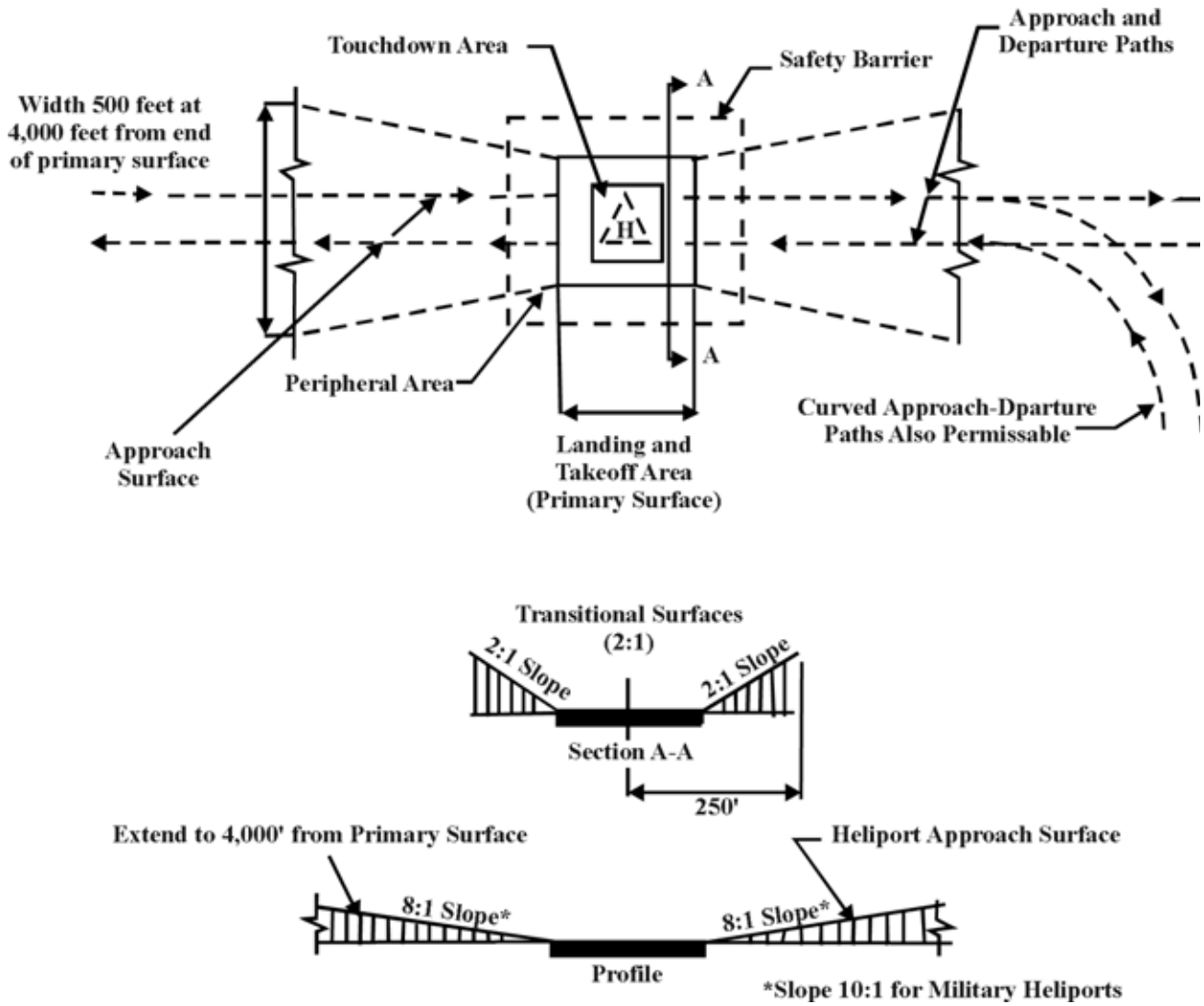


FIG 6-3-9

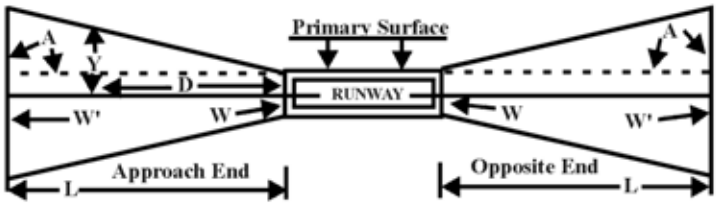
PART 77, APPROACH SURFACE DATA

RUNWAY TYPE	RWY USE AVAILABLE/PLANNED: APPROACH/OPPOSITE RUNWAY END COMBINATIONS		APPROACH SURFACE DIMENSIONS: LENGTH - L	INNER WIDTH - W	OUTER WIDTH - W'	SLOPES AND FLARE RATIOS: SLOPE RATIO	FLARE RATIO - A
UTILITY RUNWAYS	V		5,000	250	1,250	20:1	.1:1
		V	5,000	250	1,250	20:1	.1:1
	V		5,000	500	1,250	20:1	.075:1
		NP	5,000	500	2,000	20:1	.15:1
	NP		5,000	500	2,000	20:1	.15:1
		NP	5,000	500	2,000	20:1	.15:1
OTHER THAN UTILITY RUNWAYS	V		5,000	500	1,500	20:1	.1:1
		V	5,000	500	1,500	20:1	.1:1
	V		5,000	500	1,500	20:1	.1:1
		NP¾+	10,000	500	3,500	34:1	.15:1
	V		5,000	1,000	1,500	20:1	.05:1
		NP¾	10,000	1,000	4,000	34:1	.15:1
	V		5,000	1,000	1,500	20:1	.05:1
		P	50,000	1,000	16,000	50:1/40:1	.15:1
	NP¾+		10,000	500	3,500	34:1	.15:1
		NP¾+	10,000	500	3,500	34:1	.15:1
	NP¾+		10,000	1,000	3,500	34:1	.125:1
		NP¾	10,000	1,000	4,000	34:1	.15:1
	NP¾+		10,000	1,000	3,500	34:1	.125:1
		P	50,000	1,000	16,000	50:1/40:1	.15:1
	NP¾		10,000	1,000	4,000	34:1	.15:1
		NP¾	10,000	1,000	4,000	34:1	.15:1
	NP¾		10,000	1,000	4,000	34:1	.15:1
		P	50,000	1,000	16,000	50:1/40:1	.15:1
	P		50,000	1,000	16,000	50:1/40:1	.15:1
		P	50,000	1,000	16,000	50:1/40:1	.15:1

V - Visual **NP - Nonprecision** **¾+ - Visibility Minimums More Than ¾ SM**

P - Precision **¾ - Visibility Minimums As Low As ¾ SM**

EXAMPLE



Sample Use Problem: Proposed structure would be located by measurement to be 20,000 feet from the end of the primary surface and 3,400 feet at 90° from the extended centerline of a precision runway (refer to Section 77.21(b) for relation of primary surface to end of runway). To determine whether it would fall within the approach surface of that runway, apply the following formula:

$$Y = D \times A + W/2$$

Y = distance for runway centerline to edge of the approach
D = distance from end of primary surface at which proposed construction is 90° from extended runway centerline

Y = 20,000 x 15 +1,000/2 Y = 3,000 + 500 Y = 3,500 (structure would be within approach surface)

6–3–7. AIRPORT SURFACES AND CLEARANCE AREAS

a. CIVIL AIRPORT SURFACES

1. Civil airport imaginary surfaces are defined in Section 77.25 and are based on the category of each runway according to the type of approach (visual, nonprecision, or precision) available or planned for each runway end (see FIG 6–3–3). The appropriate runway imaginary surface shall be applied to the primary surfaces related to the physical end of the specific runway surface that is usable for either takeoff or landing.

2. Approach Surface Elevation – Use the runway centerline elevation at the runway threshold and the elevation of the helipad as the elevation from which the approach surface begins (see Sections 77.25 and 77.29).

3. Heliport imaginary surfaces are defined in Section 77.29 and are based upon the size of the takeoff and landing area.

4. Planned Airport/Runway Improvements – Consider the planned runway threshold and approach type when there is a plan on file with the FAA or with an appropriate military service to extend the runway and/or upgrade its use or type of approach. The existing runway threshold and type of approach may be used for temporary structures/equipment, as appropriate.

b. MILITARY AIRPORT SURFACES – The obstruction standards in Section 77.25, Civil Airport Imaginary Surfaces, apply to civil operated joint–use airports. The obstruction standards in Section 77.28, Military Airport Imaginary Surfaces, are applicable only to airports operated and controlled by a military service of the United States, regardless of whether use by civil aircraft is permitted.

c. TERMINAL OBSTACLE CLEARANCE AREA – The terminal obstacle clearance area specified in Section 77.23(a)(3) includes the initial, intermediate, final, and missed approach segments of an instrument approach procedure, and the circling approach and instrument departure areas. The applicable FAA approach and departure design criteria are contained in the 8260.3 Order series.

d. EN ROUTE OBSTACLE CLEARANCE AREA – The en route obstacle clearance area specified in Section 77.23(a)(4) is applicable when evaluating the effect of a structure on an airway, a feeder route, and/or an approved off–airway route (direct route) as prescribed in the 8260.3 Order series.

6–3–8. EVALUATING EFFECT ON VFR OPERATIONS

a. PURPOSE. These guidelines are for use in determining the effect of structures, whether proposed or existing, upon VFR aeronautical operations in the navigable airspace. The intent of these guidelines is to provide a basis for analytical judgments in evaluating the effect of proposals on VFR operations.

b. CONSIDERATIONS

1. Minimum VFR Flight Altitudes. Minimum VFR flight altitudes are prescribed by regulation. Generally speaking, from a VFR standpoint, the navigable airspace includes all airspace 500 feet AGL or greater and that airspace below 500 feet required for:

(a) Takeoff and landing, including the airport traffic pattern.

(b) Flight over open water and sparsely populated areas (an aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure).

(c) Helicopter operations when the operation may be conducted without hazard to persons and property on the surface.

2. VFR Weather Minimums. Proposed or existing structures potentially have the greatest impact in those areas where VFR operations are conducted when ceiling and/or visibility conditions are at or near VFR weather minimums. Any structure that would interfere with a significant volume of low altitude flights by actually excluding or restricting VFR operations in a specific area would have a substantial adverse effect and may be considered a hazard to air navigation.

3. Marking and/or Lighting of Structures. Not every structure penetrating the navigable airspace is considered to be a hazard to air navigation. Some may be marked and/or lighted so pilots can visually observe and avoid the structures.

4. Shielded Structures. A structure may be "shielded" by being located in proximity to other permanent structures or terrain and would not, by

itself, adversely affect aeronautical operations (see paragraph 6-3-13).

5. Height Of Structures. Structures are of concern to pilots during a climb after takeoff, low altitude operations, and when descending to land. Any structure greater than 500 feet AGL, or structures of any height which would affect landing and takeoff operations, requires extensive evaluation to determine the extent of adverse effect on VFR aeronautical operations.

6. Airport Traffic Patterns. The primary concern regarding structures in airport traffic pattern areas is whether they would create a dangerous situation during a critical phase of flight.

7. Class B and C Airspace. Structures that exceed obstruction standards in areas available for VFR flight below the floor of Class B or C airspace areas require careful evaluation. Class B and C airspace areas are designed to provide a more regulated environment for IFR and VFR traffic in and around certain airports. Consequently, the floors of some Class B and C areas compress VFR operations into airspace of limited size and minimum altitude availability.

8. VFR Routes. Pilots operating VFR frequently fly routes that follow rivers, coastlines, mountain passes, valleys, and similar types of natural landmarks or major highways, railroads, powerlines, canals, and other manmade structures. A VFR route may also be comprised of specific radials of a Very High Frequency Omnidirectional Range (VOR). These routes may correspond to an established Federal Airway, direct radials between navigation facilities, or a single radial providing transition to a route predicated on visual aids. While there may be established minimum en route altitudes for segments of these routes and navigation is dependent upon adequate signal reception, a VFR pilot may fly at an altitude below the established minimum altitude in order to maintain visual contact with the ground. The basic consideration in evaluating the effect of obstructions on operations along these routes is whether pilots would be able to visually observe and avoid them during marginal VFR weather conditions. At least 1-mile flight visibility is required for VFR operations beneath the floor of controlled airspace. This means that a surface reference used for VFR low altitude flight must be horizontally visible to pilots for a minimum of 1 mile.

c. EN ROUTE OPERATIONS. The area considered for en route VFR flight begins and ends outside the airport traffic pattern airspace area or Class B, C, and D airspace areas.

1. A structure would have an adverse effect upon VFR air navigation if its height is greater than 500 feet above the surface at its site, and within 2 statute miles of any regularly used VFR route (see FIG 6-3-10).

2. Evaluation of obstructions located within VFR routes must recognize that pilots may, and sometimes do, operate below the floor of controlled airspace during low ceilings and 1-mile flight visibility. When operating in these weather conditions and using pilotage navigation, these flights must remain within 1 mile of the identifiable landmark to maintain visual reference. Even if made more conspicuous by the installation of high intensity white obstruction lights, a structure placed in this location could be a hazard to air navigation because after sighting it, the pilot may not have the opportunity to safely circumnavigate or overfly the structure.

3. VFR MILITARY TRAINING ROUTES (VR) - Operations on VRs provide military aircrews low altitude, high speed navigation and tactics training, and are a basic requirement for combat readiness (see FAAO JO 7610.4, Special Operations). Surface structures have their greatest impact on VFR operations when ceiling and visibility conditions are at or near basic VFR minimums. Accordingly, the guidelines for a finding of substantial adverse effect on en route VFR operations are based on consideration for those operations conducted under part 91 that permits flight clear of clouds with 1 mile flight visibility outside controlled airspace. In contrast, flight along VRs can be conducted only when weather conditions equal or exceed 3,000 feet ceiling and 5 miles visibility. A proposed structure's location on a VR is not a basis for determining it to be a hazard to air navigation; however, in recognition of the military's requirement to conduct low altitude training, disseminate part 77 notices and aeronautical study information to military representatives. Additionally, attempt to persuade the sponsor to lower or relocate a proposed structure that exceeds obstruction standards and has been identified by the military as detrimental to its training requirement.

d. AIRPORT AREAS – Consider the following when determining the effect of structures on VFR operations near airports:

1. Traffic Pattern Airspace – There are many variables that influence the establishment of airport arrival and departure traffic flows. Structures in the traffic pattern airspace may adversely affect air navigation by being a physical obstruction to air navigation or by distracting a pilot's attention during a critical phase of flight. The categories of aircraft using the airport determine airport traffic pattern airspace dimensions.

(a) Traffic Pattern Airspace dimensions (See FIG 6–3–11).

(b) Within Traffic Pattern Airspace – A structure that exceeds a 14 CFR, part 77 obstruction standard and that exceeds any of the following heights is considered to have an adverse effect and would have a substantial adverse effect if a significant volume of VFR aeronautical operations are affected except as noted in paragraph 6–3–8 d.1.(c) and (d) (see FIG 6–3–12).

(c) The height of the transition surface (other than abeam the runway), the approach slope (up to the height of the horizontal surface), the horizontal surface, and the conical surface (as applied to visual approach runways, Section 77.25).

(d) Beyond the lateral limits of the conical surface and in the climb/descent area – 350 feet above airport elevation or the height of 14 CFR Section 77.23a.(2), whichever is greater not to exceed 500 feet above ground level (AGL). The climb/descent area begins abeam the runway threshold being used and is the area where the pilot is either descending to land on the runway or climbing to pattern altitude after departure. (The area extending outward from a line perpendicular to the runway at the threshold, see FIG 6–3–13).

(e) Beyond the lateral limits of the conical surface and not in the climb/descent area of any runway – 500 feet above airport elevation (AE) not to exceed 500 feet AGL.

(f) An existing structure (that has been previously studied by the FAA), terrain, or a proposed structure (that would be shielded by existing structures) may not be considered to have a substantial adverse effect. In such instances, the traffic pattern may be adjusted as needed on a case–by–case basis.

(g) Exceptions may be made on a case–by–case basis when the surrounding terrain is significantly higher than the airport elevation, the established traffic pattern altitude is less than 800 feet above airport elevation or "density altitude" is a consideration.

2. Terminal Transition Routes – A structure would have an adverse effect upon VFR air navigation if it:

(a) Exceeds a height of 500 feet above the surface at its site; and

(b) Is located within 2 statute miles of the centerline of any regularly used VFR route (see FIG 6–3–10).

3. VFR Approach Surface Slope Ratios – A structure would have an adverse effect upon VFR air navigation if it penetrates the approach surface slope of any runway. The following slope ratios are applied to the end of the primary surface:

(a) 20:1 for civil visual approaches.

(b) 50:1 for military runway approaches.

(c) 8:1 for civil helicopter approaches surfaces.

(d) 10:1 for military helicopter approach surfaces.

FIG 6-3-10
VFR ROUTES

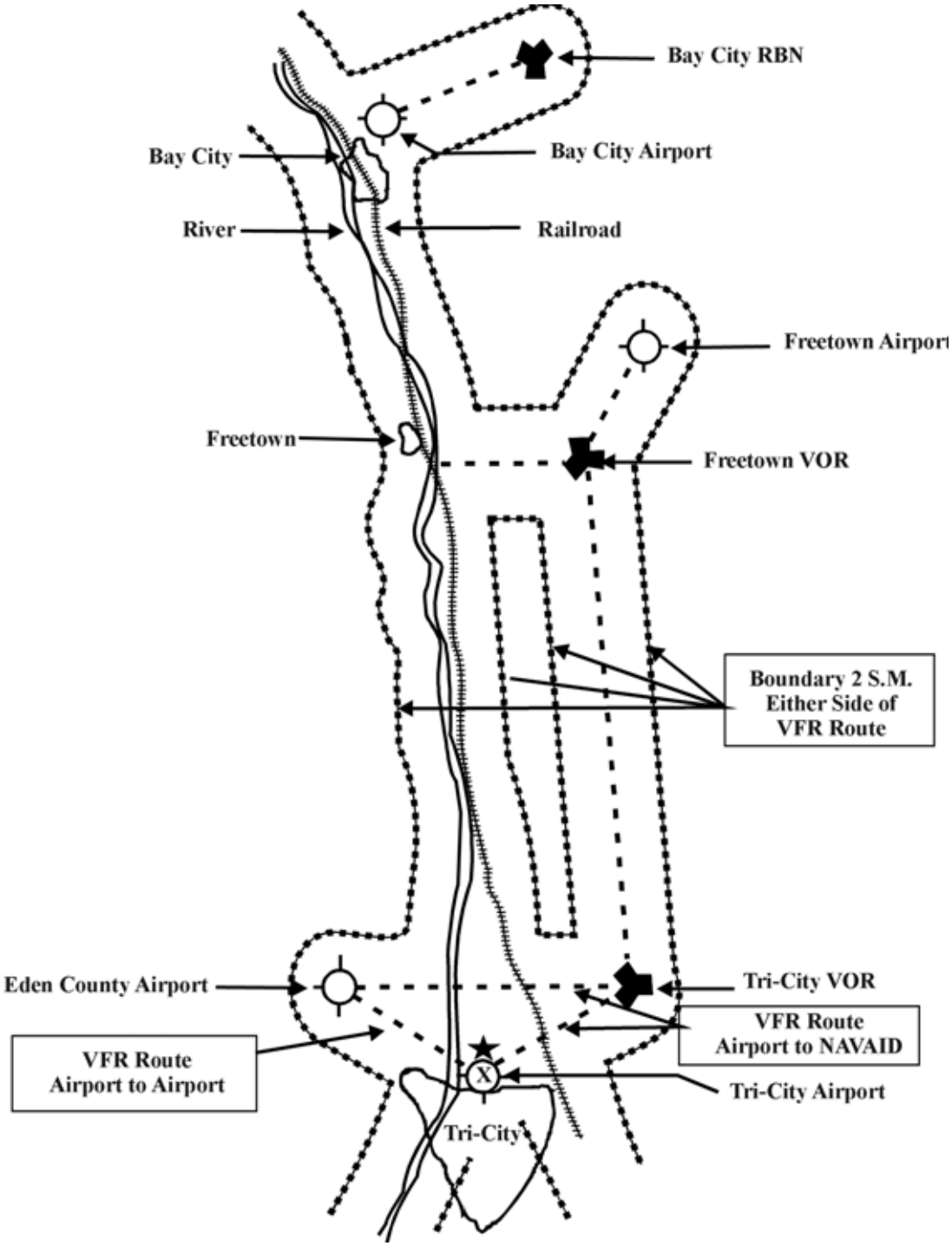
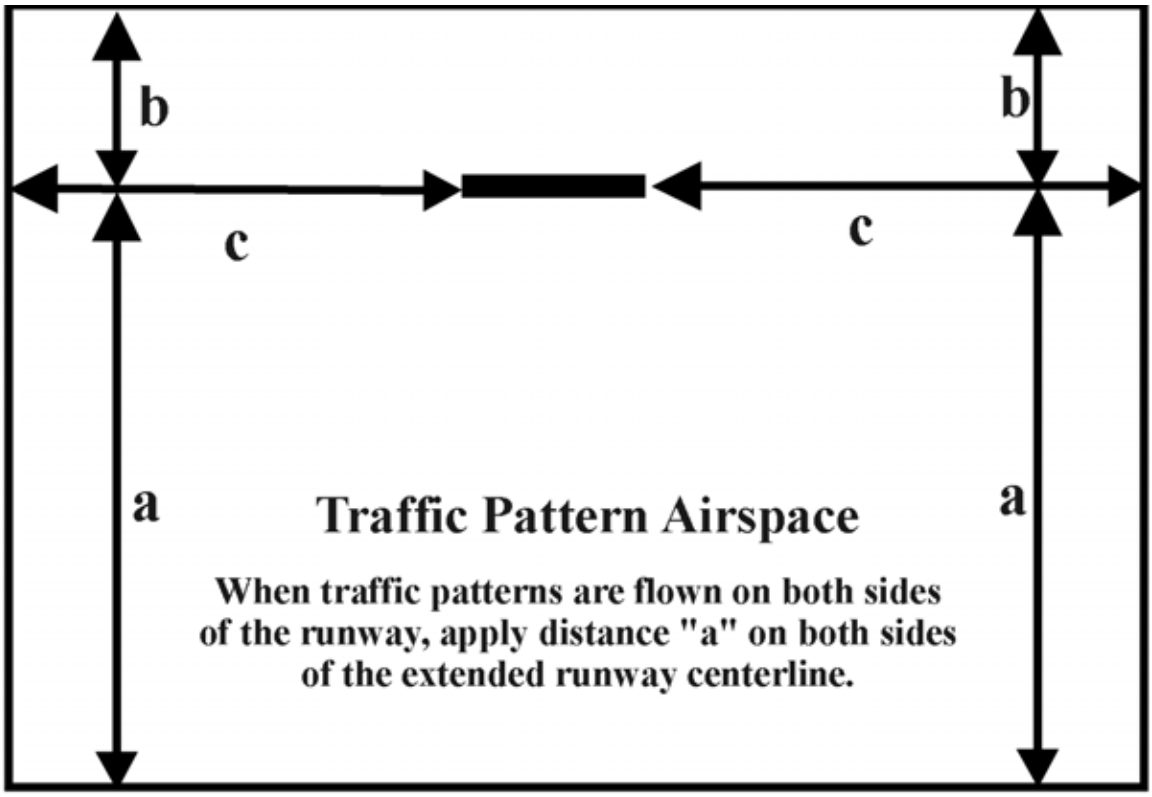


FIG 6-3-11
TRAFFIC PATTERN AIRSPACE



Aircraft Category	Distance (nautical miles)			
	a	b	c	d*
A	1.25	.25	1.25	.375
B	1.5	.25	1.5	.5
C	2.25	.5	2.25	.875
D	4.0	.5	3.0	1.0

*Increase distance "C" by adding distance specified in "d" for each aircraft over four (of the same category) anticipated to be operating in the traffic pattern at the same time.

FIG 6-3-12

TRAFFIC PATTERN AIRSPACE ADVERSE EFFECT

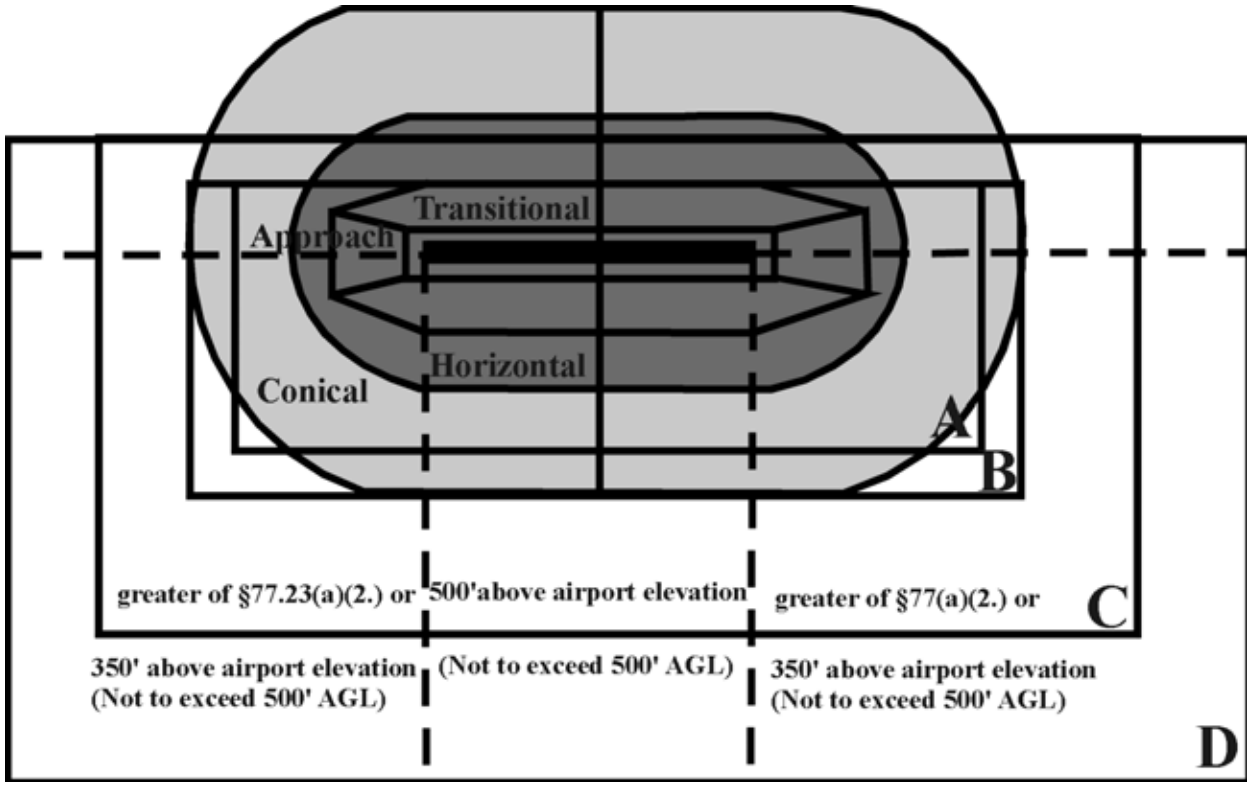
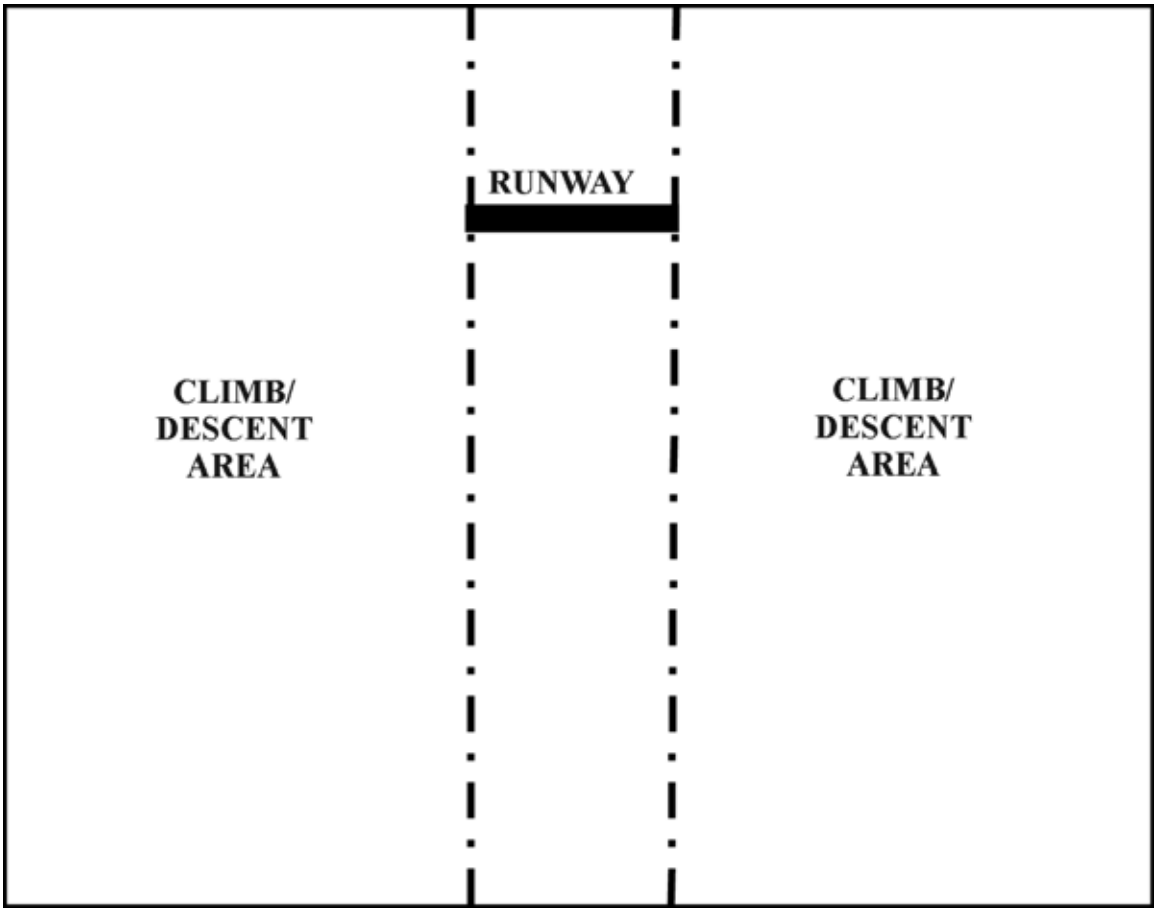


FIG 6-3-13
TRAFFIC PATTERN AIRSPACE CLIMB/DESCENT AREAS



e. HELICOPTERS – The special maneuvering characteristics of helicopters are recognized in Sections 91.119 and 91.155, provided operations are conducted without hazard to persons or property on the ground. Helicopter pilots must also operate at a speed that will allow them to see and avoid obstructions. Consequently, proposed or existing structures are not considered factors in determining adverse effect upon helicopter VFR operations except as follows:

1. En route. When the Administrator prescribes routes and altitudes for helicopters, the exemptions to part 91 for helicopters do not apply. Thus, any structure would have an adverse effect if it penetrates an imaginary surface 300 feet below an established helicopter minimum flight altitude and is located within 250 feet either side of the established route's centerline.

2. Heliport Landing/Takeoff Area. Any structure would have an adverse effect if it would exceed any of the heliport imaginary surfaces. Although helicopter approach–departure paths may curve, the length of the approach–departure surface remains fixed.

f. AGRICULTURAL AND INSPECTION AIRCRAFT OPERATIONS – Rules that apply to agricultural dispensing operations, as prescribed in part 137, allow deviation from part 91 altitude restrictions. It is the pilot's responsibility to avoid obstacles because the agricultural operations must be conducted without creating a hazard to persons or property on the surface. Similar operations include pipeline, power line, and military low–level route inspections. Consequently, these operations are not considered in reaching a determination of substantial adverse effect.

NOTE–
Before and after the dispensing is completed, the pilot is required to operate under the part 91 minimum altitudes.

g. OPERATIONS UNDER WAIVER OR EXEMPTION TO CFR – Waivers and/or exemptions to CFR operating rules include provisions to ensure achievement of a level of safety equivalent to that which would be present when complying with the regulation waived or exempted. Additionally, waivers and exemptions do not relieve pilots of their responsibility to conduct operations without creating a hazard to persons and property on the surface. Accordingly, a determination of hazard to air navigation shall not be based upon a structure's effect on aeronautical operations conducted under a waiver or exemption to CFR operating rules.

6–3–9. EVALUATING EFFECT ON IFR OPERATIONS

a. PURPOSE. This section provides general guidelines for determining the effect of structures, whether proposed or existing, upon IFR aeronautical operations.

b. STANDARDS. Obstruction standards are used to identify potential adverse effects and are not the basis for a determination. The criteria used in determining the extent of adverse affect are those established by the FAA to satisfy operational, procedural, and electromagnetic requirements. These criteria are contained in regulations, advisory circulars, and orders (e.g., the 8260 Order series and Order 7110.65). Obstruction evaluation personnel shall apply these criteria in evaluating the extent of adverse effect to determine if the structure being studied would actually have a substantial adverse effect and would constitute a hazard to air navigation.

c. IFR MINIMUM FLIGHT ALTITUDES. Technical Operations Aviation System Standards is the principal FAA element responsible for establishing instrument procedures and minimum altitudes for IFR operations. FPO personnel shall evaluate the effect of proposed structures on IFR aeronautical operations as outlined in Order 8260.19, Flight Procedures and Airspace.

d. EN ROUTE IFR OPERATIONS

1. Minimum En Route Altitudes (MEA). MEAs are established for each segment of an airway or an approved route based upon obstacle clearance, navigational signal reception, and communications. The MEA assures obstruction clearance and acceptable navigational signal coverage over the entire airway or route segment flown. Any structure that will require an MEA to be raised has an adverse effect. Careful analysis by the appropriate Flight Procedures and air traffic personnel is necessary to determine if there would be a substantial adverse effect on the navigable airspace. Generally, the loss of a cardinal altitude is considered a substantial adverse effect. However, the effect may not be substantial if the aeronautical study discloses that the

affected MEA is not normally flown by aircraft, nor used for air traffic control purposes.

2. Minimum Obstruction Clearance Altitudes (MOCA). MOCAs assure obstacle clearance over the entire route segment to which they apply and assure navigational signal coverage within 22 NM of the associated VOR navigational facility. For that portion of the route segment beyond 22 NM from the VOR, where the MOCA is lower than the MEA and there are no plans to lower the MEA to the MOCA, a structure that affects only the MOCA would not be considered to have substantial adverse effect. Other situations require study as ATC may assign altitudes down to the MOCA under certain conditions.

3. Minimum IFR Altitudes (MIA). These altitudes are established in accordance with Order 7210.37, En Route Minimum IFR Altitude Sector Charts, to provide the controller with minimum IFR altitude information for off-airway operations. MIAs provide the minimum obstacle clearance and are established without respect to flight-checked radar or normal radar coverage. Any structure that would cause an increase in a MIA is an obstruction, and further study is required to determine the extent of adverse effect. Radar coverage adequate to vector around such a structure is not, of itself, sufficient to mitigate a finding of substantial adverse effect that would otherwise be the basis for a determination of hazard to air navigation.

4. IFR Military Training Routes (IR's) - Operations on IR's provide pilots with training for low altitude navigation and tactics (see FAAO JO 7610.4, Special Operations). Flight along these routes can be conducted below the minimum IFR altitude specified in part 91, and the military conducts operational flight evaluations of each route to ensure compatibility with their obstructions clearance requirements. A proposed structure's location on an IR is not a basis for determining it to be a hazard to air navigation; however, in recognition of the military's requirement to conduct low altitude training, disseminate part 77 notices and aeronautical study information to military representatives. Additionally, attempt to persuade the sponsor to lower, or relocate proposed structures that exceed obstruction standards and have been identified by the military as detrimental to their training requirement.

5. Radar Bomb Sites (RBS) - These sites are a vital link in the low level training network used by the U.S. Air Force to evaluate bomber crew proficiency. They provide accurate radar records for aircraft flying at low altitudes attacking simulated targets along the RBS scoring line. An obstruction located within the flights' RBS boundaries may have a substantial adverse effect and a serious operational impact on military training capability.

e. TERMINAL AREA IFR OPERATIONS. The obstruction standards contained in part 77 are also used to identify obstructions within terminal obstacle clearance areas. Any structure identified as an obstruction is considered to have an adverse effect; however, there is no clear-cut formula to determine what extent of adverse effect is considered substantial. Instrument approach and departure procedures are established in accordance with published obstacle clearance guidelines and criteria. However, there are segments of instrument approach procedures where the minimum altitudes may be revised without substantially effecting landing minimums. Thus, the determination must represent a decision based on the best facts that can be obtained during the aeronautical study.

1. Instrument Approach Procedures (IAP)/Special SIAP. Flight Procedures personnel are responsible for evaluating the effect of structures upon any segment of an IAP/Special SIAP, any proposed IAP/Special SIAP, or any departure restriction. However, all FAA personnel involved in the obstruction evaluation process should be familiar with all aspects of the terminal area IFR operations being considered. If Flight Procedures personnel determine that a structure will affect instrument flight procedures, their evaluation should include those procedural adjustments that can be made without adversely affecting IFR operations. When the study discloses that procedural adjustments to reduce or mitigate any adverse effect cannot be accomplished, then the comments to air traffic shall identify the significance of this effect on procedures and aeronautical operations.

NOTE-
This paragraph applies to any IAP and Special SIAP at public-use and private-use airports.

2. Minimum Vectoring Altitudes (MVA). These altitudes are based upon obstruction clearance requirements only (see Order 8260.19). The area considered for obstacle clearance is the normal operational use of the radar without regard to the flight-checked radar coverage. It is the responsibility

of individual controllers to determine that a target return is adequate for radar control purposes. MVAs are developed by terminal facilities, approved by the National Flight Procedures Office and published for controllers on MVA Sector Charts. Any structure that would cause an increase in an MVA is an obstruction and a study is required to determine the extent of adverse effect. Radar coverage adequate to vector around such a structure is not, of itself, sufficient to mitigate a finding of substantial adverse effect that would otherwise be the basis for a determination of hazard to air navigation.

3. Military Airports. With the exception of the U.S. Army, the appropriate military commands establish and approve terminal instrument procedures for airports under their respective jurisdictions. Consequently, the OES shall ensure that the military organizations are provided the opportunity to evaluate a structure that may affect their operations. While the military has the responsibility for determining the effect of a structure, it is expected that the FPO will assist air traffic in reconciling differences in the military findings.

4. Departure Procedures. TERPS, Chapter 12, Civil Utilization of Area Navigation (RNAV) Departure Procedures, contains criteria for the development of IFR departure procedures. An obstacle that penetrates the 40:1 departure slope is considered to be an obstruction to air navigation. Further study is required to determine if adverse effect exists. Any proposed obstacle that penetrates the 40:1 departure slope, originating at the departure end of runway (DER) by up to 35 feet will be circularized. If an obstacle penetrates the 40:1 departure slope by more than 35 feet, it is presumed to be a hazard, and a Notice of Presumed Hazard will be issued, and processed accordingly. Analysis by the National Flight Procedures Office and air traffic personnel is necessary to determine if there would be a substantial adverse effect on the navigable airspace.

5. Minimum Safe Altitudes (MSA). A MSA is the minimum obstacle clearance altitude for emergency use within a specified distance from the navigation facility upon which a procedure is predicated. These are either Minimum Sector Altitudes, established for all procedures within a 25-mile radius of the navigational facility (may be increased to 30 miles under certain conditions), or Emergency Safe Altitudes, established within a 100-mile radius of the navigation facility and normally used only in military procedures at the option of the approval authority. These altitudes are designed for emergency use only and are not routinely used by pilots or by air traffic control. Consequently, they are not considered a factor in determining the extent of adverse effect, used as the basis of a determination, or addressed in the public notice of an aeronautical study.

f. CONSIDERING ACCURACY. Experience has shown that submissions often contain elevation and/or location errors. For this reason, Flight Procedures uses vertical and horizontal accuracy adjustments, as reflected below, to determine the effect on IFR operations.

1. Accuracy Application – Current directives require the FPO to apply accuracy standards to obstacles when evaluating effects on instrument procedures. These accuracy standards typically require an adjustment of 50 feet vertically and 250 feet horizontally to be applied in the most critical direction. Normally, these adjustments are applied to those structures that may become the controlling obstructions and are applicable until their elevation and location are verified by survey.

2. Certified Accuracy – The FPO shall notify air traffic whenever certified accuracy is needed to determine if the structure will have an adverse effect. Air traffic shall then contact the sponsor to request a surveyed verification of the elevation and location. The acceptable accuracy verification method must be provided and certified by a licensed engineer or surveyor. The survey must include the plus or minus accuracy required by the FPO, as well as the signature of the engineer/surveyor and the appropriate seal.

3. Determination – A final determination based on improved accuracy shall not be issued until after the certified survey is received and evaluated.

4. Survey Information Distribution – When the certified survey is received, Air Traffic personnel shall ensure that the survey information is provided to FPO personnel and shall send to NACO a copy of the survey attached to the FAA form 7460-2, Notice of Actual Construction or Alteration.

6–3–10. EVALUATING EFFECT ON AIR NAVIGATION AND COMMUNICATION FACILITIES

a. The FAA is authorized to establish, operate, and maintain air navigation and communications facilities and to protect such facilities from interference. During evaluation of structures, factors that may adversely affect any portion or component of the NAS must be considered. Since an electromagnetic interference potential may create adverse effects as serious as those caused by a physical penetration of the airspace by a structure, those effects shall be identified and stated. Proposals will be handled, when appropriate, directly with FCC through Spectrum Assignment and Engineering Services.

b. Technical operations services personnel shall evaluate notices to determine if the structure will affect the performance of existing or proposed NAS facilities. The study must also include any plans for future facilities, proposed airports, or improvements to existing airports.

c. The physical presence of a structure and/or the electromagnetic signals emanating or reflecting there from may have a substantial adverse effect on the availability, or quality of navigational and communications signals, or on air traffic services needed for the safe operation of aircraft. The following general guidelines are provided to assist in determining the anticipated interference.

1. Instrument Landing System (ILS) – Transmitting antennas are potential sources of electromagnetic interference that may effect the operation of aircraft using an ILS facility. The antenna height, radiation pattern, operating frequency, effective radiated power (ERP), and its proximity to the runway centerline are all factors contributing to the possibility of interference. Normally, any structure supporting a transmitting antenna within the established localizer and/or glide–slope service volume area must be studied carefully. However, extremes in structure height, ERP, frequency, and/or antenna radiation pattern may require careful study of structures up to 30 NM from the ILS frequency's protected service volume area.

(a) ILS Localizer. Large mass structures adjacent to the localizer course and/or antenna array are potential sources of reflections and/or re–radiation that may affect facility operation. The shape and intensity of such reflections and/or re–radiation depends upon the size of the reflecting surface and distance from the localizer antenna. The angle of incidence reflection in the azimuth plane generally follows the rules of basic optical reflection. Normally, in order to affect the course, the reflections must come from structures that lie in or near the on–course signal. Large mass structures of any type, including metallic fences or powerlines, within plus/minus 15 degrees of extended centerline up to 1 NM from the approach end of the runway and any obstruction within 500 feet of the localizer antenna array must be studied carefully. (Refer to FAAO JO 6750.16, Siting Criteria for Instrument Landing Systems).

(b) ILS Glide Slope. Vertical surfaces within approximately 1,000 feet of the runway centerline and located up to 3,000 feet forward of the glide slope antenna can cause harmful reflections. Most interference to the glide slope are caused by discontinuities in the ground surface, described approximately as a rectangular area 1,000 feet wide by 5,000 feet long, extending forward from the glide slope antenna and centered at about the runway centerline. Discontinuities are usually in the form of rough terrain or buildings (refer to FAAO JO 6750.16, Siting Criteria for Instrument Landing Systems).

2. Microwave Landing System (MLS). The guidelines stated for ILS systems above also apply to MLS installations. The established MLS service volume defines the area of concern.

3. Very High Frequency Omni–Directional Radio Range and Tactical Air Navigation Aid (VOR/TACAN). Usually, there should be no reflecting structures or heavy vegetation (trees, brush, etc.) within a 1,000 foot radius of the VOR or the TACAN antenna. Interference may occur from large structures or powerlines up to 2 NM from the antenna. (Refer to FAAO 6820.10, VOR, VOR/DME, and TACAN Siting Criteria).

4. Air Route Surveillance Radar/Airport Surveillance Radar (ARSR/ASR). Normally, there should be no reflecting structures within a 1,500–foot radius of the radar antenna. In addition, large reflective structures up to 3 NM from the antenna can cause interference unless they are in the "shadow" of topographic features.

5. Air Traffic Control Radar Beacon (ATCRB). The effects encountered due to reflections of the secondary radar main lobe are more serious than those associated with primary radar. Therefore, it is necessary to ensure that no large vertical reflecting surface penetrates a 1,500-foot radius horizontal plane located 25 feet below the antenna platform. In addition, interference may occur from large structures up to 12 miles away from the antenna. This distance will depend on the area of the reflecting surface, the reflection coefficient of the surface, and its elevation with respect to the interrogator antenna. (Refer to FAAO 6310.6, Primary/Secondary Terminal Radar Siting Handbook).

6. Directional Finder (DF). The DF antenna site should be free of structures that will obstruct line-of-sight with aircraft at low altitudes. The vicinity within 300 feet of the antenna should be free of metallic structures which can act as re-radiators.

7. Communication Facilities. Minimum desirable distances to prevent interference problems between communication facilities and other construction are:

(a) 1,000 feet from power transmission lines (other than those serving the facility) and other radio or radar facilities.

(b) 300 feet from areas of high vehicle activity such as highways, busy roads, and large parking areas.

(c) One (1) NM from commercial broadcasting stations (e.g., FM, TV).

8. Approach Lighting System. No structure, except the localizer antenna, the localizer far field monitor antenna, or the marker antenna shall protrude above the approach light plane. For approach light plane clearance purposes, all roads, highways, vehicle parking areas, and railroads shall be considered as vertical solid structures. The clearance required above interstate highways is 17 feet; above railroads, 23 feet; and for all other public roads, highways, and vehicle parking areas, 15 feet. The clearance required for a private road is 10 feet or the highest mobile structure that would normally use the road, which would exceed 10 feet. The clearance for roads and highways shall be measured from the crown of the road; the clearance for railroads shall be measured from the top of the rails. For vehicle parking areas, clearance shall be measured from the average grade in the vicinity of the highest point. Relative to airport service roads substantial adverse effect can be eliminated if all vehicular traffic is controlled or managed by the air traffic control facility. A clear line-of-sight is required to all lights in the system from any point on a surface, one-half degree below the aircraft descent path and extending 250 feet each side of the runway centerline, up to 1,600 feet in advance of the outermost light in the system. The effect of parked or taxiing aircraft shall also be considered when evaluating line-of-sight for approach lighting systems.

9. Visual Approach Slope Indicator (VASI)/Precision Approach Path Indicator (PAPI). No structures or obstructions shall be placed within the clearance zone for the particular site involved or the projected visual glide path.

NOTE-
VASI and PAPA now fall under the heading of VGSI.

10. Runway End Identifier Lights (REIL). No structures or obstructions shall be placed within the established clearance zone.

d. Factors that modify the evaluation criteria guidelines require consideration. Some facility signal areas are more susceptible to interference than others. The operational status of some signals may already be marginal because of existing interference from other structures. In addition, the following characteristics of structures must be considered:

1. The higher the structure's height is in relation to the antenna, the greater the chance of interfering reflections. Any structure subtending a vertical angle greater than one degree from the facility is usually cause for concern. Tall structures, such as radio towers and grain elevators, can interfere from distances greater than those listed in the general criteria.

2. The type of construction material on the reflecting surface of the structure is a factor, with nonmetallic surfaces being less troublesome than metallic or metallic impregnated glass.

3. Aircraft hangars with large doors can be a special problem because the reflecting surface of the hangar varies appreciably with changes in the position of the doors.

4. Interference is usually caused by mirror reflections from surfaces on the structure. Orientation of the structure therefore plays an important part in

the extent of the interference. Reflections of the largest amplitude will come from signals striking a surface perpendicular to the signals. Signals striking a surface at a shallow angle will have a smaller amplitude.

e. Air traffic personnel shall request technical operations services personnel to assist them in discussions with sponsors to explore alternatives to resolve the prospective adverse effects to facilities. These may involve design revisions, relocation, or reorientation depending on the character of the construction and facility involved.

f. Attempt to resolve electromagnetic interference (EMI) before issuing a hazard determination. Notify the sponsor by letter (automated DPH letter) that the structure may create harmful EMI and include in the letter the formula and values that were applied, the specific adverse effects expected, and an offer to consider alternatives. Provide the sponsor, as well as the FAA, ample time to exhaust all available avenues for positive resolution. The intent of this process is to allow the sponsor adequate time to consider the problems and the alternatives before a decision is rendered by the issuance of the FAA determination. Follow these guidelines in all situations where harmful EMI is projected by the study.

6–3–11. EVALUATING PLANNED OR FUTURE AIRPORT DEVELOPMENT PROGRAMS

The national system of airports consists of public, civil, and joint–use airport facilities considered necessary to adequately meet the anticipated needs of civil aeronautics. Airport Planning and Programming Offices are the most accurate sources of up–to–date information on airport development plans. Consequently, Airports personnel are expected to extensively review structures in reference to the safe and orderly development of airport facilities, including what development will realistically be accomplished within a reasonable time. Areas of consideration in accomplishing this responsibility are:

a. Future Development of Existing Airports. A detailed review in this area requires looking at current planned airport projects, national airport plan data, and land–use planning studies in the vicinity of the structure. The results of the study forwarded to air traffic shall include appropriate comments regarding the extent of Federal aid, sponsor airport investments, the airport owner's obligations in existing grant–in–aid agreements, and anticipated aeronautical activity at the airport and in the general area. If a structure would adversely impact an airport's efficiency, utility, or capacity, the responsible Airports Office should document this impact in its evaluation. Comments should include recommended new location(s) for the structure as appropriate.

b. New Airport Development. When a structure requiring notice under part 77 and any new airport development are both in the same vicinity, Airports personnel shall study the interrelationship of the structure and the airport. Additionally, supplemental information on the proposed airport site shall be furnished to air traffic. If a substantial adverse effect is anticipated, Airports personnel shall provide detailed comments and specific recommendations for mitigating the adverse effects.

6–3–12. EVALUATING TEMPORARY CONSTRUCTION

a. Temporary Construction Equipment. Construction of structures normally requires use of temporary construction equipment that is of a greater height than the proposed structure. Appropriate action is necessary to ensure that the temporary construction equipment does not present a hazard to air navigation. It is not possible to set forth criteria applicable to every situation; however, the following action examples may help to minimize potential problems:

1. If use of the temporary construction equipment is on an airport, it may be necessary to negotiate with airport managers/owners to close a runway, taxiway, temporarily move a runway threshold, or take other similar action.

2. Negotiate with equipment operators to raise and lower cranes, derricks, or other construction equipment when weather conditions go below predetermined minimums as necessary for air traffic operations or as appropriate for the airport runways in use.

3. Control the movement of construction vehicle traffic on airports.

4. Adjust minimum IFR altitudes or instrument procedures as necessary to accommodate the

construction equipment if such action will not have serious adverse effects on aeronautical operations.

5. Request that the temporary construction equipment be properly marked and/or lighted if needed.

b. Temporary Structures – OE notices for temporary structures are processed in the same manner as a permanent structure, but require special consideration in determining the extent of adverse effect. This is especially true of structures such as cranes and derricks that may only be at a particular site for a short time period. As a general policy, it is considered in the public interest to make whatever adjustments necessary to accommodate the temporary structure of 30 days or less if there is no substantial adverse affect on aeronautical operations or procedures. However, this policy does not apply if the aeronautical study discloses that the structure would be a hazard to aviation. Reasonable adjustments in aeronautical operations and modifications to the temporary structure should be given equal consideration.

6–3–13. CONSIDERING SHIELDING

Shielding as described below should not be confused with notice criteria as stated in Section 77.15(c).

a. Consideration. Shielding is one of many factors that must be considered in determining the physical effect a structure may have upon aeronautical operations and procedures. Good judgment, in addition to the circumstances of location and flight activity, will influence how this factor is considered in determining whether proposed or existing structures would be physically shielded.

b. Principle. The basic principle in applying the shielding guidelines is whether the location and height of the structures are such that aircraft, when operating with due regard for the shielding structure, would not collide with that structure.

c. Limitations. Application of the shielding effect is limited to:

1. The physical protection provided by existing natural terrain, topographic features, or surface structures of equal or greater height than the structure under study; and

2. The structure(s) providing the shielding protection is/are of a permanent nature and there are no plans on file with the FAA for the removal or alteration of the structure(s).

d. Guidelines. Any proposed construction of or alteration to an existing structure is normally considered to be physically shielded by one or more existing permanent structure(s), natural terrain, or topographic feature(s) of equal or greater height if the structure under consideration is located:

1. Not more than 500 feet horizontal distance from the shielding structure(s) and in the congested area of a city, town, or settlement, provided the shielded structure is not located closer than the shielding structures to any heliport or airport located within 5 miles of the structure(s).

2. Such that there would be at least one such shielding structure situated on at least three sides of the shielded structure at a horizontal distance of not more than 500 feet.

3. Within the lateral dimensions of any runway approach surface but would not exceed an overall height above the established airport elevation greater than that of the outer extremity of the approach surface, and located within, but would not penetrate, the shadow plane(s) of the shielding structure(s).

e. Air traffic shall coordinate with FPO before applying shielding criteria for precision approach surface penetrations.

NOTE-
See FIG 6-3-9 and FIG 6-3-14.

6–3–14. CONSIDERING SHADOW PLANE

The term “shadow plane” means a surface originating at a horizontal line passing through the top of the shielding structure at right angles to a straight line extending from the top of the shielding structure to the end of the runway. The shadow plane has a width equal to the projection of the shielding structure’s width onto a plane normal to the line extending from the top and center of the shielding structure to the midpoint of the runway end. The shadow plane extends horizontally outward away from the shielding structure until it intersects or reaches the end of one of the imaginary approach area surfaces; see FIG 6–3–15, FIG 6–3–16, and FIG 6–3–17.

6–3–15. RECOMMENDING MARKING AND LIGHTING OF STRUCTURES

a. STANDARDS. FAA standards, procedures, and types of equipment specified for marking and lighting structures are presented in AC 70/7460–1, Obstruction Marking and Lighting. These standards provide a uniform means to indicate the presence of structures and are the basis for recommending marking and lighting to the public. These standards are the minimum acceptable level of conspicuity to warn pilots of the presence of structures. They shall also apply when Federal funds are to be expended for the marking and lighting of structures.

b. AERONAUTICAL STUDY. All aeronautical studies shall include an evaluation to determine whether obstruction marking and/or lighting are necessary and to what extent. The entire structure or complex, including closely surrounding terrain and other structures, must be considered in recommending marking and lighting. A subsequent study may indicate a need to change an earlier determination by recommending marking and/or lighting when such recommendation was not made in the original study or, in some cases, after a determination was issued.

1. Proposed Structures. A change in runway length or alignment, a new airport development project, a change in aeronautical procedures, or other similar reasons may be cause for additional study of proposed structures to determine whether marking and/or lighting are now appropriate even when not recommended in the original study.

2. Existing Structures. A marking and/or lighting recommendation may be made at any time. In making the recommendation consider changes that have occurred in the vicinity of the structure since the initial determination was made and include such factors as increased aircraft activity, the closing of an airport, changes in IFR and VFR routes, and shielding by taller structures.

c. RECOMMENDATIONS. Recommend the marking and/or lighting standard most appropriate for the height and location of any temporary or permanent structure that:

1. Exceeds 200 feet in overall height above ground level at its site or exceeds any obstruction standard contained in part 77, Subpart C, unless an aeronautical study shows the absence of such marking and/or lighting will not impair aviation safety.

2. Is not more than 200 feet AGL, or is not identified as an obstruction under the standards of part 77, Subpart C, but may indicate by its particular location a need to be marked or lighted to promote aviation safety.

d. PARTIAL MARKING AND/OR LIGHTING. Omitting marking and/or lighting on the structure's bottom section; e.g., the lowest 200 feet of a tall structure should be discouraged unless that part of the structure is shielded. Marking and lighting standards are based on a total system configuration and are only effective when used as intended. Therefore, the structure and its location must be given careful consideration before recommending partial marking and/or lighting.

e. OMISSION/DELETION OF MARKING AND/OR LIGHTING. When recommending that marking and/or lighting be omitted because the structure is sufficiently conspicuous by its shape, size, and/or color, include a judgment that the structure would not blend into any physical or atmospheric background that may reasonably be expected in the vicinity.

f. EXCESSIVE MARKING AND/OR LIGHTING. Recommend specific advisory circular chapters, paragraphs, and, when appropriate, specific intensities that address the minimum marking and/or lighting standards for safety. Recommendation of specific chapters allow for the use of those chapters only, although they may contain references to other chapters. If the sponsor insists on or the FAA finds that high intensity white lights would not be objectionable, indicate in the determination that the FAA does not object to increased conspicuity provided the lighting is in accordance with guidelines of AC 70/7460–1, Obstruction Marking and Lighting.

g. VOLUNTARY MARKING AND/OR LIGHTING. When it is determined not necessary for aviation safety, marking and/or lighting may be accomplished on a voluntary basis. However, marking and/or lighting should not be a condition of the determination, but instead, it shall be recommended that, if voluntary, marking and/or lighting be installed and maintained in accordance with AC 70/7460–1.

h. HIGH AND MEDIUM INTENSITY WHITE OBSTRUCTION LIGHTING SYSTEMS:

1. High intensity lighting systems should not be recommended for structures less than 500 feet above ground level except when an aeronautical study shows otherwise. This does not apply to catenary support structures.

2. Use caution in recommending the use of high or medium intensity white obstruction lighting systems, especially in a populated area. Aircraft operations can be adversely affected where strobe-lighted structures are located in an area of limited visual cues. These situations can contribute to spatial disorientation when pilots are maneuvering in minimum visibility conditions. Marine or surface vessels and other vehicles, especially on nearby elevated roadways, could also experience operational difficulties from strobe lights. External shielding may minimize adverse effects. Examples are:

(a) At locations within the airport/heliport environment in a sparsely lighted rural setting.

(b) At an offshore installation.

3. Dual lighting systems should be considered when a structure is located in or near residential areas, especially in hilly terrain where some houses are higher than the base of the structure.

i. LIGHTED SPHERICAL MARKERS. Lighted spherical markers are available for increased night conspicuity of high-voltage (69kv or greater) transmission-line catenary wires. These markers should be recommended for increased night conspicuity for such wires when located near airports, heliports, across rivers, canyons, lakes, etc. Consider the following when recommending lighted spherical markers: aeronautical activity, nighttime operations, low level operations, local weather conditions, height of wires, length of span, etc. If the support structures are to be lighted, also consider lighting the catenary wires. Installation, size, color, and pattern guidelines can be found in Advisory Circular 70/7460-1, Obstruction Marking and Lighting.

j. DEVIATIONS AND MODIFICATION TO MARKING AND/OR LIGHTING. When the sponsor or owner of a structure requests permission to deviate from or modify the recommended marking and/or lighting, an appropriate aeronautical study should be made to determine whether the deviation/modification is acceptable, and/or whether the recommended marking and/or lighting should be retained.

1. A deviation refers to a change from the standard patterns, intensities, flashing rates, etc. A marking and lighting deviation is considered to be marking patterns or colors and lighting patterns, intensities, flashing rates, or colors other than those specified in AC 70/7460-1.

(a) Requests for deviations shall be forwarded to Airspace and Rules only after an aeronautical study has been conducted on the proposal. The results of the study and the regional recommendation shall be submitted with the request.

(b) Deviations require approval by the Director of System Operations Airspace and AIM. Airspace and Rules shall effect all coordination necessary for issuing the decision to approve or disapprove. The approval or disapproval decision shall be forwarded to the region/service area office for response to the sponsor. Examples of deviations are contained in AC 70/7460-1.

2. The OES may approve a request for a modified application of marking and/or lighting. Examples of modified applications may be found in AC 70/7460-1. A modified application of marking and lighting refers to the amount of standard marking and/or lighting such as:

(a) Placing the standard marking and/or lighting on only a portion of a structure.

(b) Adding marking and/or lighting in addition to the standard marking and lighting to improve the conspicuity of the structure;

(c) Reducing the amount of standard marking and/or lighting to the extent of eliminating one or the other as may be considered appropriate.

(d) Adjusting the standard spacing of recommended intermediate light levels for ease of installation and maintenance as considered appropriate.

6-3-16. NEGOTIATIONS

Negotiations shall be attempted with the sponsor to reduce the structure's height so that it does not exceed obstruction standards, mitigate any adverse effects on aeronautical operations, air navigation and/or

communication facilities, or eliminate substantial adverse effect. If feasible, recommend collocation of the structure with other structures of equal or greater heights. Include in the aeronautical study file and determination a record of all the negotiations attempted and the results. If negotiations result in the withdrawal of the OE notice, the obstruction evaluation study may be terminated. Otherwise, the obstruction evaluation shall be continued to its conclusion.

6–3–17. CIRCULARIZATION

a. Circularizing a public notice of aeronautical study provides the opportunity for interested persons to participate by submitting comments for consideration. The OES shall determine when it is necessary to distribute a public notice.

1. Normally, any structure that would exceed obstruction standards, affect an airport, have possible VFR effect, and/or require a change in aeronautical operations or procedures should always be circularized.

2. Circularization is not necessary for the following types of studies:

(a) A reduction in the height of an existing structure.

(b) A structure that would be located on a site in proximity to another previously studied structure, would have no greater effect on aeronautical operations and procedures, and the basis for the determination issued under the previous study could be appropriately applied.

(c) A proposed structure replacing an existing or destroyed structure, that would be located on the same site and at the same or lower height as the original structure, and marked and/or lighted under the same provisions as the original structure (this does not preclude a recommendation for additional marking/lighting to ensure conspicuity).

(d) A proposed structure that would be in proximity to, and have no greater effect than, a previously studied existing structure, and no plan is on file with the FAA to alter or remove the existing structure.

(e) A structure that would be temporary and appropriate temporary actions could be taken to accommodate the structure without an undue hardship on aviation.

(f) A structure found to have substantial adverse effect based on an internal FAA study.

(g) A structure that would exceed part 77.23(a)(2) and would be outside the traffic pattern.

(h) A structure that would affect IFR operations but would only need FAA comment. For instance a structure that:

(1) Would raise a MOCA, but not a MEA.

(2) Would raise a MVA.

(3) Would raise a MIA.

3. Circularization for existing structures will be determined on a case–by–case basis.

b. Each public notice (automated letter CIR) shall contain:

1. A complete, detailed description of the structure including, as appropriate, illustrations or graphics depicting the location of the structure:

(a) On–airport studies. Use airport layout plans or best available graphic.

(b) Off–airport studies. Use the appropriate aeronautical chart. Additional illustrations may be included, as necessary.

2. A complete description of the obstruction standards that are exceeded, the number of feet by which the structure exceeds the standards.

3. An explanation of the potential effects of the structure in sufficient detail to assist interested persons in formulating comments on how the structure would affect aeronautical operations.

4. A date by which comments are to be received. The date established should normally allow interested persons 30 days in which to submit comments, but a shorter comment period may be established depending upon circumstances.

c. Public notices should be distributed to those who can provide information needed to assist in evaluating the aeronautical effect of the structure. As a minimum, the following governmental agencies, organizations, and individuals should be included on distribution lists due to their inherent aeronautical interests:

1. The sponsor and/or his representative.

2. All known aviation interested persons and groups such as state, city, and local aviation authorities; airport authorities; various military organizations within the DOD; flying clubs; national, state, and local aviation organizations; flight schools; fixed base operators; air taxi, charter flight offices; and other organizations or individuals that demonstrate a specific aeronautical interest such as county judges and city mayors.

3. Airport owners as follows:

(a) All public-use airports within 13 NM of the structure.

(b) All private-use airports within 5 NM of the structure.

4. The specific FAA approach facility, en route facility (ARTCC), and Automated Flight Service Station (AFSS) in whose airspace the structure is located.

5. Flight Standards.

6. An adjacent regional/service area office if the structure is within 13 NM of the regional state boundary.

7. As appropriate, state and local authorities; civic groups; organizations; and individuals who do not have an aeronautical interest, but may become involved in specific aeronautical cases, shall be included in the notice distribution, and given supplemental notice of actions and proceedings on a case-by-case basis. Those involved should clearly understand that the public notice is to solicit aeronautical comments concerning the physical effect of the structure on the safe and efficient use of airspace by aircraft.

8. A proposed structure that penetrates the 40:1 by 35 feet or more, departure slope shall be circularized to the following:

(a) Aircraft Owners and Pilots Association;

(b) National Business Aviation Association;

(c) Regional Air Line Association;

(d) Department of Defense;

(e) Air Transport Association;

(f) Air Line Pilots Association; and

(g) Other appropriate persons and organizations listed in this section.

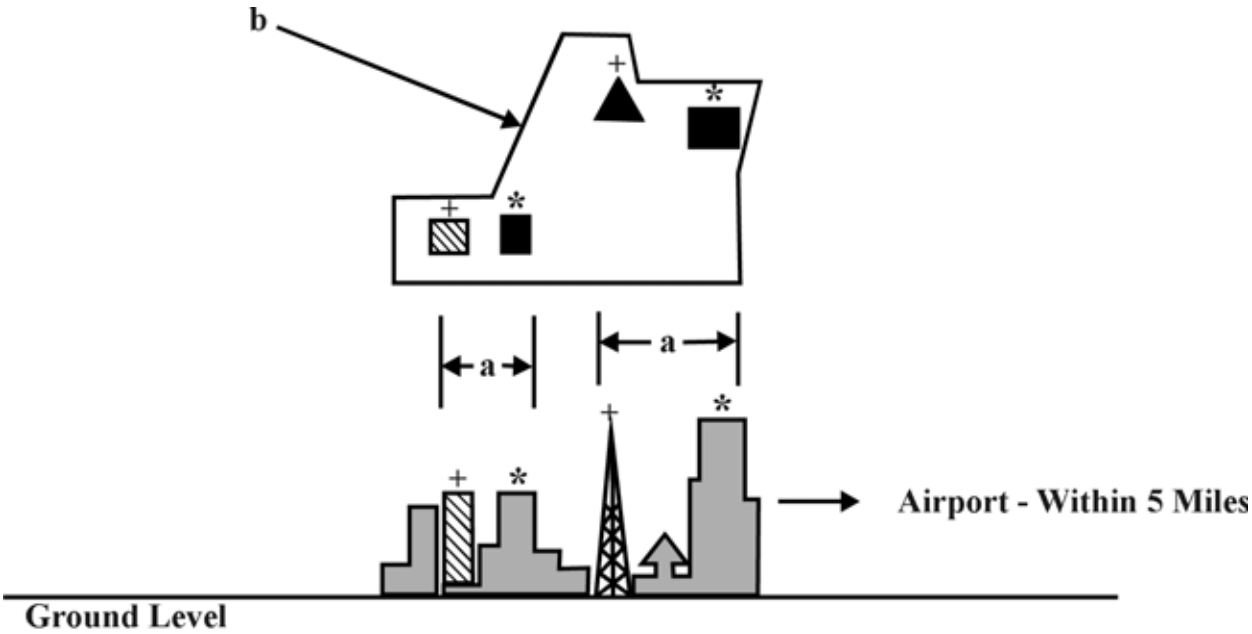
d. Document and place in the obstruction evaluation file the names of each person and/or organizations to which public notice was sent. Reference to a distribution code, mailing list, or other evidence of circularization is sufficient provided a printout or list of each coded distribution is maintained for future reference. Also record the time period during which each printout or list is used. The retention schedule is listed in Order 1350.15, Records Organization, Transfer, and Destruction Standards.

e. Consider only valid aeronautical objections or comments in determining the extent of adverse effect of the structure. Comments of a non-aeronautical nature are not considered in obstruction evaluation as described in part 77.

f. If the sponsor agrees to revise the project so that it does not exceed obstruction standards and would have no adverse effect, cancel the public notice, advise interested parties, as necessary, revise the obstruction evaluation study, and proceed as appropriate.

FIG 6-3-14

STANDARDS FOR DETERMINING SHIELDING: CONGESTED PART OF CITY, TOWN, OR SETTLEMENT



\+ Shielded Object
* Shielding Object
a Not More Than 500 Feet

FIG 6-3-15
STANDARDS FOR DETERMINING SHIELDING

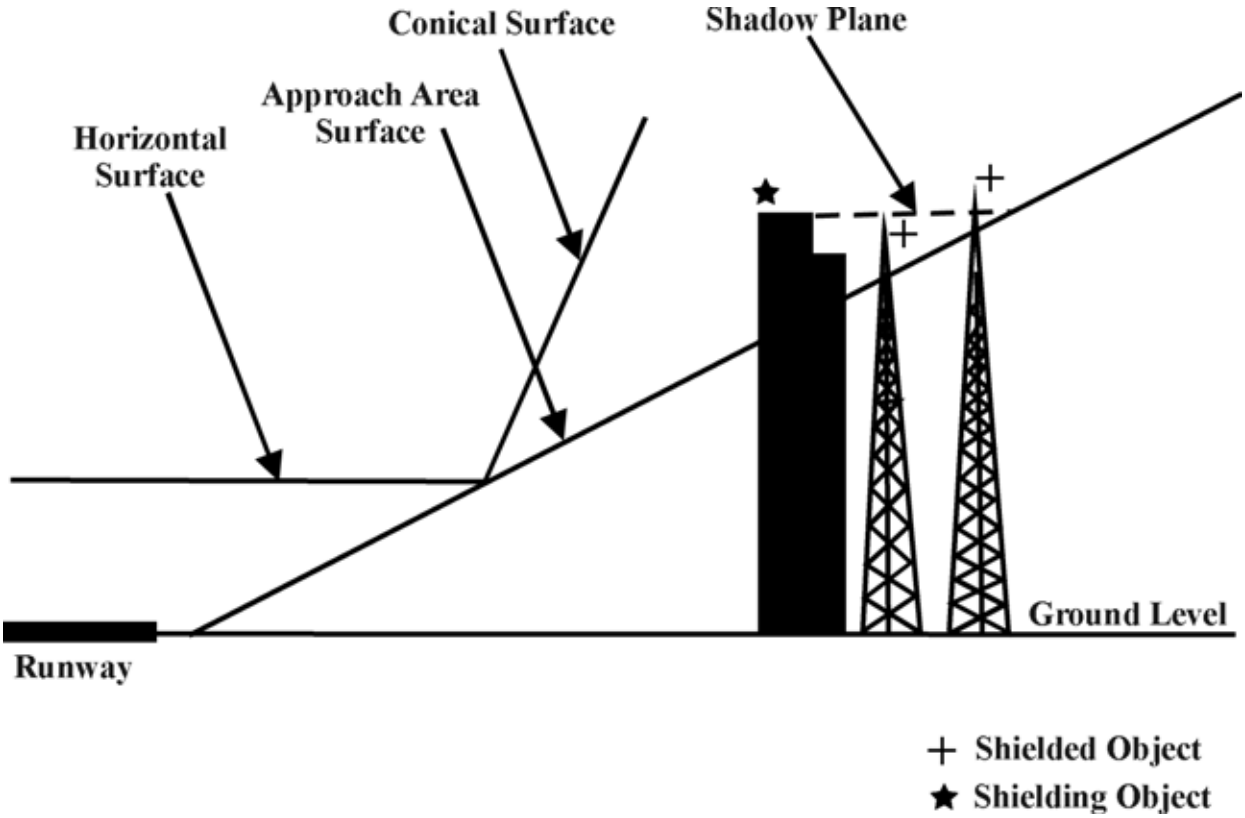


FIG 6-3-16

STANDARDS FOR DEVELOPING SHIELDING: PERSPECTIVE OF A SHADOW PLANE

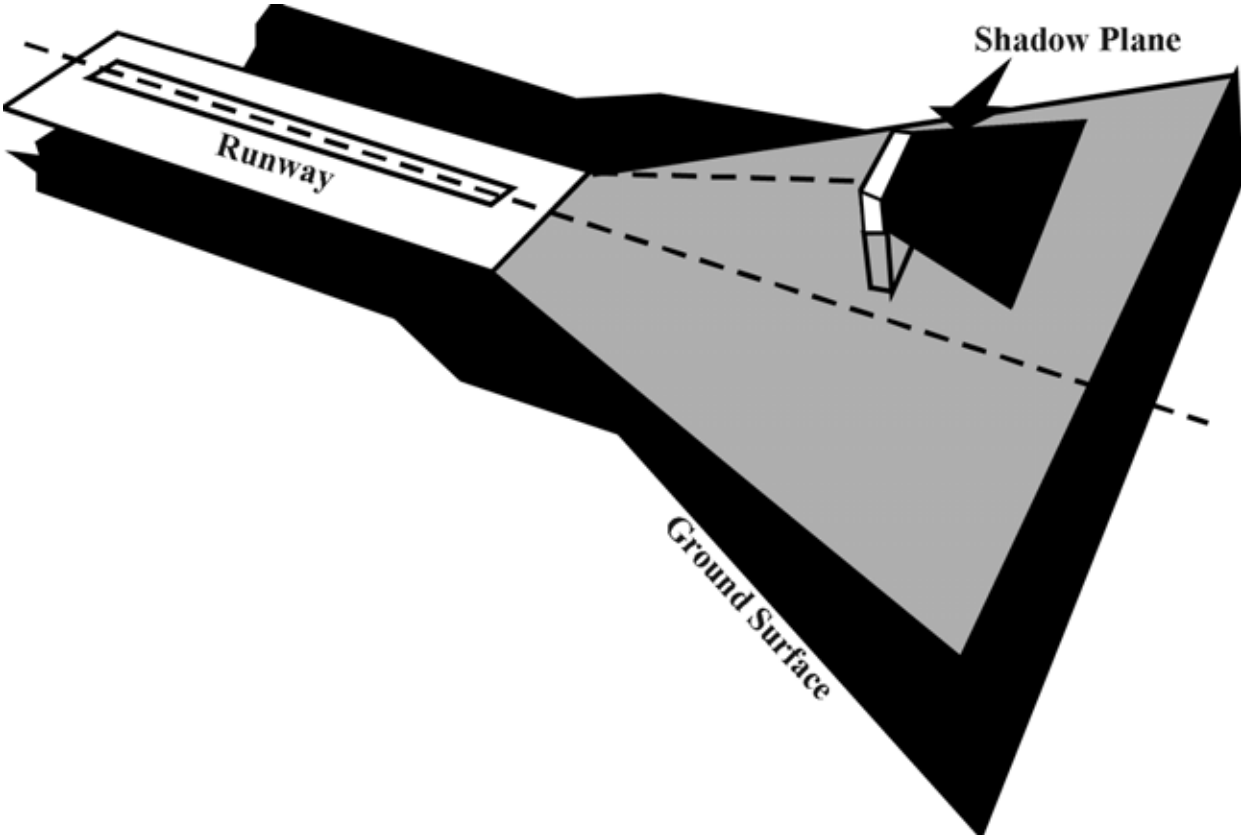


FIG 6-3-17

STANDARDS FOR DETERMINING SHIELDING: EXAMPLES OF SHADOW PLANES

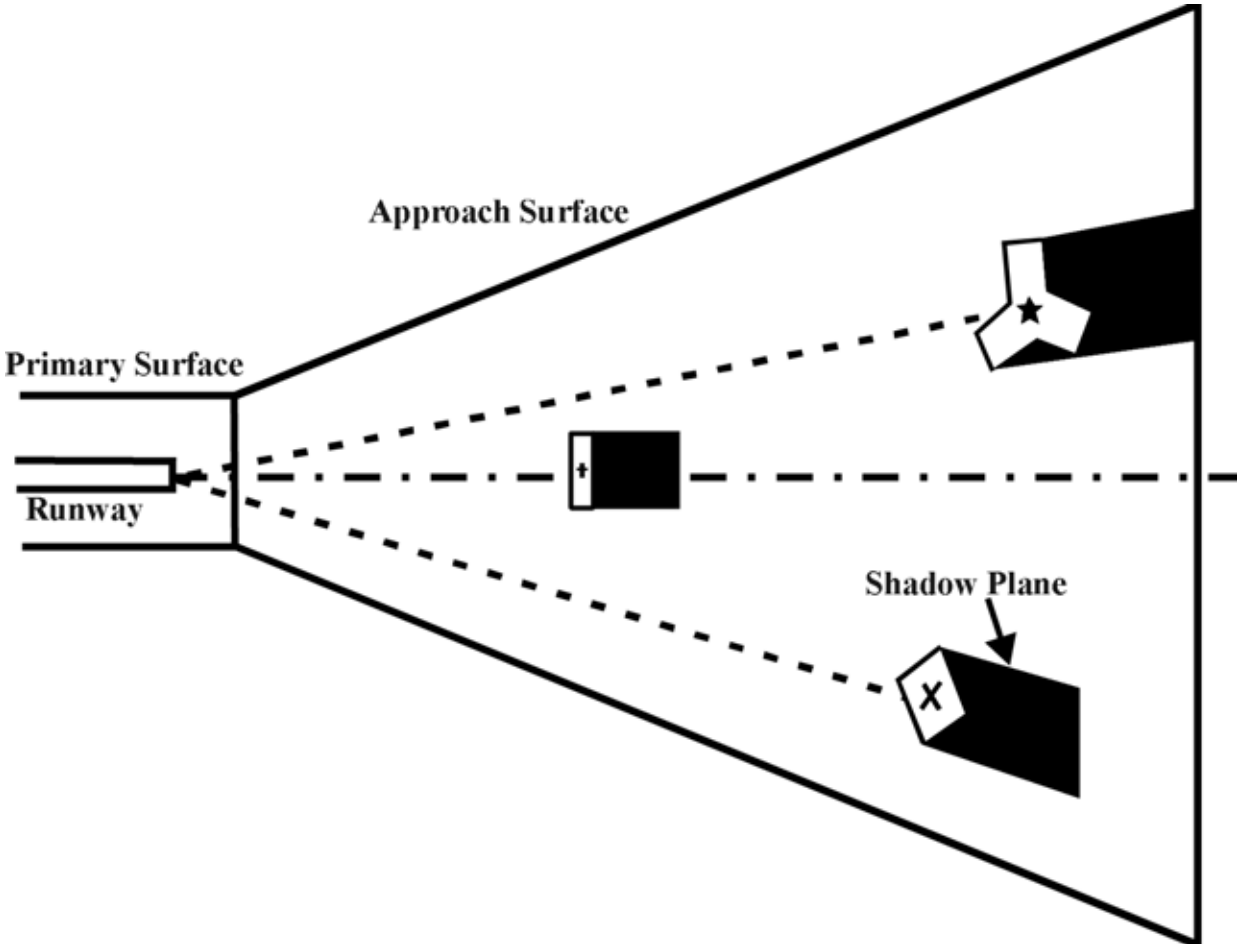


FIG 6-3-18

FREQUENCY PROTECTED SERVICE VOLUME FOR ILS FRONT COURSE

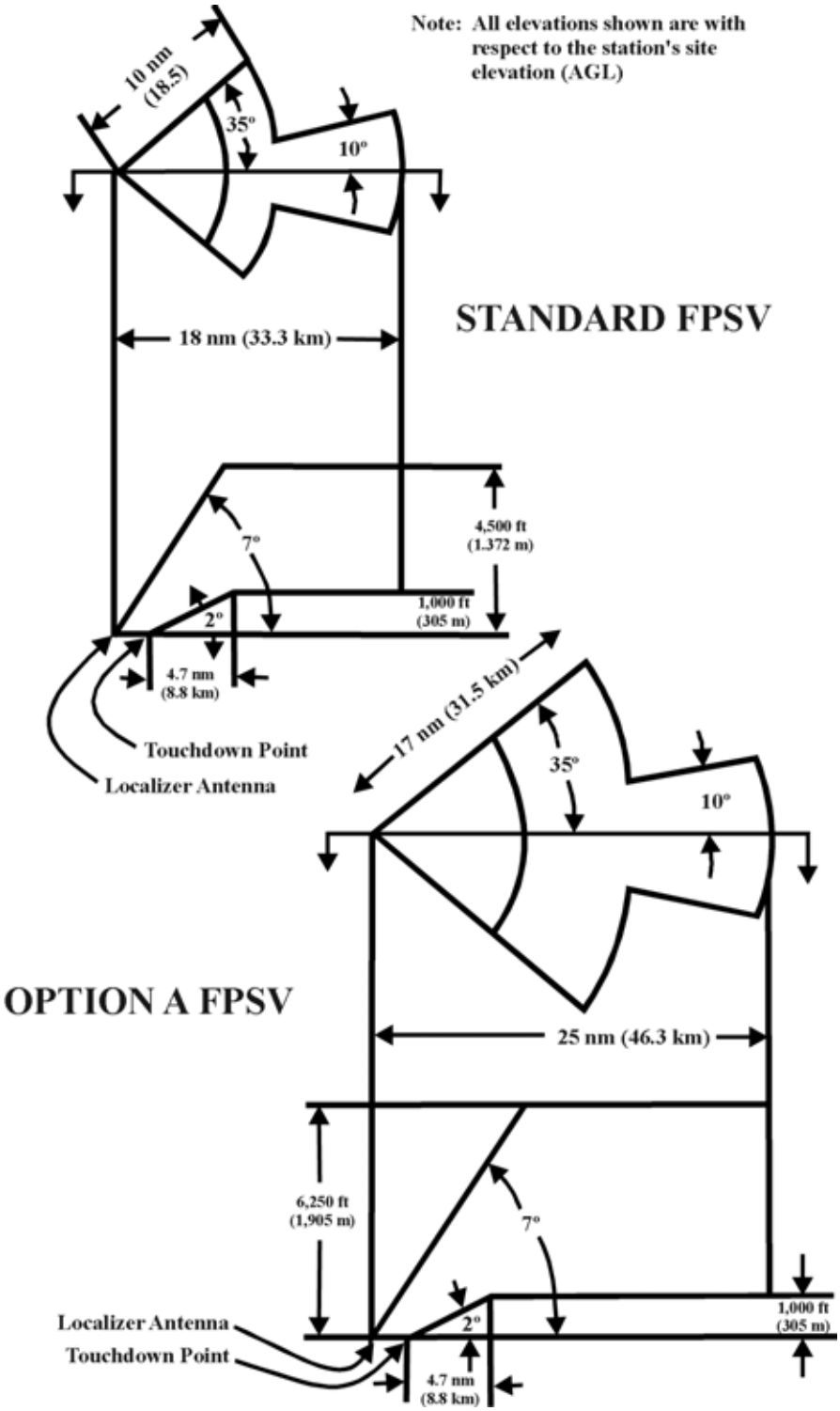


FIG 6-3-19

FREQUENCY PROTECTED SERVICE VOLUME FOR ILS BACK COURSE

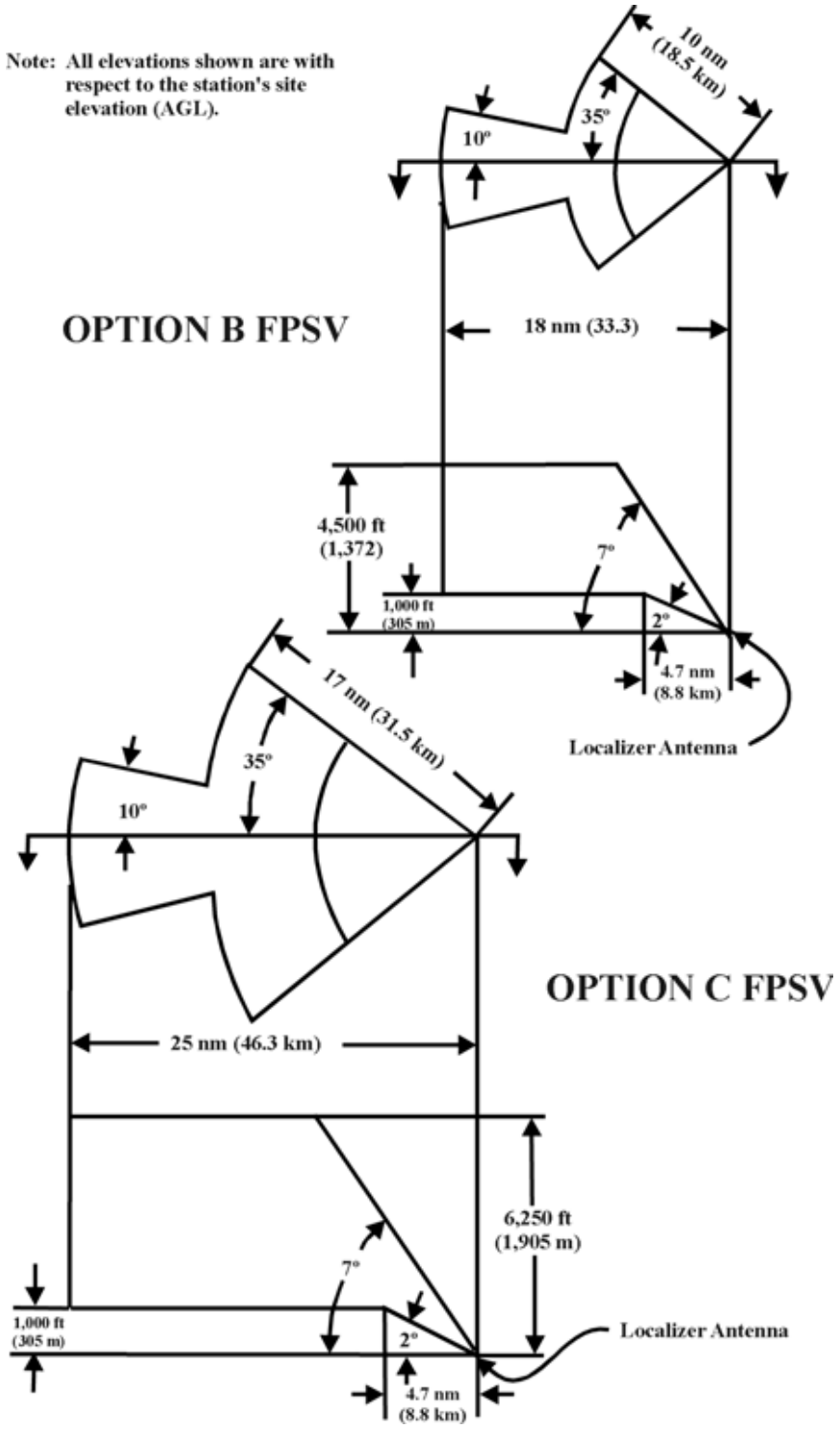
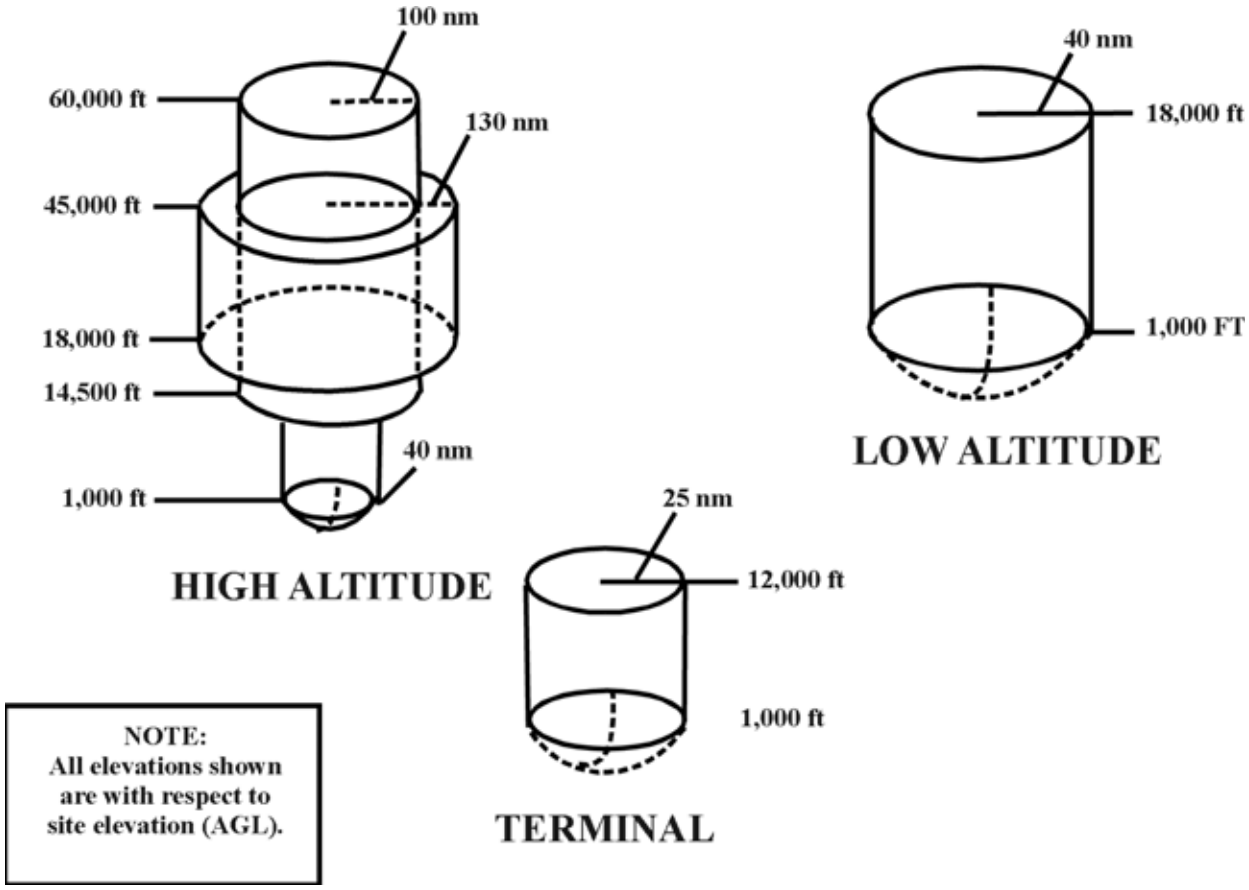


FIG 6-3-20

FREQUENCY PROTECTED SERVICE VOLUME FOR VOR



Chapter 7. Determinations

Section 1. Issuing Determinations

7–1–1. POLICY

All known aeronautical facts revealed during the obstruction evaluation shall be considered when issuing an official FAA determination. The determination shall be a composite of all comments and findings received from interested FAA offices. Should there be a disagreement in the findings, the disagreement shall be resolved before issuance of a determination. The basis for all determinations shall be on the aeronautical study findings as to the extent of adverse physical or electromagnetic interference effect upon navigable airspace or air navigation facilities. Evidence of adverse effect alone, either physical or electromagnetic, is not sufficient justification for a determination of hazard. However, a finding of a substantial physical or electromagnetic adverse effect normally requires issuance of a determination of hazard.

7–1–2. RESPONSIBILITY

a. Air traffic is responsible for issuing determinations.

b. However, if any division objects to a structure that does not exceed part 77 obstruction standards or have a physical or electromagnetic interference effect upon navigable airspace or air navigation facilities, the objecting division shall be responsible for issuing the determination. Examples would be:

1. Objections identifying potential airport hazards based on airport design criteria such as a structure within the runway protection zone (RPZ).

2. Objections identifying potential airport hazards such as structures which may not be above ground level (e.g., landfills, retention ponds, and waste recycling areas) but may create an environment that attracts birds and other wildlife.

7–1–3. DETERMINATIONS

Determinations issued by the FAA receive widespread public distribution and review. Therefore, it is essential that each determination issued is consistent in form and content to the extent practicable. To facilitate this and to achieve economy in clerical handling, automated correspondence is available through the OE/AAA automation program and shall be used in lieu of previously approved FAA forms. Determinations shall be issued as follows:

a. Issue a "Does Not Exceed" (automated DNE letter) determination if the structure does not exceed obstruction standards, does not have substantial adverse physical or electromagnetic interference effect upon navigable airspace or air navigation facilities, and would not be a hazard to air navigation.

NOTE–
A determination indicating that No Notice is Required (NNR) is no longer authorized.

b. Issue an "Exceeds But Okay" (automated EBO letter) determination if the structure exceeds obstruction standards but does not result in a substantial adverse effect, circularization was not necessary, and meets one of the following conditions:

1. The structure is temporary;

2. The structure is existing; or

3. The structure involves an alteration with no physical increase in height or change of location such as a proposed decrease in height or proposed side mount.

NOTE–
The significant difference between an EBO determination and a "Determination of No Hazard to Air Navigation" (DNH) is that the EBO determination does not allow for petition rights.

c. Issue a "Notice of Presumed Hazard" (automated NPH letter) if the structure exceeds obstruction standards and/or has an adverse effect upon navigable airspace or air navigation facilities and resolution or further study is necessary to fully determine the extent of the adverse effect. The NPH facilitates negotiation and is useful in preserving navigable airspace. Normally, the FAA should not automatically initiate further study (including circularization) without a request to do so by the sponsor. The intent of the NPH is to inform the

sponsor of the initial findings and to attempt resolution. If the sponsor fails to contact the FAA after receiving the notice, terminate the case. No further action by the FAA is required unless the sponsor re-files. If negotiation is successful, and resolution is achieved, or further study is completed, an appropriate subsequent determination should be issued.

d. Issue a "Determination of No Hazard" (DNH) if the structure exceeds obstruction standards but does not result in a substantial adverse effect.

e. Issue a "Determination of Hazard" (DOH) if the structure would have or has a substantial adverse effect; negotiations with the sponsor have been unsuccessful in eliminating the substantial adverse effect; and the affected aeronautical operations and/or procedures cannot be adjusted to accommodate the structure without resulting in a substantial adverse effect. The obstruction evaluation may or may not have been circularized.

7-1-4. DETERMINATION CONTENT AND OPTIONS

Use the following items, as appropriate, to ensure that the necessary information is included in each determination:

a. All no hazard determinations shall address or include:

1. FULL DESCRIPTION. A full description of the structure, project, etc., including all submitted frequencies and ERP shall be included. Use exact information to clearly identify the nature of the project (e.g., microwave antenna tower; FM, AM, or TV antenna tower; suspension bridge; four-stack power plant; etc.).

2. LATITUDE, LONGITUDE, AND HEIGHT. Specify the latitude, longitude, and height(s) of each structure. When an obstruction evaluation study concerns an array of antennas or other multiple-type structures, specific information on each structure should be included.

3. MARKING AND/OR LIGHTING. A marking and/or lighting recommendation shall be a condition of the determination when aeronautical study discloses that the marking and/or lighting are necessary for aviation safety.

(a) If the OE notice was for an existing structure with no physical alteration to height or location (e.g., a side mount or an editorial correction to coordinates and/or elevations due to more accurate data), and the structure was previously studied, the recommended marking and/or lighting may be in accordance with the prior study.

(b) If the notice is for a new structure, a physical alteration (height/location) to an existing structure, or an existing structure that did not involve a physical alteration but was not previously studied, the recommended marking and/or lighting shall be in accordance with appropriate chapters of the current AC 70/7460-1, Obstruction Marking and Lighting.

(c) If the OE notice was for a change in marking and/or lighting of a prior study whether the structure exists or not yet built, the recommended marking and/or lighting shall be in accordance with appropriate chapters of the current AC 70/7460-1.

(1) If it is an existing FCC-licensed structure, and the requested marking and/or lighting change is recommended, notify the sponsor to apply to the FCC for permission to make the change. Use the following specific language: "If the structure is subject to the authority of the Federal Communications Commission, a copy of this letter shall be forwarded to them and application should be made to the FCC for permission to change the marking and/or lighting as requested." This language is available in the automated letters.

(2) If the marking and/or lighting change involves high intensity white obstruction lights on an FCC-licensed structure, the sponsor shall be notified that the FCC requires an environmental assessment. Use the following specific language: "FCC licensees are required to file an environmental assessment with the Commission when seeking authorization for the use of the high intensity flashing white lighting system on structures located in residential neighborhoods, as defined by the applicable zoning law."

(3) If it is an existing structure and the requested marking and/or lighting change is recommended, the sponsor shall be required to notify the National Aeronautical Charting Office (NACO) directly when the change has been accomplished. Use the following specific language: "So that aeronautical charts and records can be updated, please notify National Aeronautical Charting Office (NACO) in writing (with a courtesy copy to the

FAA's National Flight Data Center) when the new system is installed and operational. NACO notification should be addressed to: National Aeronautical Charting Office, Aeronautical Information Branch, Room 5601 N/ACC113, 1305 East-West Highway, Silver Spring, Maryland 20910."

(d) If it is determined that marking and/or lighting are not necessary for aviation safety, marking and/or lighting may be accomplished on a voluntary basis. However, marking and/or lighting should not be a condition of the determination. Instead, it shall be recommended that voluntary marking and/or lighting be installed and maintained in accordance with AC 70/7460-1. Use specific language as follows: "Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking and/or lighting are accomplished on a voluntary basis, we recommend it be installed and maintained in accordance with FAA Advisory Circular 70/7460-1."

4. SUPPLEMENTAL NOTICE. FAA Form 7460-2, Notice of Actual Construction or Alteration, Part 2, is the authorized form for sponsors to report the start, completion, or abandonment of construction, and the dismantlement of structures. Furnish this form to each sponsor when supplemental notice is required. Each service area office shall take action to insure that their return address is correct before sending the form to the sponsor.

(a) When deemed necessary, request sponsors to complete and mail Part 1 of FAA Form 7460-2, to be received at least 10 days before the start of construction or alteration, when:

(1) An aeronautical procedure or minimum flight altitude will be affected (supplemental notice earlier than 10 days may be requested to permit adjustments).

(2) The construction will be in progress over an extended period of time.

(3) The structure will exceed 500 feet AGL and will be erected within a relatively short period of time, as in the case of a TV tower.

(b) In addition, submission by the sponsor of FAA Form 7460-2, shall be required when the structure is a new construction or involves a proposed physical alteration, and:

(1) Is more than 200 feet above ground level (AGL).

(2) Is less than 200 feet AGL but exceeds obstruction standards, requires a change to an established FAA procedure or flight minimum, requires certified accuracy so as not to exceed minimums.

(3) The FAA deems it necessary for any other reason.

(c) The information submitted on FAA Form 7460-2 is used for:

(1) Charting obstructions to air navigation on aeronautical charts.

(2) Giving notice to airmen, when applicable, of the construction of obstructions.

(3) Changing affected aeronautical procedures and operations.

(4) Revising minimum flight altitudes.

(5) Updating the NACO Obstacle Digital File.

(d) Do not require supplemental notice for existing structures that do not involve a proposed physical alteration. Instead, directly communicate the known information to NACO and other relevant persons or organizations, as necessary.

5. EXPIRATION DATE. Include an expiration date, if applicable.

(a) Assign an expiration date to all determinations that involve new construction or alterations.

(1) Normally all determinations, whether FCC construction permit related or not, shall be assigned an expiration date 18 months from the effective/issued date. In the case of determinations involving petition rights, the expiration shall be 18 months from the final date of the determination.

(2) If circumstances warrant, an expiration date not to exceed 18 months should be assigned.

(b) The determination expires on the date prescribed unless:

(1) Extended, revised, or terminated by the issuing office.

(2) The construction is subject to the licensing authority of the FCC and an application for a construction permit has been filed as required

by the FCC within six months of the date of the determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application. A request for extension must be postmarked or delivered at least 15 days prior to expiration.

(c) If the date of a final determination is changed because of a petition or review, a new expiration date will be specified as appropriate.

(d) Determinations involving existing structures that do not involve a proposed physical alteration shall not contain an expiration date.

6. SPECIAL CONDITIONS. Any condition upon which a no hazard determination is based shall be specified in the determination. When FAA Form 7460–2 is requested, a condition of the determination will be for the sponsor to keep the FAA informed of the project's status. Use the following specific language: "As a result of this structure being critical to flight safety, it is required that the FAA be kept informed as to the status of the project. Failure to respond to periodic FAA inquiries could invalidate this determination."

7. SPECIAL STATEMENTS. To help prevent potential problems, all determinations shall include the following statements:

(a) "This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any change in coordinates, heights, frequency(ies) or use of greater power will void this determination. Any future construction or alteration, including increase in heights, power, or the addition of other transmitters, requires separate notice to the FAA."

(b) "This determination does include temporary construction equipment, such as cranes, derricks, etc., which may be used during the actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA."

(c) "This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, state, or local government body."

8. ADVISORIES. Determinations may require advisory statements (available in the automated letters) to notify sponsors of potential issues.

(a) Issues pertaining to noise can be addressed as a statement in the determination with the following language: "The structure considered under this study lies in proximity to an airport and occupants may be subjected to noise from aircraft operating to and from the airport."

(b) When requested by the military, issues pertaining to military training areas/routes can be addressed in a determination with the following language: "While the structure does not constitute a hazard to air navigation, it would be located within or near a military training area and/or route."

(c) Issues pertaining to a runway protection zone can be addressed in the determination as follows: "While the structure does not constitute a hazard to air navigation, it would be located within the Runway Protection Zone (RPZ) of the airport/runway. Structures, which will result in the congregation of people within an RPZ, are strongly discouraged in the interest of protecting people and property on the ground. In cases where the airport owner can control the use of the property, such structures are prohibited. In cases where the airport owner exercises no such control, advisory recommendations are issued to inform the sponsor of the inadvisability of the project from the standpoint of safety to personnel and property."

b. In addition to the above items, a DNH shall also include or address:

1. Obstruction standards exceeded.

2. Effect on VFR/IFR aeronautical departure/arrival and en route operations, procedures, and minimum flight altitudes.

3. Effect on existing public–use airports and aeronautical facilities.

4. Effect on all planned public–use airports and aeronautical facilities.

5. Cumulative impact resulting from the proposed construction or alteration of a structure when combined with the impact of other existing or proposed structures.

6. Information and comments received as a result of circularization, informal airspace meetings, and negotiations.

7. Reasons and basis for the determination that the structure will not be a hazard to air navigation and any accommodations necessary by aeronautical users or sponsors.

8. Consideration given to any valid aeronautical comments received during the aeronautical study. The official FAA determination shall be a composite of the comments and findings received from other interested FAA offices.

9. Conditions of the determination including recommendations for marking and/or lighting of a structure, changes in procedures and/or altitudes that are necessary to accommodate the structure. The "conditions" should include a statement that appropriate action will be taken to amend the effected procedure(s) and/or altitude(s) upon notification to the FAA by the sponsor prior to the start of construction or alteration.

10. Limitations, if any.

11. Petitioning information regardless of whether the structure is proposed or existing using the following specific language: "This determination is subject to review if an interested party files a petition that is received by the FAA (30 days from issued date). In the event a petition for review is filed, it must contain a full statement of the basis upon which it is made and be submitted to the Manager, Airspace and Rules, Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591. This determination becomes final on [40 days from issued date] unless a petition is timely filed. In which case, this determination will not become final pending disposition of the petition. Interested parties will be notified of the grant of any review."

c. A DOH shall include or address:

1. FULL DESCRIPTION. A full description of the structure, project, proposal, etc. including all submitted frequencies and ERP shall be included. Use exact information to clearly identify the nature of the project. Use wording, such as microwave antenna tower, FM or AM antenna tower, suspension bridge, TV antenna tower, or four-stack power plant.

2. LATITUDE, LONGITUDE, AND HEIGHT. Specify the latitude, longitude, and height(s) of each structure. When an obstruction evaluation study concerns an array of antennas or other multiple-type structures, specific information on each structure should be included.

3. BASIS FOR THE DETERMINATION. The reasons and basis for the determination must include the adverse effect of the proposal upon the safe and efficient use of the navigable airspace by aircraft and upon air navigation facilities. Also, state the reasons the affected aeronautical operations or the procedure cannot be adjusted to alleviate or eliminate the conflicting demands for the airspace. As a minimum, the determination shall address the following:

(a) Obstruction standards exceeded.

(b) The effect on VFR/IFR aeronautical departure/arrival and en route operations, procedures, and the minimum flight altitudes effect on existing public-use airports and aeronautical facilities.

(c) The effect on all planned public-use airports and aeronautical facilities on file with the FAA or for which the FAA has received adequate notice.

(d) The cumulative impact resulting from the proposed construction or alteration of a structure when combined with the impact of other existing or proposed structures.

(e) Information and comments received as a result of circularization, informal airspace meetings and negotiations.

(f) Reasons and basis for the determination as to why the structure would be a hazard to air navigation (e.g., a clear showing of substantial adverse effect).

4. PETITIONING INFORMATION - Include petitioning information regardless of whether the structure is proposed or existing using the following specific language: "This determination is subject to review if an interested party files a petition on or before [30 days from issued date]. In the event a petition for review is filed, it must contain a full statement of the basis upon which it is made and be submitted to the Manager, Airspace and Rules, Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591. This determination becomes final on [40 days from issued date] unless a petition is timely filed. The determination will not become final pending disposition of the

petition. Interested parties will be notified of the grant of any review."

7-1-5. DETERMINATION DATES

a. ISSUED DATE - The issuance date of a determination is the date the determination is distributed.

b. PETITION DEADLINE - For determinations that involve petition rights, the deadline for receipt of petition shall be 30 days from the date of issuance.

c. EFFECTIVE DATE -

1. The effective date of determinations that do not involve petition rights shall be the date of issuance.

2. The effective date of determinations that involve petition rights, whether for existing or proposed structures, shall be 40 days from the date of issuance provided a petition for review is not filed. If a petition for review is filed, the determination will not become final pending disposition of the petition.

NOTE-
The effective date and the issued date may or may not be the same. The effective date may also be referred to as the final date.

7-1-6. EXISTING STRUCTURES

A determination issued as a result of the study of an existing structure may be written in the following forms:

a. As a DOH or DNH.

b. As a formal letter outlining the effects of the structure and perhaps recommending to the sponsor that the structure be marked and/or lighted, specifying that it be reduced in height, or specifying that it be removed.

c. As an informal letter or staff study making an internal FAA recommendation.

d. As a formal letter to the FCC recommending the dismantling of an abandoned tower.

7-1-7. DISTRIBUTION OF DETERMINATIONS

A record of the distribution for each determination whether original, revised, extended, or affirmed shall be maintained in the aeronautical study file. When appropriate, a reference to the distribution code, a mailing list, or any other evidence of distribution will be sufficient.

a. Copies of all determinations shall be sent to the:

1. Sponsor (with FAA Form 7460-2 as necessary)

2. Sponsor's representative (if any).

3. FCC (if the structure is subject to its licensing authority).

4. NACO in lieu of FAA Form 7460-2 (if the structure is existing and does not involve a proposed physical alteration). Copies of the determination shall always be accompanied by a copy of the submitted map and, if applicable, a copy of the survey; or if the determination involves a change to marking and/or lighting of an existing structure for which the sponsor has been requested to notify NACO directly of the change.

5. Copies of the determination shall always be accompanied by a copy of the submitted map and, if applicable, a copy of the surveys.

6. Other persons, offices, or entities as deemed necessary or as requested.

b. In addition to the above distribution, copies of a DNH and DOH shall also be sent to:

1. NACO.

2. Military representatives.

3. All other interested persons.

Section 2. Extension of Determinations

7–2–1. AUTHORITY

The FAA official issuing a determination has the delegated authority to grant an extension. Where a petition for an extension generates public interest or controversy, the OES shall inform the office of System Operations Airspace and AIM.

7–2–2. CONDITIONS

An extension may be granted provided the request is timely (received by the FAA 15 days before the determination expires) and a review of aeronautical activity shows no significant adverse effect resulting from a change that has occurred since the determination was issued. In the event a request for extension to the expiration date cannot be granted based on new facts, a "Determination of Hazard to Air Navigation" should be issued effective on the day following the expiration date of the no hazard determination.

7–2–3. COORDINATION

Coordination with Airspace and Rules shall be obtained before denying extensions that pertain to structures that are subject to FCC licensing authority.

7–2–4. EXTENSION PERIOD

Normally, an extension should be for a period of 18 months, unless the sponsor requests a shorter period.

7–2–5. REVIEW PROVISIONS FOR PETITION

If an extension is granted on a DNH, petition rights apply, and therefore, each such extension shall contain a statement advising of the petition period, the effective date, and the new expiration date.

7–2–6. DISTRIBUTION

Distribution shall be accomplished in accordance with paragraph 7–1–7.

Section 3. Revision, Correction, and Termination of Determination

7–3–1. REVISIONS AND TERMINATIONS BASED ON NEW FACTS

The FAA official responsible for issuing a no hazard determination has the delegated authority (Section 77.39) to revise or terminate the determination provided. The decision is based upon new facts that change the basis on which the original determination was made.

a. Revised determinations based on new aeronautical facts shall be issued under a new aeronautical study number that would cancel and supersede the original determination.

b. A decision to terminate a no–hazard determination shall be based on new facts that change the basis on which the determination was made. Normally in such a case, a subsequent "Determination of Hazard" would be issued under a new aeronautical study number.

7–3–2. CORRECTION

The FAA official issuing a determination may also correct that determination as required. Editorial changes that do not involve a coordinate change (of one second or more in latitude or longitude) or elevation change (of one foot or more) may be issued as corrections. In this case, no change to dates would be necessary. Adjustments or corrections to a proposal that involve one or both of the above coordinate or elevation changes shall be addressed as a new and separate obstruction evaluation study.

7–3–3. STANDARD FORMAT

a. A revised determination based on new aeronautical facts shall follow the standard format of the appropriate determination. An explanation should be included addressing the reason for the revision. A statement indicating that the revised determination cancels and supersedes the determination originally issued, should also be included.

b. A determination addressing editorial changes that do not involve structure coordinates or elevations may be issued by duplicating the original determination, making the corrections, adding a statement explaining the correction, and adding "Corrected" at the end of the title.

c. A determination addressing corrections to coordinates or elevations shall follow the standard format of the appropriate determination. An explanation should be included addressing the correction. This may be done in the description section of the determination. A statement should also be included which indicates that the corrected determination cancels and supersedes the original determination.

7–3–4. DISTRIBUTION

Copies of revised or corrected determinations shall be given the same distribution as the original determination and, if appropriate, be distributed to other known interested persons or parties.

Chapter 8. Post Determination Action

Section 1. Action

8–1–1. FOLLOW–UP ACTION

If a determination requires supplemental notice (Form 7460–2) and the expiration date has passed without its receipt, action shall be taken to determine construction status. To assist in this process, the automated "Follow–up Report" is available to identify those cases that require action. To determine construction status, air traffic shall forward an automated Project Status Request (PSR) letter to the sponsor. If the sponsor fails to complete and return the PSR within 37 days, air traffic may send an automated Termination Project Status (TERPSR) letter to terminate the case.

NOTE–
If a previous PSR has been received for the case indicating an FCC application has been made for a construction permit, the case shall not be terminated. Consequently, additional attempts shall be made to determine construction status.

8–1–2. RECEIPT OF COMPLETED PSR

When a completed PSR is received, air traffic shall:

a. Ensure that a copy of the Construction Permit (CP) documentation is attached (if the completed PSR indicates "Subject to CP").

1. If improper documentation or no documentation is attached, the case may be terminated. Distribute the termination letter as appropriate including a copy to the FCC.

2. If proper documentation is attached:

(a) Retain the completed PSR.

(b) Make a manual update to the automated OE case file to reflect a follow–up date consistent with the expiration of the CP. If a CP has been applied for but has not been issued, indicate one year later for the new follow–up date.

b. If the completed PSR indicates "Not Subject to a CP":

1. Retain the completed PSR.

2. Terminate the case (send automated TEREXP letter).

3. Distribute the termination letter as appropriate including a copy to the FCC.

c. If the completed PSR indicates "Project Abandoned," refer to paragraph 8–1–4.

d. If the completed PSR indicates "Project Complete," take action that is consistent with receipt of a completed Form 7460–2.

8–1–3. RECEIPT OF COMPLETED FORM 7460–2

When a completed Form 7460–2 is received, air traffic shall immediately:

a. Review the form.

1. If the form indicates "Project Abandoned," follow procedures outlined in paragraph 8–1–4.

2. If the form indicates "Construction Dismantled," follow procedures outlined in paragraph 8–1–5.

b. Compare the information on the form with the study file.

1. If information on the form differs from the study file, take appropriate action to verify and/or resolve any differences.

2. If it is verified that submitted information differs from the original evaluation, initiate a new aeronautical study to reevaluate the new information.

c. Make special distribution of completed Form 7460–2, part 1, as necessary. If minimum flight altitudes require change or the potential for EMI exists, notify the FPO, FS, Technical Operations Services, and/or FM by the quickest means possible.

d. Distribute the completed Form 7460–2, part 2, as follows:

1. Send one copy of completed Form 7460–2 to NOS along with a copy of the map and survey (if applicable).

2. Send a copy of completed Form 7460–2 to all interested offices including military, AFSS, ARTCC

E-MSAW, ARTS IIA, III, IIIA, and Micro E ARTS facilities.

e. Make the necessary manual updates to the automated OE case file.

8-1-4. PROCESSING PROJECT ABANDONED NOTIFICATION

When notification of an abandonment is received, air traffic shall:

a. Retain the correspondence or record of conversation notifying that the project has been abandoned.

b. Terminate the case (send an automated TERABA letter).

c. Distribute the termination letter, as appropriate. If the termination is for an FCC involved structure, send a copy to the FCC.

8-1-5. PROCESSING DISMANTLEMENT NOTIFICATION

When notification of a dismantled structure is received, air traffic shall:

a. Retain the correspondence notifying that the project has been dismantled.

b. Make a manual update to the automated OE case file if available.

c. Notify the NACO, FCC (if it is involved), and FPO of the dismantled structure by sending a copy of the received correspondence.

Chapter 9. Discretionary Review Process

Section 1. General

9–1–1. AUTHORITY

The Director of System Operations Airspace and AIM is delegated the authority to:

a. Grant or deny a petition for discretionary review;

b. Decide the procedural basis upon which a review will be made;

c. Affirm, revise, or reverse a determination issued in accordance with Part 77, section 77.19, 77.35, or 77.39c; and

d. Remand the case to OES for termination, re–study or other action as necessary.

9–1–2. OES RESPONSIBILITY

a. Any written communication that contains an objection to a determination issued under part 77, sections 77.19, 77.35, or 77.39, and which may be considered a petition under section 77.37, must be treated as a petition.

b. Any FAA office receiving a petition for discretionary review must immediately forward the document to the Airspace and Rules Group.

c. If a petition regarding a "Determination of No Hazard" is received toward the end of the 30–day petition–filing period, the receiving office shall notify the Airspace and Rules Group as soon as possible.

d. The OES shall assist, as requested, and provide information in a timely manner.

9–1–3. JURISDICTION

Upon receipt of a petition, jurisdiction of the case immediately transfers from the issuing office to the Airspace and Rules Group and any further coordination with the petitioner, the sponsor, and/or the respective representative(s) shall be conducted by the Airspace and Rules Group.

Section 2. Petition Processing

9–2–1. ADMINISTRATIVE PROCESSING

Upon receiving a petition, the FAA will:

a. Assign an OE case number to the petition composed of the last two digits of the calendar year in which the assignment is made, the symbol "AWA" to indicate Washington headquarters, the symbol "OE" to indicate obstruction evaluation, and a serial number. Serial numbers run consecutively within each calendar year.

b. If the petition does not meet the criteria in part 77, notify the petitioner in writing.

c. If the petition does meet the criteria in part 77, notify the sponsor, the petitioner, the OES, and, if appropriate, the FCC that the determination is not and will not become final pending disposition of the petition.

d. Distribute a copy of a valid petition and the associated determination to the Spectrum Assignment and Engineering Services, Flight Procedures Standards Branch, AFS–420, Airport Engineering Division, AAS–100; and the National Flight Procedures office for their examination.

e. There are no regulatory time frames for the completion of the processing of a petition. However, every effort should be made to complete the examination, or review, within six months of receipt of the petition.

9–2–2. RECOMMENDATIONS

Based upon the results of the examination of the petition and further coordination with Spectrum Assignment and Engineering Services, AFS–420, AAS–100, National Flight Procedures Office, and, as appropriate, AGC, the Airspace and Rules Group shall recommend to the Director of System Operations Airspace and AIM whether to grant or deny the review, and whether the review should include a public comment period.

9–2–3. DISTRIBUTION OF NOTICES OF GRANT REVIEW

The Airspace and Rules Group will distribute the notice to grant discretionary review in writing to the petitioner, the sponsor, interested parties of record, and the FCC, if appropriate. The notice will include, but is not limited to: a statement of the specific issues to be considered; the aeronautical study number, a description of the proposal's location and height; the obstruction standards that are exceeded; the date the comment period closes (no less than 45 days from issuance of the grant); where to send comments, and a person to contact for more information.

9–2–4. OES PARTICIPATION

When a discretionary review is granted, the Airspace and Rules Group shall request the OES submit a written summary report and recommendation in accordance with Section 77.37(c)(1). The summary report and recommendation shall include, but is not limited, to the following:

a. The original or certified true copy of the aeronautical study case file.

b. A narrative summary of the aeronautical study including:

1. A full description of height and location of the structure/project.

2. The obstruction standards exceeded and to what extent.

3. Adverse affects, as described in paragraph 6–3–3 of this order.

4. Summary of comments.

5. Summary of discussions conducted with sponsor.

6. Any other necessary information.

c. A recommendation as to the disposition of the petition (e.g., to affirm, revise, or reverse the determination).

d. Verify, if appropriate, the following documents have been entered into the case file:

1. FAA Form 7460–1 or other form notice.

2. Copies of all correspondence sent to the sponsor.

3. Public notice of the aeronautical study.

4. Comments received as a result of circularization for public comment.

5. Notification of informal meetings.

6. Summary of informal meetings.

7. Letters of agreement.

8. Operations letters.

9. Any other pertinent information.

9–2–5. FINAL DECISION

Based on the review of the aeronautical study, the petition, current directives and orders, and comments received, the Airspace and Rules Group shall draft and coordinate a document for the Director of System Operations Airspace and AIM signature that affirms, reverses, or revises the initial determination, or remands the case to OES for termination, re–study or other action as necessary.

9–2–6. DISTRIBUTION OF DECISION

Copies of the final decision shall be distributed by the Airspace and Rules Group to the petitioner(s), sponsor, interested parties of record, service area office, and FCC, if appropriate.

Part 3. Airport Airspace Analysis

Chapter 10. Basic

Section 1. Policy

10-1-1. PURPOSE

a. This part provides guidelines, procedures, and standards that supplement those contained in 14 CFR part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports.

b. These guidelines, procedures, and standards shall be used in determining the effect construction, alteration, activation, or deactivation of an airport will have on the safe and efficient use of the navigable airspace by aircraft.

10-1-2. AUTHORITY

The authority for managing the Airports Program is delegated to the regional Airports Division manager and may be re-delegated to the Airports District Offices (ADO). Airport personnel shall administer the Airports Program with the coordinated assistance of air traffic, Technical Operations Services, Flight Standards, and Flight Procedures personnel.

10-1-3. AIRPORT PROGRAMS

a. Airport development/improvement projects are initiated under the authority of several laws relating to Federal airport financial assistance programs. There are certain similarities in processing federally assisted and non-federally-assisted airport development improvement projects, including airport layout plan reviews. However, a significant difference is that on a federally assisted project the FAA must formally approve the airspace for the projects that receive federal assistance.

b. Airport Improvement Program (AIP) - AIP projects, including airport layout plans, are processed similarly to non-AIP projects, except that the airspace for the airport study results in either an agency approval or disapproval of the project.

c. Disposal or Conveyance of Federal Surplus Real Property for Public Airport Purposes - The FAA is required to officially endorse the site before property interest in land owned and controlled by the United States is conveyed to a public agency for public airport purposes. Airspace cases are handled in the same manner as proposals for other federally assisted airports.

d. Military/National Aeronautics and Space Administration (NASA) Airport Programs - 49 U.S.C, Section 44502(c) provides that the DOD and NASA shall not acquire, establish, or construct any military airport, military landing area, or missile or rocket site, or substantially alter any runway layout unless reasonable prior notice is given to the FAA. This permits the FAA to "...advise the appropriate committees of Congress and other interested departments, agencies, and instrumentalities of the government on the effects" of such projects "upon the use of airspace by aircraft."

NOTE-
See NO TAG for the procedures for processing these proposals.

e. Part 157 Proposals-Pursuant to appropriate sections of the Federal Aviation Act of 1958, as amended, part 157 was adopted to require notice to the Administrator by persons proposing to construct, alter, activate, or deactivate a civil or joint-use (civil/military) airport for which Federal funds have not been requested. Such notice is required so that a study can be made and the proponent can be advised as to the proposal's effect on the use of the navigable airspace by aircraft.

f. All airport proposals on public-use airports not requiring notice under part 157 that may require notice under part 77.

g. Passenger Facility Charge (PFC) - Part 158 program projects are required to be on an approved ALP and are processed similarly to AIP projects.

10-1-4. FUNDING RESPONSIBILITY

Each participating office shall note airport projects or airport layout plan changes which would, if accomplished, lead to the relocation, replacement, or modification of air traffic control, or air navigation and communications facilities. Such conditions shall be identified in the review process and appropriate recommendations made regarding funding responsibilities as related to current FAA policy on facility relocation associated with airport improvements or changes (see FAAO 6030.1 and AC 150/5300-7, FAA Policy On Facility Relocations Occasioned By Airport Improvements Or Changes).

10-1-5. RESPONSIBILITY

a. The Airports Division, or designated representative, is responsible for the overall Airports Program, initiating the coordination of airspace studies of airport proposals; conducting the necessary circularization; consolidating and resolving comments; and developing and forwarding the FAA determination to the airport sponsor/proponent. Where applicable, the airports division personnel shall forward documents regarding potential noise problems to the airport proponent/sponsor for resolution.

b. The service area office is responsible for evaluating the proposal from the standpoint of safe and efficient use of airspace by aircraft. In addition, based on existing and/or contemplated traffic patterns and procedures, the service area office director shall be responsible for identifying potential noise problems and advising the Airports Office accordingly.

c. The FPO is responsible for evaluating proposals to determine impacts on instrument procedures and whether aircraft instrument operations can be conducted safely.

d. The Flight Standards Division is responsible for reviewing proposals to determine the safety of aeronautical operations, and of persons and property on the ground.

e. The flight standards district office (FSDO) is responsible for reviewing part 157 proposals for seaplane bases and heliports.

f. The Technical Operations Services area office is responsible for:

1. Reviewing engineering studies on airport proposals to evaluate their effects upon commissioned and/or proposed NAVAIDs.

2. Conducting electromagnetic studies to evaluate the effect existing and/or proposed objects will have upon air navigation and communications facilities.

3. Reviewing and evaluating line-of-site (shadow) studies on existing and/or proposed objects to determine impact on control tower visibility.

4. Highlighting frequency management problems and reserving frequencies.

Section 2. Airport Study

10–2–1. PURPOSE

a. The purpose of an aeronautical study is to determine what effect the proposal may have on compliance with Airports Programs, the safe and efficient utilization of the navigable airspace by aircraft, and the safety of persons and property on the ground.

b. A complete study consists of an airspace analysis, a flight safety review, and a review of the proposal's potential effect on air traffic control operations and air navigation facilities.

c. Each phase of the airport aeronautical study requires complete and accurate data to enable the FAA to provide the best possible advice regarding the merits of the proposal on the NAS.

10–2–2. STUDY NUMBER ASSIGNMENT

Regional Airports Division personnel shall assign a nonrule airports (NRA) aeronautical study number to each airport case in accordance with paragraph 2–6–2. Construction or alteration of navigation and communication aids may either be handled by the specific Technical Operations Services area office as a nonrule (NR) aeronautical study or by the specific Airports Division personnel as a NRA case.

10–2–3. PROPOSALS SUBJECT TO AERONAUTICAL STUDY

To the extent required, conduct an aeronautical study of the following:

a. Airport proposals submitted under the provisions of part 157. Airport proposals on public–use airports, not requiring notice under part 157, may require notice under part 77.

b. Construction safety plans as appropriate for Airport Improvement Program requests for aid and the Airports Regional Capital Improvement Program.

c. Notices of existing airports where prior notice of the airport construction or alteration was not provided as required by part 157.

d. Disposal and Conveyance of Federal surplus and non–surplus real property for public airport purposes.

e. Airport layout plans, including consideration of the effect of structures which may restrict control tower line–of–sight capability and effects upon electronic and visual aids to air navigation.

f. Military proposals for military airports used only by the armed forces.

g. Military proposals on joint–use (civil/military) airports.

h. Proposed designation of instrument runways.

i. Airport site selection feasibility studies and recommendations.

j. Modification of airport design standards.

k. Any other airport case when deemed necessary to assess the safe and efficient use of the navigable airspace by aircraft and/or the safety of persons and property on the ground.

Section 3. Airport Standards

10–3–1. DESIGN STANDARDS

a. For Federally obligated airports, it is the responsibility of the airport proponent/sponsor/planner to comply with FAA airport design standards.

b. For non–Federally obligated airports or National Plan of Integrated Airport Systems (NPIAS) airports, it should be encouraged that the airport proponent/sponsor/planner comply with FAA airport design standards.

c. It should be noted when airport design standards are combined with appropriate state and local zoning ordinances, the resultant effect should:

1. Assure the lowest possible operational altitudes for aircraft;

2. Protect the economic investment in the airport; and

3. Promote safety in the areas affected by the airport by assuring, through proper development, compatible land use.

10–3–2. AIRPORT SPACING GUIDELINES AND TRAFFIC PATTERN AIRSPACE AREAS

a. The following guidelines are to be used as aids when evaluating airport proposals. The guidelines may also be used to determine airspace requirements to accommodate a given operation under a given condition, areas of potential air traffic conflict for aircraft having certain operational and performance characteristics, and the degree of aircraft operational flight compatibility with other airports in a given area. These guidelines are not to be construed as authorizations for aircraft operations contrary to any Code of Federal Regulations, nor are the dimensions to be construed as air traffic separation standards.

b. Aircraft Approach Categories – The factor used to categorize the following aircraft was taken from part 97. This factor is based on 1.3 times the stall speed with aircraft in landing configuration at maximum certificate landing weight.

1. Category A – Speed less than 91 knots. This category includes civil single–engine aircraft, light twins, and some of the heavier twins.

2. Category B – Speed 91 knots or greater but less than 121 knots.

3. Category C – Speed 121 knots or greater but less than 141 knots.

4. Category D – Speed 141 knots or greater but less than 166 knots.

5. Category E – Speed 166 knots or greater. This category includes, for the most part, those military, experimental, and some civil aircraft having extremely high speeds and critical performance characteristics.

c. IFR Radar Airspace.

1. Air traffic control airspace requirements for a specific runway or airport are generally dictated by the approach category of the aircraft that will use the airport and the direction of the associated instrument approaches and departures. Based on these factors, the following rectangular airspace areas were developed as general guides for the planning or siting of new airports and the designation of instrument runways when IFR radar control procedures are contemplated or programmed for a single airport operation, or under certain conditions, multiple airport operations. No provisions are made for holding or for procedure turns within the airspace areas.

(a) Airports that are regularly used by Category C aircraft or larger: 10 miles in the departure direction, 15 miles in the direction from which approaches will be made, and 5 miles either side of the extended runway centerline.

(b) Airports which are regularly used by Category B and smaller aircraft: 5 miles in the departure direction, 10 miles in the direction from which approaches will be made, and 4 miles either side of the extended runway centerline.

(c) In metropolitan areas requiring more than one airport: the primary instrument runways at all airports should be aligned in the same general direction to allow maximum spacing between airspace areas.

(d) At airports having parallel approaches: the rectangular airspace areas should be applied to each runway. Should the instrument runways at an

airport have bi-directional instrument approach capabilities, the total length of the larger airspace areas should be increased to 30 miles for Category C and D aircraft, and to 20 miles for Category A and B aircraft in the smaller airspace areas.

2. These airspace dimensions will not, nor are they intended to, contain sufficient airspace to provide for completely independent IFR operations. Normally, these areas will provide for reasonable operational efficiency if the traffic pattern airspace areas of adjacent airports do not overlap. However, in large metropolitan areas where there is an extremely heavy mix of en route and terminal traffic, reasonable operational efficiency may not result even though the airspace areas do not overlap. Such situations require a thorough review of the procedural potential of the area, as well as alternate site considerations. In conducting studies where complete radar environments call for the larger airspace areas, and such areas abut each other but do not overlap, there is adequate space for:

(a) Approach and departure on the runway centerline.

(b) Two additional tracks offset from and parallel to the runway centerline. A minimum of four miles is provided between adjacent tracks of different areas (see FIG 10-3-1).

3. Where two smaller areas are adjacent but do not overlap, an additional 1-mile spacing is required on two of the longitudinal sides (see FIG 10-3-2).

4. When the anticipated traffic volume at an existing or proposed airport requires additional airspace for greater airspace-use efficiency and operational flexibility, expand the airspace, where available, by providing a 5-mile buffer area between the adjacent airports involved. This additional airspace will provide two additional tracks offset from and parallel to the runway centerlines within the airspace areas of the adjacent airports and one additional track for each airport within the 5-mile buffer area. A minimum of 3 miles is provided between each track paralleling the runway centerline and each additional track in the buffer area. A 3-mile no transgression area is also provided between the two airports (see FIG 10-3-3).

5. If additional airspace is required in the smaller areas for greater airspace-use efficiency and flexible operation, the procedures for determining the additional airspace are identical to those used for the larger areas, except that the smaller airspace should be used in lieu of the larger airspace areas. The 1-mile additional spacing should also be applied, as outlined in subparagraph b.3. above, in addition to the 5-mile buffer area, as outlined in subparagraph b.4. above (see FIG 10-3-4).

d. IFR Nonradar Airspace - A wide range of procedures is available for airspace requirements associated with instrument approach procedures at IFR airports without radar services. Therefore, no attempt has been made to describe these requirements in detail. However, should it become necessary to determine the airspace requirements at such airports, apply the appropriate primary airspace areas and "aircraft approach categories" discussed in subparagraph a. above. Additional information is contained in AC 150/5300-13, Airport Design.

e. VFR Airspace - A primary objective in an airport/airspace study is to determine whether compatible VFR traffic patterns may be developed for a new airport or when to alter a runway layout at an existing airport located in proximity to other airports. Because flight tracks and climb/descent profiles vary when operating in a VFR traffic pattern, the following guidelines are offered for use in these studies:

1. Traffic pattern airspace (see section 6-3-8) of one airport may touch but should not overlap the traffic pattern airspace of another airport;

2. Traffic pattern airspace should be enlarged as described in section 6-3-11 when more than four aircraft of the same category operate in a VFR traffic pattern at the same time.

10-3-3. DESIGNATION OF INSTRUMENT RUNWAYS, CHANGES OF AIRPORT STATUS VFR TO IFR AND LOWERING MINIMUMS

Requests for designation of instrument runways, which relate to installation or qualification for precision landing aids, and proposals for a change in airport status from VFR to IFR, or lowering instrument approach minimums usually take one of the following forms:

a. In cases involving Federally obligated airports, the Airports Division shall be responsible for

coordinating, corresponding directly with the proponents, and formulating the official determination.

b. In cases requesting an instrument procedure not involving a Federally obligated airport, the FPO shall coordinate directly with the proponent.

c. In cases requesting the installation of a NAVAID not involving a Federally obligated airport, the Technical Operations Services area office is responsible for coordinating, corresponding directly with the proponent, and formulating the official determination.

d. A proposal submitted under part 157 (FAA Form 7480-1) not involving a request for an instrument procedure or an installation of a NAVAID, the appropriate Airports Division shall be responsible for coordinating, corresponding directly with the proponent, and formulating the official determination, regardless of which division receives the proposal.

e. A change to the Airport Layout Plan (ALP). The Flight Procedures Office shall be responsible for coordinating the requests for instrument procedures not involving a Federally obligated airport. Coordination of requests for installation of NAVAIDs shall be in accordance with part 4 of this Order. The Airports Office shall be responsible for coordinating submittals under part 157 and all other construction on a public-use airport, and changes to approved ALPs. Designation of instrument runways on all Federally obligated airports shall be the responsibility of the Airports Division and will be treated in the same manner as a revision to the ALP. Regardless of where the coordination begins, air traffic, Technical Operations Services, Flight Standards, Airports, and Flight Procedures must have an opportunity to review and comment on the proposal. No division/service area office shall require dual reporting of such a proposal. The responsible coordinating division/service area office shall correspond directly with the proponent and formulate the official determination.

10-3-4. AIRSPACE FEASIBILITY STUDY

Before expending funds for acquisition of real property, development of the ALP, or plans and specifications for new airports and major airfield improvements, feasibility studies or preliminary airport site analyses are encouraged. Normally, preliminary airport site analyses are made on all Federal agreement projects involving airport site selections. Analyses of this nature allow the agency to evaluate the proposals and advise the proponents as to their feasibility from a safety and airspace use standpoint in addition to other related matters. Guidance for conducting these airport studies is contained in AC 150/5070-6A, Airport Master Plans. That AC describes the major considerations when selecting a site for a new airport for which Federal aid is anticipated. Airport studies of this nature are coordinated in the same manner as Federal agreement proposals, except that the proposals are not circularized to the public unless specifically requested by the proponent.

10-3-5. ONSITE EVALUATION

The intent of the FAA is to achieve safe airport operations and to fulfill its responsibilities of assuring that unsafe conditions will not exist. Therefore, if there is an indication of unsafe conditions or information to evaluate the proposal cannot be obtained from the proponent, an onsite evaluation of the proposal shall be considered before issuing a determination. Such an evaluation may be necessary if the proposal would be located in a congested area or the study indicates the presence of obstructions that may affect the safe and efficient use of the airspace. An onsite evaluation may also be necessary if information pertaining to the proposal is insufficient for arriving at a determination. Airports, air traffic, Flight Procedures, Technical Operations Services, and Flight Standards personnel shall assist in the evaluation as necessitated by the situation requiring evaluation.

10-3-6. FORMULATION OF FAA DETERMINATION

The FAA determination shall be a composite of the airspace review and the comments and findings received from other interested FAA offices. Should there be a disagreement in the airspace findings or between other comments received, the disagreement shall be resolved before formulating the FAA determination.

FIG 10-3-1

IFR-RADAR AIRPORT AIRSPACE REQUIREMENTS FOR CATEGORY C AND D AIRCRAFT (ADJACENT LARGER AREAS)

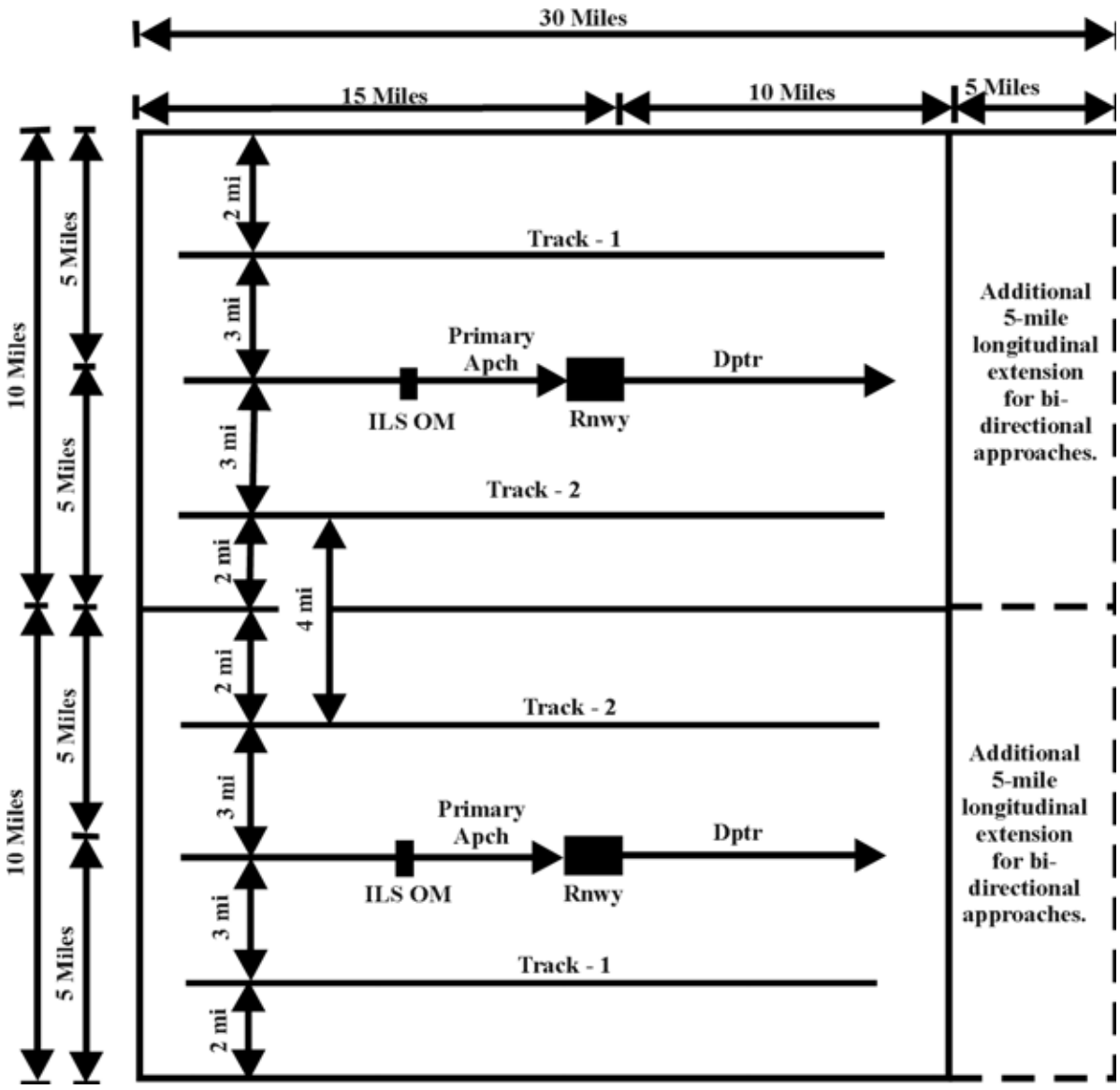


FIG 10-3-2

IFR-RADAR AIRPORT AIRSPACE REQUIREMENTS FOR CATEGORY A AND B AIRCRAFT (ADJACENT LARGER AREAS)

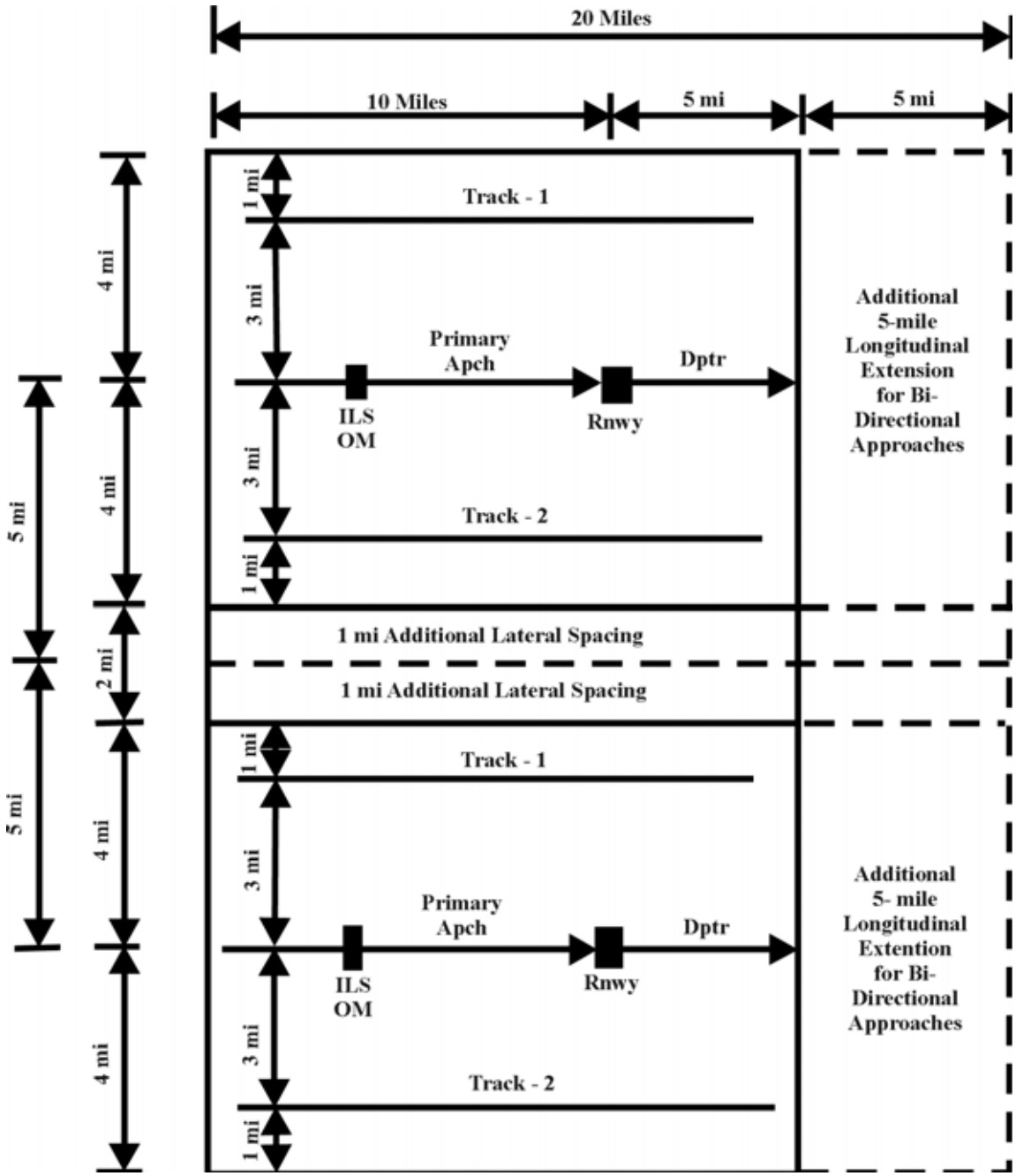


FIG 10-3-3

IFR-RADAR AIRPORT AIRSPACE REQUIREMENTS FOR CATEGORY A AND B AIRCRAFT (HIGH VOLUME ADDITIONAL AIRSPACE, SMALLER AREAS)

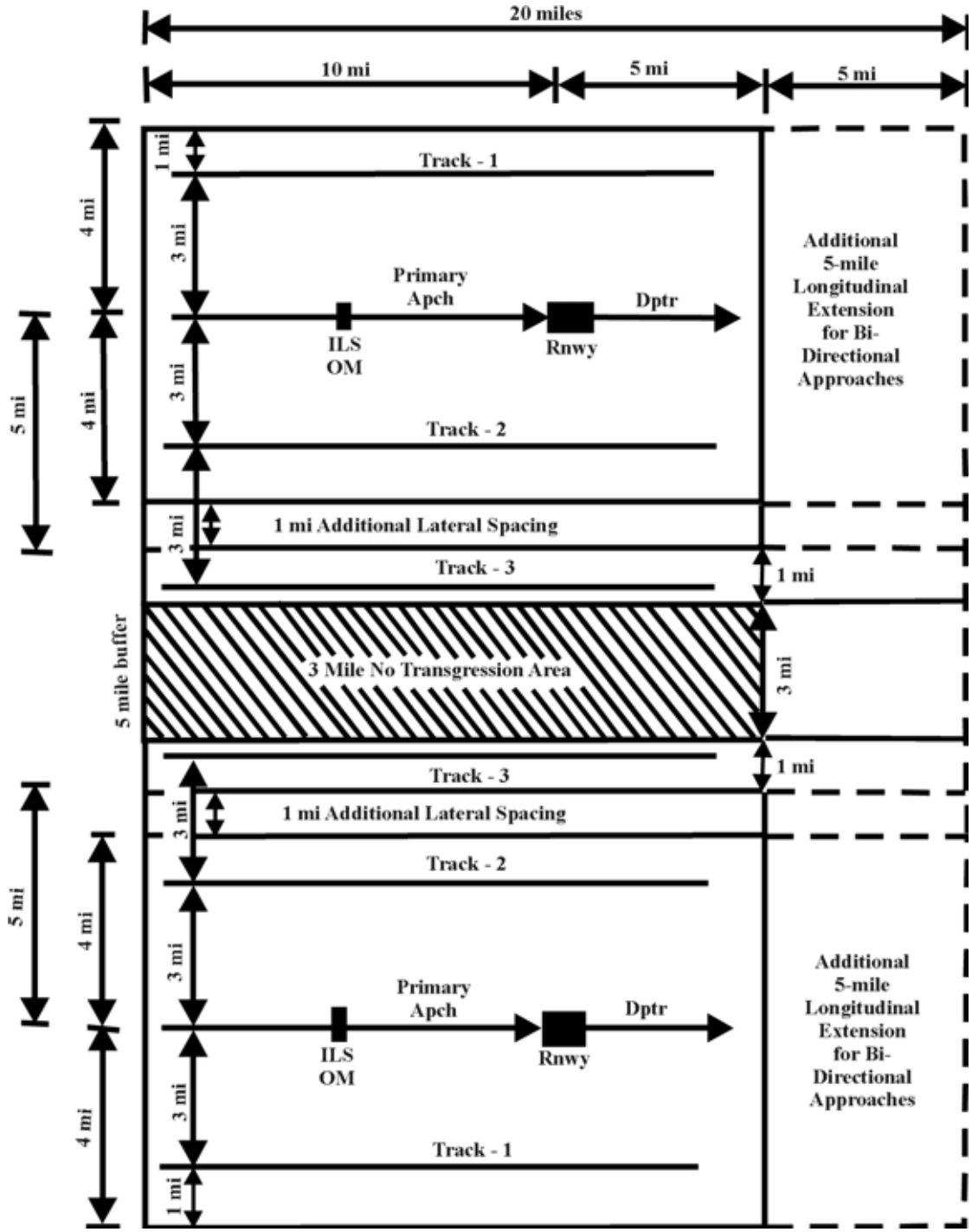


FIG 10-3-4

IFR-RADAR AIRPORT AIRSPACE REQUIREMENTS FOR CATEGORY C AND D AIRCRAFT (HIGH VOLUME ADDITIONAL AIRSPACE, LARGER AREAS)

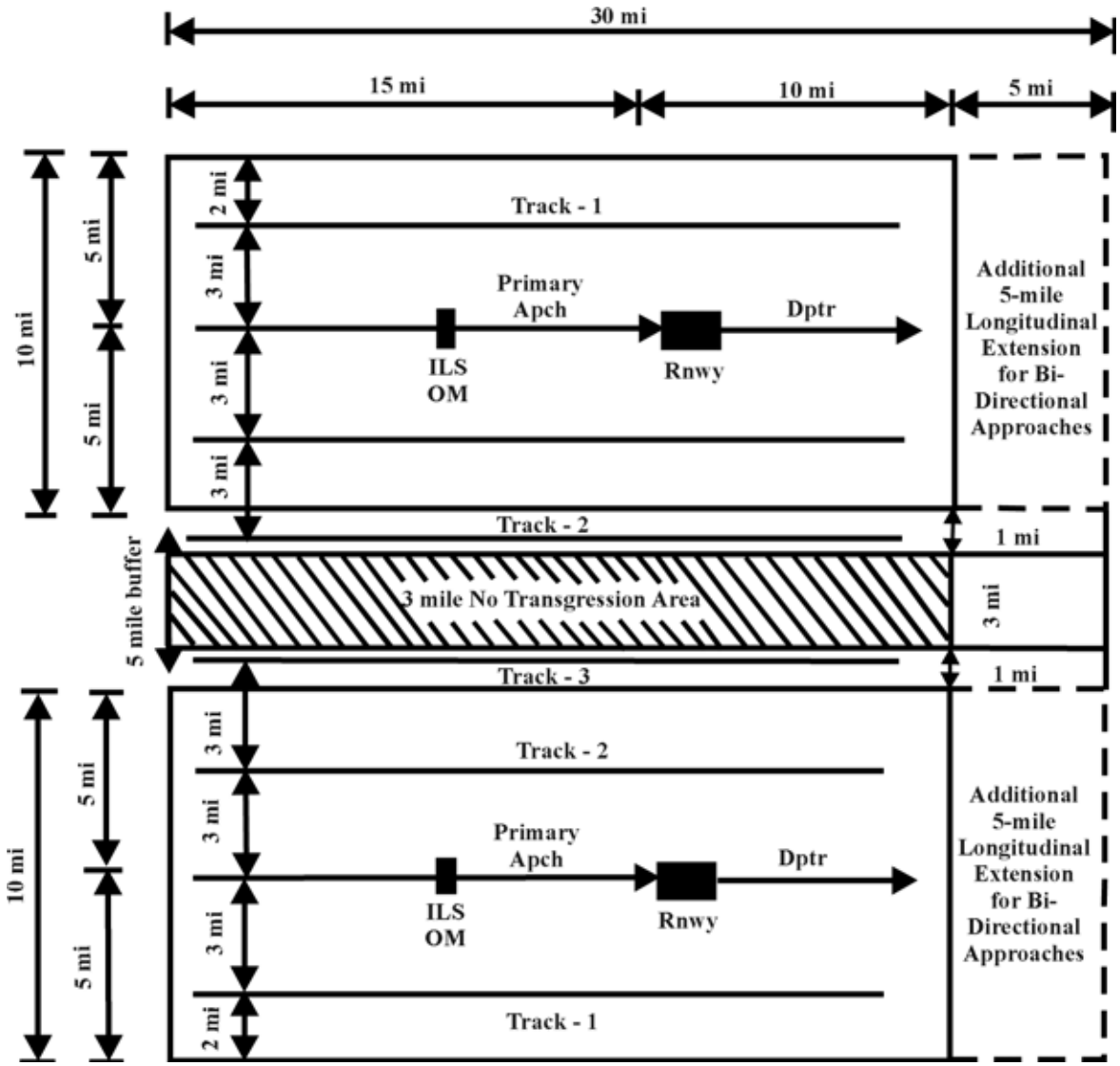
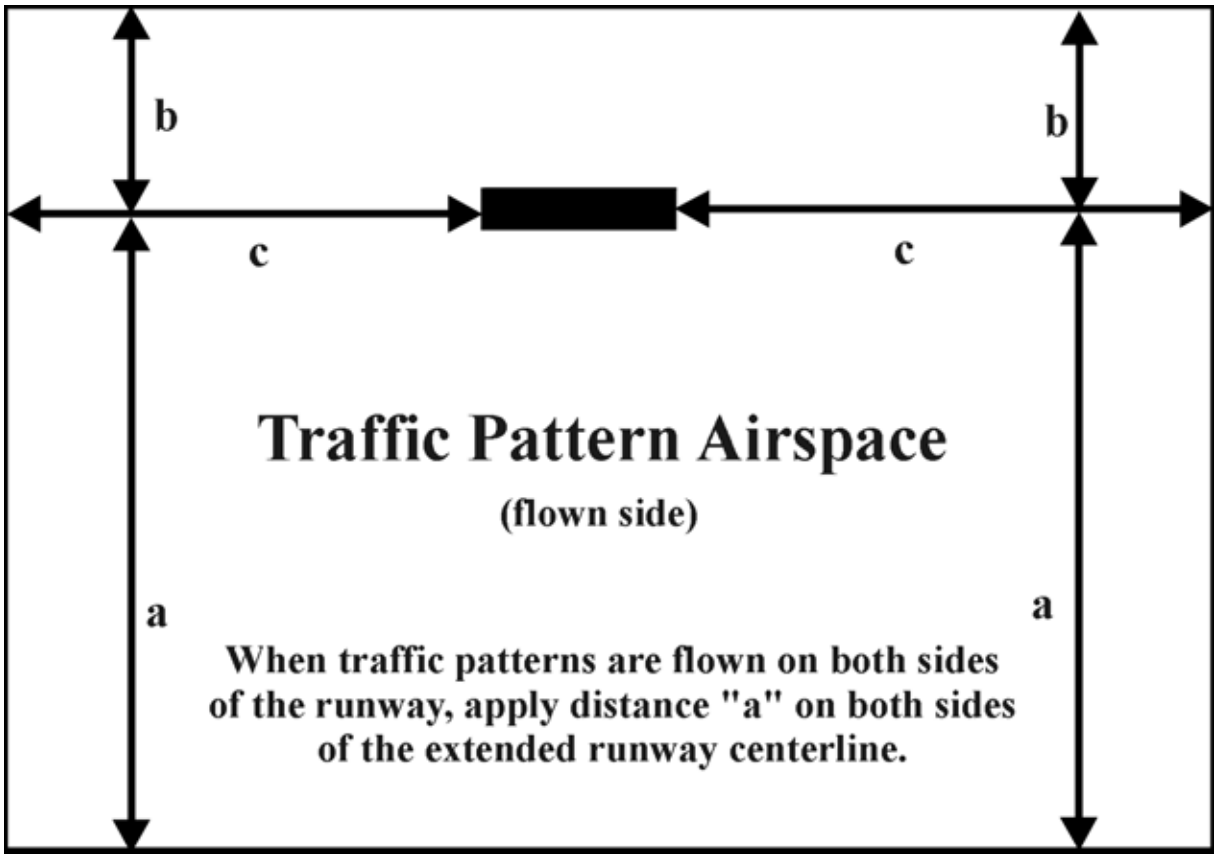


FIG 10-3-5

TRAFFIC PATTERN AIRSPACE



Section 4. Airport Charting and Publication of Airport Data

10–4–1. POLICY

a. All landing facilities which have received airspace determinations or those not analyzed, must be properly documented and processed in accordance with procedures contained in FAAO 5010.4, Airport Safety Data Program.

b. Landing facilities that have received objectionable airspace determinations shall not be published in the NFDD, and they shall not be depicted on aeronautical charts or in the Airport/Facility Directory (A/FD).

10–4–2. RESPONSIBILITY

As part of System Operations Airspace and AIM, AIM is responsible for the collection, validation, and dissemination of aeronautical information. This office is designated as the focal point for providing aeronautical information/requirements to the aviation industry, the producers of aeronautical charts and publications, and other government agencies and users.

10–4–3. AIRPORT CHARTING

a. Airports meeting the criteria below may be charted, provided the data has been processed in accordance with the policy set forth in paragraph 10–4–1.

1. Public use airports (including stolports and gliderports.)

2. Military airports without charting restrictions.

3. Abandoned airports having landmark value.

4. Private–use airports having emergency landing or landmark values.

5. Public use heliports not associated with an existing airport, private use heliports that have controlled airspace predicted on them, and selected U.S. Forest Service Heliports.

6. Ultralight flightparks when of landmark value.

NOTE–
Airports of lesser aeronautical importance may be omitted in congested areas where other airports with adequate and better facilities are available nearby.

7. Seaplane bases.

b. Airports will be plotted to true geographic positions on charts unless they are in conflict with a navigation aid at the same location. In such cases, the airport will be displaced from, or superimposed upon the navigation aid. However, in displacing for cartographic purposes, the relationship between the airport and navigation aid shall be retained.

c. Airports will be depicted on aeronautical charts by using the symbols located in the chart's legend. Airports having an ATCT are shown in blue, and all other airports are shown in magenta. Airport names and associated data shall be shown in the same color as the airport symbol.

Chapter 11. Evaluating Aeronautical Effect

Section 1. General

11–1–1. EXISTING AND PROPOSED OBJECTS

Use the guidelines in Chapter 10 to evaluate the effects of objects on the airport proposal.

11–1–2. AIRPORT TRAFFIC PATTERNS

Traffic patterns shall be established by the FAA only at those airports where the provisions of part 91 do not meet aircraft airspace requirements. When the airspace review indicates the need, traffic patterns may be established by special rule in part 93, or as outlined in this order when necessary to ensure compatibility of aircraft operations with adjacent airports, or for reasons of obstructions, terrain, traffic separation, or noise abatement. Use the guidelines in paragraph 10–3–2 to evaluate whether the traffic pattern associated with an airport proposal would conflict with operations at any other airport. Also, evaluate the traffic pattern effect on instrument approach procedures and the need for establishment of traffic pattern altitudes for aircraft separation. The service area office normally reviews proposals for traffic pattern conflicts.

11–1–3. INSTRUMENT FLIGHT PROCEDURES

a. Existing and proposed structures or objects must be evaluated for their effect on the airport proposal in reference to instrument procedures. FPOs normally conduct this by applying the standards and criteria contained in the 8260 Order series to ascertain if the airport proposal would adversely affect existing or planned instrument approach procedures. Use the same guidelines to evaluate the compatibility of any existing or proposed instrument approach procedure with the airport proposal.

b. Air traffic and Flight Procedures personnel shall be especially alert to ensure aircraft separation when the traffic pattern associated with an airport proposal would overlap the airspace encompassed by a standard instrument approach procedure (IAP) for an adjacent airport. When this occurs, air traffic will recommend actions to ensure that there is at least 500 feet vertical separation between the traffic pattern altitude and the altitude associated with the affected portion of the adjacent instrument approach procedure. If heavy jets are involved, ensure at least 1,000 feet vertical separation. These same vertical separation guidelines must be applied when evaluating a proposed IAP when the airspace required would overlap the traffic pattern airspace at an adjacent airport.

11–1–4. AIR TRAFFIC CONTROL PROCEDURES

The extent that an airport proposal or proposed instrument approach procedure may adversely affect air traffic control (ATC) procedures may be a sufficient reason to object to or disapprove a proposal. The proposal must be thoroughly examined to determine if it would adversely affect ATC procedures by requiring a restriction on the air traffic flow, or the proposal may limit the flexibility of entry or exit to or from affected traffic patterns or airport areas. The need for establishment of, or existing noise abatement procedures may amplify such problems. When a proposed instrument approach procedure would be adjacent to the area of an instrument approach procedure to another airport, determine whether simultaneous approaches would have an adverse effect on new IAP or ATC procedures and on the requirement for instrument approaches to the adjacent airport. Should a proposed instrument approach procedure be located in a radar environment, determine the radar coverage and ATC capability to provide radar air traffic control service.

11–1–5. SAFETY OF PERSONS AND PROPERTY ON THE GROUND

In accordance with 40103(b)(2)(B), FAA personnel must evaluate the effect of a proposal on the safety of persons and property on the ground. Consideration must be given to the proximity of cities and towns, as well as flight patterns over heavily populated areas, schools, homes, hospitals, sports stadiums, outdoor

theaters, and shopping centers. The evaluation must also include the effect of changes in flight operations required by the proposal and the need for special air traffic rules. In evaluating the compatibility of proposed airports and the surrounding terrain, consider the type of aircraft anticipated to use the airport, their operational performance capability, the effective runway lengths, and whether a reasonable level of safety of persons and property on the ground can be expected. Flight Standards and Airports normally conduct reviews to determine that the safety of persons and property on the ground are protected.

11–1–6. NOISE CONSIDERATION

Part 157 does not specify that noise factors be considered, however, the FAA policy to evaluate noise factors in airport airspace analysis studies should be preserved where necessary in the public interest as part of the overall FAA noise abatement program.

a. The air traffic office shall identify potential noise problem areas based on existing and/or contemplated traffic patterns and procedures. When a noise problem is anticipated, advise the airports office accordingly with recommendations and/or alternatives, such as nonstandard traffic patterns or special departure and arrival procedures, etc.

b. When an airport proposal is circularized, the Airports Office may receive comments concerning potential noise, environmental, or ecological problems.

11–1–7. AERONAUTICAL ACTIVITY

The type of aeronautical activity expected at an airport is an important consideration in the airport analysis process. The following types of activity should be considered:

a. Will the proposed operations be conducted in accordance with visual or instrument flight rules?

b. What is the expected volume of operations?

c. How many and what type aircraft will be based on the proposed airport? Be aware that a large number of aircraft may be based at a private–use airport that could generate a significant amount of traffic.

d. What is the most demanding aircraft the airport will accommodate?

11–1–8. WIND ROSE DATA

a. Visual Flight Rules. Wind conditions affect aircraft in varying degrees. In landing and takeoff, the smaller aircraft are more affected by wind, particularly crosswind components. Therefore, when studying a runway proposal, evaluate the consistency between the proposed runway alignment and the wind rose data to determine whether operations can be conducted safely.

b. Instrument Flight Rules. When evaluating a proposal to designate a single instrument landing runway at an airport, consider the consistency between this designation and the low visibility wind rose.

11–1–9. HELICOPTER INGRESS–EGRESS ROUTES

Proposed heliports require evaluation of ingress and egress information by Flight Standards. Information supplied by Technical Operations Aviation System Standards may be used for determining whether specific ingress–egress routes to and from heliports and helipads may be necessary to assure an adequate level of safety with respect to obstructions and/or congested areas.

Additionally, consider existing air traffic operations in proximity to a proposed heliport site and the need for specific ingress–egress routes.

11–1–10. DISPLACED THRESHOLDS AND CHANGING THE RUNWAY END

Consideration should be given to displacing a proposed runway threshold when proposed and existing objects, and/or terrain obstruct the airspace necessary for landing on or taking off from the runway. Consider changing the location of the proposed runway end only when no feasible alternatives exist (see AC 150/5300–13, Appendix 2).

11–1–11. EXISTING AIRPORTS

Evaluation on the effect of existing airports shall be made in the same manner as for other non–Federally assisted airport proposals under the provisions of 49 U.S.C. Section 44718. Such studies may be conducted on those airports for which there is no record of a previous aeronautical study, or on any airport when deemed necessary or appropriate.

Section 2. Processing of Airport Proposals By Regional Airports Offices

11–2–1. PROPOSALS

Airport proposals received by any FAA office shall be forwarded to the appropriate Airports Office for initial processing and study.

NOTE–
Notification under part 157 is not required for projects on Federally–assisted airports.

a. General. The Airports Office, after receipt of a proposal, will check the information submitted for correctness, clarity, completeness, and proper detail. The Airports office will verify critical data or require proponents to verify any data deemed critical. The proponent may need to be contacted if insufficient information is submitted or if significant errors appear in the submission. The Airports Office shall maintain a record by list, map, or other method so that the status of new proposals may be easily correlated with existing airports, airports under construction, or other airport proposals.

b. Establishment of New Airports. Initial review concerning the proposed construction of new airports shall include but is not limited to the following:

1. Determining conformance of the proposal with agency design criteria.

2. Identifying the objects that exceed the obstruction criteria of part 77.

3. Anticipating the operational use of the airport, including the number and type of aeronautical operations and the number of based aircraft.

4. Ascertaining whether the airport is for private or public use.

5. Identifying runway and taxiway layout in relation to compass rose data, existing or proposed obstructions, or other airports.

6. Identifying known or anticipated controversial aspects of the proposal.

7. Identifying potential noise aspects.

8. Identifying possible conflict with airport improvement and/or development or other agency plans. The Airports Division, in the NRA proposal processing, will identify all seaplane bases that may be impacted by part 157 proposals or other development on public use airports. If the airspace study reveals that a seaplane base is adversely impacted, the Airports Division will notify the seaplane base owner of the NRA proposal and the potential conflict.

9. Obtaining runway threshold coordinates and elevations.

c. Alteration of Existing Airports – The nature and magnitude of an existing airport alteration will determine the extent of processing and analysis required. Alteration, such as new runway construction, runway realignment projects, runway extension; runway upgrading, change in status, such as VFR to IFR use, and widening of runways or taxiway/ramp areas normally require the same type of processing and study as that required for new airport construction proposals.

d. Deactivation and Abandonment of Airports:

1. Airport owners/sponsors are required to notify the FAA concerning the deactivation, discontinued use, or abandonment of an airport, runway, landing strip, or associated taxiway. On partial or specific runway deactivation proposals, a description with a sketch or layout plan and the anticipated operational changes should be forwarded together with any other pertinent information needed to update agency records.

2. When it is believed that an airport is abandoned or unreported and appropriate notification has not been received, the Airports Office, after making a reasonable effort to obtain such notification, shall advise the air traffic office of the situation by memorandum. The memorandum should contain a statement that the airport is considered either abandoned or unreported. Forward a copy of the memorandum to the airport owner or sponsor, to AIM and to the Airport Safety Data Branch, AAS–330.

e. Construction safety plans are received as appropriate for Airport Improvement Program requests for aid and the Airports Regional Capital Improvement Program.

f. Other Airport Notices – Occasionally, an airport owner/sponsor will make alterations or changes to the airport without filling notice in accordance with part 157. Generally, this information will be obtained through the airport safety data program (FAA Form 5010) and after-the-fact. From a legal standpoint, this constitutes notice to the FAA and appropriate action is necessary. The Airports Office shall initiate a study of such information received in the same manner as if the notice had been received under part 157 requirements.

11-2-2. AIRPORT LAYOUT PLANS (ALP)

ALPs generally show the location, character, dimensions, details of the airport, and the work to be done. The extent of information needed for any specific airport development will vary depending on the scope and character of the project, plus the anticipated role and category of the airport. Detailed information on the development of ALPs is contained in AC 150/5070-6, Airport Master Plans, and AC 150/5300-13, Airport Design.

a. Non-Federally Assisted Airports. Airports personnel will take into consideration an ALP or plan on file in developing a determination with reference to the safe and efficient use of airspace.

b. Federally Assisted Airports. Projects at Federally assisted airports require review based on considerations relating to the safe and efficient utilization of airspace, factors affecting the control of air traffic, conformance with FAA design criteria, and Federal grant assurances or conditions of a Federal property conveyance. The product of this review is derived from analysis of information supplied in the ALP. A formal or tentative determination may be given depending on the complexity of the proposal or the timing of the request. The review and subsequent determination shall be made as expeditiously as possible to facilitate processing of the project request. Normally a project is not placed under grant nor Federal property conveyed until a favorable determination is made and the ALP approved.

c. Extent of Review. A review is normally required for all proposals involving new construction or relocation of runways, taxiways, ramp areas, holding or run-up apron projects, airport and runway lighting and marking, fire and rescue building locations, and other projects affecting, or potentially affecting, the movement of aircraft. At all public-use airports, projects which conform to a previously approved non-objectionable airport layout plan for the construction or resurfacing of existing airport paving, site preparation work, or paving to overlie existing unpaved landing strips may be omitted from the normal review process. For an airport that has a construction safety plan, the plan needs to undergo the review process with appropriate FAA offices (see AC 150/5370-2, Operational Safety On Airports During Construction).

11-2-3. NON-PART 157 PROPOSED CONSTRUCTION OR ALTERATION ON NON-OBLIGATED PUBLIC-USE AIRPORTS

Sponsors/proponents of non-part 157 proposals for construction or alteration on public-use airports are required to file notice with the FAA in accordance with part 77.13 (a)(5). The appropriate Airports Office will process these proposals in accordance with procedures established for part 157 proposals. Generally, these proposals will be submitted on FAA Form 7460-1 along with appropriate drawings and necessary supporting documentation. The procedures contained in Part 2. of this order are not applicable to such proposals. However the information contained in Part 2. may be helpful to airports personnel in applying the obstructions standards of Sections 77.23(a)(2), 77.23(a)(5), 77.25, 77.28, and 77.29.

11-2-4. FAA COORDINATION

Upon receipt of a part 157 proposal or a change to an ALP, the appropriate Airports Office shall assign an aeronautical study number, ensure that the proposal is complete and correct, review the proposal from an airport's planning viewpoint and the effect on airport programs, enter the proposal into the OE/AAA automation program, and forward a proposal package with comments to the appropriate FAA offices (e.g., air traffic, Flight Procedures, Flight Standards, and technical operations services offices) for processing. Other organizations to consider in the review process are (if applicable) the Airport Traffic Control Tower (ATCT), System Management Office (SMO), Security and Hazardous Materials Division, Military representative and Airports Certification Branch. Flight Standards or the Flight Standards District Office (FSDO) will be sent all part 157 proposals for seaplane bases and heliports depending on regional

preference. Comments will be provided either to the originating Airports Office or to its respective divisional offices depending on regional procedures. Additional internal coordination shall be accomplished, as appropriate, by the responsible division offices.

a. Part 157. Include a copy of the FAA Form 7480-1 and comments on the effect of existing or proposed man-made objects on file with the FAA, plus the effect of natural growth and terrain. Direct particular attention to, and comment on object proposals that would exceed the obstruction standards of part 77. Also, comment if the review indicated a potential noise problem and, if applicable, the effect of the proposal on the safety of persons and property on the ground. Also, enclose, as appropriate, sketches and other data required for the aeronautical study and determination. Include a plot of the proposed runway alignments, associated taxiways or seaplane alignments, and any obstructions on U.S. Geological Survey quadrangle map or equivalent.

b. ALPs. Forward a copy of the ALP and include, when appropriate, an analysis of and rationale for the plan, as well as the various stages of construction, if applicable. Include information on the location of structures that may adversely affect the flight or movement of aircraft, cause electromagnetic interference to NAVAIDs, communication facilities, or derogate the line-of-sight visibility from a control tower. Should review of the plan reveal a potential noise problem, comment to this effect. Comment, as applicable, on the proximity of urban congestion and any potential problem related to the safety of persons and property on the ground. If the layout plan is a revision of one previously approved, summarize the changes for which an airspace determination is required. Also, include comments on objects that would exceed the obstruction standards of part 77 and any other Airports comments that may be appropriate.

c. Federally Assisted Airport Proposals. Transmit by letter a description of the work to be done in the proposed project. If the project is in conformance with an approved ALP, comment to this effect. If the project is at variance with the ALP, comment accordingly and forward a proposed revision to the ALP or an appropriate programming sketch that depicts the location and nature of the proposed work. Also, in the latter event, or if it is a new proposal, forward information on the appropriate items set forth in subparagraph b. above.

d. Disposal or Conveyance of Federal Surplus or Non Surplus Property. Process proposals by public agencies to acquire property interest in land owned and controlled by the United States for public airport purposes as set forth in subparagraph c.

NOTE-
Military representative notification - The military representative may review all new landing area proposals (airports/heliports/seaplane bases), all proposals that have changes to existing landing areas, and all ALPs. Normally, the notification will be through the OE/AAA computer program, unless the military representative requests a hard copy. The military will review proposals, indicated by Airports for review, to determine impacts on military training routes (MTR), MOAs, and restricted areas.

11-2-5. NEGOTIATION WITH SPONSOR

a. During the course of a study, the Airports Office may find it necessary to negotiate with the sponsor to change a proposal. This may be due to a safety problem, efficient use of the airport, etc. After coordination by and agreement with the interested FAA offices (e.g., air traffic, Flight Procedures, Flight Standards, and technical operations services), military representatives negotiate with the sponsor for changes to the proposal as necessary. Advise interested FAA offices of the results of the negotiation.

b. When an airport proposal poses a problem with respect to the safe and efficient use of airspace by aircraft or with respect to the safety of persons and property on the ground, negotiate with the sponsor to revise the proposal, if feasible, so as to resolve the problem. Should a case involve a proposal for a new airport that would create problems not resolved by revisions to the proposal, negotiate with the sponsor for a relocation of the proposal to a new site to resolve the problem.

11-2-6. CIRCULARIZATION

The Airports Office should circularize airport proposals in accordance with nonrulemaking procedures as necessary to obtain comments from aeronautical interests, municipal, county and state groups, civic groups, military representatives, and FAA facilities and offices on proposals located within their areas of responsibility. All controversial

proposals and those that have a potential adverse effect on the users of the airspace should be included in the circularization process. However, do not circularize a proposal that may compromise the sponsor's position in land acquisition negotiations.

11–2–7. EVALUATE COMMENTS AND AERONAUTICAL EFFECT

The Airports Office shall examine comments received in response to coordination and evaluate their validity as related to the safe and efficient use of airspace and to the safety of persons or property on the ground. If the Airports Office's determination contains additional items and/or alterations of the responses previously received from the other FAA offices, request the appropriate air traffic, Flight Procedures, Flight Standards, and technical operations services offices to assist in evaluating the validity of the determination. The guidelines in Chapter 12 will assist in evaluating the aeronautical effect of airport proposals.

11–2–8. INFORMAL AIRSPACE MEETINGS

The appropriate Airports Office, with the assistance of the air traffic office, may convene an informal airspace meeting with interested parties as set forth in Part 1. of this order. The informal airspace meeting provides the opportunity to gather additional facts relevant to the aeronautical effect of the proposal, provides interested persons an opportunity to discuss aeronautical objections to the proposal, and provides the FAA with the opportunity to negotiate a resolution to objectionable aspects of the proposal.

11–2–9. ISSUE DETERMINATION

Upon completion of the airspace study, the Airports Office shall develop and issue the FAA determination by letter to the airport sponsor in accordance with the guidelines in Chapter 12. Disapprove the request if a previous airport study determination was objectionable and remains uncorrected, or if the determination listed provisions that have not been complied with by the airport owner or sponsor. The FAA determination does not constitute a commitment to provide Federal financial assistance to implement any development contained in the proposal. Also, if the proposal is not objectionable but would exceed part 77 obstruction standards, notify the sponsor of what obstruction marking and lighting would be required or recommended. Additionally, advise the sponsor that a separate notice will be required for any construction equipment, such as temporary cranes, whose working limits would exceed the height and lateral dimensions of the proposed object.

Section 3. Processing of Airport Proposals By Regional Flight Standards Offices

11–3–1. EFFECT ON SAFETY OF FLIGHT

The appropriate Flight Standards Office shall perform a flight safety review of heliport and seaplane base proposals to determine whether aircraft operations can be conducted safely. Flight Standards will review a modification of standard to proposals as appropriate except for modification to the Runway Obstacle Free Area (ROFA), Obstacle Free Zone (OFZ), Taxiway Safety Area (TSA), Taxiway Obstacle Free Area (TOFA), or penetrations to the threshold siting surface or part 77 criteria. Also, the Flight Standards Office will review any proposal with runways, taxiways, and/or ramp surfaces underlying threshold–siting surfaces and proposals for declared distance concepts. Upon completion of the review, the appropriate Flight Standards Office shall submit its report to the responsible Airports Office. The report shall state whether or not safe operations can be conducted or what conditions are needed to ensure safe operations. Information provided by Technical Operations Aviation System Standards may be used when conducting these reviews.

11–3–2. EFFECT ON SAFETY OF PERSONS AND PROPERTY ON THE GROUND

FAAO 1000.1, Policy Statement of the FAA, states that the agency will pursue a regulatory policy that recognizes the primary right of the individual to accept personal risk. However, the agency balances this right against society's interest in the safety of the individual, and limits the individual's right to incur risk when the exercise of that right creates a risk for others. Therefore, airport aeronautical studies must consider, for example, the proposal's proximity to cities or towns, and its runway alignment with reference to heavily populated areas, schools, hospitals, sports stadiums, and shopping centers, etc.

11–3–3. ONSITE EVALUATIONS

a. Heliports. All proposals for the establishment of heliports must be given an onsite operational evaluation by operations specialists or inspectors, preferably those who are qualified on helicopters. Proposed heliports to be located in congested areas, and/or on a roof–top, should be evaluated by helicopter–qualified operations inspectors. Included in the process is the development of recommendations for assignment of ingress and egress routes, where necessary.

b. Non–Federal Agreement Airport Proposal. The Flight Standards Office performing a flight safety review will use information submitted with the FAA Form 7480–1 and any other information as may be available, such as charts, aerial photographs, etc. A flight check or an onsite inspection may be advantageous if the proposal is controversial or additional information is needed.

c. Federally Assisted Airport Proposal. The Flight Standards Office should:

1. Review the proposal from the standpoint of safety of flight operations.

2. Conduct an on–site evaluation.

3. Advise the air traffic office when obstructions and/or terrain that prove to cause significant safety problems are identified.

d. The FSDO reviews part 157 seaplane base and heliport proposals.

Section 4. Processing of Airport Proposals By Regional Flight Procedures Offices

11–4–1. EFFECT ON INSTRUMENT PROCEDURES

a. The appropriate FPO shall determine the feasibility of instrument approach procedures, ensure that required instrument procedures are formulated, flight inspected, and published to coincide with the appropriate aeronautical charting date.

b. The appropriate FPO shall review proposals to determine any impact to existing and proposed instrument approach procedures. When the proposed airport underlies an existing or proposed instrument approach procedure the FPO will notify the appropriate air traffic office.

11–4–2. CHANGE OF AIRPORT STATUS FROM VFR TO IFR

a. Establishment of Instrument Procedures. Requests for instrument approach procedures must be forwarded to the appropriate FPO. The FPO must effect coordination with the appropriate air traffic, Airports, and technical operations services offices, as well as other offices of interest. The request for instrument approach procedures should normally be disapproved if the change in the airport status study indicates a safety problem.

b. Establishment of NAVAID. When an airport status is to be changed from VFR to IFR, notify the public by means of the nonrulemaking circular associated with the establishment of the NAVAID being installed to support the procedure.

c. Existing NAVAID. If the flight procedure is to be based upon an existing NAVAID, the public notification may be accomplished in the NPRM associated with changes to controlled airspace. If no change in airspace is required, it is recommended that the public be notified through the non–rulemaking circularization process.

d. No NAVAID Required. Public notification will be accomplished with the rulemaking action for controlled airspace.

11–4–3. EVALUATION OF INSTRUMENT RUNWAY DESIGNATIONS

The appropriate FPO shall evaluate the runway or runways to be used in the proposed instrument procedure. Consideration should be given to airport data, expected users, conflicts with IFR traffic, location of existing and proposed NAVAIDs, availability of weather information, and probable minimums.

Section 5. Processing of Airport Proposals By Technical Operations Services Area Offices

11–5–1. ELECTROMAGNETIC OR LINE–OF–SIGHT INTERFERENCE

The technical operations services office shall study airport proposals to determine if there is a possibility of electromagnetic or line–of–sight interference. Use the guidance in paragraph 6–3–3 to determine the extent of any adverse effect. At locations with an ATCT, a shadow study is required to determine if part of the aircraft operating area would be shielded from view by the control tower. In either case, when a potential problem exists, request the Airports Office to negotiate a resolution with the sponsor. If this is not possible, then proceed with the study and submit findings to the Airports Office.

11–5–2. EVALUATION OF INSTRUMENT RUNWAY DESIGNATION

The designation of an instrument landing runway may be associated with a precision type landing aid. Conduct a study of a proposal to designate an instrument landing runway to determine the feasibility of siting various components in accordance with established siting criteria. Forward comments and recommendations to Airports. Should program approval be received for the installation of an instrument landing system to serve a runway which has not been designated as an instrument landing runway, send a letter to the Airports Office requesting a study for the runway to be so designated. Include data in the letter concerning the siting of the various components, their heights, and any other comments that may be appropriate.

11–5–3. CHANGE IN AIRPORT STATUS FROM VFR TO IFR

The technical operations services office shall review all proposed airport status changes to ensure that there is no effect on its functional responsibilities. Forward the study results to the FPO or Airports Division Offices, as appropriate.

11–5–4. AIRPORT PROPOSALS

Proposals vary in complexity from a single runway airport to a major air carrier airport. When NAVAID facilities are part of the ALP, the technical operations services office shall conduct a study to evaluate the feasibility of siting and installing the proposed facilities as well as to evaluate the effect of the proposal on existing NAVAIDs. Conduct a shadow study, based on necessary data provided by the airport owner to ensure that existing or proposed structures, or natural objects, do not derogate the airport traffic control tower line–of–sight visibility of the proposed runway or taxiway. Forward the results of the study to the Airports Office.

Section 6. Processing of Airport Proposals By Service Area Offices

11–6–1. EFFECT ON AIR TRAFFIC CONTROL OPERATIONS

The air traffic office shall conduct an airspace review to evaluate the effect on the safe and efficient utilization of airspace by aircraft and the effect that such proposals may have on the movement and control of air traffic, associated resources (personnel, facilities and equipment), and ATC program planning.

a. The depth of the review shall commensurate with the location, complexity, and timing of the proposed development. The range of the study may vary from no need to review (e.g., the closing of an airport reported for record purposes) to a large effort required to process and study a proposal for a new major air carrier airport to serve a high density terminal area.

b. An airspace review shall be conducted for activation, deactivation or alteration of any landing area, reported in compliance with part 157 or an airport owner's federal obligations, for military construction projects, and at any other time deemed necessary for assessing the utilization of airspace. Include studies associated with existing airports and with disposal or conveyance of Federal property for public airport purposes, as appropriate.

c. Upon completion of the airspace review, forward the response (via the OE/AAA automation program, electronic mail, or memorandum) to the responsible Airports Office. The airspace response shall recommend approval or disapproval of the use of the airspace associated with the proposal. This response shall be in the form of no objection without conditions, no objection provided certain conditions are met, or objectionable. If the recommendation of the finding to the proposed use of the associated airspace is objectionable or to disapprove the proposal, clearly state the reasons why. If the finding is conditional, also clearly state the conditions. Care must be exercised when issuing conditional findings. When the conditions are such that a substantial adverse effect would result if not corrected (such as the blocked view to a portion of the movement area from the airport traffic control tower), then an objectionable or disapproval finding should be recommended. Include a statement that the FAA will reconsider the proposal after provisions are made to resolve the objectionable conditions.

11–6–2. COORDINATION

The reviewing air traffic office shall coordinate airport proposals with other air traffic offices and facilities as appropriate.

a. Projects contemplated at airports served by an ATCT or flight service station must be coordinated with the facility manager or his/her representative prior to arriving at a finding. Documentation of the coordination performed shall be entered in the case file. The ATCT responds on the proposal to the service area office in accordance with local procedures.

b. Military Airport Proposals which are not part of the Military Construction Program (MCP) are normally submitted to service area offices through the regional military representatives. Those proposals shall be processed in the same manner as civil proposals except that the air traffic office is responsible for coordinating the proposals with the Airports, Flight Standards, and technical operations services offices. The air traffic office is also responsible for any coordination necessary with the military regarding the proposal and issuance of the regional determination.

c. The Airports Office will coordinate and negotiate with the airport owner/sponsor to resolve problems with proposals on civil, public use airports. The Airports Office may request the air traffic office to assist in the negotiation if the problem relates to the safe and efficient utilization of the airspace.

11–6–3. AIRPORT TRAFFIC PATTERNS

a. If the appropriate VFR or IFR traffic pattern airspace area requirements overlap or if airspace requirements cannot be developed to accommodate the category and volume of aircraft anticipated at an existing or planned airport, the airport, in all cases, need not be found objectionable from an airspace utilization standpoint if adjustments to traffic

patterns (such as establishing non-standard traffic patterns, assigning specific traffic pattern altitudes, and/or developing special operational procedures) would mitigate the conflict. Such action may reduce the capacity, operational flexibility, and compatibility of the airports involved. The air traffic office shall determine if airspace areas overlap. If the airport proposal's traffic pattern conflicts with the pattern of an adjacent airport and the conflict could be eliminated by adjusting only the proposal's pattern, the air traffic office will specify the traffic pattern to be used as a condition of the proposal's determination.

b. If an adjacent traffic pattern needs to be adjusted to solve a conflict and the pattern adjustment can be made safely, the Airports Office will request assistance from the air traffic office in negotiating with the adjacent airport owner/manager for agreement in writing to the traffic pattern adjustment. If a non-standard traffic pattern adjustment is made at a public-use airport with other than a full-time control tower, then visual indicators at the airport are required, in accordance with AC 150/5340-5, Segmented Circle Airport Marker System. If night operations are conducted or planned at the airport, then floodlighting of the segmented circle is necessary.

c. The traffic pattern airspace associated with an airport proposal may not overlap the traffic pattern of an adjacent airport.

11-6-4. PART 77 REVIEW

Review proposed structures and existing terrain or objects that exceed part 77 obstruction standards to determine the extent of adverse effect and recommend marking/lighting if needed. If the review indicates obstructions that are potential hazards to the airport proposal, forward the airspace finding to the Airports Office. The airspace use associated with a new airport or airport alteration proposal should normally be considered as objectionable (or disapproved for AIP) if the study discloses an adverse effect that cannot be mitigated.

11-6-5. DESIGNATION OF INSTRUMENT RUNWAY/CHANGE IN AIRPORT STATUS VFR TO IFR

The processing required by air traffic offices depends upon the action necessary for establishment of the instrument approach procedure. This can involve the establishment of NAVAIDs, nonrule or rulemaking circularization and associated actions, the need for communications, weather reporting, and the capability of providing air traffic control service. In conducting the airspace review, determine the viability of establishing a reasonable instrument approach procedure and the acceptability of the airport environment for the proposed procedure. Also, evaluate the effect of the proposed procedure on existing or proposed IFR or VFR aeronautical operations at the airport in question and/or adjacent airports. Be particularly alert to previously issued "no objection" determinations which include a provision/condition for VFR only operations. Forward the finding to the responsible office. Airports shall coordinate and circularize all VFR to IFR changes for all part 157 proposals and airport layout plans (see paragraph 11-2-9).

11-6-6. ONSITE EVALUATION

The need for onsite evaluations will be determined by the airspace review results. Onsite evaluations may be especially necessary when the review indicates the presence of unsafe conditions. The air traffic office should assist the Airports, Flight Standards, and FPOs in the onsite evaluation, as appropriate.

NOTE-
Noise consideration, see paragraph 11-1-6.

Chapter 12. Airport Determinations

Section 1. General

12–1–1. RESPONSIBILITY

The Airports Office is responsible for formulating and issuing the official determination. That determination shall incorporate the division's responses and other pertinent issues. If the official determination differs from the responses as a result of the airspace coordination, the Airports Office shall obtain a concurrence from the appropriate, responsible FPO, air traffic, technical operations services, and Flight Standards offices. The Airports Office shall also assure that each determination issued conforms to established policy, procedures, and guidelines. Controversial proposals may require special handling, but no determination shall be issued which would be contrary to agency policy until the matter has been coordinated with and approved by the Associate Administrator for Airports, and the Vice President, System Operations Services.

12–1–2. TERMINOLOGY

The following terminology shall be used in FAA determinations:

a. Part 157 Airports.

1. "No Objection" to the proposal – A "no objection" determination concludes that the proposal will not adversely affect the safe and efficient use of airspace by aircraft and will not adversely affect the people or property on the ground.

2. "Conditional No Objection" to the proposal – A "conditional no objection" determination concludes the proposal will not adversely affect the safe and efficient use of navigable airspace by aircraft provided certain conditions are met (specify the conditions).

3. "Objection" to the proposal – An "objection" determination will specify the FAA's reasons for issuing such a determination.

b. ALP. An ALP is a graphic depiction of the existing and future airport facilities showing the clearance and dimensional requirements to meet applicable standards. The ALP serves as a record of aeronautical requirements and is used by the FAA in its review of proposals that may affect the navigable airspace or other missions of the FAA.

1. Approved. An approved ALP is one that has met all the applicable requirements as set forth in the appropriate FAA documents. In order for an ALP to be unconditionally approved, the appropriate FAA offices must have reviewed and approved the location, type, and dimension of all proposed development. In addition, all proposed development shall have been subject to the appropriate environmental processing and have written approval by the FAA.

2. Conditional Approval. The conditional approval of an ALP is one that has met all the applicable requirements. An ALP that has been conditionally approved is one where the proposed development has received conceptual approval by the appropriate FAA office. The proposed development has not received approval as to the final location, type, and dimension of all proposed development. New structures would require the submission of FAA Form 7460–1. In addition, where the appropriate environmental processing has not occurred, a conditional ALP approval would be required.

12–1–3. CONDITIONAL DETERMINATIONS

When the airport study results in a conditional determination, then clearly set forth the conditions in the determinations to avoid any misunderstanding.

a. IFR/VFR Status. If the intent of a conditional determination is to restrict or defer the establishment of an instrument approach procedure because of conflict with other IFR procedures in a particular area or to restrict aircraft operations to VFR weather conditions, then these conditions should be clearly defined in the determination to avoid possible misunderstanding. For example, the phrase "VFR operations only" should not be used when the intent is to restrict the establishment of an instrument approach procedure but not necessarily restrict IFR departures. If the intent is to restrict all

IFR operations, the determination should identify specific weather conditions rather than relate to VFR operations, or it should be written to specifically prohibit IFR operations.

b. Traffic Patterns. If there is a need to establish specific airport traffic patterns to ensure compatibility of aircraft operations with adjacent airports, or for other reasons, set forth the specific traffic pattern requirement as a condition.

c. Runway Thresholds. When the determination concerns a proposed runway construction, and existing objects will obstruct the airspace needed for arrivals or departures, and if the obstructions cannot be removed or mitigated due to lack of control by the airport sponsor or other compelling reasons, the conditions can stipulate displacement of the runway threshold or changing the location of the runway end to provide clearance over the obstructions. If you use this condition, ensure that the remaining runway length is sufficient to safely accommodate the most critical aircraft expected to use the runway. Perhaps it may be feasible, or more desirable, for the obstructions to be removed rather than shorten the runway. If so, you may give the airport sponsor this option. However, when the study indicates the runway threshold can safely be displaced or the runway end changed, use the following wording in the determination's conditions:

1. "The runway threshold is displaced and properly marked and lighted so as to provide obstacle clearance in accordance with appropriate airport design standards."

2. "The runway end is changed and properly marked and lighted so as to clearly indicate that portion of runway which is closed to pilots for takeoff and landing."

d. Ingress–Egress Routes. When the determination concerns a heliport, it may be necessary to specify ingress–egress routes in the conditions placed on the determination (see paragraph 11–1–9).

e. Other Conditions. Specify in the determination any other items which are feasible and necessary to assure the safe and efficient use of the airspace by aircraft and the safety of persons and property on the ground.

12–1–4. EXPIRATION DATES

a. The establishment of a expiration date shall be included in the determinations as appropriate. Expiration dates (normally 18 months) allow for the orderly planning of airports by providing realistic time limitations for the completion of airport projects. The expiration date may be extended if a proponent's reason for not completing the project by the specified time is valid. When establishing expiration dates on determinations issued under part 157, include the following statement: "In order to avoid placing any unfair restrictions on users of the navigable airspace, this determination is valid until [date]. Should the facility not be operational by this date, an extension of the determination must be obtained."

b. Expiration dates generally are not appropriate for ALP approvals and airspace approvals of other planning projects.

12–1–5. STATEMENT IN DETERMINATIONS

a. No Objections or Conditional. Include the following statement in the determination forwarded to the proponent:

1. "This determination does not constitute FAA approval or disapproval of the physical development involved in the proposal. It is a determination with respect to the safe and efficient use of navigable airspace by aircraft and with respect to the safety of persons and property on the ground."

2. "In making this determination, the FAA has considered matters such as the effects the proposal would have on existing or planned traffic patterns of neighboring airports, the effects it would have on the existing airspace structure and projected programs of the FAA, the effects it would have on the safety of persons and property on the ground, and the effects that existing or proposed manmade objects (on file with the FAA), and known natural objects within the affected area would have on the airport proposal."

3. "The FAA cannot prevent the construction of structures near an airport. The airport environs can only be protected through such means as local zoning ordinances, acquisitions of property in fee title or aviation easements, letters of agreement, or other means."

b. Objectionable – Include the following statement in the determination forwarded to the

proponent: "This is a determination with respect to the safe and efficient use of navigable airspace by aircraft and with respect to the safety of persons and property on the ground. In making this determination, the FAA has considered matters such as the effect the proposal would have on existing or planned traffic patterns of neighboring airports, the effects it would have on the existing airspace structure and projected programs of the FAA, the effects it would have on the safety of persons and property on the ground, and the effects that existing or proposed manmade objects (on file with the FAA) and natural objects within the affected area would have on the airport proposal."

c. Notice of Completion – Include a reminder that the sponsor is required to notify the nearest Airport District Office (ADO) or regional office within 15 days after completion of the project. For a part 157 airport, this is accomplished by returning the FAA Form 5010–5 to the appropriate Airport office.

12–1–6. AIRPORT MASTER RECORD

When appropriate, enclose within the determination, FAA Form 5010, Airport Master Record, and include a statement in the determination letter providing the sponsor guidance on its use.

12–1–7. ADVISE FEDERAL AGREEMENT AIRPORT SPONSORS

When a determination is sent to the sponsor, include the following additional statement: "This determination does not constitute a commitment of Federal funds and does not indicate that the proposed development is environmentally acceptable in accordance with applicable Federal laws. An environmental finding is a prerequisite to any major airport development project when Federal aid will be granted for the project. This approval is given subject to the condition that the proposed airport development identified below shall not be undertaken without prior written environmental approval by the FAA. These items include [list items] (see FAAO 5050.4A, Chapter 3, for more information)."

12–1–8. DISSEMINATION OF STUDY RESULTS

The Airports Office shall make available to FAA offices that participated in the study a copy of each determination issued. Include a copy to AAS–330 for part 157 proposals. AAS–330 shall be provided a copy of the entire airspace determination when the FAA Form 5010–5, is returned from the proponent. Additionally, the results of an airport study circularized outside the FAA or discussed in an informal meeting should be disseminated by the Airports Office to those persons/offices on the circular distribution list, attendees at the informal airspace meeting, and any other interested person, as soon as feasible after the sponsor has been notified. Outside of agency distribution shall be in the form of a notice "To All Concerned." Include in the notice the aeronautical study number together with a brief summary of the factors on which the determination was based and a recital of any statement included in the determination. In addition, if a conditional statement concerning environmental acceptability has been included in the determination to the proponent, include a similar statement in the notice.

12–1–9. REVIEW OF SENSITIVE OR CONTROVERSIAL CASES AND PART 157 DETERMINATIONS

a. A proponent of an airport proposal or interested persons may, at least 15 days in advance of the determination void date, petition the FAA official who issued the determination to:

1. Revise the determination based on new facts that change the basis on which it was made.

2. Extend the determination void date. Determinations will be furnished to the proponent, aviation officials of the state concerned, and, when appropriate, local political bodies and other interested persons.

b. The petition must be based on aeronautical issues and will not be accepted after airport construction has begun. The appropriate regional office should attempt to resolve the issue(s) in the following manner:

1. Informal Meeting. The Airports Office should hold a special informal airspace meeting with all interested parties when requested. Emphasize that the scope of an airport study analysis is limited, and that the FAA's determination is based on the safe and efficient use of navigable airspace by aircraft and the safety of persons and property on the ground (see paragraph 12–1–5). The air traffic office

shall assist in the meeting when requested by Airports.

2. Reevaluate. If any new factors regarding the safe and efficient use of the airspace become known as a result of the informal meeting then reevaluate the airport proposal. Affirm or revise the original determination as appropriate.

3. Public Hearing. The regulations provide no right to, or procedures for, a public hearing regarding airport matters. An airport airspace determination is only advisory and for the FAA's own use. Circularization and, where required, informal airspace meetings should be sufficient to provide interested persons a forum to present their views. When Federal funds are, or will be involved in the airport or its development, there is a right to a public hearing on site location, but no similar right exists to a hearing on airspace matters. If a party is emphatic in their demand for a public hearing System Operations Airspace and AIM, through the service area office, should be notified and there shall be no implication made that a hearing may be granted. It is general policy not to grant such hearings. However, should circumstances dictate otherwise, System Operations Airspace and AIM would direct the conduct of the hearing to be informal in nature, not within the scope of the Administrative Procedures Act, and the subject matter would be limited to the scope of the airspace analysis (i.e., the safe and efficient use of navigable airspace by aircraft).

12–1–10. DISPOSAL OF FEDERAL SURPLUS REAL PROPERTY FOR PUBLIC AIRPORT PURPOSES

a. Site Endorsement. The FAA shall study and officially endorse the site before property interest in land owned and controlled by the United States is conveyed to a public agency for public airport purposes.

b. Processing Procedures. Surplus Federal property cases shall be processed in the same manner as Federal airport proposals.

Chapter 13. Military, NASA, and Other Agency Airport Proposals

Section 1. General

13–1–1. PRIOR NOTICE TO FAA

49 U.S.C. Section 44718 provides, in part, that the Department of Defense (DOD), the National Aeronautics and Space Administration (NASA), or other agencies shall not acquire, establish, or construct any military airport, missile or rocket site, or substantially alter any runway layout unless reasonable prior notice is given to the FAA Administrator so that the appropriate committees of Congress, and other interested agencies, may be advised as to the effects of such projects upon the use of airspace by aircraft.

13–1–2. FORM OF NOTICE

The DOD forwards military airport or missile site projects to FAA Washington Headquarters in the form of an annual Military Construction Program (MCP). Military projects not involved in the annual program are submitted to the FAA regional office by the individual services or commands through the regional military representatives (see paragraph 13–1–5). NASA and other agencies submit their projects directly to FAA Washington Headquarters.

13–1–3. FAA HEADQUARTERS REVIEWS

Annual MCPs and proposals submitted by NASA or other agencies are forwarded to Airspace and Rules for review and processing. Airspace and Rules shall coordinate with appropriate headquarters ATP, Flight Technologies and Procedures, and Spectrum Assignment and Engineering Services Offices prior to forwarding the proposal to the regional/service area office for study. Any problems with the proposal at the headquarters level should be resolved prior to requesting regional/service area input.

13–1–4. REGIONAL/SERVICE AREA OFFICE REVIEW

Airspace and Rules will then forward the projects to the appropriate regional office for processing in the same manner as civil airport proposals, except that service area offices are responsible for the study. The determination and recommendation on the proposal, plus all pertinent comments and related material, shall be forwarded to Airspace and Rules by the service area office. The official FAA determination shall be formulated by Airspace and Rules after review and any required inter–services coordination and forwarded to DOD, NASA, or other agencies as appropriate. A copy of the determination shall be forwarded to the affected regional/service area office.

13–1–5. MILITARY PROPOSALS OTHER THAN MCP

Other military airport proposals may be submitted by individual services through the appropriate regional military representatives to the regional/service area office. These proposals shall be processed in the same manner as civil airport proposals except as indicated below. This exception does not apply to notices on joint–use airports received under part 157 or AIP projects.

a. The regional Airports Division shall coordinate with the service area office, Flight Standards Division, technical operations services area office, FPO, and other offices as required for formulation of the official FAA determination. The determination shall be issued to the appropriate regional military representative with a copy to Airspace and Rules.

b. When a controversial proposal is referred to Washington Headquarters for resolution, the airspace finding and official agency determination shall be formulated by the AAS–100 in coordination with Airspace and Rules and other offices, as required, and forwarded to the appropriate regional military representatives through the regional/service area office.

Part 4. Terminal and En Route Airspace

Chapter 14. Designation of Airspace Classes

Section 1. General

14–1–1. PURPOSE

In addition to the policy guidelines and procedures detailed in Part 1. of this order, this part prescribes specific policies and procedures for managing terminal and en route airspace cases.

14–1–2. DEFINITIONS

a. CONTROLLED AIRSPACE. An airspace of defined dimensions within which ATC service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

1. Controlled airspace is a generic term that covers Class A, Class B, Class C, Class D, and Class E airspace areas.

2. Controlled airspace is also that airspace within which all aircraft operators are subject to certain pilot qualifications, operating rules, and equipment requirements in 14 CFR part 91 (for specific operating requirements, please refer to 14 CFR part 91). For IFR operations in any class of controlled airspace, a pilot must file an IFR flight plan and receive an appropriate ATC clearance. Each Class B, Class C, and Class D airspace area designated for an airport contains at least one primary airport around which the airspace is designated (for specific designations and descriptions of the airspace classes, please refer to 14 CFR part 71).

3. Controlled airspace in the United States is designated as follows:

(a) CLASS A AIRSPACE AREA. Generally, that airspace from 18,000 feet MSL up to and including FL 600, including the airspace overlying the waters within 12 nautical miles (NM) of the coast of the 48 contiguous States and Alaska. Unless otherwise authorized, all persons must operate their aircraft under IFR.

(b) CLASS B AIRSPACE AREA. Generally, that airspace from the surface to 10,000 feet mean sea level (MSL) surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers, and is designed to contain all published instrument procedures. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for VFR operations is "clear of clouds."

(c) CLASS C AIRSPACE AREA. Generally, that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C area is individually tailored, the airspace usually consists of a surface area with a 5 NM radius, an outer circle with a 10 NM radius that extends from no lower than 1,200 feet up to 4,000 feet above the airport elevation. Each person must establish two–way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while within the airspace.

(d) CLASS D AIRSPACE AREA. Generally, that airspace from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures. Arrival extensions for instrument approach procedures may be Class D or Class E airspace. Unless otherwise authorized, each person must establish

two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while in the airspace. No separation services are provided to VFR aircraft.

(e) CLASS E AIRSPACE AREA. Generally, if the airspace is not Class A, Class B, Class C, or Class D, and it is controlled airspace, it is Class E airspace. The types of Class E airspace areas are:

(1) Surface Area Designated for an Airport – When designated as a surface area for an airport, the airspace will be configured to contain all instrument procedures.

(2) Extension to a Surface Area – There are Class E airspace areas that serve as extensions to Class B, Class C, Class D, and Class E surface areas designated for an airport. Such airspace provides controlled airspace to contain standard instrument approach procedures without imposing a communications requirement on pilots operating under VFR.

(3) Airspace Used for Transition – There are Class E airspace areas beginning at either 700 or 1,200 feet AGL used to transition to/from the terminal or en route environment.

(4) En Route Domestic Areas – There are Class E airspace areas that extend upward from a specified altitude and are en route domestic airspace areas that provide controlled airspace in those areas where there is a requirement to provide IFR en route ATC services but the Federal airway system is inadequate.

(5) Federal Airways – The Federal airways are Class E airspace areas and, unless otherwise specified, extend upward from 1,200 feet to, but not including, 18,000 feet MSL. The colored airways are green, red, amber, and blue. The VOR airways are classified as Domestic, Alaskan, and Hawaiian.

(6) Unless designated at a lower altitude, Class E airspace begins at 14,500 feet MSL to, but not including 18,000 feet MSL overlying: the 48 contiguous States including the waters within 12 miles from the coast of the 48 contiguous States; the District of Columbia; Alaska, including the waters within 12 miles from the coast of Alaska, and that airspace above FL 600; excluding the Alaska peninsula west of long. 160°00’00”W., and the airspace below 1,500 feet above the surface of the earth unless specifically so designated.

(7) Offshore/Control Airspace Areas. Airspace areas beyond 12 NM from the coast of the United States, wherein ATC services are provided.

b. UNCONTROLLED AIRSPACE.

1. CLASS G AIRSPACE AREA. Airspace that has not been designated as Class A, Class B, Class C, Class D, or Class E airspace.

14-1-3. GOVERNING CRITERIA

Controlled airspace in terminal areas shall be designated, modified, or discontinued in accordance with the policy, procedures, and criteria contained herein.

14-1-4. FRACTIONAL MILES

Unless otherwise stated, all distances are nautical miles. When figuring the size of surface areas and Class E airspace or their extensions, any fractional part of a mile shall be converted to the next higher 0.1 mile increment.

EXAMPLE-
3.62 miles would be considered to be 3.7 miles.

14-1-5. AIRSPACE LEGAL DESCRIPTION

a. A text header shall be used and include the following information:

1. On line one:

(a) FAA routing symbol of the region.

(b) Two letter abbreviation of the state.

(c) Type of airspace.

2. On line two: Enter the name of the airport and, if different, preceded by the name of the city.

3. If applicable, on line three: Enter the geographic coordinates for the reference used to describe the airspace, that is, geographic position, airport reference point, NAVAID, etc.

4. If applicable, on subsequent lines: Enter any NAVAID or airport, including geographic coordinates, used in the legal description.

b. State vertical limits in the first sentence of the text.

c. Do not restate geographic coordinates used in the text header in the legal description text.

d. If applicable, the way to distinguish between the classes is to separate the description of basic radius from the extension description by using a semi-colon.

NOTE-
Do not include a vertical limit for any extension(s) that will become Class E airspace. See examples of airspace legal descriptions below.

EXAMPLES OF AIRSPACE LEGAL DESCRIPTIONS

ANE MA B BOSTON, MA
Logan International Airport (Primary Airport)
(lat. 42°21'51"N., long. 70°59'22"W.)

Boundaries.

Area A. That airspace extending upward from the surface to and including 7,000 feet MSL within an 8-mile radius of the Boston VORTAC.

Area B. That airspace extending upward from 2,000 feet MSL to and including 7,000 feet MSL within a 10.5-mile radius of the Boston VORTAC, excluding Area A.

Area C. That airspace extending upward from 3,000 feet MSL to and including 7,000 feet MSL within a 20-mile radius of the Boston VORTAC, excluding Areas A and B previously described and that airspace within and underlying Area D described hereinafter.

Area D. That airspace extending upward from 4,000 feet MSL to and including 7,000 feet MSL between the 15- and 20-mile radii of the Boston VORTAC extending from the Boston VORTAC 230' radial clockwise to the Boston VORTAC 005' radial.

ASW LA C SHREVEPORT REGIONAL AIRPORT, LA
Shreveport Regional Airport, LA
(lat. 32°26'48"N., long. 93°49'33"W.)
Barksdale AFB, LA
(lat. 32°30'07"N., long. 93°39'46"W.)

That airspace extending upward from the surface to and including 4,300 feet MSL within a 5-mile radius of the Shreveport Regional Airport, and that airspace extending upward from 1,600 feet MSL to and including 4,300 feet MSL within a 10-mile radius of the airport, excluding that airspace designated as the Barksdale AFB, LA, Class C airspace area east of the points where the 10-mile radius from Shreveport Regional Airport intersects the 10-mile radius from Barksdale AFB.

AEA VA D MANASSAS MUNICIPAL
Harry P. Davis Airport, Manassas, VA
(lat. 38°43'17"N., long. 77°30'56"W.)

That airspace extending upward from the surface to and including 2,000 feet MSL within a 4-mile radius of the Manassas Municipal/Harry P. Davis Airport; and that airspace extending upward from the surface within 2.6 miles either side of a bearing 025° from the airport extending from the 4-mile radius to 7.5 miles northeast of the airport and excluding that airspace within the Washington Tri-Area Class B area.

Chapter 15. Class B Airspace

Section 1. General

15–1–1. PURPOSE

a. The primary purpose of a Class B airspace area is to reduce the potential for midair collisions in the airspace surrounding airports with high density air traffic operations. Aircraft operating in these airspace areas are subject to certain operating rules and equipment requirements.

b. Additionally, Class B airspace areas are designed to enhance the management of air traffic operations to and from the airports therein, and through the airspace area.

15–1–2. REGIONAL/SERVICE AREA OFFICE EVALUATION

a. Service area offices shall biennially evaluate existing and candidate Class B airspace areas using the information contained in this chapter as a guideline.

b. If the conclusion of an evaluation indicates that airspace modifications should be made, regions/service area offices shall follow the applicable procedures in this order.

c. Additionally, any planned modifications to, or establishments of, Class B airspace areas shall be coordinated with Airspace and Rules prior to any public announcement.

Section 2. Class B Airspace Standards

15–2–1. CRITERIA

a. The criteria for considering a given airport as a candidate for a Class B airspace designation must be based on factors that include the volume of aircraft, the number of enplaned passengers, and the type/nature of operations being conducted in the area.

b. For a site to be considered as a new Class B airspace candidate, the following criteria must be met:

1. The primary airport serves at least 5 million passengers enplaned annually;

2. The primary airport has a total airport operations count of 300,000 (of which at least 240,000 are air carriers and air taxi); and

NOTE–
Operation counts are available from the Office of Aviation Policy and Plans, Statistics and Forecast Branch, APO–110. Enplaned passenger counts may be obtained by contacting the Office of Airport Planning and Programming Division, APP–1. Current validated counts are normally available in mid–October of the current year for the previous year.

3. The Class B designation will contribute to the efficiency and safety of operations, and is necessary to correct a current situation or problem that can not be solved without a Class B designation.

NOTE–
The above is the minimum criteria. It should be noted that when the criteria for the establishment of a Class B airspace area is met, it is merely an indication that the facility is a candidate for further study.

c. Although an airport meets the minimum passenger and air traffic operations criteria for a Class B designation, other factors must be considered, such as: would a Class B designation contribute to the efficiency and safety of operations in the area: and is there a current situation or problem that cannot be solved without the designation of Class B airspace.

15–2–2. DESIGNATION

Class B airspace area locations shall include at least one primary airport around which the Class B airspace area is designated.

15–2–3. CONFIGURATION

a. General Design. Simplification of the Class B airspace area configuration is a prime requisite. Its vertical and lateral limits should be standardized and shall be designed to contain all instrument procedures within Class B airspace. The number of sub–areas should be kept to a minimum.

b. Lateral Limits. This airspace should be initially designed in a circular configuration centered on the primary airport. Describe the airspace area using NAVAIDs as references where available on the primary airport in the following order of preference: VORTAC, VOR/DME, etc.

1. The outer limits of the airspace shall not exceed a 30 NM radius from the primary airport.

2. This 30 NM radius will generally be divided into three concentric circles: an inner 10 NM radius, a middle 20 NM radius, and an outer 30 NM radius.

3. The inner 10 NM radius area may be subdivided based on operational needs, runway alignment, adjacent regulatory airspace, or adjacent airports.

4. The areas between 10 to 20 NM and 20 to 30 NM may be vertically subdivided because of terrain or other regulatory airspace.

c. Vertical Limits. The upper limit of the airspace normally should not exceed 10,000 feet MSL. The inner 10 NM area shall normally extend from the surface to the upper limits of the airspace. This segment may be adjusted to coincide with runway alignment, adjacent airports, other regulatory airspace, etc., but shall encompass, as a minimum, all final approach fixes and minimum altitudes at the final approach fix. The floor of the area between 10 and 20 NM shall be predicated on a 300–foot per NM gradient for 10 NM. This segment will normally have a floor between 2,800 feet and 3,000 feet above airport elevation. This floor shall remain constant for that segment, but may be adjusted considering terrain and adjacent regulatory airspace. However, segmentation should be held to an absolute minimum. The floor of the area between 20 and 30 NM shall be at an altitude consistent with approach control arrival and departure procedures. It is expected that this floor would normally be

between 5,000 and 6,000 feet above airport elevation. In the segment between 20 and 30 NM, exclusions are permitted to accommodate adjacent regulatory airspace and/or terrain.

d. Variations. Any variation from the standard configuration shall be addressed in the staff study.

e. Satellite Airports. When establishing the airspace floor, consider the adverse effect on satellite airport operations as well as operations at the primary airport. When airspace directly over a satellite airport is not required, it should be excluded from the Class B airspace. Special published traffic patterns and/or procedures may be required for satellite airports.

Section 3. Class B Airspace Processing

15–3–1. RESPONSIBILITIES

a. The Airspace and Rules Manager is responsible for oversight of the Class B airspace designation/modification process. All NPRMs and final rules shall be issued by Airspace and Rules. Airspace and Rules will provide assistance, as needed, to the regions/service area offices in developing Class B airspace actions.

b. The service area office is responsible for coordination to determine Class B airspace candidacy, or the need for modifications to an existing area. As part of this responsibility, the service area office shall perform an analysis of the Class B airspace candidate and document the analysis in a staff study. Preparation of the staff study may be delegated to the facility.

15–3–2. STAFF STUDY

The staff study shall be in the format detailed in FAAO 1800.2, Evaluations, Appraisals, and Staff Studies. At a minimum, the staff study shall include the following:

a. A written description and the graphic depiction of the proposed area.

b. Graphic depiction(s) and analysis of the following:

1. Existing routes with associated altitudes that VFR traffic use while operating en route through the area or transitioning to all affected airports (charted VFR flyways).

2. Proposed VFR Flyways, with associated altitudes that would be charted to accommodate VFR aircraft desiring to transit the Class B airspace area (see FAAO 7210.3, chapter 11, National Programs).

3. A redundant boundary description including VOR/DME and latitude and longitude points outlining the proposed Class B area. In addition, where possible, include geographical features.

4. Routes with associated altitudes that IFR traffic use to conduct en route operations through the area being analyzed.

5. IFR departure and arrival traffic flows, including SIAPs, instrument departure procedures, STARs, and preferential arrival and departure routes associated with each runway configuration.

c. A narrative discussion and rationale of the following:

1. Number of aircraft based and types of operations conducted at affected airports.

2. Numbers of VFR operations that receive ATC service, that are denied service, and that circumnavigate the present terminal airspace configuration. Include any anticipated increase or decrease in these numbers if a Class B airspace configuration is modified or so designated.

3. Average delay in minutes now experienced by VFR operations in obtaining ATC services, and any anticipated increase or decrease in this number.

4. The facility's ability to provide ATC service to IFR and VFR traffic within the boundaries of its delegated airspace.

d. Analyses of staffing options, and issues, such as:

1. Current staffing status and the anticipated staffing requirements for implementing the Class B airspace.

2. Major proposals/comments submitted by user groups and an analysis and/or disposition of each.

3. Impact on air traffic and air navigation facilities including new or modified control positions required, if any, and new or relocation of navigational aids/communication equipment.

e. Environmental considerations.

f. Conclusions. Include a discussion on how the proposed establishment or modification will enhance safety and the efficiency of airspace management.

15–3–3. AIRSPACE USERS COORDINATION

a. Pre–NPRM. The service area office shall ensure that user input is sought and considered prior to formulating any planned Class B airspace area design.

1. An ad hoc advisory committee, composed of representatives of local airspace users, shall be formed to present input or recommendations to the FAA regarding the proposed design of the Class B airspace area. The service area office should provide advice and assistance on technical matters to the committee as needed.

2. Informal airspace meeting(s) shall be conducted in accordance with Chapter 2 of this order.

3. Based on the results of the region's analysis and the staff study, the service area office shall determine whether the effort should be continued to NPRM or terminated. The service area office will forward the proposal, all pertinent documentation (including advisory committee and informal airspace meeting input), and the region's/service area office's recommendations, to Airspace and Rules for further action. If it is determined to proceed with the rulemaking process, Airspace and Rules will prepare the NPRM.

b. Post–NPRM. The service area office shall:

1. Review all comments received in response to the NPRM and informal airspace meeting(s).

2. Coordinate with the concerned facility to address all substantive aeronautical comments.

3. Forward a discussion of how each substantive comment was addressed, along with the region's/service area office's recommendation for final action on the proposal, to Airspace and Rules.

Chapter 16. Class C Airspace

Section 1. General

16–1–1. PURPOSE

Class C airspace areas are designed to improve aviation safety by reducing the risk of midair collisions in the terminal area and enhance the management of air traffic operations therein.

16–1–2. NONRULEMAKING ALTERNATIVES

Before initiating rulemaking actions to establish Class C airspace, exhaust all nonrulemaking alternatives that provide for an acceptable level of safety and are consistent with the objectives of standardization and simplification. Such alternatives include, for example, the following actions:

a. Improved radar services.

b. Pilot/controller education programs and aviation education safety seminars.

16–1–3. REGIONAL/SERVICE AREA OFFICE EVALUATION

a. Service area offices shall biennially evaluate existing and candidate Class C airspace areas using the information contained in this chapter as a guideline.

b. If the conclusion of an evaluation indicates that airspace establishment or modifications should be made, regions/service area offices shall follow the applicable procedures in this order.

c. Additionally, any planned modifications to or establishments of Class C airspace areas shall be coordinated with Airspace and Rules prior to any public announcement.

16–1–4. CLASS C AIRSPACE

a. A provision may be incorporated in part–time Class C airspace area designations (rules) to allow, by Notices to Airmen, for changes when minor variations in time of designation are anticipated. To apply this provision a Notice of Proposed Rulemaking and final rule shall be issued which provides the following statement in the specific airspace designation: “This Class C airspace area is effective during the specific dates and times established, in advance, by a Notice to Airmen.”

b. The effective date and time will thereafter be continuously published. Information concerning these surface areas shall be carried in the following publications as applicable:

1. The Airport/Facility Directory for the contiguous United States, Puerto Rico, and Virgin Islands.

2. United States Flight Information Publication Supplement Alaska.

3. The Pacific Chart Supplement.

c. Notices to Airmen specifying the dates and times of a designated part–time area may be issued by the appropriate facility only after coordination with the regional/service area office. The service area office shall assure that such action is justified and in the public interest.

Section 2. Class C Airspace Standards

16–2–1. CRITERIA

a. The criteria for considering a given airport as a candidate for Class C designation must be based on factors which include the volume of aircraft or number of enplaned passengers, the traffic density, and the type or nature of operations being conducted.

b. For a site to be considered as a candidate for Class C airspace designation, it must meet the following criteria:

1. The airport must be serviced by an operational airport traffic control tower and a radar approach control; and

2. One of the following applies:

(a) An annual instrument operations count of 75,000 at the primary airport.

(b) An annual instrument operations count of 100,000 at the primary and secondary airports in the terminal area hub.

(c) An annual count of 250,000 enplaned passengers at the primary airport.

NOTE–
Operations counts are available from the Office of Aviation Policy and Plans, Statistics and Forecast Branch, APO–110. Enplaned passenger counts may be obtained by contacting the Office of Airport Planning and Programming, APP–1. Current validated counts are normally available in mid–October of the current year for the previous year.

16–2–2. DESIGNATION

Class C airspace area locations shall include a single primary airport around which the Class C airspace is designated.

16–2–3. CONFIGURATION

a. General Design. Simplification and standardization of Class C airspace areas are prime requisites. Lateral and vertical limits shall be in accordance with the following, to the extent possible.

b. Lateral Limits. Class C airspace areas should initially be designed as two circles centered on the airport reference point. The inner circle should have a 5 NM radius, and the outer circle should have a 10 NM radius. Wherever possible, use VOR radials and DME arcs to define the boundaries of the airspace and any of its sub–areas. It is important, however, that prominent visual landmarks also be considered to assist the VFR traffic preferring to remain clear of this area.

c. Vertical Limits. The ceiling of a Class C airspace should be 4,000 feet above the primary airport's field elevation. The airspace within the 5 NM circle shall extend down to the surface. The airspace between the 5 and the 10 NM circle(s) shall extend no lower than 1,200 feet AGL.

d. Variations. Any variation from the standard configuration identified shall be addressed in the appropriate staff study. (The number of sub–areas shall be kept to a minimum.)

NOTE–
Though not requiring regulatory action, an Outer Area is the procedural companion to Class C airspace. The normal radius of an Outer Area is 20 NM from the primary Class C airspace airport. Its vertical limit extends from the lower limits of radio/radar coverage up to the ceiling of the approach control's delegated airspace, excluding the Class C airspace itself, and other airspace as appropriate.

16–2–4. TIME OF DESIGNATION

Class C airspace areas may be designated full–time or part–time. If part–time, the effective time shall be stated in local time.

Section 3. Class C Airspace Processing

16–3–1. RESPONSIBILITIES

a. The Airspace and Rules Manager is responsible for oversight of the Class C airspace designation/modification process. All NPRMs and final rules shall be issued by Airspace and Rules. Airspace and Rules will provide assistance, as needed, to the regions/service area offices in developing Class C airspace actions.

b. The service area office is responsible for coordination to determine Class C airspace candidacy, or the need for modifications to an existing area. As part of this responsibility, the service area office shall perform an analysis of the Class C airspace candidate and document the analysis in a staff study. Preparation of the staff study may be delegated to the facility.

16–3–2. STAFF STUDY

The staff study shall be in the format detailed in FAAO 1800.2, Evaluations, Appraisals, and Staff Studies. At a minimum, the staff study shall include the following:

a. Traffic volume, density, and breakdown by category.

b. Geographical features, adjacent airspace, and ATC facilities.

c. A description of the terminal area including:

1. VFR traffic flow into, out of, and through the area.

2. IFR traffic flow in the affected en route structure including transition routes.

3. IFR traffic flow in conjunction with runway configuration, SIAPs, instrument departure procedures, STARs, and preferential arrival and departure routes.

4. The names and locations of satellite airports and a breakdown of air traffic at each, by category.

5. A general description of air traffic operations in the area.

d. A complete analysis of:

1. Major proposals submitted by users.

2. Near midair collision assessment.

3. The advantages and disadvantages of Class C airspace establishment.

4. Any budgetary impact on air traffic control and air navigation facilities, e.g., new or modified control positions, new or modified communications equipment, the capability of the facility to provide Class C services to the extent possible at minimum cost, and installation of new or relocation of existing navigational aids.

5. An assessment of the economic impact on users.

e. A statement regarding the actions taken to comply with paragraph 6–1–2.

f. The conclusions reached based on the analysis of the options and issues. The need to enhance safety shall be the main factor in evaluating the options and issues.

16–3–3. AIRSPACE USERS COORDINATION

a. Pre–NPRM. The service area office shall ensure that user input is sought and considered prior to formulating any planned Class C airspace area design.

1. An ad hoc advisory committee, composed of representatives of local airspace users, shall be formed to present input or recommendations to the FAA regarding the proposed design of the Class C airspace area. The service area office should provide advice and assistance on technical matters to the committee as needed.

2. Informal airspace meeting(s) shall be conducted in accordance with Chapter 2 of this order.

3. Based on the results of the region's analysis and the staff study, the service area office shall determine whether the effort should be continued to NPRM or terminated. The service area office will forward the proposal, all pertinent documentation (including advisory committee and informal airspace meeting input), and the region's/service area office's recommendations, to Airspace and Rules for further action. If it is determined to proceed with the rulemaking process, Airspace and Rules will prepare the NPRM.

b. Post–NPRM. The service area office shall:

1. Review all comments received in response to the NPRM and informal airspace meeting(s).

2. Coordinate with the concerned facility to address all substantive aeronautical comments.

3. Forward a discussion of how each substantive comment was addressed, along with the region's/service area office's recommendation for final action on the proposal to Airspace and Rules.

Chapter 17. Class D Airspace

Section 1. General

17–1–1. PURPOSE

Class D airspace areas are terminal airspace that consist of specified airspace (i.e., Surface Areas) within which all aircraft operators are subject to operating rules and equipment requirements. Service area offices are responsible for the coordination and implementation of Class D airspace designations.

a. Generally, a surface area is designated Class D airspace to provide controlled airspace for terminal VFR or IFR operations at airports having a control tower.

b. For non–towered airports requiring a surface area, the airspace will be designated Class E, see FAAO JO 7400.9, Airspace Designations and Reporting Points.

c. The designation of navigable airspace outside of the United States is the responsibility of Airspace and Rules (e.g., U.S. territories).

17–1–2. REGIONAL/SERVICE AREA OFFICE EVALUATION

a. Service area offices shall biennially evaluate existing and candidate Class D airspace areas using the information contained in this chapter as a guideline.

b. If the conclusion of an evaluation indicates that airspace modifications should be made, regions/service area offices shall follow the applicable procedures in this order.

17–1–3. DESIGNATION

If the communications and weather observation reporting requirements of paragraphs 17–2–9 and 17–2–10 are met, a surface area:

a. Shall be designated where a FAA control tower is in operation. Final rules will not be published in the Federal Register prior to a control tower becoming operational at the primary airport.

b. May be designated where a non–FAA control tower is in operation.

c. Shall be designated to accommodate instrument procedures (planned, published, special, arrival, and departure) if such action is justified and/or in the public interest. The following factors should be considered:

1. Type of procedure, including decision height or minimum descent altitude.

2. The actual use to be made of the procedure, including whether a certificated air carrier or an air taxi/commuter operator providing service to the general public uses it.

NOTE–
For special instrument procedures, consideration should be given to availability to other users.

3. The operational and economic advantage offered by the procedure, including the importance and interest to the commerce and welfare of the community.

4. Any other factors considered appropriate.

17–1–4. TIME OF DESIGNATION

Class D or surface areas may be designated full–time or part–time. If part–time, the effective time shall be stated in Coordinated Universal Time (UTC). Service area offices shall insure effective times are forwarded to NFDC to be published in the NFDD.

17–1–5. PART TIME SURFACE AREAS

a. A provision may be incorporated in part–time Class D surface area designations (rules) to allow, by Notices to Airmen, for changes when minor variations in time of designation are anticipated. To apply this provision a Notice of Proposed Rulemaking and final rule shall be issued which provides the following statement in the specific airspace designation: “This surface area is effective during the specific dates and times established, in advance, by a Notice to Airmen.”

b. The effective date and time will thereafter be continuously published. Information concerning these surface areas shall be carried in the following publications as applicable:

1. The Airport/Facility Directory for the contiguous United States, Puerto Rico, and Virgin Islands.

2. United States Flight Information Publication Supplement Alaska.

3. The Pacific Chart Supplement.

c. Notices to Airmen specifying the dates and times of a designated part-time area may be issued by the appropriate facility only after coordination with the regional/service area office The service area office shall assure that such action is justified and in the public interest.

Section 2. Class D Airspace Standards

17–2–1. CONFIGURATION

a. A Class D airspace area shall be of sufficient size to:

1. Allow for safe and efficient handling of operations.

2. Contain IFR arrival operations while between the surface and 1,000 feet above the surface and IFR departure operations while between the surface and the base of adjacent controlled airspace.

b. Size and shape may vary to provide for 1 and 2 above. The emphasis is that a Class D area shall be sized to contain the intended operations.

17–2–2. AIRPORT REFERENCE POINT/ GEOGRAPHIC POSITION

a. The Class D airspace boundary should normally be based on the airport reference point (ARP) or the geographic position (GP) of the primary airport. The ARP/GP is the center of the airport expressed in coordinates and should be incorporated into the surface area's legal description.

b. If a Class E surface area is established in conjunction with a part–time Class D area, the areas should normally be coincident. Explain any differences in the rulemaking documents.

NOTE–
Under certain conditions, the ARP/GP can change. If this occurs, the airspace should be reviewed to ensure the instrument procedures are still contained within existing airspace.

17–2–3. SATELLITE AIRPORTS

a. Using shelves and/or cutouts to the extent practicable, exclude satellite airports from the Class D airspace area (see FIG 17–2–3).

b. Satellite airports within arrival extensions may be excluded using the actual dimensions of the TERPs trapezoid.

c. Do not exclude airports inside the TERPs primary obstruction clearance area of the procedure(s) for which the surface area is being constructed or when the exclusion would adversely affect IFR operations.

17–2–4. ADJOINING CLASS D AIRSPACE AREAS

Designate separate Class D airspace area for airports in proximity to each other. A common boundary line shall be used so that the airspace areas do not overlap. When operationally advantageous, the common boundary separating adjacent Class D areas may be eliminated if the areas are contained in an existing Class B or Class C airspace area controlled by the same IFR ATC facility.

17–2–5. DETERMINING CLASS D AREA SIZE

The size of a Class D area, and any necessary extensions, is determined by the use of a 200 feet per NM climb gradient and information obtained from the person responsible for developing instrument procedures (see FIG 17–2–1).

NOTE–
Normally, the person responsible for developing instrument procedures for civil and U.S. Army airports is a FAA Aviation Standards Airspace Evaluation Specialist. A military representative handles all other military procedures.

17–2–6. DEPARTURES

a. When diverse departures are authorized, design the Class D area using a radius of 3.5 NM plus the distance from the ARP/GP to the departure end of the outermost runway (see FIG 17–2–1).

b. When specific departure routes are required, the routes will determine the shape of the Class D area. Use the 200 feet per NM climb gradient procedure in subparagraph a. above and FIG 17–2–2 plus 1.8 NM either side of the track(s) to be flown.

c. In areas with rising terrain, apply the procedures reflected in FIG 17–2–2.

17–2–7. ARRIVAL EXTENSION

a. A Class D area arrival extension shall be established to the point where an IFR flight on an instrument approach can be expected to descend to less than 1,000 feet above the surface.

b. When multiple approach procedures are established using the same initial approach course,

but with different 1,000-foot points, the extension length shall be based on the approach requiring the greatest distance. Consistent with safety and operational feasibility, if an adjustment to the 1,000-foot point can be made to eliminate or shorten an extension, the specialist shall coordinate with the person responsible for developing the instrument approach to request the adjustment.

c. The width of the extension shall be equal to the width of the TERPs primary obstruction clearance area at the point where an IFR flight on an instrument approach can be expected to descend to an altitude below 1,000 feet above the surface. However, if the primary area widens between the point where the flight leaves 1,000 feet and the airport, the widened portion of the primary area located outside the basic surface area radius shall be used for the extension. These extensions shall, in all cases, extend to a minimum of 1 NM on each side of the centerline.

d. If all arrival extensions are 2 NM or less, they will remain part of the basic Class D area. However, if any extension is greater than 2 NM, then all extensions will be Class E airspace.

17-2-8. VERTICAL LIMITS

Class D areas should normally extend upward from the surface up to and including 2,500 feet AGL. The altitude shall be converted to MSL and rounded to the nearest 100 feet. However, in a low density or non-turbo aircraft traffic environment, a vertical limit of 2,500 feet AGL may be excessive and a lower altitude should be used.

NOTE-
The nearest 100 feet means that 49 feet and below shall be rounded down and 50 feet and above shall be rounded up.

17-2-9. COMMUNICATIONS

Communications capability must exist with aircraft, that normally operate within the Class D Surface Area down to the runway surface of the primary airport (the airport upon which the surface area is designated). This communication may be either direct from the ATC facility having jurisdiction over the area or by rapid relay through other communications facilities which are acceptable to the ATC facility having that jurisdiction.

17-2-10. WEATHER OBSERVATIONS AND REPORTING

a. Weather observations shall be taken at the primary airport during the times and dates the Class D airspace is active. A federally certified weather observer or a federally commissioned automated weather observing system (this includes all FAA and NWS approved and certified weather reporting systems) can take the weather observation. The weather observer shall take routine (hourly) and special observations. An automated weather observing system can provide continuous weather observations.

b. Scheduled record and special observations from weather observers or automated weather reporting systems shall be made available to the ATC facility(s) having control jurisdiction over the Class D designated surface area. This can be accomplished through Automated Flight Service Station/Flight Service Station (AFSS/FSS), Longline Dissemination, National Weather Service (NWS), or other FAA-approved sources. Facilities that require weather reports from satellite airports may enter into a letter of agreement (LOA) with the associated AFSS/FSS, airline/contract observer, airport management, etc.

NOTE-
1. *At ATC sites where non-Federal employees perform weather duties, the appropriate FAA office shall ensure that the reporting and dissemination requirements applicable to National Weather Service and FAA publication standards are followed.*

2. *In facilities where direct access to automated weather observing systems is not available, controllers will apply the provisions of FAAO 7110.65, Air Traffic Control.*

17-2-11. LOSS OF COMMUNICATION OR WEATHER REPORTING CAPABILITY

a. If the capabilities outlined in paragraph 17-2-9 and/or paragraph 17-2-10 are temporarily out of service for an active Class D Surface Area, a Notice to Airmen shall be issued stating the temporary loss of the affected service.

b. However, if it is determined that the capabilities are consistently unavailable, a Notice to Airmen shall be issued, as described above, and rulemaking action initiated to revoke the Surface Area, as appropriate.

c. The FPO needs to be kept informed of any planned action, especially when instrument approach procedures (IAP) are involved, so as to assess the impact on published approaches. The Standards Specialist may decide changes are needed in the IAP, dependent on possible new altimeter source and other considerations. These changes will have an effect on the airspace action required; e.g., minimums may be raised, or procedure may be canceled.

FIG 17-2-1
CLASS D AREA RADIUS FORMULA

Class D AREA RADIUS FORMULA
RADIUS
ARP/GP = AIRPORT REFERENCE POINT AND/OR GEOGRAPHIC POSITION
EOR = END OF OUTERMOST RUNWAY
6076 = ONE NAUTICAL MILE IN FEET
200 FEET PER NAUTICAL MILE = STANDARD CLIMB GRADIENT
D = DISTANCE IN FEET FROM ARP/GP TO EOR 3.5 MILES = DISTANCE REQUIRED FOR DEPARTURE TO REACH 700-FOOT CLASS E AIRSPACE USING STANDARD CLIMB GRADIENT
(700/200)
2.5 MILES = DISTANCE REQUIRED FOR DEPARTURE TO REACH 1200-FOOT CLASS E AIRSPACE USING STANDARD CLIMB GRADIENT
((1200 - 700)/200)
THE FORMULA CAN BE EXPRESSED AS: R = D/6076 + 3.5

Example:

At Airport A, the distance from the geographic position to the end of the outermost runway is 4,023 feet; therefore, assuming flat terrain, the radius is calculated as:

R = 4023/6076 + 3.5 = .662 + 3.5 = 4.162 = 4.2
The radius for the 700-foot Class E airspace becomes: 4.2 + 2.5 = 6.7

RISING TERRAIN

In the above example, an aircraft departing to the west would reach the lateral boundary of the surface area without reaching 700 feet AGL and, in effect, leave controlled airspace. To ensure that the lateral boundary of the Class D area is congruent with the beginning of the 700-foot Class E airspace, the specialist shall:

a. Search the Class D area's radius circle for the highest terrain.

b. Calculate the MSL height of the aircraft by adding 700 feet to the airport elevation.

c. Compare MSL altitudes of the aircraft versus the highest terrain to determine if the aircraft has reached the overlying or adjacent controlled airspace. If not, increase the size of the Class D area, as necessary, to contain the departure.

NOTE-
When terrain, obstacles, or procedures prohibit departures in portions of the basic surface area, a terrain search is not necessary in that area and that height is not used in the computations.

FIG 17-2-2
RISING TERRAIN

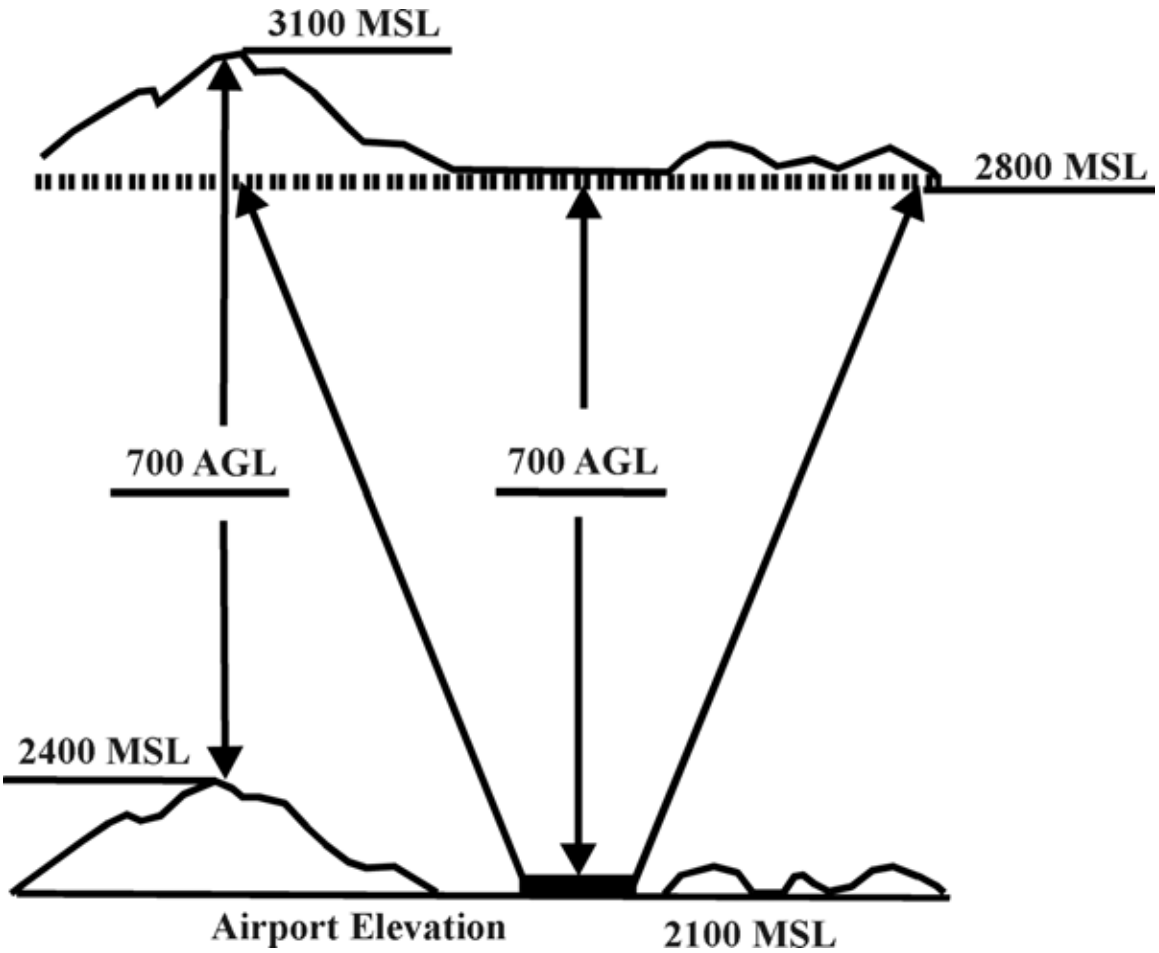
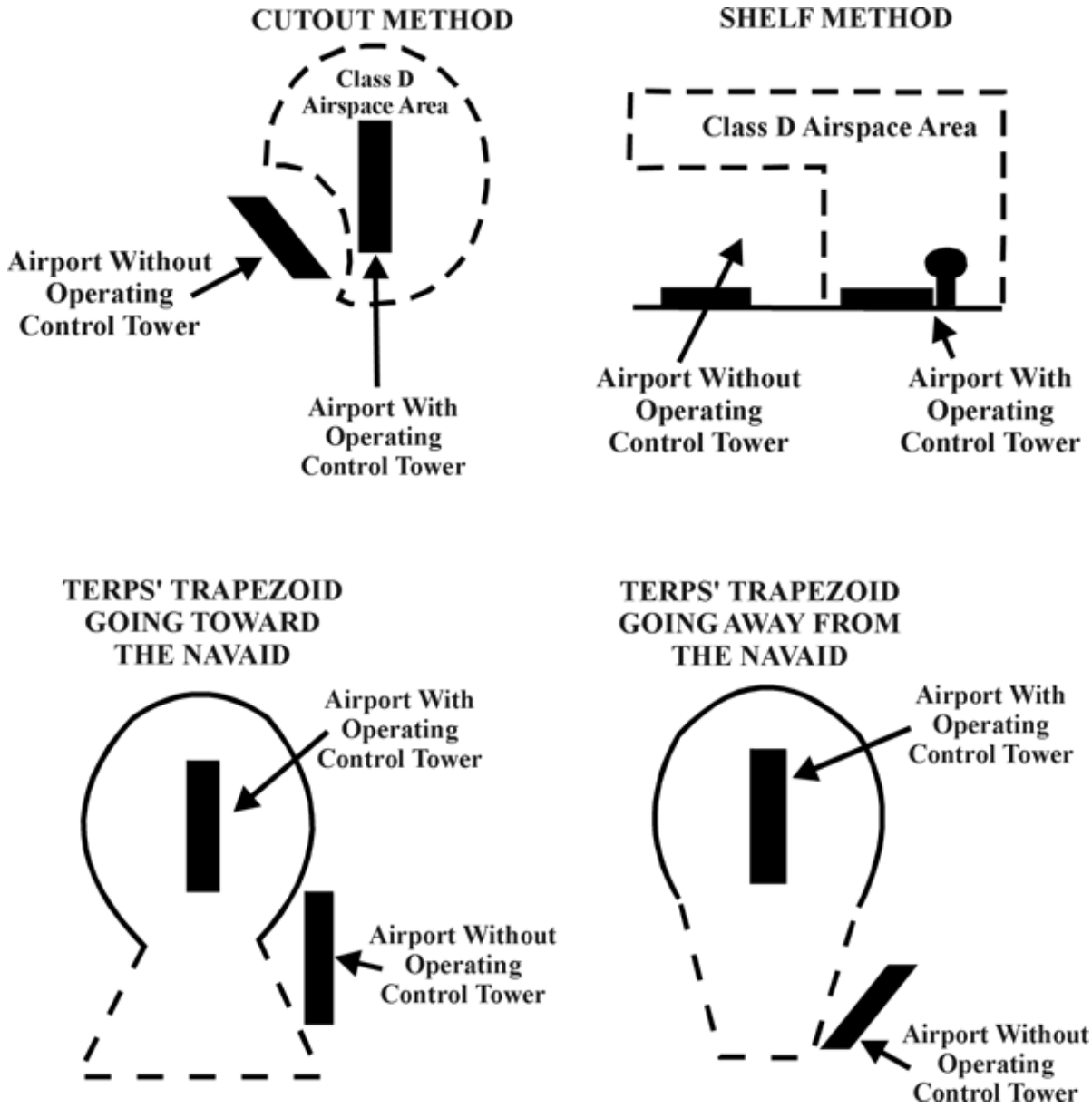


FIG 17-2-3

EXAMPLES OF SATELLITE AIRPORTS EXCLUDED FROM SURFACE AREA AIRSPACE AREAS



Chapter 18. Class E Airspace

Section 1. General

18–1–1. INTRODUCTION

Class E airspace consists of:

a. The airspace of the United States, including that airspace overlying the waters within 12 NM of the coast of the 48 contiguous states and Alaska, extending upward from 14,500 feet MSL up to, but not including 18,000 feet MSL, and the airspace above FL600, excluding –

1. The Alaska peninsula west of longitude 160°00’00”W.; and

2. The airspace below 1,500 feet above the surface of the earth.

b. Surface area designated for an airport. When designated as a surface area for an airport, the airspace will be configured to contain all instrument procedures to the extent practicable.

c. Airspace used for transition. Class E airspace areas extending upward from either 700 or 1,200 feet AGL used to transition to/from the terminal or en route environment.

d. En Route Domestic Areas. Class E airspace areas that extend upward from a specified altitude and provide controlled airspace in those areas where there is a requirement to provide IFR en route ATC services but the Federal airway structure is inadequate.

e. Federal Airways. The Federal airways and low altitude RNAV routes are Class E airspace areas and unless otherwise specified, extend upward from 1,200 feet to, but not including, 18,000 feet MSL. The colored airways are green, red, amber, and blue. The VOR airways are classified as Domestic, Alaskan, and Hawaiian.

f. Offshore Airspace Areas. Class E airspace areas that extend upward from a specified altitude to, but not including, 18,000 feet MSL and are designated as offshore airspace areas. These areas provide controlled airspace beyond 12 miles from the coast of the U.S. in those areas where there is a requirement to provide IFR en route ATC services and within which the U.S. is applying domestic procedures.

18–1–2. CLASS E SURFACE AREAS

a. A Class E surface area is designated to provide controlled airspace for terminal operations where a control tower is not in operation. Class E surface areas extend upward from the surface to a designated altitude; or to the adjacent or overlaying controlled airspace. Class E airspace surface areas must meet the criteria in paragraph 17–1–3 of this order.

b. When a surface area is established to accommodate part time operations at a Class C or D airspace location, the surface area will normally be coincident with that airspace. If the airspace is not coincident, it should be explained in the rule.

18–1–3. DESIGNATION

If the communication and weather requirements described in paragraphs 17–2–9 and 17–2–10 are met, Class E surface airspace may be designated to accommodate:

a. IFR arrival, departure, holding, and en route operations not protected by other controlled airspace.

b. Instrument approach procedures. Surface airspace may be designated to accommodate special instrument procedures if such action is justified and/or in the public interest. The following factors are among those that should be considered:

1. Type of procedure including decision height or minimum descent altitude.

2. The actual use to be made of the procedure, including whether it is used by a certificated air carrier or an air taxi/commuter operator providing service to the general public.

NOTE–
For special instrument procedures, consideration should be given to availability to other users.

3. The operational and economic advantage offered by the procedure, including the importance and interest to the commerce and welfare of the community derived by the procedure.

4. Any other factors considered appropriate.

Section 2. Transitional Airspace

18–2–1. PURPOSE

Transitional areas, Class E, are designated to serve terminal and en route aircraft to include helicopter operations such as:

a. Transitioning to/from terminal and en route.

b. Transiting between airways and routes.

c. En route climbs or descents.

d. Holding.

e. Radar vectors.

f. Providing for course changes.

g. When the route under consideration is almost all within existing Class E airspace and small additions would complete the coverage.

NOTE–
The only areas that are normally excluded in the Class E description should be limited to Mexico, Canada, SUA and international airspace. Exclude SUA only when active. Do not exclude Federal Airways or other airspace areas.

h. En route training operations.

18–2–2. 700/1,200–FOOT CLASS E AIRSPACE

Class E–5 700/1200–foot airspace areas are used for transitioning aircraft to/from the terminal or en route environment.

18–2–3. 700–FOOT CLASS E AIRSPACE

A Class E–5 airspace area with a base of 700 feet above the surface shall be designated to accommodate arriving IFR operations below 1,500 feet above the surface and departing IFR operations until they reach 1,200 feet above the surface.

18–2–4. 1,200–FOOT CLASS E AIRSPACE

Where sufficient controlled airspace does not exist, designate a 1,200 foot Class E–5 airspace area to accommodate arriving IFR operations at 1,500 feet and higher above the surface and departing IFR operations from the point they reach 1,200 feet above the surface until reaching overlying or adjacent controlled airspace.

18–2–5. CLASS E AIRSPACE FLOORS ABOVE 1,200 FEET

Class E–5 airspace areas may be established with MSL floors above 1,200 feet AGL. Normally floors will be at least 300 feet below the minimum IFR altitude.

18–2–6. COORDINATION OF MISSED APPROACH ALTITUDES

Coordination shall be initiated with the appropriate FPO or military representatives to adjust missed approach altitudes upward to at least 1,500 feet above the terrain at locations where existing procedures specify lower altitudes and such action can be accomplished without penalty to overall IFR operations or without exceeding TERPS criteria.

Section 3. Transitional Airspace Area Criteria

18–3–1. DEPARTURE AREA

a. The configuration of Class E airspace for departures is based on either specific or diverse departure routings and determines whether the Class E airspace will be circular or oriented in one or more specific direction(s).

b. A climb gradient of 200 feet per NM shall be applied to determine the size of all Class E airspace for departures, and when necessary departure extensions. Specific departure areas with a base of 700 feet require the airspace 1.8 NM each side of the track centerline. Departure areas with a base of 1,200 feet require 4 NM each side of the track centerline.

c. When a surface area does not exist, the climb gradient shall be applied from the departure end of the outermost runway to determine the width of the 700–foot Class E airspace and the beginning of the 1,200–foot Class E airspace.

d. The lateral boundary of a 1,200–foot Class E airspace that overlies the waters within 12 NM of the coast of the 48 contiguous states and Alaska, excluding the Alaskan Peninsula west of longitude 160 degrees, shall terminate at 12 NM.

e. In the western states where the floor of controlled airspace is 14,500 MSL or 1,500 AGL, the 1200–foot airspace should be route oriented and normally only necessary between the 700–foot Class E airspace and the closest adjacent existing controlled airspace.

NOTE–
Where diverse departures are authorized, the 700–foot Class E airspace will normally be a 2.5 NM radius beyond the radius of the basic surface areas. This standard does not apply to surface areas associated with Class C airspace.

18–3–2. LENGTHY DEPARTURE CLASS E AIRSPACE EXTENSIONS

If lengthy Class E airspace extensions are established for departing flights, they shall include the additional airspace within lines diverging at angles of 4.5 degrees from the centerline of the route radial beginning at the associated NAVAID. In planning such extensions, the same frequency protection considerations involved in airway planning must be included.

NOTE–
The 4.5–degree angle leaves an 8 NM wide area at 51 NM from the associated NAVAID.

18–3–3. ARRIVAL AREA

The point at which a flight can be expected to leave 1,500 feet above the surface on an instrument approach and the width of the primary obstruction clearance area shall be obtained from the office responsible for developing the instrument approach.

18–3–4. ARRIVAL EXTENSION

Class E airspace extension with a base of 1,200 feet above the surface and 4 NM each side of the track centerline shall be established to contain the flight path of arriving IFR flights at altitudes at least 1,500 feet or higher above the surface.

a. To determine length of an arrival extension, one needs:

1. The point at which a flight can be expected to leave 1,500 feet above the surface.

2. The airspace needed to contain arriving IFR operations at 1,500 feet and higher above the surface.

b. The extension length shall be based on the approach requiring the greatest distance when multiple approach procedures (e.g., NDB/ILS) are established using the same approach course but with different final approach altitudes.

c. The width of the extension shall be equal to the width of the TERPS primary obstruction clearance area at the point where an IFR flight on an instrument approach can be expected to descend to less than 1,500 feet above the surface. However, if the primary area widens between the point where the flight leaves 1,500 feet and the airport, the widest portion of the primary area shall be used for the extension. Extensions shall, in all cases, extend to a minimum of 1 NM on each side of the centerline, although the primary obstruction clearance area extends less than 1 NM from the centerline.

d. The extension width shall be based on the approach requiring the greatest width when multiple approach procedures (e.g., NDB/ILS) are established using the same approach course.

18–3–5. PROCEDURE TURN PROTECTION

Class E airspace extensions shall be established for the protection of low altitude procedure turn areas as follows:

a. Procedure turns authorized to a distance of 5 NM or less:

1. The boundary on the procedure turn side is 7 NM from, and parallel to, the approach course.

2. The boundary on the side opposite the procedure turn side is 3 NM from, and parallel to, the approach course.

3. The outer limit is established at 10 NM outbound from the procedure turn fix.

b. Procedure turns authorized to a distance greater than 5 NM:

1. The boundary on the procedure turn side is 8 NM from, and parallel to, the approach course.

2. The boundary on the side opposite the procedure turn is 4 NM from, and parallel to, the approach course.

3. The outer limit is established at 16 NM outbound from the procedure turn fix. This length is extended 1 NM and the width is widened .2 (2/10) of a NM for each NM beyond 10 NM that the procedure turn is authorized.

18–3–6. DETERMINING BASE ALTITUDES

In determining the base altitude of Class E airspace designated to encompass procedure turns, it is only necessary to consider governing terrain within the TERPS primary obstruction clearance area, excluding the entry zone, rather than terrain within the entire rectangular areas specified above.

Chapter 19. Other Airspace Areas

Section 1. General

19–1–1. EN ROUTE DOMESTIC AIRSPACE AREAS

a. En Route Domestic Airspace Areas consist of Class E airspace that extends upward from a specified altitude to provide controlled airspace in those areas where there is a requirement to provide IFR en route ATC services but the Federal airway structure is inadequate. En Route Domestic Airspace Areas may be designated to serve en route operations when there is a requirement to provide ATC service but the desired routing does not qualify for airway designation. Consideration may also be given to designation of En Route Domestic Airspace Areas when:

1. The NAVAIDs are not suitable for inclusion in the airway system, but are approved under part 171, are placed in continuous operation, and are available for public use; or

2. Navigation is by means of radar vectoring. En route Domestic Airspace Areas are listed in FAAO JO 7400.9, Airspace Designations and Reporting Points.

b. En Route Domestic Airspace Areas are designated under 14 CFR Section 71.71 and are listed in FAAO JO 7400.9, Airspace Designations and Reporting Points.

19–1–2. OFFSHORE/CONTROL AIRSPACE AREAS

a. Offshore/Control Airspace Areas are locations designated in international airspace (between the U.S. 12–mile territorial limit and the CTA/FIR boundary, and within areas of domestic radio navigational signal or ATC radar coverage) wherein domestic ATC procedures may be used for separation purposes.

b. These areas provide controlled airspace where there is a requirement to provide IFR en route ATC services, and to permit the application of domestic ATC procedures in that airspace.

c. Class A Offshore/Control Airspace Areas are identified as “High” (e.g., Atlantic High; Control 1154H). Class E areas are identified as “Low” (e.g., Gulf of Mexico Low, Control 1141L).

d. Since there is no standard established for offshore routes NAVAID spacing, such spacing should be determined on a regional, site–by–site basis.

e. In determining which configuration to use, consider user requirements, NAVAID quality and dependability, radar vectoring capabilities, transition to/from offshore airspace areas, requirements of other users for adjacent airspace, and possible future requirements for controlled airspace.

f. Offshore/Control areas that require use of one NAVAID for an extended distance should be based on L/MF facilities so that lower MEAs can be established.

NOTE–
Care should be exercised in relocating NAVAIDs on which offshore airspace areas are based so that the desired offshore airspace configuration can be retained.

g. Where Offshore/Control Class E airspace is extended to the domestic/oceanic boundary, the diverging lines shall terminate at their intersection with the domestic/oceanic boundary.

19–1–3. DESIGNATION

Offshore control airspace areas are designated in Sections 71.33 and 7l.71. These areas are listed in FAAO JO 7400.9, Airspace Designations and Reporting Points.

19–1–4. PROCESSING

Offshore airspace area rulemaking actions are processed by Airspace and Rules. Regions/service area offices may process those domestic cases that are ancillary to a terminal airspace action with approval of Airspace and Rules.

Chapter 20. Air Navigational Routes

Section 1. General

20–1–1. PURPOSE

a. This chapter prescribes procedures and criteria for the designation/establishment of Air Traffic Service (ATS) routes.

b. An ATS route is defined as a route designed for the management of air traffic operations or for the provision of air traffic services.

c. An ATS route may be a low/medium frequency (L/MF) route (which includes colored Federal airways); Very High Frequency Omnidirectional Range (VOR) Federal airways and jet routes; or an area navigation (RNAV) route.

d. Criteria and procedures for the development of an air navigation route(s) are contained in FAAO 8260.3, Terminal Instrument Procedures, and FAAO 8260.19, Flight Procedures and Airspace, unless otherwise specified.

20–1–2. CONTROLLED AIRSPACE

a. ATS routes shall only be established in controlled airspace.

b. Where necessary, regions/service area offices shall initiate the required action to designated controlled airspace of sufficient dimension to encompass the airspace to be protected and any associated course changes for ATS routes. This information shall be forwarded to Airspace and Rules for processing.

20–1–3. WHEN TO DESIGNATE AIR NAVIGATION ROUTES

ATS routes should be designated to serve en route operations when:

a. The route is predicated upon NAVAIDs that are suitable for inclusion in the system.

b. The benefits of the designation should outweigh any adverse effects to other airspace users, and:

1. The route is a normal extension of an existing airway; or

2. Users will benefit from charted information pertaining to navigational guidance, minimum en route altitudes, and changeover points.

20–1–4. RESPONSIBILITIES

a. Service area office:

1. Shall coordinate ATS routes with appropriate offices to determine if operational requirements and air traffic warrant a rulemaking action (e.g., ATC facilities, adjacent regional/service area offices, and regional Frequency Management Offices).

2. Early coordination should be effected with Flight Operations to ensure timeliness of input.

3. Shall maintain a program of systematic review of all ATS routes in their respective regions and initiate action to designate or adjust these routes as necessary.

b. Regional FPO shall process ATS routes requests in accordance with appropriate FAA Orders.

20–1–5. ROUTE IDENTIFICATION

Dual designation of ATS routes shall be avoided. All alpha–numeric ATS route identifications shall be assigned by Airspace and Rules as follows:

a. Identify ATS routes based on L/MF NAVAIDs by color names (e.g. Amber, Blue, Green, and Red) followed by a number designation.

1. Designate those routes extending east and west as Green or Red.

2. Designate those extending north and south as Amber or Blue.

b. Identify ATS routes based on VOR NAVAIDs as follows:

1. Route lettering shall be as follows:

(a) The letter “V” will prefix low altitude ATS routes below FL 180.

(b) The letter "J" will prefix high altitude ATS routes at FL 180 through FL 450.

2. Route numbering shall be as follows:

(a) Assign even numbers for those ATS routes extending east and west.

(b) Assign odd numbers for those ATS routes extending north and south.

c. Identify advanced RNAV ATS routes as follows:

1. The letter "T" will prefix low altitude RNAV ATS routes below FL 180, and the letter "Q" for RNAV routes FL 180 and above.

2. Route numbering shall follow the guidelines detailed in paragraph 20–1–5.b.1.(a) and b.2.

d. Route segments shall be listed from West to East for even numbered ATS routes, or South to North for odd numbered routes.

20–1–6. CHANGEOVER POINTS

When it is anticipated that the location of a changeover point will affect the lateral extent of an airway, en route domestic airspace area, offshore airspace area, or airspace to be protected for a jet route, the service area office shall include the location in the proposal.

20–1–7. BASE ALTITUDES

a. The base of an ATS route shall be at least 1,200 feet above the surface and at least 500 feet below the minimum en route altitude (MEA) except that route floors may be established no less than 300 feet below the MEA when:

1. The 500–foot buffer would result in the loss of a cardinal altitude; or

2. A definite operational advantage would exist.

b. The route floor should conform, as closely as possible to the floor of transitional airspace.

20–1–8. MINIMUM EN ROUTE ALTITUDES (MEA)

a. Procedures for establishing MEAs are set forth in FAAO 8260.3, TERPS, and FAAO 8260.19, Flight Procedures and Airspace.

b. When rounding off MEA to the nearest hundred feet results in vertical separation of not less than 451/251 feet between the floor of controlled airspace and the MEA, such separation is considered in compliance with the 500/300 feet specified.

c. The criteria for surface area size shown in FIG 17–2–1 and FIG 17–2–2 shall be used for determining airspace required for climb from the surface to 500/300 feet below the MEA/MOCA.

d. Use the criteria and procedures contained in appropriate FAA Orders for determining the airspace required for climb from one MEA to 500 feet below the higher MEA.

20–1–9. PROCEDURAL REQUIREMENTS

Procedural requirements may dictate designation of airspace lower than 500 feet below the MEA or MRA in certain en route radar vectoring areas or when necessary to accommodate climb or descent operations. Such airspace shall not be designated for the specific purpose of including a MOCA unless use of the MOCA is procedurally required.

20–1–10. ACTION TO RAISE BASE OF TRANSITIONAL AREAS

When action is initiated to raise the base of transitional airspace associated with a route segment, care shall be taken to designate, in accordance with applicable criteria, sufficient airspace to encompass IFR procedures prescribed for airports which underlie the route. Additionally, care shall be taken to ensure that controlled airspace, such as transition airspace or lower floor of control area, is provided for aircraft climbing from one minimum en route altitude to a higher one.

Section 2. Flight Inspection Requirements

20–2–1. REQUEST FOR FLIGHT INSPECTION DATA

Service area office shall be responsible for providing the appropriate Technical Operations Aviation System Standards Office with a copy of the NPRM relating to new or revised ATS routes. Requests for flight inspection data (e.g., MEA, COP, etc.) for ATS routes shall be initiated by the service area office (see paragraph 2–5–4 of this order for actions that will be processed direct to final rule without an NPRM).

20–2–2. FLIGHT INSPECTION DATA DISTRIBUTION

a. The appropriate Technical Operations Aviation Standards Office shall forward flight inspection data regarding ATS routes to AIM on FAA Form 8260–16.

b. AIM shall notify Airspace and Rules when the flight inspection is complete, and indicate if the results are satisfactory or unsatisfactory.

20–2–3. FLIGHT INSPECTION REQUESTS

A requirement for a flight inspection evaluation should be coordinated with the regional Frequency Management Office prior to requesting flight inspection review.

20–2–4. FLIGHT INSPECTION REPORT

Upon completion of the requested action, a flight inspection report will be forwarded to the originating office and will indicate whether the flight inspection results were satisfactory or unsatisfactory. If unsatisfactory, appropriate corrective action should be accomplished and the flight inspection request resubmitted.

Section 3. Low/Medium Frequency and VOR Airways

20–3–1. NAVAID SPACING

a. VOR Federal airways are based on NAVAIDs which normally are spaced no farther apart than 80 NM. They may be based on more widely spaced NAVAIDs if a usable signal can be provided and frequency protection afforded for the distance required (see Order 9840.1, U.S. National Aviation Handbook for the VOR/DME/TACAN Systems).

b. NAVAID spacing for L/MF airways has no standard but is determined on an individual basis.

20–3–2. VERTICAL AND LATERAL EXTENT

The standard vertical and lateral extent of these airways is specified in FAAO 8260.3, TERPS, and FAAO 8260.19, Flight Procedure and Airspace. Nonstandard dimensions may be specified as required except as limited by any flight inspection limitations and by paragraph 20–1–7 of this order.

20–3–3. WIDTH REDUCTIONS

a. Width reductions are not applicable to L/MF airways.

b. For ATS routes other than L/MF, a reduced airway width of 3 NM on one or both sides of the centerline may be established from the NAVAID to the point where 4.5 degree intersecting lines equal 3 NM. Normally, lines perpendicular to the airway centerline determine the ends of the reduced portion. If required, the ends of the reduced portion may be defined differently. A reduced width is permissible to obtain additional traffic capacity and flexibility through the use of multiple routes and to avoid encroachment on special use airspace or other essential maneuvering areas. Width reductions are considered the exception rather than the rule and are approved only where adequate air navigation guidance and justification exist.

Section 4. Jet Routes

20–4–1. DESIGNATION

Jet routes extend from FL 180 to FL 450, inclusive, and are designated to indicate frequently used routings. Jet routes may also be designated for route continuity where such designation would clearly facilitate description of the intended route of flight.

NOTE–
"T" class NAVAIDs (e.g., TVOR) shall not be used to designate jet routes.

20–4–2. NAVAID SPACING

Jet routes are normally based on "H" class NAVAIDs spaced no farther apart than 260 NM or non–VOR/DME area navigation system performance. They may be based on more widely spaced NAVAIDs if a usable signal can be provided (e.g., GPS) and frequency protection afforded for the distance required.

20–4–3. JET ROUTE WIDTH

Jet routes have no specified width however, alignment should be planned using protected airspace specified for VOR airways in FAAO 8260.3, TERPS, or any flight inspection limitation to prevent overlapping special use airspace or the airspace to be protected for other jet routes.

Section 5. Area Navigation Routes

20–5–1. DISCUSSION

a. RNAV systems permit navigation via a selected course to a predefined point without having to fly directly toward or away from a navigational aid. Several different types of airborne systems are capable of accurate navigation on an area basis.

b. RNAV aircraft are required to have the capability of operating along and within the lateral confines of VOR routes and airways. Therefore, current procedures and separation criteria remain the same for all RNAV aircraft cleared to operate along the conventional VOR route structure.

c. One item to be considered between area navigation and the present VOR/DME system is the effect of slant range error on aircraft position. Aircraft operating along the conventional VOR route structure are affected by DME slant range error in a relative manner and are primarily affected longitudinally since flightpaths are normally directly to or from ground stations. RNAV aircraft may be affected laterally as well as longitudinally since they do not have the disadvantage of having to operate directly to or from ground stations.

d. RNAV operations will use established and designated routes, up to and including FL 450, unless air traffic control radar is used to monitor navigation accuracy and aircraft separation.

e. A user must demonstrate that the equipment complies with accuracy criteria and must receive approval before the equipment can be used in the ATC system.

20–5–2. WAYPOINT CRITERIA

a. In accordance with paragraph 3–3–4, of this order, obtain five–letter pronounceable waypoint name/codes approval from AIM.

b. All magnetic bearings, distances between waypoints, and geographical coordinates of waypoints shall be validated by NACO.

c. Each waypoint shall be defined by geographical coordinates (e.g., degrees, minutes, seconds, hundredths of a second).

d. RNAV waypoints are used not only for navigation reference, but also for ATC operational fixes in much the same manner as VOR/DME ground stations and intersections are used in the conventional VOR structure. Waypoints are to be established along RNAV routes at:

1. The end points of RNAV routes.

2. Route turn points.

3. All holding fixes.

4. At any other point of operational benefit, such as route junction points where required for route clarity.

20–5–3. LATERAL PROTECTED AIRSPACE CRITERIA FOR RNAV EN ROUTE SEGMENTS

a. The criteria contained in this section are applicable to all established or designated RNAV routes except those portions of instrument departure procedures and Standard Terminal Arrival Routes (STARs) appropriate to the instrument departure procedures and STAR criteria. The lateral extent of RNAV routes designated in part 71 is coincident with the lateral protected airspace derived from this criteria.

b. The basic width of an RNAV route is 8 NM (4 NM on each side of the route centerline).

20–5–4. EN ROUTE TURN PROTECTION CRITERIA

Additional lateral airspace to be protected for course changes along RNAV routes at and above FL 180 shall be in accordance with FAAO 7130.2, Airspace to Be Protected for Course Changes at and Above Flight Level 180. The airspace to be protected on the overflown side of the route centerline during course changes of more than 15 degrees along RNAV routes below FL 180 shall be the lateral route width or 4 NM, whichever is greater, applied until the pilot reports on course. In effect, this means that the lateral dimensions of reduced route widths do not constitute fully protected airspace for aircraft during such course changes.

Part 5. Special Use Airspace

Chapter 21. General

Section 1. Policy

21–1–1. PURPOSE

In addition to the policy guidelines and procedures detailed in Part 1. of this order, this part prescribes specific policies and procedures for handling special use airspace (SUA) cases.

21–1–2. SCOPE

The primary purpose of the SUA program is to establish/designate airspace in the interest of National Defense, security and/or welfare. Charted SUA identifies to other airspace users where these activities occur.

21–1–3. DEFINITION AND TYPES

a. SUA is airspace of defined dimensions wherein activities must be confined because of their nature, or wherein limitations may be imposed upon aircraft operations that are not a part of those activities.

b. The types of SUA areas are Prohibited Areas, Restricted Areas, Military Operations Areas (MOA), Warning Areas, Alert Areas, Controlled Firing Areas (CFA), and National Security Areas (NSA).

21–1–4. CATEGORIES

There are two categories of SUA: regulatory (rulemaking) and other than regulatory (nonrulemaking). Prohibited Areas and Restricted Areas are rulemaking actions that are implemented by a formal amendment to part 73. MOAs, Warning Areas, Alert Areas, CFAs, and NSAs are nonrulemaking actions.

21–1–5. SUA APPROVAL AUTHORITY

FAA Headquarters is the final approval authority for all permanent and temporary SUA, except CFA's. CFA approval authority is delegated to the service area office. The service area office shall forward those proposals recommended for approval (except CFA) to FAA Headquarters for a final determination.

NOTE–
Final approval of Warning Areas is shared with other agencies per Executive Order 10854. Warning Area proposals, except controlling or using agency changes, must be coordinated with the Department of State and the Department of Defense for concurrence. Airspace and Rules is responsible for accomplishing this coordination.

21–1–6. MINIMUM NUMBERS AND VOLUME

The dimensions and times of use of SUA shall be the minimum required for containing the proposed activities, including safety zones required by military authority. When it is determined that a specified SUA area is no longer required, the using agency, or the appropriate military authority, shall inform the service area office that action may be initiated to return the airspace to the NAS.

21–1–7. OPTIMUM USE OF AIRSPACE

a. To ensure the optimum use of airspace, using agencies shall, where mission requirements permit, make their assigned SUA available for the activities of other military units on a shared–use basis.

b. SUA should be located to impose minimum impact on nonparticipating aircraft and ATC operations. This should be balanced with consideration of the proponent's requirements. To the extent practical, SUA should be located to avoid airways/jet routes, major terminal areas, and known high volume VFR routes.

c. Consider subdividing large SUA areas, where feasible, in order to facilitate the real–time release of the airspace when activation of the entire area is not required by the user.

NOTE–
Policies concerning airspace utilization for military operations are contained in FAAO JO 7610.4, Chapter 9, Military Operations Requirements.

21-1-8. JOINT-USE POLICY

a. Under the "joint-use" concept, SUA is released to the controlling agency and becomes available for access by nonparticipating aircraft during periods when the airspace is not needed by the using agency for its designated purpose.

b. Restricted areas, warning areas, and MOAs shall be designated as "joint-use" unless it is demonstrated that this would result in derogation to the using agency's mission. For certain SUA areas, joint use may be impractical because of the area's small size, geographic location, or high level of use in such areas. In these cases, the airspace proposal package must include specific justification of why joint-use is not appropriate.

c. Joint-use does not apply to prohibited areas. Alert areas and CFAs are essentially joint-use because nonparticipating aircraft may transit these areas without limitation.

d. Joint-use procedures shall be specified in a joint use "Letter of Procedure" or "Letter of Agreement" between the using agency and the controlling agency. These letters should include provisions for the real-time activation/deactivation of the airspace, where such capabilities exist. They should also provide for the timely notification to the controlling agency when the scheduled activity has changed, been canceled, or was completed for the day.

e. Using agencies shall ensure that joint-use SUA is returned to the controlling agency during periods when the airspace is not needed nor being used for its designated purpose.

21-1-9. ENVIRONMENTAL ANALYSIS

a. SUA actions, except as listed in paragraph b, below, are subject to environmental impact analysis in accordance with the National Environmental Policy Act of 1969 (NEPA). Guidance for the environmental analysis of SUA proposals is contained in FAAO 1050.1, Policies for Considering Environmental Impacts, other relevant FAA directives; the FAA/DOD Memorandum of Understanding Concerning Special Use Airspace Environmental Assessment; and other applicable regulations and statutes.

b. Prohibited area and alert area designations are actions that are neither permissive nor enabling. As such, environmental assessments or statements are not required when designating these areas (see FAAO 1050.1, Environmental Impacts: Policies and Procedures).

21-1-10. CONTROLLING AGENCY

The controlling agency is the FAA ATC facility that exercises control of the airspace when an SUA area is not activated. A military ATC facility may be assigned as the controlling agency, subject to the concurrence of the service area office and the concerned ARTCC. A controlling agency shall be designated for each joint-use SUA area.

21-1-11. USING AGENCY

a. The using agency is the military unit or other organization whose activity established the requirement for the SUA. The using agency is responsible for ensuring that:

1. The airspace is used only for its designated purpose.

2. Proper scheduling procedures are established and utilized.

3. The controlling agency is kept informed of changes in scheduled activity, to include the completion of activities for the day.

4. A point of contact is made available to enable the controlling agency to verify schedules, and coordinate access for emergencies, weather diversions, etc.

REFERENCE-
FAAO JO 7610.4, Chapter 9, Military Operations Requirements.

b. Restricted area and MOA using agencies are responsible for submitting Restricted Area/MOA Annual Utilization Reports in accordance with Section 7 of this chapter.

c. An ATC facility may be designated as the using agency for joint-use areas when that facility has been granted priority for use of the airspace in a joint-use letter of procedure or letter of agreement.

21-1-12. WAIVERS

The establishment of SUA does not, in itself, waive compliance with any part of the Code of Federal Regulations. DOD has been granted a number of waivers, exemptions, and authorizations to accomplish specific missions. Information about current waivers, exemptions, and authorizations granted for military operations may be obtained from FAA Headquarters, Airspace and Rules, or the Office of Rulemaking (ARM).

21-1-13. PUBLIC NOTICE PROCEDURES

Public notice procedures invite the public to comment on the impact of SUA proposals on the safe and efficient use of the navigable airspace. In addition to the public notice procedures described in chapter 2 of this order, SUA proposals are subject to the following:

a. All nonregulatory SUA proposals shall be circularized, and an NPRM shall be issued for all regulatory SUA proposals, except for those actions that clearly have no impact on aviation and are not controversial. A nonrulemaking circular or NPRM is not normally required for the following types of proposals:

1. Changes to the using or controlling agency.

2. Editorial changes to correct typographical errors.

3. Internal subdivision of an existing area to enhance real-time, joint-use (provided there is no change to the existing external boundaries) times of use, or type/level of activities.

4. Actions that lessen the burden on the flying public by revoking or reducing the size or times of use of SUA.

b. SUA nonrulemaking circulars are prepared and distributed by the service area office. FAA Headquarters prepares SUA NPRMs. Normally, circulars and NPRMs provide a minimum of 45 days for public comment.

c. When comments or coordination show that the proposal may be controversial, or there is a need to obtain additional information relevant to the proposal, an informal airspace meeting may be considered (see Chapter 2 of this order).

21-1-14. SUA NONRULEMAKING CIRCULARS

a. Prepare and distribute SUA nonrulemaking circulars as specified in Chapter 2 of this order and the additional requirements in this paragraph. Ensure wide dissemination to the potentially affected aviation user community. Send one copy of each SUA circular to Airspace and Rules and to the appropriate regional military representative(s).

b. CONTENT - Circulars should contain sufficient information to assist interested persons in preparing comments on the aeronautical impact of the proposal. SUA circulars should include:

1. A brief narrative that:

(a) Describes the purpose of the proposed airspace, the types of activities to be conducted, and the expected frequency of those activities. If the proposal modifies existing SUA, describe the changes and explain the desired result. For temporary MOA proposals, include a brief summary of the planned exercise or mission scenario.

(b) Discusses measures planned to minimize impact on nonparticipating aircraft, such as airport exclusions, joint-use procedures, limited activation times, etc. If there are known plans to provide real time area status information and/or traffic advisory services for nonparticipating pilots, include this information in the circular.

2. A complete description of the proposed area consisting of boundaries, altitudes, times of use, controlling agency, and using agency.

3. A copy of a sectional aeronautical chart depicting the boundaries of the proposed area.

4. The name and address (provided by the proponent) of the person to whom comments on the environmental and land-use aspects of the proposal may be submitted.

NOTE-
Do not include statements in the circular that certify NEPA compliance or state that environmental studies are complete. The proponent and/or FAA must consider environmental issues raised in response to the circular before a final determination is made on the proposal.

5. The issue date of the circular and the specific date that the comment period ends. Provide at least 45-days for public comment.

NOTE–
When selecting the comment closing date, consider the time needed for the preparation, printing and release of the circular, plus a representative mailing time, in order to afford the public the maximum time to submit comments.

c. SPECIAL DISTRIBUTION – In addition to the distribution requirements in Chapter 2, send copies of SUA nonrulemaking circulars to:

1. State transportation, aviation, and environmental departments (or the state clearing house if requested by the state).

2. Local government authorities, civic organizations, interest groups, or individuals that may not have an aeronautical interest, but are expected to become involved in a specific proposal.

3. Public libraries within the affected area requesting that the circular be displayed for public information.

4. Persons or organizations that have requested to be added to the circularization list.

NOTE–
1. *The service area office determines special distribution requirements in accordance with regional/service area office policies and considering the type of proposal, the potential for controversy, and the extent of possible aeronautical impact.*

2. *If the proposed airspace overlaps regional geographical boundaries or airspace jurisdictions, coordinate as required with adjacent regional/service area offices to ensure distribution of circulars to all appropriate parties.*

21–1–15. CHARTING AND PUBLICATION REQUIREMENTS

a. All SUA areas except CFAs, temporary MOAs, and temporary restricted areas, shall be depicted on aeronautical charts, and published as required in aeronautical publications.

b. Approved SUA actions normally become effective on the U.S. 56–day, en route chart cycle publication dates (see Part 1. of this order).

EXCEPTION–

Effective dates for temporary restricted areas, temporary MOAs, and CFAs are determined by mission requirements instead of the 56–day en route, charting date cycle.

c. Temporary areas shall be described in part 4, Graphic Notices, of the Notices to Airmen (NOTAM) Publication. Normally, publication of the graphic notice will begin two issues prior to the exercise start date and will continue through completion of the exercise. The notice shall include the area's legal description, effective dates, and a chart depicting the area boundaries. For large exercises, a brief narrative describing the exercise scenario, activities, numbers and types of aircraft involved, and the availability of in–flight activity status information for nonparticipating pilots should be included.

NOTE–
Submit temporary SUA graphic notice information, along with the airspace proposal package, to Airspace and Rules by the cutoff dates specified in the appropriate chapter of this order. All graphics submitted must be of high quality and in camera ready form. Facsimile copies are not suitable. Airspace and Rules will process and coordinate the notice with System Operations Airspace and AIM, Publications, for publication in the NOTAM Publication. Do not submit temporary SUA graphic notices directly to Publications.

d. When a SUA action becomes effective before it appears on the affected sectional chart(s), a description and map of the area will be published in part 4 of the NOTAM Publication. This information will be carried in the NOTAM Publication until the change has appeared on the affected sectional chart(s). Airspace and Rules is responsible for complying with this requirement.

NOTE–
1. *Minor editorial corrections to a SUA description or changes to the using or controlling agencies, will not be published in the NOTAM Publication.*

2. *In addition to the above, SUA designations or amendments that occur after publication of the latest sectional chart(s) will be listed in the "Aeronautical Chart Bulletin" section of the appropriate A/FD. This information will be carried in the A/FD until the change is published on the affected sectional chart(s).*

21–1–16. CERTIFICATION OF SUA GEOGRAPHIC POSITIONAL DATA

a. Geographic positional data for all permanent and temporary SUA boundaries (except CFAs) must be certified for accuracy by the NACO before publication and charting. Airspace and Rules shall submit proposed positional data to NACO for certification. Latitude and longitude positions used in

SUA descriptions shall be based on the current North American Datum.

b. Airspace and Rules shall forward any corrections or recommended changes made by NACO to the service area office. The service area office will forward the NACO changes to the regional military representative, or civil proponent, for review. The regional military representative/civil proponent will inform the service area office of its concurrence with NACO changes or reason for nonconcurrence. The service area office will advise FAA Headquarters of the proponent's conclusions. A record of this coordination shall be included in the airspace case file.

21-1-17. LEAD REGION

a. The regional office that is responsible for the geographical area containing the affected airspace processes the SUA proposal. When a proposal overlaps regional office geographical jurisdictions, the concerned service area office shall coordinate to determine which office will serve as the lead region for processing the proposal. Coordination between regions/service area offices is also required when the affected geographical area, and the ATC facility to be designated as controlling agency, are under the jurisdiction of different regional/service area offices.

b. Concerned regions shall ensure that:

1. All affected ATC facilities review the proposal and provide input to the aeronautical study, as required.

2. For nonregulatory proposals, distribution of nonrulemaking circulars includes interested parties in each regional jurisdiction, as necessary.

c. The airspace package submitted to headquarters shall include documentation of regional/service area office coordination, affected ATC facility comments and copies of public comments received.

Section 2. SUA Legal Descriptions

21–2–1. GENERAL

a. The legal description is the official airspace definition used for NAS database and charting purposes. This section provides guidelines and formats for preparing SUA legal descriptions. See TBL 21–2–1 for examples of regulatory and nonregulatory SUA legal descriptions.

b. All bearings and radials used in SUA legal descriptions are true from point of origin.

c. Mileage used in the description shall be expressed in nautical miles (NM).

d. Descriptions of approved SUA, except temporary areas and CFA's, are compiled and published once a year in FAAO JO 7400.8, Special Use Airspace. Updates to the order are not published between editions and the listings are considered current only as of the date specified in the order. For this reason FAAO JO 7400.8 should be used as a general reference only and should not be relied upon as a sole source when accurate positional data are needed (e.g., video maps, letters of agreement, etc). For up–to–date descriptions of SUA areas, contact Airspace and Rules or AIM.

21–2–2. LATERAL BOUNDARIES

a. SUA lateral boundaries are normally defined by geographic (latitude/longitude) coordinates. All coordinates shall be expressed in a "degrees, minutes, and seconds" format. Do not round off, or convert seconds to tenths of minutes (enter 00' and 00" to specifically reflect the "zero" minutes and "zero" seconds places respectively). See TBL 21–2–1 for examples.

b. Other methods may be used to define boundaries if necessary to simplify the description, such as defining the boundaries by reference to a NAVAID radial/DME. When a NAVAID is used as a reference point, include its geographic location in degrees, minutes, and seconds.

c. To aid pilots in area identification, boundaries may be aligned along a prominent terrain feature such as rivers, highways, railroad tracks, etc., provided the feature is clearly discernable from the air.

d. Except for temporary SUA areas, boundaries shall not be described as "along the boundary" of another designated airspace area.

e. Where feasible, consider subdividing large SUA areas to enhance joint use of the airspace.

21–2–3. VERTICAL LIMITS

a. For areas that contain aircraft operations exclusively, altitudes at or above 18,000 feet MSL shall be expressed as flight levels (FL).

b. For areas that contain other than aircraft operations, altitudes above 18,000 feet MSL shall be expressed in feet above MSL.

c. Where terrain considerations or other factors would make the use of an MSL altitude impractical, the floor of the area may be described in feet above ground level (AGL).

d. In describing SUA ceilings, unless otherwise specified in the description, the word "to" an altitude or flight level means "to and including" that altitude or flight level. If the upper vertical limit does not include the altitude or flight level, the ceiling shall be stated as "to but not including" the altitude or flight level.

e. Do not designate variable altitudes to describe the floor or the ceiling of an SUA area. When there is a requirement for the altitude of the floor or ceiling to change based on time of use, or geographic position within the SUA area, etc.; the differing sections shall be established as separate subdivisions.

EXCEPTION–
The floor of an area may be described using a combination of MSL and AGL altitudes if necessary due to terrain or operational considerations. For example, "5,000 feet MSL or 3,000 feet AGL, whichever is higher."

f. In limited situations, and provided a specific operational requirement exists, the same altitude may be used to describe both the ceiling of one SUA subdivision and the floor of an overlying subdivision. In this case, the same ATC facility shall be designated as the controlling agency for both subdivisions.

g. Where feasible consider stratification of SUA areas to enhance joint–use of the airspace.

21-2-4. TIMES OF USE

a. The times of use indicate the period during which the using agency is authorized to schedule and use a SUA area. These times should reflect when normal operations are expected to occur. In determining the times of use, the proponent should select the minimum period needed to meet the using agency's requirements. The goal is to capture the majority of the day-to-day activities. When the using agency has a requirement for intermittent, less frequent use of the airspace (outside the specific published time-period), a provision to activate the airspace by NOTAM may be stated in the SUA legal description.

NOTE-
The times of use should be based on the intended typical use of the area. These times are depicted on aeronautical charts to assist other airspace users in determining the most likely periods of area activation.

b. Times of use are stated using the options, or combination of options, shown below:

1. Specific hours/days. Local time using the 24-hour clock, and days of the week. If the time of use will change significantly on a seasonal basis, or mission requirements call for specific time blocks, variable times of use may be designated.

EXAMPLE-
1. *"0700 - 2200, Monday - Friday."*

2. *"Sep - Apr, 0800 - 1700, Monday - Friday; an May - Aug, 0600 - 2400 Monday - Friday."*

3. *"0800 - 0930 and 1300 - 1600, Monday - Friday."*

4. *"0700 - 1600, daily."*

NOTE-
1. *As used in SUA legal descriptions, the term "daily" means 7 days per week.*

2. *If the SUA area overlaps more than one local time zone, state the predominant time zone in the description, for example: "0700 - 1800 central time; Monday - Friday."*

2. Continuous. Use only when justification exists for utilization 24 hours a day, 365 days a year.

EXCEPTION-
"Continuous" may also be used when the area will be utilized 24 hours per day over a specific period, such as "Continuous, Monday - Friday;" or "Continuous, April - June."

3. NOTAM activation. Use "By NOTAM" or "Other Times by NOTAM" to indicate when a NOTAM must be issued in order to activate the area. NOTAM options are:

(a) "Other times by NOTAM." Used along with specific times to provide for activation of the area outside the specified times of use that were established according to b.1., above.

EXAMPLE-
"0700-1900 local time, Monday - Friday - other times by NOTAM."

(b) "By NOTAM," along with specific times from b.1., above: Used when issuance of a NOTAM is required prior to activating the area during the specified hours.

EXAMPLE-
1. *"By NOTAM 0700-1800 local time, Monday - Friday."*

2. *"0700-1800 local time, Monday - Friday, by NOTAM 4 hours in advance."*

(c) "By NOTAM" without specific times: Used when anticipated usage times cannot be specifically determined, or when the nature of the user's mission requires infrequent or erratic use.

(d) The NOTAM provision shall apply to the entire area and not only a portion thereof. If times of use will vary from one portion of the area to another, the dissimilar portions should be subdivided or redesignated as separate areas.

(e) NOTAMs should be issued as far in advance as feasible to ensure widest dissemination of the information to airspace users. Normally, the minimum advance notice should be at least 4 hours prior to the activation time.

NOTE-
Under no circumstances may SUA be activated by a NOTAM unless the words "By NOTAM" or "other times by NOTAM" are stated in the area's legal description.

4. Sunrise to sunset. This option should be reserved for cases where seasonal sunrise/sunset time variations make publication of specific clock times impractical.

5. Intermittent. Must include an associated time-period or "by NOTAM" provision. In any case, intermittent shall not be used for restricted areas without a "by NOTAM" provision.

EXAMPLE–

1. *"Intermittent, 0700 – 2200, Monday – Friday."*

2. *"Intermittent by NOTAM at least 4 hours in advance."*

21–2–5. CONTROLLING AGENCY

The ATC facility designated as the controlling agency (see paragraph 21–1–10).

NOTE–

A controlling agency is not designated for prohibited areas, alert areas, or controlled firing areas.

21–2–6. USING AGENCY

The agency, organization, or military command designated as the using agency (see paragraph 21–1–11).

21–2–7. SUA LEGAL DESCRIPTION AMENDMENTS

All changes to a published SUA legal description must be made through the appropriate regulatory or non–regulatory procedures described in this order. This includes minor changes, editorial corrections, internal subdivisions of an existing area, changes of the controlling or using agency, or reducing the area's dimensions or times of use.

TBL 21-2-1

EXAMPLES OF SPECIAL USE AIRSPACE LEGAL DESCRIPTIONS

REGULATORY SUA DESCRIPTION:

R-2305 Gila Bend, AZ

Boundaries - Beginning	at lat. 32°50'25"N., long. 112°49'03"W.; to lat. 32°50'52"N., long. 112°42'56"W.; to lat. 32°49'00"N., long. 112°39'03"W.; to lat. 32°29'00"N., long. 112°43'03"W.; to lat. 32°29'00"N., long. 112°53'33"W.; to the point of beginning.
Designated altitudes	Surface to FL 240.
Time of designation	0700-2300 local time daily, other times by NOTAM.
Controlling agency	FAA, Albuquerque ARTCC.
Using agency	U.S. Air Force, 58th Fighter Wing, Luke AFB, AZ.

NONREGULATORY SUA DESCRIPTION:

Taiban MOA, NM

Boundaries - Beginning	at lat. 34°34'36"N., long. 104°07'00"W.; to lat. 34°33'00"N., long. 103°55'02"W.; to lat. 34°10'00"N., long. 103°55'02"W.; to lat. 34°10'00"N., long. 104°07'00"W.; to the point of beginning.
Altitudes	500 feet AGL to but not including FL 180.
Times of use	0800-2400 Monday-Friday; other times by NOTAM.
Controlling agency	FAA, Albuquerque ARTCC.
Using agency	U.S. Air Force, Commander, 27th Fighter Wing, Cannon AFB, NM.

COORDINATE FORMAT - Do not round off latitude and longitude coordinates. Always use the full format consisting of degrees, minutes, and seconds, as follows:

Correct	**Incorrect**
40°06'00"N.	40°06'N.
104°35'30"W.	104°35.5'W.
39°00'00"N.	39°N.

Section 3. SUA Proposals

21–3–1. GENERAL

This section describes the requirements for SUA proposals submitted to the FAA. SUA proposals must be based on a specific airspace requirement. The need for the proposed airspace must be definitive and sufficient grounds must be provided to justify any resultant imposition on nonparticipating aircraft and/or to afford priority to the SUA user. Before proposing the establishment of new SUA, proponents shall consider the use of existing SUA, or the modification of an existing area, to conduct their mission.

21–3–2. CLASSIFIED INFORMATION

Do not include classified information in the proposal package. If any information required by this section is classified, the regional military representative should contact the service area office to discuss the handling of that information.

21–3–3. PROPOSAL CONTENT

SUA proposal packages shall contain the following information, as applicable:

a. Proponent's Transmittal Letter. Summarize the proposal and provide a point of contact for further information.

b. Area Description. Using the guidelines in Section 1 and Section 2 of this chapter, describe the proposed area as follows:

1. Title. State type of area (restricted area, warning area, etc.). For MOA proposals, include proposed name of the MOA.

2. Boundaries. A description of the proposed area's perimeter and any subdivisions (see paragraph 21–2–2).

NOTE–
All geographic coordinates shall be based on the current North American Datum (see paragraph 21-1-16).

3. Altitudes. State the floor and ceiling of the proposed area (see paragraph 21–2–3).

4. Times of use. State the times of use to be published for the area as determined in paragraph 21–2–4. Include an estimate of the expected area usage in number of hours per day and days per year. In cases where the unit plans to use the airspace during different blocks of time each day, but actual clock times may vary within the charted "times of use," describe those planned operations to provide as accurate a picture as possible of the projected daily use of the airspace.

5. Controlling agency. State the FAA or military ATC facility to be assigned as controlling agency for the proposed SUA.

NOTE–
A controlling agency is not designated for prohibited areas, alert areas, or controlled firing areas.

6. Using agency. State the organization to be designated as using agency for the airspace. Specify military service, unit or organization, and location. For non–military using agencies, specify the organization name and location.

c. Airspace Statement of Need and Justification.

1. Describe the purpose and need for the proposed airspace. Sufficient justification must be provided to support approval of the airspace. Additionally, any known or anticipated aeronautical impact on other airspace users must be addressed, including measures proposed, if any, to lessen the impact.

(a) For new SUA areas, explain why the requirement cannot be met by using existing SUA or by modifying an existing area. List SUA areas within a reasonable distance that were considered and explain why each area is not acceptable.

(b) For proposals to increase the dimensions or times of use of an existing area, explain the need for the increase.

2. State whether the area will be available for joint use. Provide justification for non–joint use areas.

d. Air Traffic Control Assigned Airspace (ATCAA). State whether or not an ATCAA will be requested to support the proposed SUA. If yes, describe ATCAA dimensions and times of use.

NOTE–
ATCAA information is requested in the proposal solely to assist the FAA in evaluating the overall aeronautical impact of the SUA proposal. Requests to establish an

ATCAA are coordinated directly with the ATC facility having jurisdiction over the airspace and are handled separately from the SUA proposal process.

e. Activities. List all activities to be conducted in the proposed SUA. Include the following information:

1. For areas that will contain aircraft operations:

(a) The number and types of aircraft that will normally use the area.

(b) A listing of the specific activities and the maximum altitudes required for each type of activity planned.

(c) State whether supersonic flight will be conducted.

(d) A chart depicting the location and the representative pattern of firing and/or ordnance delivery runs and weapons impact areas (if applicable).

2. For areas to contain surface-to-surface or surface-to-air weapons firing:

(a) Type weapon(s) to be fired.

(b) Maximum altitude required for each weapon listed.

(c) A chart of the proposed area depicting firing points, impact areas, firing fans and safety buffers for each type weapon used.

f. Environmental and land use information.

1. Furnish the name, organization, and mailing address of the person to whom comments on environmental and land use aspects of the proposal may be sent.

2. Proposals to establish SUA with a floor below 1200 feet AGL where there is underlying private or public use land, must include a statement that the proponent agrees to provide reasonable and timely aerial access to such land. Where applicable, describe provisions to be used to accommodate such access.

3. Proposals to designate the surface as the floor of a prohibited or restricted area shall include a statement explaining how the proponent will exercise control of the underlying surface (i.e., by ownership, lease, or agreement with the property owner). Do not submit a copy of the deed, lease, or control agreement.

NOTE-
Restricted areas that were designated with the surface as the floor prior to December 1, 1967, are exempt from the "own, lease, or control" requirement. The exemption status remains valid until amendment actions are taken which would expand the dimensions or times of use, or change the designated purpose of the area.

g. Communications and Radar.

1. If known, state whether radar and/or radio communications will be used to monitor the airspace. Identify the facility or agency that will provide radio and/or radar monitoring, e.g., range control, military radar unit (MRU), airborne radar unit (ARU), Fleet Area Control and Surveillance Facility (FACSFAC).

2. If a military ATC facility will be designated as the controlling agency for the airspace, indicate whether area status information and traffic advisories will be provided to nonparticipating pilots. If applicable, provide a VHF frequency to be depicted on aeronautical charts.

h. Safety Considerations. Include an explanation of the following items, if applicable:

1. Measures taken to ensure containment of the activity within the proposed area.

2. Procedures for handling malfunctions.

3. Ordnance trajectory envelopes.

4. When an aircraft activity could measurably affect the safety of persons or property on the surface, the proponent shall demonstrate that provisions have been made for their protection.

i. Coordination Summary. List ATC facilities, military units, and/or other organizations contacted in developing the proposal.

j. Area Chart. Submit an original sectional aeronautical chart depicting the boundaries of the proposed area and any subdivisions.

k. Environmental Documents. Unless provided separately, submit applicable environmental documents. If the environmental analysis is incomplete, indicate the status and estimated completion date.

l. Graphic Notice Information. For temporary MOA or temporary restricted area proposals, include the graphic notice information required by paragraph 21-1-15, above.

m. Other. Include any other information that should be considered by the FAA in making its determination on the proposal.

21–3–4. ABBREVIATED PROPOSALS

a. For certain SUA proposals, it is not necessary to include in the proposal package all of the items specified in paragraph 21–3–3, above. Proponents should consult with the service area office to determine if an abbreviated proposal may be submitted. Abbreviated proposals may be considered for:

1. Amendments of existing SUA to:

(a) Change the controlling or using agency.

(b) Reduce the dimensions or times of use.

(c) Subdivide or revoke the airspace.

(d) Make minor editorial corrections to the legal description.

2. Recurring proposals for temporary airspace (e.g., annual exercises such as Quick Force, Pecos Thunder, etc.) provided the location is the same and activities are similar to previous exercises.

3. Renewal of an existing CFA.

b. The service area office may specify the contents of the abbreviated proposal. Suggested items include, as applicable:

1. The type, purpose, and reason(s) for the action.

2. The specific changes to be made in the area's legal description.

3. For recurring temporary MOAs or CFAs, written confirmation that the activities, times, altitudes, safety precautions, etc., are to be the same as for a previously approved area.

4. The proposed effective date.

5. A summary of proposal coordination accomplished.

6. Environmental documentation, or written re–evaluation/updates of environmental documents used to support a previous temporary MOA.

7. For proposals to revoke SUA provide the reason for the action and requested effective date.

Section 4. Coordination of Proposals

21–4–1. POLICY

The regional military representatives are the service area office points of contact for the coordination of the respective military service's SUA proposals at the FAA regional/service area office level. The service area office will handle all coordination of nonmilitary SUA proposals.

21–4–2. PROPOSAL PRE–COORDINATION

a. Before submitting a SUA proposal to the FAA service area office, military proponents will coordinate, at a minimum, with locally affected ATC facilities and military units, local FAA representatives or liaison officers (where assigned), and the ARTCC having jurisdiction over the affected airspace.

b. Inquiries received from nonmilitary sources requesting the establishment or amendment of SUA will be referred to the appropriate service area office for assistance.

21–4–3. ATC FACILITY COORDINATION

a. The proponent will coordinate with affected ATC facilities as needed to discuss the proposal. Proponents should provide the facility with specific information about the mission requirement, desired airspace parameters, and why existing SUA within a reasonable distance are not suitable to accommodate the requirement (see paragraph 21–3–1).

b. The ATC facility will review the proposal to evaluate its potential impact on aeronautical and facility operations. Following its review, the facility will inform the proponent whether the proposed airspace is operationally feasible, would adversely impact aeronautical or facility operations, or if the location is not acceptable to the FAA for aeronautical reasons. The facility may suggest alternative locations or negotiate the design of the proposed SUA area to resolve or lessen any adverse impacts.

c. Proponents are cautioned that ATC facility concurrence with the proposal represents just the facility's preliminary assessment of the aeronautical and ATC operational feasibility of the proposal. The proposal will still be subject to the further processing requirements of this order (e.g., aeronautical study, public comment period, and environmental analysis), and the development of a letter of agreement. Therefore, the facility's concurrence shall not be interpreted as the FAA's endorsement or as a final approval of the proposal.

21–4–4. SUBMISSION OF PROPOSALS

a. Submit SUA proposals to the appropriate FAA service area office for formal processing. Military SUA proposals shall be submitted to the service area office through the appropriate military representative. Before submitting the proposal to the service area office, the military representative will review the package to determine compliance with the requirements of this order and applicable military service policies.

b. Proponents shall promptly notify the service area office if there is a change in requirements that would alter the requested effective date, or cancel the need for the proposed airspace.

Section 5. Regional/Service Area Office Actions

21–5–1. GENERAL

a. SUA proposals should be processed as expeditiously as possible, consistent with thorough analysis, public notice procedures, and environmental requirements. This is necessary to ensure that decisions are based on the most current data, and that limited funding and personnel resources are used efficiently. The proponent should receive a timely determination on the disposition of the proposal in order to conduct its mission or consider alternatives. Lengthy delays in processing the proposal may result in the need for a supplemental public comment period, and/or the revalidation of the aeronautical and environmental studies.

b. The service area office will notify the appropriate regional military representative, in writing, if a significant processing delay is anticipated or major problems arise.

21–5–2. REGIONAL/SERVICE AREA OFFICE PROCESSING REQUIREMENTS

This paragraph describes the basic SUA processing items accomplished at the regional/service area office level. The service area office may supplement or modify the sequence of these items as needed.

a. Assign a rulemaking docket number or nonrulemaking study number, as appropriate (see Chapter 2 of this order).

NOTE–
When amending any part of the legal description of an existing SUA area, a docket number, or study number must be assigned. This includes minor changes, editorial corrections, and the reduction or revocation of the airspace.

b. Review the proposal package for content and compliance with the requirements of this order.

c. Task concerned ATC facilities to conduct an aeronautical study of the proposal (see Section 6 of this chapter).

d. Determine if other airspace or airport actions are pending or on file at the region/service area office for possible conflict with the proposal.

e. Coordinate with other FAA offices (e.g., Airports, FPO, Flight Standards, etc.) as required for assistance in identifying impacts on airport development plans, aviation safety, and IFR/VFR operations.

f. Coordinate the proposal with adjacent regional office service area office, if necessary.

g. Circularize nonrulemaking proposals as specified in Chapter 2, and Chapter 21, Section 1 of this order. Send an information copy of each circular to Airspace and Rules.

h. For restricted area or prohibited area proposals, submit the proposal package to Airspace and Rules to initiate rulemaking action.

i. Determine if an informal airspace meeting will be held.

NOTE–
If informal airspace meetings or environmental public meetings are planned, and the schedule is known, include meeting information in the nonrulemaking circular, or in the rulemaking package for publication in the NPRM. Also, see meeting notification requirements in Chapter 2 of this order.

j. Review all public comments received. Evaluate comments with respect to the proposal's effect on the safe and efficient utilization of airspace. All substantive aeronautical comments must be addressed in the final rule or nonrulemaking case file. Where required, consider the proposal's impact on the safety of persons and property on the ground. Provide copies of pertinent public comments to the concerned regional military representative.

k. Review aeronautical study results.

l. Evaluate aeronautical impacts identified through public comments, aeronautical study, or other sources. Coordinate with the proponent regarding ways to lessen aeronautical impact and/or resolve problem areas. As additional impacts are identified during the processing of the proposal, provide the information to the proponent.

m. Review environmental or land-use comments addressed to the FAA, then forward them to the proponent for consideration in appropriate environmental documents.

n. If, after the publication of an NPRM or a non-rulemaking circular, the proposal is modified by the proponent or to mitigate aeronautical or environmental impacts, determine if the changes are significant enough to necessitate a supplemental public comment period.

o. Coordinate with the service area office Environmental Specialist for review of the proponent's environmental documents (see paragraph 21-5-4, below).

p. Determine whether to recommend FAA headquarters approval of the proposal, or disapprove the proposal at the regional/service area office level (see paragraphs 21-5-6 and 21-5-7, below).

21-5-3. AERONAUTICAL IMPACT CONSIDERATION

There is no set formula for balancing the various competing user requirements for the use of airspace. If approval of the SUA proposal would result in an adverse aeronautical impact, every effort shall be made to seek equitable solutions to resolve or minimize the adverse aeronautical effects. If the aeronautical impact cannot be mitigated, the service area office must carefully weigh the extent of that impact against the need and justification provided by the SUA proponent. The region's/service area office's recommendation should include a discussion of how any aeronautical issues were resolved.

21-5-4. ENVIRONMENTAL DOCUMENT REVIEW

In coordination with the service area office Environmental Specialist, the Airspace Specialist will review the proponent's draft and final environmental documents to ensure that the environmental analysis matches the proposed airspace parameters (e.g., time of use, lateral and vertical dimensions, types and numbers of operations, supersonic flight). Any environmental issues identified in this review must be forwarded to the proponent for consideration.

21-5-5. REGIONAL/SERVICE AREA OFFICE DETERMINATION

After considering all pertinent information, the service area office determines whether to recommend approval of the proposal to FAA Headquarters, negotiate changes with the proponent, or disapprove the proposal. If the regional/service area office aeronautical processing is completed before the proponent's environmental documents have been finalized, the proposal may be forwarded to FAA Headquarters for review of the aeronautical portion. In all cases, a final determination on the proposal by FAA Headquarters shall be deferred until applicable NEPA requirements are completed.

NOTE-
Supplemental public notice with an additional comment period may be necessary if significant changes are made to the proposal after it was advertised for public comment. If a FAA determination has not been issued within 36 months of the last aeronautical public comment period or, if it is known that the aeronautical conditions in the area have changed significantly from what existed at the time of that last comment period, a supplemental comment period is required. Supplemental comment periods may be reduced to 30 days in length.

21-5-6. DISAPPROVAL OF PROPOSALS

a. The service area office may disapprove any SUA proposal, however, such disapproval should be based on valid aeronautical reasons. The service area office shall notify the proponent, in writing, stating the reasons for disapproval. Reasonable efforts should be made to resolve problem areas before rejecting the proposal. Provide an information copy of the disapproval correspondence to Airspace and Rules.

b. If the proponent resubmits the proposal after resolving problem areas, the service area office should determine required actions and resume processing the proposal.

c. If the proponent resubmits the proposal without resolving problem areas, the service area office shall forward the case along with the region's recommendation to Airspace and Rules for further action.

21–5–7. SUBMISSION OF APPROVAL RECOMMENDATIONS TO FAA HEADQUARTERS

Submit SUA proposals recommended for approval to Airspace and Rules for final determination and processing. Include the following (as applicable):

a. A service area office transmittal memorandum containing a brief overview of the proposal and the region's/service area office's recommendation for headquarters action. Summarize any amendments made to the original proposal in response to public comments, or negotiations to mitigate impacts, etc. If coordination with the designated controlling agency indicates that plans exist to provide nonparticipating pilots with traffic advisories, or real–time area activity status information, provide a VHF frequency and facility identification to be depicted on aeronautical charts.

b. A separate attachment that contains the recommended legal description of the area (e.g., boundaries, altitudes, times, controlling agency, and using agency). Use the format shown in TBL 21–2–1.

NOTE–
If only part of the description of an existing area is being amended, the attachment should show just the changed information rather than the full legal description.

c. A sectional aeronautical chart depicting the final boundaries of the proposed area, including any subdivisions.

d. A copy of the proponent's airspace request correspondence and proposal package, to include all applicable items required by Section 3 of this chapter.

e. A copy of aeronautical comments received in response to the NPRM or non–rulemaking circular, along with a discussion of how each substantive comment was addressed or resolved.

f. A synopsis of FAA environmental issues or concerns which were forwarded to the proponent, if applicable. Identify any modifications made to the proposal to mitigate environmental effects.

g. A copy of the aeronautical study.

h. A summary of meeting discussions and copies of written comments submitted at the meeting, if an informal airspace meeting was held.

i. Copies of pertinent correspondence from other FAA offices (e.g., Flight Standards, Airports, adjacent service area office, affected ATC facilities, etc.).

j. Environmental documents (if not submitted separately).

k. Any other information that should be considered by FAA Headquarters in making a final determination on the proposal.

21–5–8. HANDLING OF PROPOSALS TO REDUCE OR REVOKE SUA

a. Normally, proposals which lessen the burden on the public by reducing the size, or times of use, or by revoking SUA, do not require advance public notice and comment. An abbreviated proposal package may be submitted in accordance with paragraph 21–3–4.

b. An environmental analysis of the SUA reduction or revocation action is not normally required. However, if FAA plans to implement new routes or air traffic procedures in the affected airspace, that route or procedural action may require its own environmental analysis.

21–5–9. FAA INITIATED SUA PROPOSALS

a. Proposals to establish or modify SUA are normally initiated by a DOD proponent. However, since it is responsible for ensuring the safe and efficient use of the navigable airspace, the FAA may initiate SUA proposals when such actions are necessary to resolve a safety issue, enhance joint use, or enhance the capability of the SUA to accommodate the using agency's mission. Prior to initiating a SUA proposal, the service area office shall exhaust every avenue to resolve the issues by other means. When modification of an existing SUA area is contemplated, full consideration shall be given to providing the affected user with an equivalent capability to perform its mission.

b. When initiating a proposal, the service area office will prepare the SUA proposal package and required documentation. The proposal will be coordinated with the affected military units through the appropriate regional military representative. If an environmental analysis is required, the service area office will determine responsibility assignment.

c. In developing a proposal, the service area office shall, through the regional military representative, consult with the concerned DOD department to identify and document the impact of the proposed change on affected military units' mission(s).

d. If any using agency objects and agreement cannot be reached, but there is strong justification to proceed with the proposal, the service area office shall send the proposal package to Airspace and Rules for further action. Include with the proposal package, the reason for the proposal, a copy of the objections, a summary of efforts to resolve the objections, and the region's recommendations. Do not initiate public notice procedures for such proposals, without Airspace and Rules concurrence.

Section 6. Aeronautical Study

21–6–1. PURPOSE

An aeronautical study is conducted to identify the impact of the SUA proposal on the safe and efficient use of airspace and ATC procedures.

21–6–2. POLICY

a. An aeronautical study is required for all prohibited area, restricted area, MOA, and warning area proposals, except those which reduce or revoke SUA, change the controlling or using agency, or make minor corrections to the legal description. The service area office determines whether to require an aeronautical study for alert area or CFA proposals.

b. The service area office shall task affected FAA ATC facilities to conduct, or provide input to the aeronautical study. When applicable, coordinate with adjacent regional/service area offices for additional input. FAA ATC facilities shall submit the completed study to the service area office. When input to the study from a military ATC facility is needed, the service area office shall submit a request to the appropriate regional military representative.

c. For temporary airspace actions that are recurring, such as periodic military exercises, a previous study may be used provided it has been reviewed for currency and updated as necessary.

d. The service area office will review the study to determine if there are any aeronautical impacts to be considered or resolved. The service area office will supplement the study as needed to include regional/service area office perspective, cumulative effect analysis, etc. Coordinate the study findings with the proponent to explore possible options to reduce aeronautical impact.

e. A copy of the study shall be included with the SUA proposal package submitted to FAA Headquarters.

21–6–3. CONTENT OF STUDY

The service area office may specify the content and format of the study based on the type and extent of the SUA proposal. Suggested items include:

a. Introduction. An overview of the existing airspace structure, airports, and types and volume of aeronautical activities currently operating in the airspace affected by the proposal.

b. Impact on IFR and VFR Terminal Operations. Consider the proposal's impact on existing and proposed terminal procedure.

1. Arrival and departure flows, STARs, and departure procedures.

2. Standard instrument approach procedures.

3. Airport traffic patterns, Class D, and Class E airspace surface areas.

c. Impact on public use and charted private airports (airports with FAA Form 5010 on file).

1. Number and types of aircraft based.

2. Amount of operations.

3. The proposal's affects on airport access, capacity, and operations.

d. Impact on IFR En Route Operations.

1. Overall effect on IFR traffic flow.

2. Existing airway/Jet Route structure/GPS routes.

3. Average daily traffic count on affected airway/route.

4. Feasibility of airway/route realignment to accommodate the proposed SUA.

5. Direct IFR routings.

e. Impact on VFR Operations, Routes, and Flyways. Consider the effect on VFR operations, charted routes and known, but uncharted, high-volume routes or flyways.

NOTE–
Although VFR pilots are not denied access to MOAs, the potential for aeronautical impact due to VFR pilots electing to deviate around the MOA when active should be evaluated when processing a MOA proposal. Consider the proposed MOA's size and location, and the extent of current non-participating VFR operations in the affected airspace.

f. Impact on other pending proposals. Consider known airport development plans, resectorization, other airspace or airway/route proposals, or instrument procedures, currently being processed or on file.

g. Cumulative Aeronautical Impact Assessment. Establishment of the proposed airspace may have broader effects beyond the immediate vicinity of the proposed airspace. Consider the overall impact of the proposal on aviation operations when combined with:

1. Existing adjacent airspace such as Class B or C areas, or other SUA.

2. Existing geographical features such as large bodies of water, mountainous terrain, or obstructions that could influence the flight paths of nonparticipating aircraft or affect the availability of nonparticipating aircraft to circumnavigate the proposed SUA.

3. Aviation safety issues, compression of air traffic, etc.

NOTE-
If the proposed SUA will contain aircraft operations, also consider the impact of routes to be used by the participating aircraft to enter/exit the SUA area.

h. Associated ATCAA. If it is known that an ATCAA will be requested in conjunction with the proposed SUA, determine if use of the ATCAA would result in any additional aeronautical impact that should be considered.

i. Alternatives. When adverse aeronautical impacts are identified consider measures or alternatives that could mitigate or lessen the impact.

j. ATC Facility Assessment. The ATC facility's assessment of a proposal's impact on aeronautical and facility operations, and the facility's concurrence or nonconcurrence with the proposal.

k. ATC services. Indicate whether the controlling agency plans to provide real-time SUA status information, allow transitions through the area by nonparticipating aircraft, or provide traffic advisories to nonparticipating pilots requesting such services. If the controlling agency agrees to advertise such service, provide facility identification and a VHF frequency to be depicted on aeronautical charts.

l. Recommendations. Provide a recommendation for FAA action on the proposal.

Section 7. Restricted Area and MOA Annual Utilization Reports

21-7-1. PURPOSE

Annual utilization reports provide the FAA with information regarding the times and altitudes used, and the types of activities conducted in restricted areas and MOAs. These reports assist the FAA in its management of the SUA program.

21-7-2. REPORTING REQUIREMENTS

a. Using agencies are required to submit annual reports to the FAA detailing the use of all assigned restricted areas and/or MOAs. Actual utilization data are required. See FIG 21-7-1 for report format. Instructions for preparing the report are contained in FIG 21-7-2.

b. Reports shall cover each fiscal year period (October 1 through September 30). If the area was assigned to the using agency for only part of the fiscal year, report the utilization for that partial period.

c. For areas that are subdivided by legal description, a separate report is required for each officially designated sub-area published in FAAO JO 7400.8, Special Use Airspace.

d. Do not include classified information in the report.

e. Submit reports by January 31 following the end of each fiscal year, to the office of the service area office director having jurisdiction over the airspace being reported.

f. Military using agencies shall submit reports to the FAA through the appropriate regional military representative. The military representative will ensure that an information copy of each report is sent to the Director of System Operations Airspace and AIM, Federal Aviation Administration, 800 Independence Avenue, SW, Washington, DC 20591.

g. Non-military using agencies shall submit reports directly to the FAA service area office director. The service area office will send an information copy of nonmilitary reports to Airspace and Rules.

21-7-3. SUPPLEMENTARY REPORTS

The service area office may request the using agency to submit a supplementary report if it determines that additional information is needed to evaluate the use of a restricted area or MOA. Requests will be submitted through the appropriate regional military representative. Using agencies should provide the requested information within 60 days of receiving the request.

21-7-4. UTILIZATION REPORT TERMS

Terms as used in Restricted Area and MOA Annual Utilization Reports are defined as follows:

a. ATCAA. Airspace assigned by ATC to segregate air traffic between the specified activities being conducted within the assigned airspace and other IFR traffic.

b. Activated. The time-period during which the controlling agency has returned the restricted area or MOA to the using agency; regardless of whether any activity is actually occurring.

c. Controlling Agency. The designated ATC facility having jurisdiction over the SUA airspace when it is not in use by the using agency. Also, the facility that authorizes transit through, or flight within, special use airspace, in accordance with joint-use procedures contained in a letter of agreement.

d. Joint Use. A term applied to SUA which is released to the controlling agency for public access during periods when the airspace is not needed by the using agency. It also means airspace wherein access may be granted to non-participating aircraft subject to the joint-use procedures specified in a letter of agreement between the controlling and using agencies.

e. Nonparticipating aircraft. An aircraft, civil or military, which is not a part of the activities being conducted within a SUA area.

f. Scheduled. The using agency's planned time period(s) of intended use of a SUA area as submitted in advance to the controlling agency (for military using agencies, see the scheduling requirements

contained in FAAO JO 7610.4, Chapter 9, Military Operations Requirements).

g. Using agency – The organization, unit, or military command that the SUA was established; and the agency responsible for compilation and submission of Restricted Area/MOA Annual Utilization Reports.

h. Utilized – Amount of time (hours or days) that activities were actually conducted in the SUA area (e.g., when participating aircraft were operating, or other designated activities were conducted, in the airspace).

21–7–5. REVIEW REQUIREMENT

a. The service area office shall perform a thorough review of all annual utilization reports for restricted areas and MOAs within its jurisdiction. At a minimum, the following utilization report items should be analyzed:

1. Activities. Are the reported activities appropriate for the airspace type and designated purpose?

2. Altitudes. Do the reported activities and altitudes reflect a requirement for the altitudes published in the area's legal description?

3. Utilization Data. Consider whether actual use supports the published parameters, or if discussions should be held with the user to determine if an airspace amendment action is appropriate. Calculate the following percentages for reference in comparing the published parameters of the area with its reported actual utilization.

(a) Hours actually utilized as a percentage of hours activated.

(b) Hours scheduled as a percentage of hours published in the area's legal description.

(c) Hours activated as a percentage of hours scheduled.

(d) Days actually utilized as a percentage of days activated.

4. Joint Use Information. Is the airspace being made available for joint use (if applicable)?

5. Remarks. Consider any mitigating factors that explain or clarify reported data. Are any other issues identified that require further action?

b. If additional information is needed to complete the utilization report review, request the user to submit a supplementary report as described in paragraph 21–7–3.

c. As required, initiate discussions to resolve issues or forward recommendations for corrective action, to the regional military representative or responsible official for nonmilitary SUA.

d. Refer to Section 8 of this chapter for additional information regarding SUA review procedures and utilization standards.

21–7–6. REVIEW SUMMARY

The service area office shall prepare a summary of the results of its annual utilization report review. The summary should document the findings, recommendations, and actions taken, as appropriate. Submit review summaries to Airspace and Rules by March 31 of each year. It is not necessary to submit copies of the actual utilization reports with the summary.

FIG 21-7-1

RESTRICTED AREA AND MILITARY OPERATIONS AREA ANNUAL UTILIZATION REPORT (RCS: 1412-DOT-AN)

1. Restricted area number or MOA name:
2. Reporting period dates:
3. Reporting Unit Name and Phone:
4. Associated ATCAA:
(a) ATCAA Name:
(b) ATCAA Altitudes:
5. Aircraft Activities:
(a) Aircraft types:
(b) Types of activities conducted:
(c) Altitude/flight levels used for each type of activity:
(d) Supersonic flight:
(1) Area used for supersonic:
(2) Altitudes/flight levels:
6. Artillery/Mortar/Missile Activities (Restricted Area only):
(a) Type activities:
(b) Maximum altitude used for each activity:
7. Other activities not reported in 5 or 6 above:
(a) Type activity:
(b) Maximum altitude used for each activity:
8. Utilization information:
(a) Total number of aircraft sorties:
(b) Total number of days the area was:
(1) Scheduled for use:
(2) Activated:
(3) Actually utilized:
(c) Total number of hours the area was:
(1) Scheduled for use:
(2) Activated:
(3) Actually utilized:
9. Joint use information:
(a) Total number of hours the area was returned to the controlling agency:
(b) Letter of agreement provisions:
10. New chart Submitted/No Change:
11. Remarks:

FIG 21-7-2

INSTRUCTIONS FOR PREPARING RESTRICTED AREA AND MOA ANNUAL UTILIZATION REPORTS

GENERAL: Restricted Area and MOA annual utilization reports provide information needed by FAA airspace managers to confirm airspace requirements and evaluate the efficiency of airspace utilization. It is essential that this report document actual utilization of the airspace as completely and as accurately as possible. The following format is used to report both restricted area and MOA utilization. If an item does not apply, enter "N/A" for that item. A "Remarks" section is provided to document additional pertinent information. Do not include classified information in this report. Refer to FAAO JO 7400.2, Procedures for Handling Airspace Matters, for definitions of terms used in this report, and for additional reporting and submission instructions.

REPORT FORMAT:

1. Restricted area number or MOA name: State the Restricted Area number or MOA name. Report only one area per form. For areas that are officially subdivided by legal description (See FAAO JO 7400.8), prepare a separate report for each subdivision.

2. Reporting Period Dates: Enter the fiscal year dates (1 Oct [enter applicable fiscal year] to 30 Sept [enter applicable fiscal year]), or period covered if other than a full fiscal year.

3. Reporting Unit: Provide name of organization preparing the report and DSN, commercial and FAX numbers (as available).

4. Associated ATCAA:

(a) ATCAA Name: Name(s) of ATCAA established for use in conjunction with the area being reported in Item 1. Enter "None" if no ATCAA established.

(b) ATCAA Altitudes: State the ATCAA altitudes available.

5. Aircraft Activities:

(a) Aircraft types: List the specific types of aircraft, which used the area during the reporting period (e.g., F-15, B-1, etc.). Include ROA activities in this section.

(b) Types of activities conducted: List each specific type of activity conducted. Do not use general terms such as "air operations," etc.

(c) Altitudes/flight levels used for each type activity: State the highest altitude/flight level used for each activity listed in 5.(b), above.

(d) Supersonic flight:

(1) Area used for supersonic: Indicate yes/no.

(2) Altitudes/Flight levels: State altitudes/flight levels used for supersonic flight.

6. Artillery/Mortar/Missile Activities (Restricted Areas only):

(a) Type of activities: Indicate type(s) of weapon(s) fired.

(b) Maximum altitude used for each activity: State the highest altitude used for each activity/weapon.

7. Other activities not reported in 5 or 6 above:

(a) Type activity: List any other activities conducted in the area, but not already covered in other sections of the report.

(b) Maximum altitude for each activity: State highest altitude used for each type activity.

8. Utilization information:

(a) Total number of aircraft sorties: Enter the total number of aircraft sorties that utilized the area during the reporting period.

(b) Total number of DAYS the area was: Count a "day" as being scheduled, activated, or utilized, regardless of the amount of time involved on that particular day. The intent of this item is to document the number of different days during the year that the area was needed in order to accomplish the mission, whether it was needed for only 10 minutes or a full 24 hours.

(1) Scheduled for use:

(2) Activated:

(3) Actually utilized:

(c) Total number of HOURS area was:

(1) Scheduled for use: Hours the area was activated by NOTAM may be included in this item.

(2) Activated:

(3) Actually utilized: When computing "actually utilized" time, do not provide a cumulative total of individual aircraft hours flown in the area. Hours reported cannot exceed the area's total available published hours.

9. Joint use information:

(a) Total number of hours the area was returned to the controlling agency: To compute this figure, subtract the hours reported in 8(c)(2) from 8760 hours (use 8784 hours for "leap year" reporting).

(b) Letter of agreement provisions: Note whether the letter of agreement between the controlling agency and the using agency includes any joint-use provisions which permit the controlling agency to route nonparticipating aircraft through the airspace.

10. New chart Submitted/No Change: Attach a chart of the area depicting, as applicable, aircraft operating areas, flight patterns, ordnance delivery areas, surface firing points, and target, fan, and impact areas. After once submitting an appropriate chart, annual charts are not required unless there is a change in the area, activity, or altitudes used, which would alter the depiction of the activities originally reported. If no change is to be submitted, indicate "No change."

11. Remarks: Include any other information that should be considered by airspace reviewers. Explain reasons for apparent low utilization rates or large differences between "scheduled," "activated," and/or "utilized" data (e.g., extensive weather or maintenance cancellations and delays, unit deployments, etc.); or note recurring airspace denials or restrictions on use of the area imposed by the controlling agency.

Section 8. SUA Review and Analysis

21–8–1. GENERAL

Under Title 49 U.S.C. 40101 the FAA is charged with ensuring the safe and efficient use of the nation's airspace. In carrying out this responsibility, the FAA must periodically review existing SUA and take appropriate airspace amendment action, if warranted, based on the findings of its review. The following paragraphs set forth SUA review policy and provide suggested analysis techniques for use by regional and headquarters airspace personnel.

21–8–2. POLICY

a. The service area office shall conduct an annual review of restricted areas, MOAs, and warning areas under its jurisdiction. CFAs and Alert Areas may be reviewed as deemed necessary by the service area office. The purpose of the annual review is to:

1. Confirm that the user has a continuing requirement for the airspace.

2. Determine if the airspace is being used for its designated purpose.

3. Determine if actual use supports the designated dimensions and times of use.

4. Determine if joint–use airspace is being released to the controlling agency when not needed for its designated purpose.

5. Determine if any adjustments should be considered to enhance the efficient use or management of the airspace.

b. When the review indicates that airspace amendment or other corrective action should be considered, the service area office shall discuss the findings with the respective regional military representative, or responsible official for non–military SUA, and determine an appropriate course of action.

21–8–3. SOURCES OF INFORMATION

There are a variety of sources of information pertinent to SUA utilization. Using agencies are required to submit annual reports on restricted areas and MOA utilization as described in Section 7 of this chapter. Additional information may be obtained through coordination and research to augment these reports or to compile specific information about SUA areas that are not covered by the annual reporting requirement. Coordination with controlling agencies may be necessary to obtain detailed information regarding real–time use and area scheduling practices, or to identify airspace operational problems. The Special Use Airspace Management System (SAMS) will provide a more centralized and comprehensive source of SUA data for review purposes. As it becomes available, SAMS data should be incorporated into the review process. Additional sources of SUA information include:

a. Controlling agency or using agency input.

b. Regional/service area office SUA onsite review team reports.

c. FAA Air Traffic Representative (ATREP) reports.

d. SUA Letters of Agreement.

e. User meeting feedback.

f. Routine use of restrictions imposed by the controlling agency on the activation of SUA, or frequent denials of using agency activation requests.

g. Recurring ATC problems, spill outs, or NMAC reports associated with the SUA being reviewed.

21–8–4. UTILIZATION STANDARDS

a. The General Accounting Office (GAO) recommended that the FAA establish standards to be used to measure the effectiveness of SUA utilization, and to serve as a starting point for regional/service area office discussions with the user about the possible need for an airspace amendment or revocation action. In fulfillment of the GAO recommendation, this paragraph presents a limited, basic standard to be considered when reviewing SUA utilization data. It applies primarily to the review of restricted area and MOA annual utilization reports, but may be used to evaluate other SUA areas where sufficient utilization data is available.

b. Reviewers are cautioned that many factors affecting SUA use cannot be quantified. Therefore, it is impractical to develop an all–encompassing

standard that would fully measure SUA effectiveness. A thorough evaluation of SUA will require a combination of utilization data analysis, plus a subjective review of each area with consideration given to any unique circumstances.

c. The following standard may be applied in reviewing SUA utilization data:

1. Activities. The activities conducted must be appropriate for the type and designated purpose of the SUA.

2. Times of Use. Hours actually utilized should equal at least 75 percent of the hours the area was activated, discounted for weather cancellations and delays, or loss of use for reasons beyond the using agency's control (as documented in the utilization report Remarks section).

3. Designated Altitudes. Activities conducted/altitudes used indicate a need for retaining the published altitude structure of the SUA area.

21-8-5. SUA REVIEW GUIDE

This paragraph may be used as a framework for conducting a review of SUA. It applies primarily to the review of restricted areas and MOAs for which annual reports are submitted. However, it may also be used for reviewing warning areas when sufficient utilization data are available. This should not be considered an all-inclusive list. Reviewers may modify the factors to be examined or the extent of the review based on the availability of information or to fit the specific area/situation under review. The following items should be evaluated:

a. Activities. Are the activities conducted appropriate for the type and purpose of the SUA area? If inappropriate activities are conducted, notify the military representative, or responsible official, that the activity must be terminated in that SUA area or an airspace proposal must be submitted to establish the proper category of SUA to accommodate the activity.

b. Altitudes. Does the actual use of altitudes support those specified in the descriptions? Are there less frequently used portions that could be subdivided as separate areas to enhance real-time joint use of the airspace? Are any portions of the vertical dimensions no longer required for the mission? If the answers indicate a need for change, action should be initiated to amend the description.

c. Times of Use. Compare scheduled, activated, and actual utilized data. Low usage rates do not necessarily indicate a need to revoke or amend airspace. Consideration must be given to the designated purpose of the area and whether limitations were imposed on its use as a condition for the original establishment of the SUA. SUA may be established to accommodate less frequent activities such as certain research, test, and development profiles. Determining the continued requirement for, or validity of, such areas will require discussions with the user and cannot be determined strictly based on utilization times. Additionally, low or infrequent use may result from factors beyond the using agency's control, such as adverse weather, unit deployments, maintenance delays, ATC-imposed restrictions, etc.

1. Compare time actually utilized to time activated. This is the most important factor in analyzing SUA utilization. Significant disparity between the time activated and actually utilized may indicate inefficient airspace use and the need to improve real-time use procedures so that the airspace is released to the controlling agency for joint use when not needed by the user for its designated purpose. Determine whether the published times of use are valid or should be amended to match current mission requirements. If actual utilization is less than 75 percent of the time activated, coordinate with the regional military representative to determine the reason and whether corrective action is required. If information is available, the impact of weather and/or ATC delays on the actual utilization of the area should be considered when evaluating this item.

2. Compare scheduled use to published times of use. If scheduled use is significantly less than or greater than (e.g., by use of NOTAMs) the published times, discussions should be held with the user to determine if the published times should be amended to reflect current mission requirements.

3. Compare scheduled time to activated time. Is the amount of time the area is being activated consistent with the amount of scheduled use? A significant difference between these times may indicate a need to discuss real-time use or revalidate published times of use with the user. Consideration

should be given to the effects of weather or maintenance cancellations, or other factors limiting the using agency's use of the area.

4. NOTAM Activation. If a NOTAM provision is included in the SUA legal description, and activation by NOTAM is extensive or routine, consider whether it would be advantageous to increase the published times of use to include the routine NOTAM period. This action may better inform the flying public of expected area usage periods, and reduce NOTAM system workload.

5. Intermittent Time of Use. If regular use of the area occurs during a set time period daily, or if use has become other than sporadic, consider whether specific times of use should be published to better inform the flying public of expected area usage periods and reflect current mission requirements.

d. Non-utilization of SUA. A using agency is required to explain in the remarks section of its annual utilization report why it did not use the SUA area during an entire reporting period. If no such explanation is provided, request that the military representative or using agency provide the reasons and the using agency's plans for future use of the airspace.

1. If the user responds that the SUA is no longer required, initiate action to revoke the airspace.

2. If the user validates a continuing need for the airspace, coordinate with the user to determine if the area's dimensions and/or times of use remain valid or should be amended to reflect current requirements.

3. If the airspace remains unused for a second consecutive fiscal year period, inform the military representative of the FAA's intent to revoke the area unless additional justification for retaining the airspace is submitted.

e. Joint-use and Real-time Use Procedures. Evaluate the effectiveness of joint-use procedures and real-time activation/deactivation procedures (if applicable). Obtain input from the controlling agency as needed.

1. Are procedures for timely release of joint-use airspace contained in a letter of agreement?

2. Are real-time activation/deactivation procedures specified and used?

f. Area Scheduling. Does the using agency schedule the area in accordance with FAAO JO 7610.4, Special Operations, requirements?

g. Aeronautical Charts and Publications. Check the accuracy of SUA information shown on aeronautical charts and contained in applicable publications. Submit required corrections to Airspace and Rules for processing.

h. Other Issues. Determine if there are any other issues that require further investigation, such as:

1. Adverse impact on NAS operations.

2. Recurring spill outs.

3. Frequent instances of limitations on the use or activation of the SUA by the controlling agency.

21-8-6. SUA REVIEW FOLLOW UP ACTION

The service area office's annual SUA review forms the basis for further discussions with user representatives to resolve any discrepancies noted or other issues that were identified. Results of the review should be documented and maintained on file in accordance with current administrative guidance. Regional/service area office follow up actions are dependent on the results of the review as follows:

a. If it is determined that the existing SUA parameters (times, altitudes, boundaries) are valid, no further action is required other than documentation of the review results.

b. If any SUA parameters are found to exceed the user's requirements or if it is determined that the SUA does not accommodate the user's current mission requirements, then the service area office should discuss the finding with the military representative/using agency official. When appropriate, the service area office should request the user to submit an airspace proposal to amend the SUA description.

Section 9. SUA Review Teams

21-9-1. PURPOSE

a. A SUA Review Team is one option available to the service area office director for conducting the annual SUA review detailed in paragraph 21-8-2.

b. When this option is selected, the SUA Review Team shall:

1. Evaluate the need for, or obtain additional information regarding a specific SUA proposal; or

2. Develop recommendations for the retention, modification, or revocation of the SUA airspace based on actual utilization or a change in user requirements.

c. A team established for this type of review shall be dissolved upon completion of its overall conduct of the review.

21-9-2. TEAM COMPOSITION

Review teams shall be composed of at least two FAA members plus the regional military representative. The team membership shall be based on the requirements and purpose of the review. Members may be selected from the reviewing region/service area office, another service area office, concerned ATC facilities, or other FAA Headquarters (e.g., Strategic Operations Security or Safety Evaluations representative), regional, orfield offices, as required (e.g., Flight Standards or FPO).

21-9-3. RESPONSIBILITIES

a. When the service area office director determines that there is a need for a team to review a SUA, the service area office director shall designate a team chairperson who will be responsible for the overall conduct of the review.

b. The team chairperson shall:

1. Prepare an agenda and pre-brief team members on the purpose and procedures for the review.

2. Begin coordination sufficiently in advance to provide local officials with adequate time to prepare the required information.

3. Coordinate visits to military SUA sites through the appropriate regional military representative.

4. Determine if an informal airspace meeting should be held to allow users and other interested parties an opportunity to present comments and offer recommendations. If a meeting is planned, follow the informal airspace meeting procedures in Chapter 2 of this order.

c. The team shall examine:

1. The actual hours, altitudes, and geographical area used, the types of activities conducted, and the impact on other users.

2. Review the effectiveness of procedures for real-time, joint-use of the airspace, and identify problem areas or aeronautical impacts.

3. Draft recommendations to resolve problems, improve the efficient use of airspace, and/or enhance the service to the using agency.

21-9-4. TEAM REPORT

a. A report shall be prepared to document the results of the review. The report contents should include at a minimum:

1. Copies of notification memoranda.

2. A team member list.

3. An Executive Summary.

4. A description and chart of the SUA reviewed.

5. Team Observations and Recommendations.

6. An informal airspace meeting summary and copies of written comments submitted at the meeting (if applicable).

7. Supporting documents or source information (if applicable).

(a) SUA utilization data.

(b) Letters of Agreement.

(c) Other pertinent documents.

b. Within 60 days after completion of the review, the report shall be forwarded through the service area office director to the regional military representative,

or responsible official for nonmilitary SUA. A copy of the report shall be sent to Airspace and Rules and concerned ATC facilities.

21–9–5. FOLLOW UP ACTION

a. The regional military representative, or responsible official for non–military SUA, should respond to the report in writing within 60 days of receipt. If the user concurs with the team's observations and recommendations, the service area office shall coordinate with the user representative to initiate any required airspace action or other recommendations.

b. If the user does not agree with the stipulated recommendations, the service area office shall coordinate with the appropriate representative to resolve any issue(s). If agreement cannot be reached, the service area office shall forward its recommendation, along with an explanation of the user's position, to Airspace and Rules for further action. A copy of the region's/service area office's recommendation shall be provided to the appropriate user representative.

c. The service area office will monitor the status of open items until all required actions have been addressed.

Chapter 22. Prohibited Areas

Section 1. General

22–1–1. DEFINITION

A prohibited area is airspace established under 14 CFR part 73 provisions, within which no person may operate an aircraft without permission of the using agency.

22–1–2. PURPOSE

Prohibited areas are established when necessary to prohibit flight over an area on the surface in the interest of national security and welfare.

22–1–3. IDENTIFICATION

Identify prohibited areas with the prefix letter "P" followed by a dash, a two–digit number, location, and the two–letter state abbreviation (e.g., "P–47, Amarillo, TX"). Identification numbers are assigned by Airspace and Rules.

22–1–4. DESCRIPTION

Prohibited areas normally extend from the surface upward to a specified altitude, with a "continuous" time of designation

22–1–5. WAIVERS/AUTHORIZATION

No person may conduct operations within a prohibited area except under a certificate of waiver issued by the Administrator.

Section 2. Processing

22–2–1. SUBMISSION OF PROPOSALS

a. Submit prohibited area proposals to the service area office for processing in accordance with the requirements in Chapter 21 of this order. Although specifying a minimum processing time is impractical, at least 6 months would be needed for a routine, non–controversial proposal.

b. The restrictions imposed by a prohibited area may be highly controversial and require in–depth study as well as strong justification.

22–2–2. REGIONAL/SERVICE AREA OFFICE ACTIONS

After completing the requirements of Chapter 21, prohibited area proposals shall be forwarded to Airspace and Rules for final determination.

Chapter 23. Restricted Areas

Section 1. General

23–1–1. DEFINITION

A restricted area is airspace established under 14 CFR part 73 provisions, within which the flight of aircraft, while not wholly prohibited, is subject to restriction.

23–1–2. PURPOSE

Restricted areas are established when determined necessary to confine or segregate activities considered hazardous to nonparticipating aircraft.

23–1–3. IDENTIFICATION

Identify restricted areas with the letter "R" prefix followed by a dash, a four–digit number, a location, and the two–letter state abbreviation (e.g., R–2309, Yuma, AZ). A letter suffix is used to indicate area subdivisions. Airspace and Rules assigns identification numbers.

23–1–4. RESTRICTED AREA FLOOR

a. The restricted area floor may be established to the surface only when the using agency owns, leases, or by agreement, controls the underlying surface.

NOTE–
Existing restricted areas established from the surface before December 1, 1967, are exempt from the "own, lease, or control" requirement. This remains valid until amendment action is taken which would expand the boundaries, altitudes, or times of use, or changes the designated purpose of the area. Nevertheless, using agencies of such restricted areas are encouraged to acquire sufficient control of the property to prevent possible disruption of that agency's activities.

b. Provisions must be made for aerial access to private and public use land beneath the restricted area, and to accommodate instrument arrivals/departures at affected airports with minimum delay.

c. The restricted area shall exclude the airspace 1,500 feet AGL and below within a 3 NM radius of airports available for public use. This exclusion may be increased if necessary based on unique circumstances.

23–1–5. JOINT USE

a. Restricted areas are established for joint use by assigning an ATC facility as the controlling agency, and by executing a joint use letter of procedure between the controlling and using agencies. The letter of procedure provides for the operation of nonparticipating IFR and/or VFR aircraft within the area. Flight within the restricted area is controlled by the using agency except when the area has been released to the controlling agency. During such periods, the controlling agency may permit nonparticipating aircraft operations in the restricted area.

b. Prepare letters of procedure in accordance with FAAO JO 7210.3, Facility Operation and Administration. The format of the letter may be modified as needed based on local requirements. The joint–use letter shall include procedures for the timely activation, release, or recall of the airspace. The letter may also specify conditions and procedures whereby the controlling agency may route traffic through the area while in use, if approved separation can be maintained between nonparticipating aircraft and the user's activities.

c. The service area office shall be the approval authority for joint–use letters of procedure. This authority may be delegated to a FAA ATC facility designated as the controlling agency.

d. Requirements for coordination and communications between the controlling and using agencies concerning the activation and release of joint–use restricted areas shall be outlined in the letter of procedure. A record shall be made of all such communications. These records shall be retained in accordance with FAAO JO 7210.3, Facility Operation and Administration.

23–1–6. TEMPORARY RESTRICTED AREAS

a. Temporary restricted areas may be designated when necessary to accommodate hazardous activities associated with military exercises, test programs, etc.

b. Proponents shall be encouraged to seek permission from using agencies to conduct their activities within existing permanent restricted areas before submitting a request for designation of a temporary restricted area.

c. The duration of a temporary restricted area shall be specified in the NPRM/Final Rule.

Section 2. Processing

23–2–1. SUBMISSION OF PROPOSALS

Submit restricted area proposals to the service area office at least 10 months prior to the desired effective date. The following schedule is an estimate of the minimum time needed to process proposals that require only routine coordination.

NOTE–
Proposals that are complex, controversial, or require extensive environmental analysis could need up to 24 months or more additional processing time beyond that shown in TBL 23–2–1.

TBL 23–2–1

Calendar Days	Action
D	Proposal received by FAA regional/ service area office.
D+30	Proposal reviewed by region/ service area office; aeronautical study initiated. Proposal sent to Airspace and Rules to begin Rulemaking Process.
D+95	Proposal reviewed by Airspace and Rules.
D+105	NPRM published in Federal Register; Public comments directed to appropriate region.
D+150	Public comment period ends.
D+180	Comments reviewed by the region/ service area office, and recommendations sent to Airspace and Rules.
D+240	Headquarters review of proposal, comments, and regional/service area office recommendations. Final determination; Rule prepared and submitted to Federal Register.
D+250	Rule published in Federal Register (at least 30 days prior to effective date).
D+250–306	Within this time frame; NACO cutoff date, and Rule effective date.

23–2–2. TEMPORARY RESTRICTED AREA PROPOSALS

a. Temporary restricted areas are subject to the same rulemaking processing (e.g., NPRM and final rule) and environmental analysis requirements as permanent areas. However, since temporary restricted area effective dates are determined by the exercise or mission requirements rather than the standard 56–day en route chart cycle, a shorter overall processing time is the norm.

b. The FAA will attempt to accommodate changes in temporary restricted area requirements. Nonetheless, exercise planners should be aware that the Administrative Procedure Act requires public notice of the proposal and publication of the final rule at least 30 days before the airspace effective date. Moreover, these requirements may not permit late changes to the airspace proposed in the NPRM without causing a delay in the planned exercise start date. Significant changes to the proposal after the NPRM is published could necessitate an additional public comment period, further study of the aeronautical impact, and/or supplemental environmental analysis. Therefore, early planning, careful ground site selection, and close coordination between concerned parties throughout the entire planning process are essential. In selecting the ground site, specific attention must be given to the impact of the proposed temporary restricted area on existing aeronautical operations near the site. In any case, no change should be made within 45 days of the exercise start date unless:

1. It is absolutely essential to the safety and successful conduct of the exercise; or

2. To reduce the amount of airspace to be restricted.

NOTE–
For processing times, see TBL 23–2–2. See FAAO JO 7610.4, chapter 2, Exercise Planning, for additional details.

TBL 23-2-2

Calendar Days	Action
D	Proposal received by FAA regional/ service area office.
D+30	Proposal reviewed by region/service area office and submitted to Airspace and Rules; aeronautical study initiated as required.
D+95	Proposal received by Airspace and Rules, NACO coordination; NPRM sent to Federal Register. Comments directed to appropriate regional/ service area office.
D+105	NPRM published in Federal Register.
D+150	Public comment period ends.
D+180	Comments reviewed by region/ service area office; recommendation sent to Airspace and Rules.
D+240	Airspace and Rules review of proposal, comments, and regional/ service area office recommendation. Final determination. Rule prepared and sent to Federal Register. Graphic Notice sent to NOTAM Publication.
D+250	Rule published in Federal Register (at least 30 days prior to effective date).

Chapter 24. Warning Areas

Section 1. General

24–1–1. DEFINITION

A warning area is airspace of defined dimensions, (extending from 3 NM outward from the coast of the United States), designated to contain activity that may be hazardous to nonparticipating aircraft.

24–1–2. PURPOSE

The purpose of a warning area is to warn nonparticipating pilots of the potential danger from activities being conducted. A warning area may be located over domestic waters, international waters, or both.

24–1–3. IDENTIFICATION

Identify warning areas with the letter "W" prefix followed by a dash; a two– or three–digit number; a location; and the two–letter state abbreviation (e.g., W–291, San Diego, CA). A letter suffix is used to indicate subdivisions. Identification numbers are assigned by Airspace and Rules.

24–1–4. JOINT USE

Warning areas may be considered for joint use if the area can be released to the FAA during periods when it is not required for its designated purpose, and provided the warning area is located in airspace wherein the FAA exercises ATC authority under ICAO agreements. When designating a warning area for joint use, a letter of agreement shall be executed between the controlling and using agencies to define the conditions and procedures under which the controlling agency may authorize nonparticipating aircraft to transit, or operate within the area. Apply the provisions of paragraph 23–1–5, as appropriate.

Section 2. Processing

24–2–1. SUBMISSION OF PROPOSALS

Submit warning area proposals to the service area office at least 7 months prior to the desired effective date. The following schedule is an estimate of the minimum time needed to process proposals that require only routine coordination.

NOTE–
Proposals that are complex or controversial could require significantly longer processing time than that shown in TBL 24–2–1.

24–2–2. EXECUTIVE ORDER 10854 COORDINATION

In accordance with Executive Order 10854, all warning area proposals must be coordinated with the Departments of State and Defense. This coordination will be accomplished by Airspace and Rules.

TBL 24–2–1

Calendar Days	Action
D	Proposal received by FAA regional/ service area office.
D+30	Proposal reviewed by region/service area office; aeronautical study initiated, as required Nonrule circular published.
D+75	Public comment period ends. Aeronautical study due.
D+105	Comments reviewed by region/ service area office; recommendation sent to Airspace and Rules.
D+150	Executive Order 10854, NACO coordination, and final determination by Airspace and Rules.
D+160	NACO cutoff date. Warning area published in NFDD (on or before cutoff date for next available charting date).
D+240	Warning area effective date.

Chapter 25. Military Operations Areas

Section 1. General

25–1–1. DEFINITION

A military operations area (MOA) is airspace designated outside of Class A airspace, to separate or segregate certain nonhazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted.

25–1–2. PURPOSE

MOAs are designated to contain nonhazardous, military flight activities including, but not limited to, air combat maneuvers, air intercepts, low altitude tactics, etc.

25–1–3. IDENTIFICATION

Identify a MOA by a name followed by the acronym MOA and the two–letter state abbreviation (e.g., Dome MOA, AZ). MOA subdivisions may be identified by a suffix consisting of a number, letter, cardinal point, or the terms "High" or "Low," (e.g., Moody 1; Gamecock B; Tiger North; Smoky High). Either the proponent or the service area office selects MOA names.

NOTE–
Select an easily understood word. Lengthy or composite names are cumbersome and tend to be confusing when communicating and in charting.

25–1–4. MOA FLOOR

MOAs may extend below 1,200 feet AGL if a mission requirement exists and there is minimal adverse aeronautical effect. Provisions must be made to enable aerial access to private and public use land beneath the area, and for terminal VFR and IFR flight operations. Provisions must also be made to accommodate instrument arrivals/departures at affected airports with minimum delay. The MOA shall exclude the airspace 1,500 feet AGL and below within a 3 NM radius of airports available for public use. This exclusion may be increased if necessary based on unique circumstances. If the MOA floor extends below 1,200 feet AGL over a charted private airport, coordination should be effected with the airport operator to determine whether there would be any conflict between the MOA activity and airport operations.

25–1–5. LOCATION

MOAs should be located to create minimum adverse impact on nonparticipating aircraft operations. MOAs shall not be established offshore beyond the United States 12 NM territorial limit. To the extent possible, locate MOAs:

a. Within 100 miles of the user's base of flight origin.

b. Outside terminal area airspace, Federal airways, charted terminal VFR routes, and known high volume VFR flyways.

c. Within radar and communications coverage of an ATC facility or MRU.

NOTE–
Do not designate MOAs to overlap existing, charted Terminal Area VFR Routes, or charted VFR Flyways (See FAAO JO 7210.3, chapter 11, National Programs).

25–1–6. JOINT USE

a. In effect, MOAs are always joint use in that VFR aircraft are not denied access, and IFR aircraft may be routed through the airspace, by agreement between controlling and using agencies, when approved separation can be provided from the MOA activity.

b. Procedures for access to the airspace by nonparticipating IFR traffic shall be specified in a letter of agreement between the controlling and using agencies.

25–1–7. TEMPORARY MOAs

a. Temporary MOAs are designated to accommodate the military's need for additional airspace to periodically conduct exercises that supplement routine training. When existing airspace is inadequate to accommodate these short–term military

exercises, temporary MOAs may be established for a period not to exceed 45 days. On a case-by-case basis, Airspace and Rules may approve a longer period if the proponent provides justification for the increase.

b. When it is determined that the need for a temporary MOA will occur on a regular and continuing basis, the airspace should be considered for establishment as a permanent MOA with provisions for activation by NOTAM/Special Notice disseminated well in advance of scheduled exercises.

c. Once a temporary MOA is approved, the military shall be responsible for publicizing the exercise within 100 miles of the affected airspace. The publicity may be accomplished through the public media, pilot forums, distribution of information bulletins to known aviation interests, etc.

25-1-8. MOAs IN CLASS G AIRSPACE

MOAs may be designated in Class G airspace. Using agencies and pilots operating in such MOAs should be aware that nonparticipating aircraft may legally operate IFR or VFR without an ATC clearance in these MOAs. Pilots of nonparticipating aircraft may operate VFR in Class G airspace in conditions as low as 1 statute mile flight visibility and clear of clouds (see Section 91.155 for complete Class G airspace VFR minima). Any special procedures regarding operations within MOAs that encompass Class G airspace should be included in a letter of agreement between the controlling and using agencies.

Section 2. Processing

25–2–1. SUBMISSION OF PROPOSALS

Submit MOA proposals, other than temporary MOAs, to the service area office at least 8 months prior to the desired effective date (see paragraph 25–2–2 for temporary MOA proposals). The following schedule is an estimate of the minimum time needed to process proposals that are non–controversial, without significant aeronautical impact, and require only routine coordination.

NOTE–
Proposals that are complex, controversial, or require extensive environmental analysis could need up to 24 months or more additional processing time beyond that shown in TBL 25–2–1.

TBL 25–2–1

Calendar Days	Action
D	Proposal received by FAA regional/ service area office.
D+30	Proposal reviewed by region/service area office. Nonrule circular published. Aeronautical study initiated, as required.
D+75	Public comment period ends. Aeronautical study due.
D+105	Comments reviewed by region and recommendation sent to Airspace and Rules.
D+165	Proposal, comments, and recommendation reviewed by Airspace and Rules. NACO coordination and final determination.
D+175	NACO cutoff date. MOA published in NFDD on or before this date.
D+231	MOA effective date and/or 56–day airspace effective date.

25–2–2. TEMPORARY MOA PROCESSING

a. Submit temporary MOA proposals to the service area office at least 4 months prior to desired effective date (See TBL 25–2–2). When there is a known requirement for multiple activations of the same temporary MOA over a specific time period, proponents are encouraged to combine the requests into a single proposal covering the entire period. This will provide notice to the public that is more effective and reduce administrative processing workload.

b. Temporary MOA effective dates are determined by the exercise requirements rather than the 56–day en route chart cycle used for permanent SUA. Consequently, a shorter overall processing time is required.

c. See paragraph 21–1–15 of this order for graphic notice and narrative description information to be submitted with the proposal package.

d. For recurring temporary MOAs, an abbreviated proposal package may be submitted at the discretion of the service area office. See paragraph 21–3–4 of this order for details.

TBL 25–2–2

Calendar Days	Action
D	Proposal received by FAA regional/ service area office.
D+30	Proposal reviewed by region/service area office; Nonrule circular published; aeronautical study initiated.
D+75	Public comment period ends. Aeronautical study due.
D+105	Comments reviewed by region/ service area office. Recommendation sent to Airspace and Rules.
D+135	Proposal, comments, and recommendation reviewed by Airspace and Rules. NACO coordination and final determination. Graphic Notice sent to NOTAM Publication.

Chapter 26. Alert Areas

Section 1. General

26–1–1. DEFINITION

An alert area is airspace wherein a high volume of pilot training or an unusual type of aeronautical activity is conducted.

26–1–2. PURPOSE

Alert areas are designated to inform nonparticipating pilots of areas that contain a high volume of pilot training operations, or an unusual type of aeronautical activity, that they might not otherwise expect to encounter. Pilots are advised to be particularly alert when flying in these areas.

26–1–3. LOCATION

Alert areas shall not extend into Class A, B, C, and D airspace, or Class E airport surface areas. To the extent possible, alert areas should avoid Federal airways, major terminal areas, and high volume VFR routes. Once an alert area is designated, the establishment of Federal airways through such areas should be kept to a minimum.

26–1–4. ACTIVITIES

a. Only those activities that do not pose a hazard to other aircraft may be conducted in an alert area.

b. All alert area activities shall be conducted in accordance with visual flight rules, and in compliance with applicable Sections of 14 CFR.

c. Automated Flight Service Stations/Flight Service Stations may broadcast information regarding alert area activities as circumstances dictate.

26–1–5. IDENTIFICATION

Alert areas shall be identified by the letter “A” prefix followed by a dash, a two or three digit number, a location, and the two–letter state abbreviation (e.g., A–292, Pensacola, FL). A letter suffix is used to indicate subdivisions. Identification numbers are assigned by Airspace and Rules. Aeronautical charts shall be annotated to reflect the type of activity conducted in the alert area.

Section 2. Criteria

26–2–1. GENERAL

a. Alert areas should be designated only at those locations where it is determined that either the volume of training operations, or the unusual aeronautical activity, is so unique that dissemination of the information would be of operational value to the flying public, and would significantly enhance aviation safety.

NOTE–
Before proposing an alert area, consider whether the publication of an advisory note on aeronautical charts near the affected location would provide satisfactory notice of the activity to nonparticipating pilots.

b. Alert areas may be designated for either military or civil aviation activities.

c. Since pilots should normally expect to encounter concentrated air traffic near major military and civil airports, the establishment of alert areas at such locations is not recommended in order to avoid diminishing the effectiveness of the alert area designation.

d. Alert areas should not be designated for activities where other approved charting symbology is more appropriate (e.g., Parachute Jumping Areas, Glider Operating Areas).

e. Establishment of an alert area is not a prerequisite to conduct any type of flight activity.

f. Other than the basic requirement to comply with applicable sections of 14 CFR, alert areas do not impose any flight restrictions or communications or ATC clearance requirements on pilots either operating within, or transiting the area.

26–2–2. TYPES OF OPERATIONS

Limit the establishment of alert areas to the following types of operations:

a. Concentrated Student Training.

1. A high volume of flight training operations at one or more airports in a given area. The volume of activity should exceed 250,000 local operations (as defined in FAAO JO 7210.3, chapter 12, Facility Statistical Data, Reports, and Forms) annually and be generated primarily by student training in fixed–wing and/or rotary–wing aircraft.

2. A pilot training area beyond a 20 NM radius of the airport that contains unusually intensive training operations.

b. Unusual Aeronautical Activity. There are no specific criteria established for this category. Each proposal will be evaluated on a case–by–case basis to determine its significance to the flying public and aviation safety.

NOTE–
One example of an alert area fitting this category is A–381, designated to identify the unusual concentration and volume of aviation activity in the U.S. Gulf Coast/Gulf of Mexico area.

Section 3. Processing

26–3–1. ALERT AREA PROPOSALS

Alert area proposals shall contain all applicable items listed in chapter 21, section 3 of this Order; except that designation of a controlling agency, completion of an aeronautical study, and FAA environmental analysis are not required.

26–3–2. SUBMISSION OF PROPOSALS

Submit alert area proposals to the service area office at least 6 months prior to the desired effective date. The following schedule is an estimate of the minimum time needed to process proposals that require only routine coordination.

NOTE–
Controversial proposals may require significantly greater processing time than that shown in TBL 26–3–1.

TBL 26–3–1

Calendar Days	Action
D	Proposal received by FAA regional/ service area office.
D+30	Proposal reviewed by region/ service area office. Nonrule circular published.
D+75	Public comment period ends.
D+105	Comments reviewed; recommendation sent to Airspace and Rules
D+135	NACO coordination; proposal, comments and recommendation reviewed by Airspace and Rules. Final determination.
D+145	Alert Area cutoff date and effective date published in NFDD.
D+145–201	Within this time frame; NACO cutoff date and Alert Area effective date.

Chapter 27. Controlled Firing Areas

Section 1. General

27–1–1. DEFINITION

A controlled firing area (CFA) is airspace designated to contain activities that if not conducted in a controlled environment would be hazardous to nonparticipating aircraft.

27–1–2. PURPOSE

CFAs provide a means to accommodate, without impact to aviation, certain hazardous activities that can be immediately suspended if a nonparticipating aircraft approaches the area.

27–1–3. CRITERIA

a. CFAs should be considered only when necessary to accommodate activities that are capable of being immediately suspended, and it has been specifically determined that designation of a restricted area is not warranted.

b. The distinguishing feature of a CFA, compared to other SUA, is that CFA activities shall be suspended immediately when a nonparticipating aircraft approaches the area. The responsibility lies totally with the CFA user to terminate activities so that there is no impact on aviation. There is no requirement for nonparticipating aircraft to avoid the airspace, nor are any communications or ATC separation requirements imposed.

27–1–4. CHARTING

CFAs are not depicted on aeronautical charts because the user terminates the activities when required to prevent endangering nonparticipating aircraft.

27–1–5. DIMENSIONS

Although there are no set limits to the dimensions of a CFA, the size of the area must be reasonable considering the types of activities conducted, and surveillance, communications, and activity termination capabilities.

27–1–6. ACTIVITIES

a. Only those activities that can be immediately suspended on notice that a nonparticipating aircraft is approaching are appropriate for a CFA. Examples of such activities include:

1. Ordnance disposal.
2. Blasting.
3. Static testing of large rocket motors.

b. CFAs are not intended to contain aircraft ordnance delivery activities. Operation of observer or surveillance aircraft is permitted.

c. Other activities (e.g., artillery, etc.) may be considered provided they can meet the criteria and comply with the safety precautions prescribed in this chapter.

d. CFAs may be designated for either military or civil activities.

27–1–7. APPROVAL

The service area office is the approval authority for CFAs. For other than one–time events, CFAs should be approved for a specific period as determined by the service area office. An expiration date shall be assigned for each CFA.

27–1–8. SUSPENSION OR REVOCATION

The service area office may suspend or revoke a CFA if a question arises about the safety of the operation, compliance with safety precautions or conditions of approval, or if unforeseen impact on aeronautical operations occurs.

Section 2. Processing

27–2–1. SUBMISSION REQUIREMENTS

Submit CFA proposals to the appropriate service area office at least 4 months prior to the desired effective date.

27–2–2. CFA PROPOSALS

CFA proposals shall include the applicable items from Chapter 21, Section 3. In addition, provide the following information:

a. Justification for establishing a CFA instead of a restricted area.

b. Surveillance and safety procedures to be applied.

27–2–3. REGIONAL/SERVICE AREA OFFICE ACTION

Upon receipt of a CFA proposal, the service area office shall:

a. Assign a nonrulemaking study number.

b. Determine if circularization of the proposal is required.

c. Review the proposal for justification and compliance with CFA criteria.

d. Determine if the proposed CFA would conflict with the requirements of other airspace users. Consider proximity of Federal airways, VFR flyways, etc.

e. Evaluate the adequacy of surveillance and safety procedures.

f. Determine limitations, safety precautions, or other requirements to be observed as conditions of approval.

g. If the operation also requires a waiver to part 101, process that waiver and complete FAA Form 7711–1, Certificate of Waiver or Authorization.

h. Issue an approval letter to the proponent (see paragraph 27–2–4), or inform the proponent in writing if the CFA is disapproved.

27–2–4. APPROVAL LETTER

Inform the proponent in writing of the approval or renewal of the CFA. Include the following information as required:

a. CFA description (boundaries, altitudes, and times of use).

b. Activity for which the CFA is approved.

c. Using agency name.

d. Effective/expiration date(s).

e. Conditions, operating limitations, and/or safety precautions to be observed (see Section 3 of this chapter).

f. Additional provisions, if needed.

g. Instructions for the user to notify the operators of airports in the vicinity of the CFA of the activities to be conducted, if required.

h. If applicable, attach FAA Form 7711–1.

i. Instructions and suspense date for submitting a CFA renewal request, if applicable.

Section 3. Safety Precautions

27–3–1. USER RESPONSIBILITIES

The CFA user shall:

a. Ensure that the activity is confined within the CFA.

b. Cease hazardous activity immediately upon observation or notification that a nonparticipating aircraft is approaching the area. Resume the activity only after the aircraft is clear of the CFA.

c. Make provisions to ensure the safety of persons or property on the surface, if applicable.

d. Retain full legal responsibility in event of any incident resulting from the activity conducted in the CFA.

27–3–2. PRECAUTIONARY MEASURES

a. The service area office must be satisfied that adequate safety precautions are in place for each CFA. Specific precautionary measures established to protect nonparticipating aircraft and persons and property on the surface will depend on various factors such as the type of activity, terrain, CFA dimensions, etc. The following measures are considered the minimum required and are mandatory for all CFAs:

1. The user shall appoint a safety officer to ensure that operations are conducted according to the requirements of this Order, and the CFA approval letter.

2. The base of the clouds shall be at least 1,000 feet above the highest altitude affected by the hazardous activity.

3. Visibility shall be sufficient to allow visual surveillance of the entire CFA, plus a distance of 5 miles beyond the CFA boundary in all directions.

4. The CFA shall be clear of nonparticipating aircraft or personnel before starting, and while conducting hazardous activities.

5. Projectiles shall not enter any cloud formation.

b. The service area office may establish other ceiling and visibility requirements, or additional precautionary measures, as required by the specific case.

NOTE–
CFA activities are terminated to avoid conflict with nonparticipating aircraft, therefore, there is no requirement for the issuance of a NOTAM.

27–3–3. AREA SURVEILLANCE

a. Surveillance shall be continuously maintained immediately prior to and during the time that hazardous activity is in progress.

b. Surveillance may be accomplished by trained ground observers, aircraft, surface vessels, or a combination of methods. Radar may be used to supplement visual surveillance of the area.

c. A sufficient number of trained observers shall be used to ensure adequate coverage of the required area.

d. Observers shall be provided with continuous, effective communications with all firing points. If at any time communication is lost, hazardous activity shall cease until reliable communication is reestablished.

Chapter 28. National Security Areas

Section 1. General

28–1–1. DEFINITION

A National Security Area (NSA) consists of airspace of defined vertical and lateral dimensions established at locations where there is a requirement for increased security of ground facilities. Pilots are requested to voluntarily avoid flying through an NSA. When it is necessary to provide a greater level of security, flight in an NSA may be temporarily prohibited pursuant to the provisions of 14 CFR 99.7, Special Security Instructions. Where there is a need to restrict flight operations in an NSA, the required restriction will be issued by Airspace and Rules and disseminated via NOTAM.

28–1–2. PURPOSE

An NSA is designated to enhance national security and protect national assets.

28–1–3. CRITERIA

An NSA should be considered when a need to protect national assets or a need to protect an area in the interest of national security is identified.

28–1–4. DIMENSIONS

There are no standard dimensions for an NSA. The dimensions should be the minimum to promote the protection of the national asset or area identified.

28–1–5. CHARTING

NSAs shall be depicted on aeronautical charts to inform users of the NAS regarding their vertical and lateral dimensions. Additionally, a note shall be depicted on the chart adjacent to the NSA stating the requested avoidance altitude.

28–1–6. EXPIRATION, SUSPENSION, OR REVOCATION

An NSA does not expire. However, an NSA may be suspended or revoked at the discretion of Airspace and Rules.

Section 2. Processing

28–2–1. NSA PROPOSALS

NSA proposals shall contain all applicable items listed in Chapter 21, Section 3, of this order. References to environmental analysis, ATCAAs, controlling agency, using agency, and times of use are not required.

28–2–2. SUBMISSION OF PROPOSALS

a. An NSA proposal may be initiated by any agency of the Federal government. Send any NSA proposal to the service area office at least 6 months prior to the desired effective date. Such requests shall include sufficient justification for the requested action.

b. Requests should be sent to the service area office responsible for the affected area.

28–2–3. REGIONAL/SERVICE AREA OFFICE PROCESSING

The service area office shall evaluate the effect of proposals on aircraft operations in the NAS as specified in Chapter 21. The service area office shall then forward their recommendation and justification to Airspace and Rules for processing.

28–2–4. AIRSPACE AND RULES PROCESSING

Upon receipt of an NSA proposal, Airspace and Rules shall:

a. Review the proposal for justification and impact on aircraft operations in the NAS.

b. Coordinate the request as appropriate.

c. Approve or disapprove the request.

d. Forward the approved request to Aeronautical Information Management for charting.

e. Take action to suspend or revoke the NSA when it is no longer justified.

f. Take appropriate action to inform users of the designation, suspension, or revocation of the NSA.

Part 6. Miscellaneous Procedures

Chapter 29. Outdoor Laser Operations

Section 1. General

29–1–1. PURPOSE

This chapter prescribes policy, responsibilities, and guidelines for processing a Notice of Proposed Outdoor Laser Operation(s) and determining the potential effect of outdoor laser activities on users of the NAS.

29–1–2. AUTHORITY

a. Title 49 of the U.S. Code (49 U.S.C.), Section 40103 gives the Administrator the authority to regulate, control, develop plans for, and formulate policies with respect to the use of the navigable airspace.

b. Regulatory authority for laser light products has been delegated to the Food and Drug Administration (FDA). Product regulations are detailed in 21 CFR, part 1010, Performance Standards for Electronic Products, and part 1040, Performance Standards for Light Emitting Products.

29–1–3. POLICY

a. Determinations shall be based on the findings of an aeronautical review.

b. Regional/service area offices having control jurisdiction over the airspace where laser operations are planned must conduct an aeronautical review of all proposed laser operations to be performed in the NAS to ensure that these types of operations will not have a detrimental effect on aircraft operations.

c. Full consideration must be given to national defense requirements, commercial uses, and general aviation operations that have the public right of "freedom of transit" through the NAS.

d. Accordingly, while a sincere effort must be made to negotiate equitable solutions regarding proposed laser operations in the NAS, preservation of the navigable airspace for aviation must be the primary emphasis.

29–1–4. RESPONSIBILITIES

a. The area director, Terminal Operations, or En Route and Oceanic Operations; or their designee is responsible for determining the effect of proposed outdoor laser operations on air traffic control operations and issuing a consolidated letter of objection or non–objection.

b. The regional/service area office Flight Standards Division is responsible for providing a safety analysis to determine any potential effect that a proposed outdoor laser operation would have on flight crews.

c. The office of Aerospace Medicine is responsible for providing information regarding the potential effects of laser beams on pilot vision.

29–1–5. DEFINITIONS

a. Afterimage. A reverse contrast shadow image left in the visual field after an exposure to a bright light that may be distracting and disruptive, and may persist for several minutes.

b. Center for Devices and Radiological Health (CDRH). An office of the FDA concerned with enforcing compliance with the Federal requirements for laser products including laser light shows.

c. Demonstration Laser. Any laser product designed or intended for purposes of visual display of laser beams, for artistic composition, entertainment, and/or advertising display (Reference 21 CFR 1040.10(b) 13). Any demonstration laser in excess of 5 mW requires a variance from the CDRH.

d. Divergence. The increase in diameter of the laser beam with distance from the exit aperture. Divergence is an angular measurement of the beam spread, expressed in milliradians (mrad). In laser safety calculations, divergence is defined at the points where the irradiance is 37% of the peak irradiance.

e. Flashblindness. Generally, a temporary visual interference effect that persists after the source of illumination has ceased.

f. Visual Interference Level. A visible laser beam (normally with an irradiance less than the MPE) that can produce a visual response that interferes with the safe performance of sensitive or critical tasks by air crews or other personnel. This level varies in accordance with the particular zone where the laser is operating. "Visual interference level" is an generic term for critical level, sensitive level, or laser free level.

g. Flight Hazard Zones. Airspace areas specifically intended to mitigate the potential hazardous effect of laser radiation. See FIG 29-1-1, FIG 29-1-2, and FIG 29-1-3.

h. Glare. Obscuration of an object in a person's field of vision due to a bright light source located near the same line-of sight (e.g., as experienced with oncoming headlights).

i. Irradiance. Irradiance is a means of expressing the power of the beam per unit area, expressed in watts per centimeter squared (W/cm^2).

j. Laser. An acronym for light amplification by stimulated emission of radiation. A laser is a device that produces an intense, directional, coherent beam of visible or invisible light.

1. Continuous Wave (CW). The output of a laser which is operated in a continuous duration rather than a pulsed mode.

2. Repetitive Pulsed (RP). A laser with multiple pulses of radiant energy occurring in a sequence.

k. Laser Manufacturer. A term that refers to persons who make laser products, including those who are engaged in the business of design, assembly, or presentation of a laser light show.

l. Laser Operator. A laser operator should be a knowledgeable person present during laser operation who has been given authority to operate the laser system in compliance with applicable safety standards, subject to direction of the laser safety officer.

m. Laser Safety Officer (LSO). A designated person who has authority to monitor and enforce the control of laser hazards and affect the evaluation and control of laser hazards.

n. Safety Observer. A designated person who is responsible for monitoring the safe operation of a laser and who can immediately terminate the laser beam if necessary to ensure safety. Normally, a safety observer will view airspace in the vicinity of a laser beam to identify any potentially unsafe condition.

o. Local Laser Working Group (LLWG). A group that, when necessary, is convened to assist the service area office in evaluating the potential effect of laser beams on aircraft operators in the local vicinity of the proposed laser activity.

p. Maximum Permissible Exposure (MPE). The level of laser radiation to which a person may be exposed without hazardous effect or adverse biological change in the eye or skin. In general, MPE is expressed as mW/cm2 or mJ/cm2.

q. Nominal Ocular Hazard Distance (NOHD). The distance from the laser system beyond which the laser beam irradiance does not exceed the MPE for that laser.

r. Protection Distances. The minimum distance from the laser system beyond which the laser beams irradiance level does not exceed the following specific effective irradiance levels within the corresponding zones:

1. Laser Free Zone - $50nW/cm^2$;

2. Critical Zone - $5\mu W/cm^2$;

3. Sensitive Zone - $100\mu W/cm^2$;

4. Normal Flight Zone - MPE (2.6 mW/cm^2 for CW visible lasers).

s. Radiant Exposure - A means of expressing the pulse energy of the beam per unit area, expressed as J/cm^2.

t. Reflections. Reflections can be diffuse or specular.

1. Diffuse Reflection. A reflection from a surface, which is incapable of producing a virtual image such as is commonly found with flat finish paints or rough surfaces.

2. Specular Reflection. A mirror-like reflection that usually maintains the directional characteristics of the beam.

u. Terminated Beam. A laser beam that is blocked from entering navigable airspace.

v. Unterminated Beam. A laser beam that is directed or reflected into the navigable airspace.

w. Variance. Permission from FDA for a laser manufacturer and/or operator to deviate from one or more requirements of 21 CFR 1040 when alternate steps are taken to provide equivalent level of safety.

x. Visible Wavelengths. For the purpose of laser safety, the wavelengths of light that are visible (used for LFZ, CFZ, and SFZ calculations) range from 380 to 780 nanometers (nm).

FIG 29-1-1
Multiple Runway Laser Free Zone

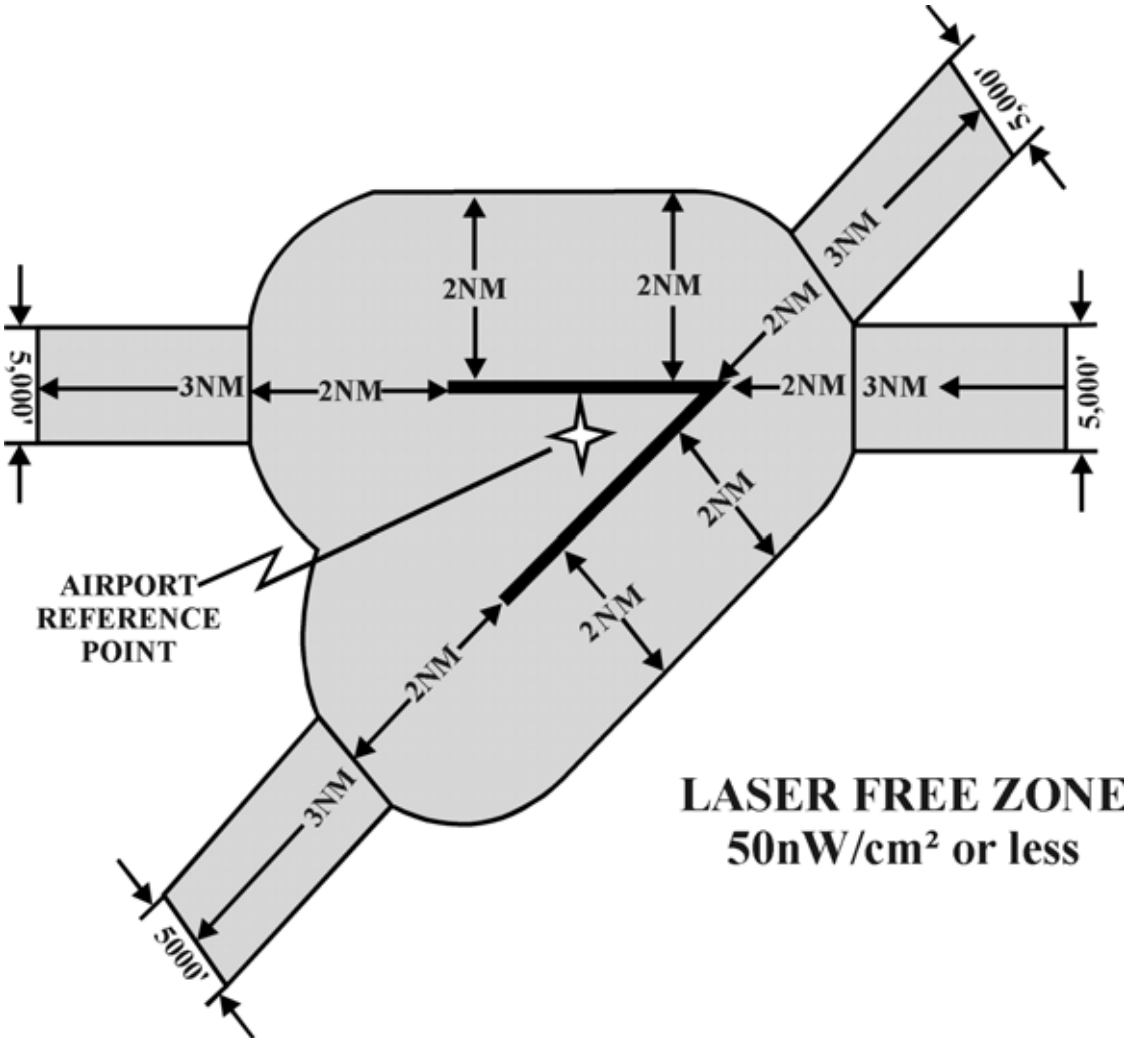
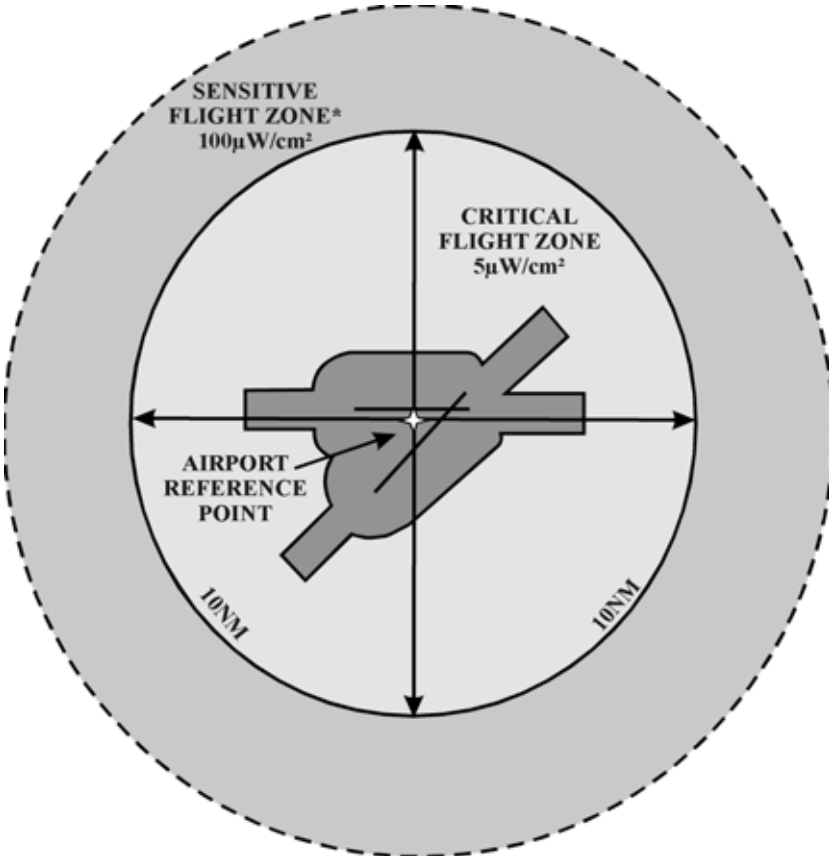


FIG 29-1-2
Airspace Flight Zones



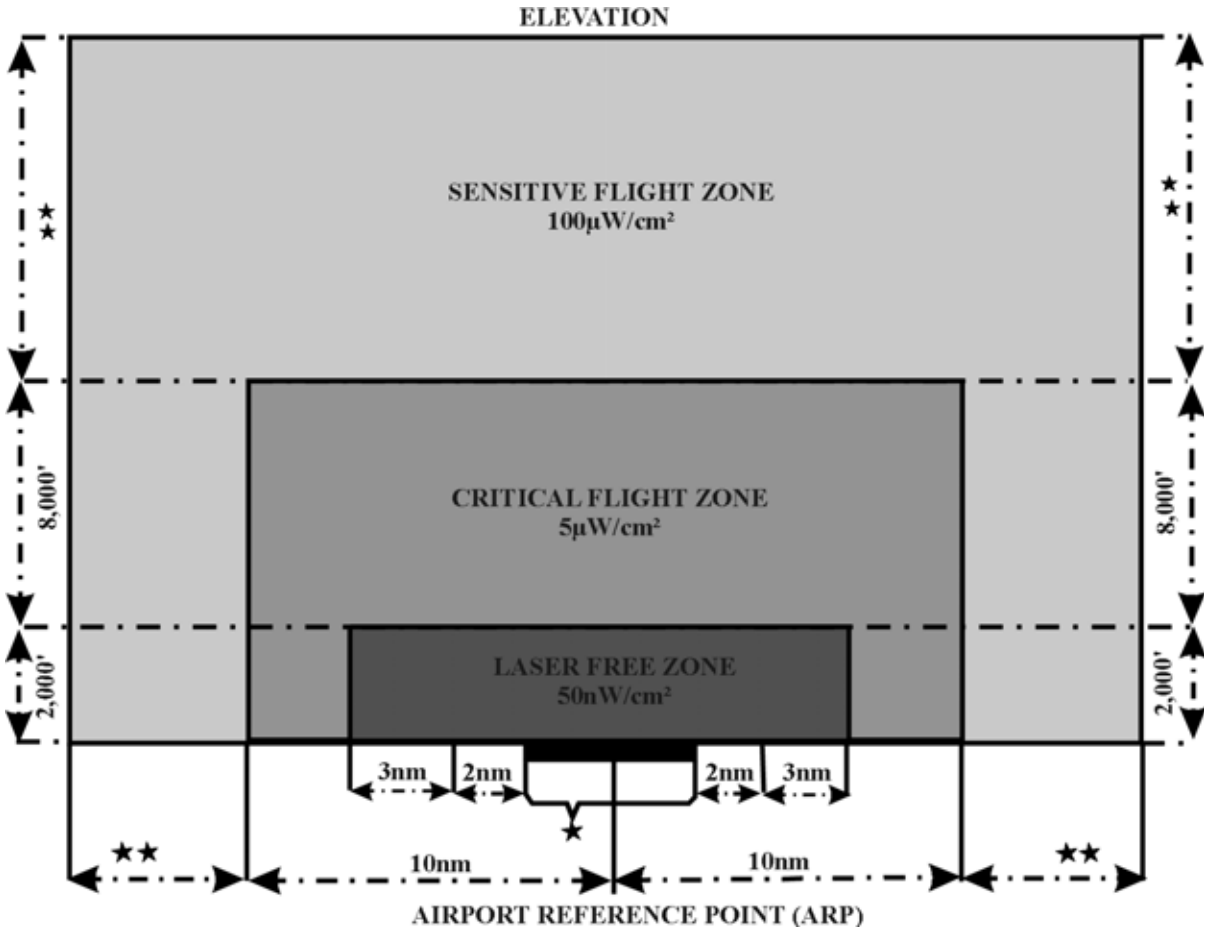
1. Laser Free Zone (LFZ). Airspace in the immediate proximity of the airport, up to and including 2,000 feet AGL, extending 2 NM in all directions measured from the runway centerline. Additionally, the LFZ includes a 3 NM extension, 2,500 feet each side of the extended runway centerline, of each usable runway surface, up to 2,000' AGL of each useable runway surface. The effective irradiance of a visible laser beam is restricted to a level that should not cause any visual distraction or disruption.

2. Critical Flight Zone (CFZ). Airspace within a 10 NM radius of the airport reference point, up to and including 10,000 feet AGL. The effective irradiance of a visible laser beam is restricted to a level that should not cause transient visual effects (e.g., glare, flashblindness, or afterimage).

3. Sensitive Flight Zone (SFZ). Airspace outside the critical flight zones that authorities (e.g., FAA, local departments of aviation, military) identify to be protected from the potential visual effects of laser beams.

4. Normal Flight Zones (NFZ). Airspace not defined by the Laser Free, Critical, or Sensitive Flight Zones. As with all the above zones, the NFZ must be protected from a visible or invisible laser beam that exceeds the MPE.

FIG 29-1-3
Airspace Flight Zones



* Runway length varies per airport. AGL is based on published airport elevation

** To be determined by regional/service area office evaluation and/or local airport operations.

Section 2. Evaluating Aeronautical Effect

29–2–1. AERONAUTICAL REVIEW

a. At a minimum the following items must be studied as part of any aeronautical review:

1. Location of the proposed laser operation.

2. Aircraft operations affected by the proposed operation.

3. Air traffic flows in the proposed area of the operation.

4. An analysis of adverse effect conducted by the ATC facility having control over the affected airspace.

5. A safety analysis conducted by the Flight Standards Division regarding the effects on flight crews.

6. For visible laser systems, plot the LFZ, CFZ, and SFZ (if applicable) for all potentially affected airports and evaluate any control measures, which may mitigate any adverse effect.

7. The effective irradiance levels listed below must not be exceeded in the corresponding zones.

(a) A laser–free zone is limited to 50nW/cm^2 or less.

(b) A critical flight zone is limited to 5μW/cm^2 or less.

(c) A sensitive flight zone is limited to 100μW/cm^2 or less.

(d) A normal flight zone, as well as the above zones, is limited to the MPE or less.

EXCEPTION–
The LFZ, CFZ, and SFZ need only be considered for visible laser systems. Further, when control measures (e.g., safety observers) mitigate all hazards or other issues raised by the aeronautical review, irradiance levels may exceed the above levels.

b. Consult FDA/CDRH personnel for technical advice. (e.g., regarding repetitively pulsed laser calculations)

c. Scientific/research lasers in accordance with 21 CFR Section 1010.5 may be exempt from Title 49 and, in addition, may not be able to comply with the above procedures. Regardless of whether or not a proponent is exempt from the provisions, a proposal is still reviewed using the above procedures.

29–2–2. LOCAL LASER WORKING GROUP (LLWG)

When necessary, the service area office may convene a LLWG to assist in evaluating proposed laser operation.

a. The service area office must forward information on a proposed outdoor laser operation to the local air traffic facility.

b. The local air traffic facility must act as the focal point for the LLWG. Other participants may include, but not limited to, representatives from the ARTCC, ATCTs, airport management, airspace users, city/county/state officials, other government agencies, military representatives, qualified subject experts, laser manufacturers, etc.

c. The LLWG must resolve issues regarding local laser operations and forward recommendations to the service area office as soon as practicable.

29–2–3. PROTECTION DISTANCE CALCULATIONS

a. The laser system power range table (TBL 29–2–1) provides the applicable protection distances along the axis of the laser beam with a 1mrad divergence. This table must not be used to determine the protection distances for repetitively pulsed (RP) lasers. Proponents are required to resolve RP laser system calculations with the FDA or laser manufacture before submitting a completed Laser Configuration Worksheet to the FAA.

b. TBL 29–2–2 lists sine and cosine values to be used in determining the vertical and horizontal distances to be protected from the laser source. The distances obtained from TBL 29–2–1 are multiplied by these values to determine the appropriate vertical and horizontal distances to be protected based on the minimum and maximum vertical angles. Differences in site/ground elevations should be considered.

c. The vertical component of the protection distance may be determined by multiplying the laser distance from TBL 29–2–1 by the sine of the maximum elevation angle of the laser beam from

TBL 29–2–2. For example, vertical component = protection distance x sine of the maximum elevation angle.

d. The horizontal component of the protection distance may be determined by multiplying the laser distance from TBL 29–2–1 by the cosine of the minimum elevation angle of the laser beam from TBL 29–2–2. For example, horizontal component = protection distance x cosine of the minimum elevation angle.

e. Do not reduce calculated distances for correction factor techniques unless validated by FDA/CDRH.

f. All distances must be rounded up to the next 100–foot increment. See example problems 1, 2, and 3 that follow the Vertical and Horizontal Component Table, TBL 29–2–2.

29–2–4. CONTROL MEASURES

Physical, procedural, and automated control measures may be used to ensure that aircraft will not be exposed to levels of illumination greater than the respective maximum irradiance levels established for the various protected zones.

a. Physical beam stops at the system location or at a distance may be used to prevent laser light from being directed into protected zones.

b. The beam divergence, azimuth, elevation, and output power may be adjusted to meet appropriate irradiance levels.

c. Beam direction should be specified by giving bearing in the azimuth scale 0 – 360 degrees and elevation in degrees ranging from 0 – 90 degrees, where zero degrees is horizontal and +90 degrees is vertical. Bearings shall be given in both true and magnetic north.

d. Manual operation of a shutter or beam termination system can be used in conjunction with safety observers. Observers must have an adequate view of the airspace surrounding the beam's paths to a distance appropriate to the affected airspace.

e. Scanning of a laser system that is designed to automatically shift the direction of the laser beam can be used. However, scanning safeguards must be found to be acceptable by the FDA and the FAA. The FDA recommendation must be included in the proposal to the FAA.

NOTE–
Scanning may reduce the level of illumination; however, it may also increase the potential frequency of an illumination.

f. Any automated system designed to detect aircraft and automatically terminate the beam, redirect the beam, or shutter the system, must be reviewed and found to be acceptable by the FAA before the use of the device may be accepted as a control measure.

TBL 29-2-1

LASER SYSTEM POWER RANGE TABLE
CW Laser Beam Divergence: 1 Milliradian
*** NOT TO BE USED WITH RP SYSTEMS**

W/cm^2 --->	2.60E-03	1.00E-04	5.00E-06	5.00E-08	
CW Laser Power (W)	Nominal Ocular Hazard Distance NOHD (ft)	Sensitive Zone Exposure Distance SZED (ft)	Critical Zone Exposure Distance CZED (ft)	Laser-Free Zone Exposure Distance LZED (ft)	LZED (nm)
1	726	3701	16553	165527	27
2	1026	5234	23409	234090	39
3	1257	6411	28670	286700	47
4	1452	7403	33105	331053	54
5	1623	8276	37013	370129	61
6	1778	9066	40546	405456	67
7	1920	9793	43794	437942	72
8	2053	10469	46818	468180	77
9	2178	11104	49658	496580	82
10	2295	11704	52344	523441	86
11	2407	12276	54899	548990	90
12	2514	12822	57340	573401	94
13	2617	13345	59681	596815	98
14	2716	13849	61934	619344	102
15	2811	14335	64108	641082	106
16	2903	14805	66211	662106	109
17	2993	15261	68248	682484	112
18	3080	15703	70227	702270	116
19	3164	16134	72151	721514	119
20	3246	16553	74026	740257	122
25	3629	18506	82763	827633	136
30	3976	20273	90663	906626	149
35	4294	21897	97927	979268	161
40	4591	23409	104688	1046882	172
45	4869	24829	111039	1110386	183
50	5133	26172	117045	1170450	193
55	5383	27449	122758	1227578	202
60	5623	28670	128216	1282163	211
65	5852	29841	133452	1334518	220
70	6073	30967	138489	1384895	228
75	6286	32054	143350	1433502	236
80	6492	33105	148051	1480515	244
85	6692	34124	152608	1526079	251
90	6886	35113	157032	1570323	258
95	7075	36076	161335	1613353	266
100	7259	37013	165527	1655266	272
105	7438	37927	169614	1696143	279
110	7613	38819	173606	1736057	286
115	7784	39692	177507	1775075	292
120	7952	40546	181325	1813253	298

125	8116	41382	185064	1850643	305
130	8276	42201	188729	1887293	311
135	8434	43005	192324	1923245	317
140	8589	43794	195854	1958537	322
145	8741	44569	199320	1993204	328
150	8890	45331	202728	2027278	334
155	9037	46081	206079	2060789	339
160	9182	46818	209376	2093764	345

* The FDA may be contacted to validate data for repetitively pulsed lasers.

NOTE–
[1] To determine the NOHD for lasers having divergence values other than 1.0 mrad use the formula – NOHD @ 1.0 mrad ÷ mrad (actual divergence) = NOHD.

EXAMPLE–
Power 40W, Divergence 7 mrad
NOHD 40W @ 1.0 mrad = 4,591
4,591 ÷ 7 = 656 NOHD. Rounded up to nearest hundred feet = 700 feet.
(A beam divergence of .7 would make this calculation 7,000 feet)

* The proponent validates repetitive pulsed information with the FDA and submits a completed laser configuration worksheet.

TBL 29-2-2

VERTICAL AND HORIZONTAL COMPONENTS

VERTICAL COMPONENT

Maximum Elevation Angle	Sine (vertical component multiplier)
90	1.0000
85	.9962
80	.9848
75	.9659
70	.9397
65	.9063
60	.8660
55	.8192
50	.7660
45	.7071
40	.6428
35	.5736
30	.5000
25	.4226
20	.3420
15	.2588
10	.1737
5	.0872
0	.0000

HORIZONTAL COMPONENT

Minimum Elevation Angle	Cosine (horizontal component multiplier)
0	1.0000
5	.9962
10	.9848
15	.9659
20	.9397
25	.9063
30	.8660
35	.8192
40	.7660
45	.7071
50	.6428
55	.5736
60	.5000
65	.4226
70	.3420
75	.2588
80	.1737
85	.0872
90	.0000

LASER PROBLEM SOLUTIONS

EXAMPLE PROBLEM 1:
Laser output power = 15 watts
Laser beam divergence = 1.0 mrad
Find: Laser protection distances:
1. Find TBL 29-2-1 at 15 watts in the Laser Output Power column.
2. Proceed horizontally and read: NOHD of 2,811 feet, CFZ of 64,108 feet, SFZ 14,335 feet.
Answer: (with rounded up distances): NOHD 2,900 feet, CFZ 64,200 feet, SFZ 14,400 feet.

EXAMPLE PROBLEM 2
Laser output = 18 watts
Laser beam divergence = 1.0 mrad
Maximum elevation angle 60°
Minimum elevation angle 20°
Find:Vertical and horizontal distances to be protected:
1. Laser distance (from TBL 29-2-1) = 3,080 feet.
2. Sine of 60° maximum elevation angle (from TBL 29-2-2) = 0.8660.
3. Find altitude by multiplying 3,080 feet by 0.8660 = 2,667 feet.
4. Cosine of 20° minimum elevation angle (from TBL 29-2-2) = 0.9397
5. Find horizontal distance by multiplying 3,080 feet by 0.9397 = 2,894 feet.
Answer: Minimum required protected airspace is 2,700 feet vertically and 2,900 feet horizontally from the laser source.

EXAMPLE PROBLEM 3
Power = 25 watts
Laser NOHD at 1 mrad = 3,629 feet.
Beam Divergence = .7 mrad
Find: Actual NOHD
1. Find actual NOHD by dividing the NOHD at 1 mrad divergence (3,629 feet) by actual divergence (.7 mrad).
2. 3629 feet. ÷ .7 = 5184 feet.
Answer: NOHD 5,200 feet (rounded up)

Section 3. Aeronautical Determinations

29–3–1. FINDINGS

a. All outdoor laser operation determinations must be issued in writing.

b. Determinations rendered must either be objectionable or non–objectionable. A non–objectionable letter of determination (LOD) issued by the FAA is not permission nor an endorsement of the outdoor laser operation.

c. Determinations may be telephoned to the proponent and to the CDRH; however, each must be followed up with a written response.

d. Send a copy of LODs to the military liaison offices, affected ATC facilities, (when convened, the local laser group), and the CDRH in Rockville, Maryland.

e. Forward a copy of objectionable LODs to Airspace and Rules.

29–3–2. CONTENT OF DETERMINATIONS

a. As a minimum, letters of non–objection determinations must:

1. Include a listing of any provisions, conditions, or limitations.

2. Inform the proponent not to incorporate change(s) into the proposed activity once a non–objection LOD has been issued unless the service area office issues a non–objection to the change in writing.

3. Stipulate a requirement that proponents must notify the FAA designated representative of:

(a) Any changes to show "start/stop" times or cancellation 24 hours in advance.

(b) The laser light activity 30 minutes before start time.

4. Include a statement advising the proponent that the determination is based on FAA requirements only and final approval must also be obtained from the appropriate authority.

5. Specify that the FAA determination does not relieve the sponsor or operator of compliance responsibilities related to laws, ordinances or regulation of any federal, state, or local government.

6. Include the name and telephone number of the ATC facility to be notified and other information as deemed appropriate.

7. Indicate NOTAM requirements.

b. An objectionable LOD shall inform the proponent:

1. That a determination of objection is being issued.

2. Why the proposal does not satisfy FAA requirements.

3. That supplementary information may be submitted for reconsideration.

c. If negotiations to resolve any objectionable effects are not successful, the determination of objection stands.

29–3–3. PUBLICATION OF LASER OPERATIONS IN THE NAS

a. When a determination by the service area office of non–objection is issued, consider the time of duration (in days) of the laser activity.

b. The service area office must review laser operations for continued publication bi–annually.

c. Service area office must forward to Aeronautical Information Management information for publication as follows:

1. Class II Publications. Temporary laser operations at a specific location that will exceed 56 days but less than 180 days.

NOTE–
Publication in the Class II publication is dependent on established cutoff dates.

2. Appropriate aeronautical charts. Laser operations at a specific location that will exceed 180 days or are considered permanent.

3. Airport Facility Directory (AFD). Publish in the AFD laser operations that will exceed 180 days at a specific location.

Section 4. Notices to Airmen

29–4–1. ISSUANCE OF NOTICES TO AIRMEN (NOTAM)

a. To enhance safety of flight, the appropriate service area office shall prepare the NOTAM and notify the United States NOTAM Office Facility via telephone (703) 904–4557, or fax (703) 904–4437 within seven days of a proposed laser activity to alert pilots of such activities.

b. The NOTAM will emphasize the potential hazardous effects and other related phenomena that may be encountered by laser light emissions. Include facility to notify, and any other information deemed appropriate.

c. The service area office may further delegate notification responsibility to the respective Flight Service Station, and/or Air Traffic Facility.

d. When deemed appropriate, the service area office may direct the proponent to activate or cancel the FDC NOTAM, specific to the laser activity. The service area office shall explain the responsibility of the proponent concerning appropriate NOTAM actions.

e. The service area office is responsible for canceling the NOTAM except as noted above in paragraph 29–4–1.c. and d.

Chapter 30. High Intensity Light Operations

Section 1. General

30–1–1. PURPOSE

This chapter prescribes policy and guidelines for determining the potential effect of high intensity light activities on users of the NAS.

30–1–2. POLICY

Consideration shall be given to commercial, general aviation requirements as well as to the public right of "freedom of transit" through the airspace. Accordingly, while a sincere effort shall be made to negotiate equitable solutions to conflicts over the use of the NAS for non–aviation purposes, aviation must receive primary emphasis.

30–1–3. AUTHORITY

The provisions of 49 U.S.C. Sub Title VII, grants the Administrator the authority for aviation safety. That authority has been delegated to air traffic and Flight Standards with the associated responsibilities to evaluate activities that can potentially affect aviation safety in the NAS.

30–1–4. DEFINITIONS

The terms used in this chapter are defined below:

a. High Intensity Light (HIL). A lighting system other than laser light designed to penetrate the navigable airspace.

b. HIL Manufacturer. A term that refers to persons who manufactures high intensity light emitting products. This includes those who are engaged in the business of design, assembly, or presentation of a HIL activity.

c. HIL Operator. A knowledgeable person present during HIL operation who is responsible for ensuring compliance with applicable safety standards; monitoring the safe operation of a HIL operation; and can effect termination of the HIL promulgation in the event an unsafe condition becomes apparent.

Section 2. Aeronautical Review/Determinations

30–2–1. EVALUATION OF AFFECTED AIRSPACE AREAS

The following guidelines should be used in evaluating proposals received for HIL activities in the NAS. Refer to airspace zones described in chapter 29 to assist in evaluating those areas in close proximity to an airport. Reduction in the size of a specific zone may be considered when the aeronautical study to assure users of the NAS will not be effected.

30–2–2. AERONAUTICAL STUDY

a. Determination of the potential overall airspace effected by HIL operations shall be conducted by the service area office. The aeronautical study, as a minimum, should include the following, as appropriate:

1. Quantities of traffic affected.

2. Location(s) of aviation activity that may be affected, including areas where low–level air traffic operations may occur (e.g. helicopter operations, Flights for Life).

3. Control jurisdiction (e.g., ATC facility).

4. Coordination with Flight Standards, and local officials, as necessary (e.g., FAA air traffic facilities, appropriate military representatives, and airport managers).

b. Observers, when required, shall be able to see the full airspace area surrounding the HIL beam's paths to a distance appropriate to the affected airspace.

c. Require the control measures that ensure aircraft will not be exposed to HIL illumination that has the potential to affect a pilot in the performance of their respective duties.

30–2–3. CONTENT OF DETERMINATION

a. After completing an aeronautical study, the service area office shall prepare a Letter of Determination (LOD). Follow the guidelines published in paragraph 29–3–2 to formulate the content of the LOD. Forward a copy of the determination to the proponent of the activity, and when deemed necessary, to all affected ATC facilities, airport managers, and military liaison offices.

b. At the discretion of the service area office, issue a NOTAM to alert pilots of known HIL activity. The service area office may delegate notification responsibility to the respective automated flight service stations/flight service stations, other air traffic facilities, or require the proponents to activate or cancel the local NOTAM involving the HIL operation through that appropriate facility.

Chapter 31. Rocket and Launch–Vehicle Operations

Section 1. General

31–1–1. PURPOSE

This chapter provides guidance, policies, and procedures for processing requests for rocket and launch vehicle operations in the NAS.

31–1–2. AUTHORITY

a. Public Law (PL) 98–575. Congress enacted PL 98–575, Commercial Space Launch Act of 1984, codified at 49 USC subtitle IX, Chapter 701, with its purpose to:

1. Promote economic growth and entrepreneurial activity through utilization of the space environment for peaceful purposes.

2. Encourage the U.S. private sector to provide launch vehicles and associated launch services by simplifying and expediting the issuance or transfer of launch licenses and by facilitating and encouraging the utilization of Government–developed space technology.

3. Designate an executive department to oversee and coordinate the conduct of launch operations, to issue and transfer launch licenses authorizing such activities, and to ensure that public health and safety, foreign policy, and national security interests of the United States are satisfied.

b. Part 101 prescribes rules governing the operation in the United States of moored balloons, kites, unmanned rockets, and unmanned free balloons.

Part 400 establishes procedures and requirements regarding the authorization and supervision of all space launch activities conducted from within U.S. territory or by U.S. citizens. The part 400 regulations, however, do not apply to amateur rocket activities or to space launch activities carried out by the U.S. Government on behalf of the U.S. Government.

31–1–3. POLICY

It is air traffic policy that all rocket launch vehicle proposals that seek a waiver of part 101 requirements, and that are expected to reach an altitude higher than 25,000 feet above ground level, and those rockets/launch–vehicles that are categorized as "amateur" or licenseable under part 400 shall be forwarded to Airspace and Rules for headquarters review. Airspace and Rules will coordinate the proposals with AST and submit a waiver recommendation to the concerned service area office.

31–1–4. RESPONSIBILITY

a. Air traffic continues to have the waiver authority for certain categories of amateur rockets, and is responsible for integrating all rocket and launch–vehicle operations into the NAS. Additionally, AST is responsible for issuing licenses for non–Federal government space launches, launch sites, space reentry, reentry sites and their associated operations. Therefore, communication and coordination between AST and air traffic is paramount. Since the AST line of business is not currently represented at the regional headquarters level, the required AST coordination must occur at the FAA Headquarters level.

b. Airspace and Rules is air traffic's point of contact for such activities and is directly responsible for coordinating certain proposals regarding airspace operations and procedures with AST.

c. The Licensing and Safety Division, AST–200, within the Office of Commercial Space Transportation is responsible for the licensing of launch sites and those launch vehicle operations that fall under part 400. Additionally, any required waivers and/or exemptions to part 400 will also be issued by AST–200.

31–1–5. ENVIRONMENTAL IMPACT ANALYSIS

a. Launch site and reentry actions are subject to NEPA Order 1050.1, Policies and Procedures for

Considering Environmental Impacts, and other applicable regulations, public laws, and statutes.

b. All NEPA requirements associated with licensed commercial space transportation activities will be addressed by AST as part of the site licensing process.

31-1-6. DEFINITIONS

As used in this chapter, the following terms are defined below:

a. Unmanned rockets. Those rocket operations conducted by private citizens or model rocket clubs for the sole purpose of pursuing and enjoying a hobby. These types of rockets are categorized as either small or large based on their characteristics as described below.

1. Small model/amateur rockets. Rockets are generally small in size, and have a short propellant burn time (less than 15 seconds). Usually, these rockets have trajectories and flight paths that can be easily monitored by the operator and/or spotters to ensure the safety provisions contained in Section 101.23 are met.

2. Large model/amateur rockets. Rockets that are normally larger, and have greater propellant burn times (equal to or greater than 15 seconds). These rockets will most always enter controlled airspace requiring a waiver to part 101.

b. Other unmanned rockets. Those rockets or missiles that use more than 125 grams of propellant, or weigh more than 1,500 grams, including the propellant, must comply with all the requirements of part 101, Subpart C – Unmanned Rockets, and may require a license (or exemption) to operate under part 400 depending on other rocket characteristics.

c. Launch Vehicles. Launch vehicles built to operate, or place any payload, in outer space, low earth orbit, or a sub-orbital trajectory (equal to or greater than 15 seconds). Part 400 requires that operations of launch vehicles be licensed by AST.

Section 2. Processing of Proposals

31-2-1. REGIONAL/SERVICE AREA OFFICE REVIEW

a. The regional/service area office responsible for the launch's geographical area shall manage proposals for unmanned rocket and space launch activities. When a proposal overlaps regional/service area office geographical jurisdictions, the affected service area office shall coordinate to determine which office will serve as the lead region/service area office for processing the proposal. Coordination between regions/service area offices is also required when the affected geographical area and the ATC controlling agency are under the jurisdiction of different regional/service area offices.

b. Concerned regions/service area offices shall coordinate with the responsible military representative and ensure that all affected ATC facilities review the proposal and provide input to the aeronautical review, as required.

c. If the proposal requires FAA Headquarters review, the package shall include documentation of regional/service area office coordination, affected ATC facility comments, and any other information pertinent to the case.

d. As part of the rocket/launch-vehicle operation review process performed by the concerned service area office, or those facilities delegated waiver authority, coordination shall be effected with the Central Altitude Reservation Function (CARF), an element of the David J. Hurley Air Traffic Control System Command Center (ATCSCC). This coordination is to ensure that any system impact(s) that may result from the requested operation are identified and resolved before a rocket/launch-vehicle operation waiver approval is finalized.

31-2-2. AERONAUTICAL REVIEW

The following information should be used as a guide for the conduct of an aeronautical review of rocket and launch-vehicle operations.

a. An aeronautical review of any rocket or launch-vehicle operation shall be conducted to determine if there are aeronautical impacts to be considered or resolved.

b. Rocket and launch-vehicle operations shall be categorized based on their operational characteristics and purpose of flight. These characteristics include, but are not limited to, size, total weight, propulsion, rocket motor design, and hardware design materials. The characteristics of the rocket/launch-vehicle will determine which parts of 14 CFR provisions will govern it.

c. The criteria for parts 101 and 400 rockets/launch-vehicles are described below.

1. Uses 4 ounces or less of slow-burning propellant.

2. Is made of paper, wood, or breakable plastic, containing no substantial metal parts - an amount necessary for structural integrity.

3. Weighs 16 ounces or less including the propellant.

4. Is operated in a manner that does not create a hazard to persons, property, or other aircraft.

d. If any of the above criteria are exceeded, then part 101 applies and subpart C, Unmanned Rockets, must be adhered to. Rockets will remain captured under part 101 until one of the criteria listed for part 400 is triggered.

e. Part 400. Any rocket or launch vehicle that meets any of the following criteria will be reviewed by AST under part 400 provisions. Such provisions are that the rocket:

1. Motor(s) exceed total impulse of 200,000 pound-seconds.

2. Motor(s) have a total burning time or operating time of 15 seconds or more.

3. Has a ballistic coefficient (gross weight in pounds divided by the frontal area of the rocket vehicle) of 12 pounds or more per square inch.

NOTE-
1. *Part 101 rocket launch proposals that are a part of a competition for prize money will be reviewed by AST. Those proposals shall be sent to Airspace and Rules for processing.*

2. *Part 400 rockets/launch-vehicles will also exceed the criteria addressed in paragraph a., part 101 rockets. Therefore, waivers to part 101 will also be required.*

31-2-3. HEADQUARTERS REVIEW

a. It is air traffic policy that proposals for rockets that are expected to reach altitudes higher than 25,000 feet above ground level and rockets/launch-vehicles categorized as "amateur" or licenseable under part 400, be forwarded to Airspace and Rules for FAA Headquarters review. Airspace and Rules will coordinate the proposal with AST-200, and submit a waiver recommendation to the service area office.

b. The package submission to FAA Headquarters should include the following (as applicable):

1. A transmittal memorandum containing a brief overview of the proposal and the region's/service area office's recommendation for headquarters action.

2. A summary of any amendments made to the original proposal in response to negotiations to mitigate impacts, etc.

3. A sectional aeronautical chart depicting the final boundaries of the proposed airspace area.

4. A copy of the proponent's launch request correspondence and proposal package.

5. A copy of the aeronautical review and the service area office recommendation.

6. Copies of pertinent correspondence from other FAA offices (e.g., Flight Standards, Airports, adjacent service area office, affected ATC facilities).

7. Any other information that should be considered by FAA Headquarters in making a final determination on the proposal (e.g., rocket/launch-vehicle propulsion, physical dimensions and weight, total impulse and burn time of the motor(s), launch site location, planned flight path/trajectory, including staging and impact locations).

c. Airspace and Rules will coordinate the proposal with AST-200.

d. Upon completion of the AST-200 review, the proponent's package, including the part 400 waivers, exemptions, and/or licenses (if applicable), shall be returned to Airspace and Rules for distribution to the service area office. For the proposals that have received favorable determinations by FAA Headquarters, the service area office shall, in turn, issue the part 101 waiver and forward the completed package to the proponent.

31-2-4. CONTROLLING AGENCY

The FAA ATC facility having control jurisdiction over the airspace where the rocket/launch-vehicle is projected to enter shall be designated as the controlling agency. The controlling agency will be responsible for ensuring that any temporary airspace (e.g., TFRs, ALTRVs) is activated when the launch operations are imminent, including any applicable downrange and terminal airspace.

31-2-5. SUITABLE AIRSPACE FOR LAUNCH OPERATIONS

Amateur rocket launches that will not enter controlled airspace do not require prior notice to the FAA. However, those proponents must ensure the safety of persons and property on the ground and of aircraft flying nearby. Conversely, rockets and launch-vehicles that will enter controlled airspace must be integrated with other users of the NAS and be segregated from nonparticipating aircraft to ensure safety. This shall be accomplished by requirements to the waivers to part 101.

a. Amateur rockets may not require sterile airspace. In these cases, the proponent and/or the service area office must:

1. Ensure that the activity is confined within the launch site area.

2. Cease activity immediately upon observation or notification that a nonparticipating aircraft is approaching the area. Surveillance by ground observers shall be continuously maintained immediately prior to and during the time that the activity is in progress to ensure adequate coverage of the required area. If required by the service area office, observers shall have real-time communication capability (radio, cellular phones, etc.) with the FAA facility to ensure a cease-fire can occur immediately. The activity may resume only after the nonparticipating aircraft are clear of the area and will not interfere with launch operations.

3. Ensure that adequate safety precautions are in place for each launch site. Specific precautionary measures established to protect nonparticipating

aircraft, persons, and property will depend on various factors such as the type of activity, terrain, launch site dimensions, etc.

b. Existing SUA may be used only if permission has been granted by the using agency or controlling agency, as appropriate. The responsibility is on the proponent to obtain the required permission.

c. Temporary flight restrictions (TFR) for space flight operations (SFO) as described in Section 91.143 may be used to provide protection from potentially hazardous situations for nonparticipating aircraft and rocket/space launch operations.

d. An altitude reservation (ALTRV) may be used but only to sterilize Class A airspace within which it operates. ALTRVs do not sterilize airspace below Class A airspace.

e. When sterile airspace is required for rocket and launch–vehicle launch operations, the dimensions and times of use of that airspace shall be the minimum required to contain the proposed activities, including required safety zones. When it is determined that the airspace is no longer required, the service area office, using agency, or the appropriate military authority providing SUA shall initiate action to release that airspace to the NAS.

f. Launch sites should be located in areas that will minimize the impact on nonparticipating aircraft and ATC operations. To the extent practical, plan launch sites, and rocket/launch–vehicle trajectories to avoid airways/jet routes, major terminal areas, and known high–volume VFR routes.

Section 3. Determinations

31–3–1. REGIONAL/SERVICE AREA OFFICE DETERMINATIONS

a. The service area office (or designated representative) has the authority, in accordance with FAAO 1100.5, FAA Organization – Field, to grant individual waivers to part 101. FAA Form 7711–1 waivers shall contain, as a minimum:

1. The section of part 101 that is being waived.

2. The name, address, telephone number of the applicant.

3. Activities (e.g., types of rockets) approved for launch.

4. The location of the approved launch site in coordinates.

5. Approved dates and times of launch operations.

6. Advance notification requirements to the appropriate FAA facilities and, if desired, cancellation and termination notification.

7. Approved projected altitudes of the rocket(s).

8. Other provisions in part 101 may be included at the discretion of the service area office.

9. Any other requirements deemed necessary for local operations.

b. The service area office may suspend or revoke a waiver whenever a question arises about the safety of the operation, compliance with safety precautions or conditions of approval, or if unforeseen impact on aeronautical operations occurs.

31–3–2. NOTAM

a. NOTAMs issued for space launch and reentry operations, 14 CFR Section 91.143, will be processed as usual.

b. The NOTAM shall include the launch site description, effective dates and times, and a chart depicting the area boundaries. It should also include a brief narrative describing the launch scenario, activities, numbers and types of rockets/launch–vehicles involved, and the availability of in–flight activity status information for nonparticipating pilots. Information regarding ALTRVs used in conjunction with TFRs may also be addressed.

c. If a launch site will be used on a routine, basis, the service area office may consider charting the TFR on the applicable sectional aeronautical chart.

Chapter 32. Environmental Matters

Section 1. General Information

32–1–1. PURPOSE

This section provides guidance and establishes policy and procedures to assist air traffic personnel in applying the requirements of FAAO 1050.1E, Environmental Impacts: Policies and Procedures, to proposed air traffic actions. The guidance in this chapter will assist air traffic personnel in determining the level of environmental study appropriate for a proposed action and in preparing the required environmental documentation.

The policies and procedures set forth in this chapter are intended to supplement the requirements of FAAO 1050.1E and other Department of Transportation and FAA directives.

Further, this chapter outlines the approach for considering environmental issues and helps reduce the complexity of the review process, while ensuring that the environmental process associated with proposed air traffic actions is thoroughly and properly documented.

32–1–2. POLICY

It is air traffic policy to use an interdisciplinary approach to assure compliance with all environmental laws and regulations. This policy requires that all projects be reviewed as early as possible to determine if there is the potential for impact to the quality of the human environment. All units of the Air Traffic Terminal, En Route and Oceanic, and System Operations Service Units shall adhere to the requirements in FAAO 1050.1E.

In addition, all units shall comply with the guidelines and directions detailed in this chapter whenever reviewing regulatory and nonregulatory airspace actions.

32–1–3. BACKGROUND

a. FAAO 1050.1E establishes policies and procedures and assigns responsibility for assuring FAA compliance with the National Environmental Policy Act of 1969, as amended (NEPA), the implementing regulations issued by the Council on Environmental Quality (CEQ) (40 CFR parts 1500–1508), the Department of Transportation (DOT) Order 5610.1, FAAO 1050.1E, and other related statutes and directives.

b. The complexity of environmental issues associated with some air traffic activities necessitates a systematic and uniform approach to the environmental review process. This process must assess all impacts, as well as provide the data for preparing the necessary documentation.

c. FAAO 1050.1E provides the overall procedures and guidance for the FAA's environmental responsibilities. It is the intent of this chapter to complement, and not repeat in its entirety, what is already contained in FAAO 1050.1E. However, there are issues addressed in FAAO 1050.1E that require further detail for air traffic or additional emphasis to ensure they are properly addressed.

This chapter is designed to address these unique actions (i.e., special use airspace proposals) and provide the additional detail necessary for air traffic to conduct an adequate environmental review.

32–1–4. DELEGATION OF AUTHORITY

The Approving Official for Environmental Assessments (EAs), Findings of No Significant Impact (FONSIs) and Environmental Impact Statements (EISs) is the FAA official with signature authority for these documents. The FAA official with signature authority to approve a Record of Decision (ROD) is the decision–maker (see Order 1100.154A, Delegation of Authority).

a. The air traffic Facility Manager has signature authority for memoranda related to administrative actions listed in FAAO 1050.1E, paragraph 200e(4) and advisory actions discussed in FAAO 1050.1E, paragraphs 200e(1) and 301.

b. The Air Traffic Organization Terminal and En Route and Oceanic Operations Service Area

Directors have signature authority for Categorical Exclusions (CATEXs), EAs, FONSIs, EISs, and RODs which are exclusively within the scope of a single Service Area, and may delegate this authority to a Manager within that Service Area. For Special Use Airspace (SUA) actions that require approval at the Headquarters level, the associated environmental document also requires approval and signature at the Headquarters level.

The Terminal Service Area is responsible for air traffic NEPA compliance for proposed actions within the jurisdiction of a terminal Air Traffic Control (ATC) facility.

The En Route and Oceanic Service Area is responsible for air traffic NEPA compliance for proposed actions not associated with an ATC terminal facility. Additionally, the En Route and Oceanic Service Area will be designated as the point of contact for the establishment or modification of SUA or Military Training Routes (MTRs) when requested by another Federal agency.

When a proposed action requires involvement by both the Terminal and En Route and Oceanic Service Area, the Terminal Service Area will be the lead entity for NEPA compliance.

c. The Terminal and/or En Route and Oceanic Service Unit Vice Presidents have signature authority to sign EAs, FONSIs, EISs, and RODs that are beyond the scope of authority of a single Service Area.

d. The System Operations Airspace and AIM, Environmental Programs Group is responsible for coordinating environmental processes that cross Service Area boundaries.

32-1-5. RESPONSIBILITIES

The order of delegated authority for air traffic environmental processes is as follows:

a. System Operations Service Unit, System Operations Airspace and AIM, Environmental Programs Group. The Environmental Programs Group has been delegated authority to direct and implement environmental policy and procedures for air traffic actions. It shall design and initiate training programs to educate air traffic personnel in Headquarters, in the Terminal and En Route and Oceanic Service Areas and in air traffic field facilities on environmental laws, regulations, policies, and processes related to the implementation or revision of air traffic airspace and procedures.

The Environmental Programs Group shall direct and implement training for air traffic Environmental Specialists in the use of noise modeling tools (see subparagraph 32-1-5.b., Terminal and En Route and Oceanic Service Units and Service Areas). Additionally, the Environmental Programs Group shall serve as the air traffic focal point for the Headquarters Environmental Network chaired by the Office of Environment and Energy (AEE).

b. Terminal and En Route and Oceanic Service Units and Areas. The Vice Presidents of the Terminal and En Route and Oceanic Service Units have the final responsibility for ensuring that all appropriate environmental documentation within their area of jurisdiction is prepared accurately and completely.

The Terminal and En Route and Oceanic Service Area Directors shall be responsible for designating at least one person to serve as the Environmental Specialist within their Service Area to address air traffic environmental issues. Funding for training associated with the duties of the Environmental Specialist shall also be the responsibility of the Service Area Director (or the Director's designee).

In addition, the Service Area Director (or their designees) shall appoint a representative to serve as the focal point for their Service Area on the AEE Environmental Network. The representative shall coordinate any environmental activity in their Service Area with the Environmental Programs Group, as appropriate.

The Service Area Directors shall ensure that the Environmental Specialist attends the following training, as soon as practicable after their appointment to the position: 1) FAA Academy Courses #12000, Introduction to NEPA Requirements and Procedures (or an equivalent); 2) FAA Academy Course #50019, Airspace and Procedures (or an equivalent); 3) Community Involvement; 4) Integrated Noise Model (INM); and, 5) Noise Integrated Routing System (NIRS). Recurrent training to supplement these minimums should be provided, as appropriate.

c. Terminal and En Route and Oceanic Service Area Environmental Specialist.

1. The Service Area Environmental Specialist is responsible for reviewing environmental studies and forwarding written concurrence to the air traffic facilities originating any environmental documentation.

2. The Service Area Environmental Specialist shall provide guidance in and oversee the preparation of the air traffic initial environmental reviews (see Appendix 4), CATEXs, EAs, and EISs for air traffic actions.

3. The Service Area Environmental Specialist is responsible for preparation of FONSIs and RODs for air traffic actions.

4. The Service Area Environmental Specialist shall coordinate requests for training by personnel within their Service Areas with the Environmental Programs Group.

5. The Service Area Environmental Specialist shall review NEPA documentation initiated by the Technical Service Areas. In addition, the Service Area Environmental Specialist shall cooperate with Airport District Offices or the Airport Division, within their jurisdiction, on the preparation of NEPA documents and Federal Aviation Regulation Part 150 studies undertaken by these offices. Review and comments by the Service Area Environmental Specialist shall be directed to those matters affecting the operation of the air traffic program. Comments shall be forwarded to the appropriate Airports Program office. The Service Area Environmental Specialist may also be requested to attend public meetings or hearings to provide support to the Facility, Service Area, or other lines of business convening the meeting or hearing.

6. The Service Area Environmental Specialist shall act as the FAA environmental point of contact when another Federal agency (e.g., Department of Defense (DOD)) requests FAA participation as a Cooperating Agency on air traffic or airspace actions.

NOTE-
When a request for Cooperating Agency status is received from the DOD related to Special Use Airspace (SUA), a copy of Appendix 2 and Appendix 3, (flow charts for SUA environmental and aeronautical non-rulemaking and rulemaking actions, respectively) along with a copy of Appendix 4 (a summary of FAA procedures for processing DOD SUA actions), will be attached to the response. A copy of the response, which will also identify the Service Area environmental point of contact, will be provided to the appropriate Service Area.

Additionally, the Service Area Environmental Specialist shall review other agencies' environmental documentation when applicable (e.g., when the FAA is considering adopting the environmental documentation).

7. In the case of SUA actions, the Service Area Environmental Specialist shall review environmental studies in accordance with paragraph 32-2-3.

8. The Service Area Environmental Specialists shall coordinate with each other and with their counterparts in other agencies, as appropriate.

d. Air Route Traffic Control Center (Center), Terminal Radar Approach Control (TRACON), and Air Traffic Control Tower (ATCT) Facility Managers.

1. Center, TRACON, and ATCT Facility Managers shall be responsible for ensuring that all appropriate environmental documentation for proposed air traffic actions within their jurisdiction is prepared accurately and completely. These managers are responsible for recommending to the Service Area Environmental Specialist the appropriate level of environmental study.

For actions other than Advisory or Emergency Actions (as defined in FAAO 1050.1E), the Facility Manager shall ensure that, at a minimum, the Air Traffic Initial Environmental Review (IER) (see Appendix 5) is prepared and submitted to the Terminal or En Route and Oceanic Service Area Environmental Specialist along with the proposed action (see paragraph 32-2-1.a., Determination of Appropriate Environmental Documentation). Under some limited circumstances, the Service Area Environmental Specialist may waive the need for completion of the IER by substituting an appropriate level of documentation (i.e., memorandum to the file).

The ATCT Manager should be involved early in the design phase of a proposal to ensure that a full understanding of tower/airport operations is included in the alternatives development. The ATCT Manager is responsible for ensuring that information provided to the Center, and/or TRACON is complete and accurate.

The Facility Managers shall also be responsible for designating at least one facility staff specialist within their scope of operations to address environmental issues. The facility specialist may be required to perform his/her environmental duties on a full-time or collateral basis. The decision about the need for a full-time Environmental Specialist at a field facility shall be made by the Facility Manager.

The Facility Managers shall ensure that the specialist who performs environmental duties on a full-time basis attends the training specified in paragraph 32-1-5.b., Responsibilities, and numbered 1., 2., and 3., as soon as practicable. The INM and NIRS training are also recommended, but are not mandatory.

In addition, where other facilities have, or are authorized to have, an operations specialist (i.e., Plans and Programs Specialist, Procedure Specialists), to conduct environmental activities as a collateral duty, it is recommended that these specialists attend the above-referenced training.

2. The Facility Managers shall ensure that their facility is represented at Airport Program and other line of business NEPA and Airport Program Part 150 process meetings where decisions rendered could affect air traffic operations in their area of responsibility. The Facility Managers shall cooperate fully with operating divisions, airport sponsors, and contract support personnel in the environmental review processes. Additionally, air traffic attendance at these meetings does not necessarily constitute air traffic endorsement or sanction of the proposed action.

NEPA documents and FAR Part 150 studies must receive thorough review at the facility level. Review and comments on Airport Program documents shall be directed to those matters that affect the operation of the air traffic program. Facility comments must be forwarded to the Service Area Environmental Specialist, not more than 15 days after receipt of the document or study. (Requests for longer periods of review shall be coordinated with the Service Area Environmental Specialist on an as-needed basis.) Prior to a facility submitting comments directly to other operating divisions, or airport sponsors, the facility point of contact shall discuss the issues with the Service Area Environmental Specialist.

Facility Managers (or their designees) shall not make or recommend a proposed flight track, route or air traffic flow as a preferred action for the sole purpose of noise abatement. They may, however, indicate if the proposed action is operationally feasible or safe (within the context of aircraft separation standards). The airport sponsor (operator) is solely responsible for the recommendation of noise abatement procedures.

3. The field facility is responsible for preparing the IER and recommending a CATEX, an EA or an EIS for new or revised air traffic procedures, or airspace modifications. After completion of the IER, the originating facility shall forward the recommendation for a CATEX, EA or EIS along with all the supporting documentation to the Service Area Environmental Specialist for review and approval. The Service Area Environmental Specialist shall then prepare the Categorical Exclusion Declaration (if appropriate) for signature by the Service Area Director (or the Director's designee).

Section 2. Environmental Processing

32–2–1. PROCEDURES

The Terminal or En Route & Oceanic Service Area shall conduct the NEPA process for any proposed air traffic action in their area of jurisdiction with the potential to impact the human environment. Examples of air traffic actions include, but are not limited to, procedural changes that create new or alter existing flight tracks over noise sensitive areas or altitudes utilized by aircraft, certain SUA requests or changes, and initiatives effecting operational changes (e.g., changes in runway use percentage or heading). Environmental documentation for such actions must be completed prior to approval and subsequent implementation (see Appendix 1, "Environmental Study Process Flow Chart," for the steps from action concept to implementation).

If the FAA is not the proponent of the proposed action (e.g., the Department of Defense or an Airport Sponsor [the proponent] requests the FAA to take the action) then the proponent is responsible for funding and preparation of environmental documentation associated with the proposed action. FAAO 1050.1E, "Environmental Impact: Policies and Procedures," paragraph 203b and 203c discuss responsibility for preparation of EAs or EISs (respectively) where FAA must approve the project.

The proponent must prepare and submit the associated environmental documentation in conjunction with the proposed air traffic action, as follows:

a. Determination of Appropriate Environmental Documentation. The appropriate level of environmental documentation required must be determined after all portions of a proposed action have undergone the Air Traffic Initial Environmental Review (IER) (see Appendix 5). The IER must be used for all projects that will require headquarters–level funding for completion of the environmental process. For those projects not being funded at the headquarters level, completion of the IER is optional. Facility personnel and the Service Area Environmental Specialist must coordinate the IER process.

The completed IER, along with a recommendation as to whether the proposed action warrants no further environmental review, a CATEX, or preparation of an EA or an EIS must be forwarded to the Service Area Environmental Specialist. Field personnel must consult FAAO 1050.1E before making a recommendation on the appropriate level of environmental review for a proposed action. Following are specific sections of FAAO 1050.1E that must be reviewed.

1. Advisory Actions, paragraph 301. A memorandum to the file may be the only documentation necessary.

2. Emergencies, paragraph 302.

3. Extraordinary Circumstances, paragraph 304.

4. Categorical Exclusion, paragraphs 303 and 307 through 312, and Extraordinary Circumstances, paragraph 304. Only those categorical exclusions listed may be cited.

A review of Paragraph 305 will assist in determining the appropriate level of environmental documentation required for a CATEX (see Appendix 6 for a "Sample Categorical Exclusion Declaration").

5. Chapter 4 of FAAO 1050.1E addresses EAs and FONSIs. A review of this chapter will assist in determining when to prepare these documents. The FAA may adopt, in whole or in part, an EA prepared by another Federal agency. Consult FAAO 1050.1E paragraph 404d to determine if the EA meets the criteria for FAA adoption.

6. Chapter 5 of FAAO 1050.1E addresses EISs and RODs. A review of this chapter will assist in determining when and how to prepare these documents.

7. A review of FAAO 1050.1E, Appendix A, Section 14 will assist in determining whether a noise analysis is warranted and if so, what type of analysis should be conducted. A noise analysis requires several different types of input data including radar data. This data is available to FAA personnel.

However, requests for the FAA to release radar data, to other than FAA personnel, for use in noise studies or NEPA documents should be via FAAO 1200.22C, Use of National Airspace System (NAS) Computer and Radar Data or Equipment by Outside Interests, or the Freedom of Information Act (FOIA) process. It may be simpler and more expedient to utilize the

FOIA process, as FOIA does not require use of the Data Release Review Committee or a Memorandum of Agreement between the FAA Field Facility and an Environmental Contractor. Consultation with the Service Area Environmental Specialist should occur if radar data is needed.

b. Preparation of Environmental Documents. Following are the various levels of environmental studies and documentation that may be prepared.

1. No Further Environmental Action Required. Following review and consultation, the field Facility Manager and Service Area Environmental Specialist may agree that no additional documentation is required. When this occurs, the originating facility shall prepare a memorandum to the file indicating the basis for this determination (e.g., that the proposed action is administrative or advisory in nature and does not require additional environmental study) and include references to the provisions of FAAO 1050.1E that support the determination.

2. Actions Not Subject to NEPA Review. See FAAO 1050.1E, paragraph 200e(4), for a list of actions that require no environmental study.

3. Categorical Exclusions (CATEXs). After completion of the IER (when applicable), the originating facility shall forward the IER and any supporting environmental documentation to the Service Area Environmental Specialist for concurrence. The Service Area Environmental Specialist shall then prepare the Categorical Exclusion Declaration (see Appendix 6) for signature by the Service Area Director (or the Director's designee). A CATEX does not apply to a proposal if extraordinary circumstances as described in FAAO 1050.1E, paragraph 304, exist.

4. Environmental Assessments (EA). Although the Facility manager shall make a recommendation on the level of environmental review, the Service Area Environmental Specialist shall make the final determination as to whether the proposed action warrants preparation of an EA or an EIS. For proposed actions that warrant an EA, the Service Area Environmental Specialist may need to request additional resources and information to support the proposal.

FAAO 1050.1E, chapter 4 summarizes and supplements requirements of CEQ for EAs. The CEQ regulations do not specify a required format for an EA, however FAAO 1050.1E, paragraph 405, contains a sample format that will facilitate preparation of an EA, and integrate compliance with other environmental laws, regulations, and Executive Orders with NEPA review.

5. Findings of No Significant Impact (FONSI). If an EA reveals that a proposed air traffic action would not cause significant adverse impacts, the Service Area Environmental Specialist shall prepare a FONSI.

FAAO 1050.1E, paragraph 406, summarizes and supplements CEQ requirements for FONSIs. The CEQ regulations do not specify a format for FONSIs, but FONSIs must contain the information discussed in 40 CFR 1508.13. The FONSI may be attached to an EA, may be combined with the EA in a single document, or may be a stand-alone document. Paragraph 406 should be reviewed in detail prior to completion of a FONSI to assist in determining the type of document to prepare. If the FONSI is not combined with or attached to an EA, it must include a summary of the EA and note any other environmental documented related to it. If the FONSI is attached or included with the EA, the FONSI does not need to repeat any of the discussions in the EA but may incorporate them by reference. All documentation relied upon must be made available to the public upon completion of the environmental process.

If mitigation is included as a requirement in the FONSI, appropriate follow-up actions must be taken to ensure that the required mitigation is implemented. The Service Area preparing the FONSI is responsible for ensuring that the required mitigation is implemented.

6. Environmental Impact Statement (EIS). If a proposed action requires preparation of an EIS, the Service Area Environmental Specialist shall advise the Area Director when there is a need to seek funding and/or resources for the EIS. Consultation with the Environmental Programs Group regarding projects at this stage is highly recommended. If an independent contractor is to prepare the EIS, the Service Area Environmental Specialist shall oversee the preparation to ensure compliance with FAAO 1050.1E, paragraphs 503 through 511.

NOTE-
The Service Area Environmental Specialist shall ensure that all EAs and any subsequent EISs for proposed air traffic action within their area of jurisdiction meet the requirements of FAAO 1050.1E. The originating facility

is responsible for the accuracy of operational data and assumptions contained therein.

7. Record of Decision (ROD). For all proposed air traffic actions that have been the subject of an EIS, the Service Area Environmental Specialist shall prepare a ROD in accordance with FAAO 1050.1E, paragraph 512. (For proposed air traffic actions for which a FONSI is prepared, the Service Area Environmental Specialist should consider preparing a ROD in accordance with FAAO 1050.1E, paragraph 408.)

If an independent contractor prepares the EIS, that contractor may also support preparation of the ROD. However, the ROD documents the agency's decision on the Federal action and remains the responsibility of the FAA.

32–2–2. FAR PART 150 STUDIES

Airport Sponsors (Operators) may choose to conduct a FAR Part 150 study to analyze the operation of an airport, identify compatible and non–compatible land uses, and assess the costs and benefits of noise mitigation techniques. Noise Compatibility Programs that result from Part 150 studies often recommend modifications to air traffic routes and/or procedures to accomplish noise abatement. The FAA does not normally make changes in air traffic routes and/or procedures solely for the purpose of noise abatement. However, under Part 150, the FAA can approve flight procedures to reduce noise that are recommended in a Noise Compatibility Plan. If modifications to air traffic routes and/or procedures are recommended, air traffic will evaluate those recommendations as to feasibility and provide input to the appropriate Airports Program office.

While preparation of a FAR Part 150 study does not necessarily invoke NEPA, the potential implementation of recommended noise abatement measures, such as alternative air traffic procedures, is subject to the NEPA process by the air traffic program. During the Part 150 process, Facility Managers should keep the Airports Division or Airports District Office representative and the Service Area Environmental Specialist advised of any alternative air traffic control procedures that have the potential to invoke the NEPA process. The Facility Managers are responsible for ensuring that current operational data and assumptions (furnished to the entity completing the Part 150 process) are accurate and that future operational data and assumptions reflect reasonable conditions. (Operational data in this context relates to flight track and profile data and/or documentation.)

The facility environmental representative and the Service Area Environmental Specialist shall coordinate with the Airports Division or Airports District Office representative throughout the Part 150 process. This coordination should ensure that assumptions and data used are reviewed at each phase and results can be verified early in the process. Early coordination will allow for needed adjustments in any operational assumptions prior to completion of the study.

The Service Area Environmental Specialist shall coordinate with the Airports Division or Airports District Office personnel to furnish any data necessary for use in the FAR Part 150 study. Additionally, air traffic participation in the process does not constitute air traffic approval for a FAR Part 150 action.

During other noise studies conducted by the Airport Sponsor, Facility Managers and Service Area Environmental Specialists shall work with the Airport Sponsor and Airports Program personnel on the exchange of information as described above.

32–2–3. SPECIAL USE AIRSPACE (SUA)

The purpose of this section is to ensure that air traffic personnel and SUA proponents are aware of the need to comply with NEPA and CEQ requirements for evaluating the environmental impacts of proposed SUA actions. (See, e.g., FAAO 1050.1E, paragraph 401p.) This section supplements the airspace processing requirements contained in Part 5. of this document.

Normally, SUA is designated to support DOD requirements. The FAA/DOD Memorandum of Understanding (MOU) provided in Appendix 7, sets forth procedures and responsibilities for the evaluation of the environmental impacts of DOD SUA proposals. It designates when DOD is the lead agency and when FAA is the cooperating agency for NEPA compliance on SUA proposals.

Appendix 8, "FAA Special Use Airspace Environmental Processing Procedures," establishes air traffic environmental processing procedures for proposed SUA actions. In the case of SUA proposals submitted by non–DOD Federal agencies, the responsibility for

preparation of an EA or EIS, if required, rests with the proponent (i.e., the requesting Federal agency). However, the FAA retains responsibility under NEPA to ensure that its SUA actions are supported by adequate environmental documentation.

Section 3. Environmental Impact Categories and Other Topics

Appendix A of FAAO 1050.1E, "Analysis of Environmental Impact Categories" summarizes the requirements and procedures for environmental impact analyses according to the resource impact category. Executive Orders, DOT and FAA Orders, and memoranda and guidance documents described in Appendix C of FAAO 1050.1E may also contain requirements that apply.

Although all resource impact categories may receive the same level of review and analysis, the actual level of detail of review and analysis for a particular resource is dependent upon the potential for impact. The following paragraphs address those impact categories that often do not receive an appropriate level of environmental review for proposed air traffic.

32–3–1. DEPARTMENT OF TRANSPORTATION (DOT) ACT SECTION 4(f) (RECODIFIED AS 49 USC SECTION 303(c))

Air Traffic personnel need to consult with all appropriate Federal, state and local officials having jurisdiction over an affected Section 4(f) resource when determining whether project–related noise impacts would constitute a use of that resource.

FAAO 1050.1E, Appendix A, Section 6, provides guidance on matters relevant to Section 4(f). (See also Appendix 9, "Noise Policy for Management of Airspace Over Federally Managed Lands.")

32–3–2. ENVIRONMENTAL JUSTICE (TITLE VI/NEPA)

Air Traffic personnel need to know the process and requirements for environmental justice compliance.

DOT Order 5610.2, Environmental Justice, requires analysis of impacts of proposed FAA actions to ensure that minority and low–income population groups are not disproportionately affected. Additionally, FAAO 1050.1E, Appendix A, Section 16, summarizes the requirements and procedures to be used in environmental impact analysis related to environmental justice, as well as other socioeconomic impacts and children's environmental health and safety risks.

Facilities should identify who benefits and who is adversely affected by the proposed actions, while noting impacts on specific subgroups.

32–3–3. COMMUNITY INVOLVEMENT

Air Traffic personnel need to ensure that the FAA fulfills the spirit and the letter of NEPA, and that the environmental process is legal and efficient. Community involvement at the earliest possible time in developing alternatives is essential in the preparation of an EIS and, where appropriate, for an EA. The Service Area Directors (or their designee) shall ensure that the community involvement process is coordinated appropriately during the alternatives development process for proposed modification to air traffic airspace and/or procedures (see FAAO 1050.1E, paragraphs 208 and 209, and the FAA's "Community Involvement Policy" statement in Appendix 10 of this order).

32–3–4. CUMULATIVE IMPACTS

Air Traffic personnel shall ensure that cumulative impacts are appropriately addressed in all EAs and EISs for air traffic actions. Cumulative impacts are those that result form the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal and non–Federal) or person undertakes such other actions. Cumulative impacts may result from individually minor but collectively significant actions taking place over a period of time. (See FAAO 1050.1E, paragraph 405f(1)(c), and also "Considering Cumulative Effects Under the National Environmental Policy Act (1997).")

32–3–5. OTHER CURRENT AIR TRAFFIC ISSUES

Although there are other actions that may be initiated by Air Traffic to make changes in airspace and/or procedures, the following two categories are currently the largest. They have the potential to affect a number of field facilities and require the

involvement of additional personnel in the environmental review process.

a. Performance-Based Navigation (RNAV/RNP by GPS/FMS Equipped Aircraft).

The significant number of changes to airspace, route structures, and instrument approach and departure procedures precipitated by aircraft equipped with Global Positioning System (GPS) and Flight Management System (FMS) capabilities has the potential to cause a significant increase in actions affecting the environment.

Among these navigation systems are several concepts. For brevity, only two of these concepts will be addressed here; Area Navigation (RNAV) and Required Navigation Performance (RNP).

RNAV is a method of navigation that enables aircraft to fly on any desired flight path within the coverage of specific navigational aids (NAVAIDS) or within the capable limits of a self-contained system. RNAV can also be a combination of capabilities from a self-contained system and specific NAVAIDS.

RNP refers to RNAV operations that provide navigation containment and have flight monitoring capabilities.

The added flexibility and proliferation of these navigation systems has the potential to affect the human environment. This is due, in part to the introduction of instrument flight rules procedures not previously applied to low altitude aircraft operations, and the anticipated reduction in separation standards. It is imperative to fully examine and document the environmental impact of each step in the RNAV and RNP development process.

b. National Airspace Redesign (NAR).

The NAR is a program developed to review the design of all national airspace resources to ensure effective and efficient management of the national airspace system (NAS). The goals of the NAR are to:

1. Increase system flexibility, predictability, and access;

2. Maintain and improve system safety;

3. Improve efficiency and reduce delays; and

4. Support the evolution of emerging technologies.

Projects related to the NAR generally involve large-scale airspace changes that include multiple airports and terminal radar areas. It is generally the environmental process associated with these larger scale airspace changes that require completion of the Initial Environmental Review and funding at the headquarters level. Periodically there are other airspace changes, which may be related to larger-scale NAR projects but may only involve a single airport.

32-3-6. RECORDS RETENTION

Records retention must be in accordance with the appropriate paragraph(s) in FAAO 1350.15, Records Organization, Transfer, and Destruction Standards.

NOTE-
Although chapter 10 of FAAO 1350.15 contains Air Traffic-specific information, guidance for retention of environmental documentation is contained in that portion of the order specific to the Airports Division.

Environmental record-keeping should receive special attention at the field facility level. If an action requires preparation of an EA or an EIS, the Service Area Environmental Specialist shall maintain the Administrative Record. The Administrative Record is important in the environmental process because it is a compilation of all the information relied upon by in the FAA decision-making process.

Since some environmental projects may extend over several years, the Administrative Record becomes a history of events. In the event of a legal challenge, the Administrative Record will be reviewed by the U.S. Court of Appeals to determine if the FAA complied with the requirements of NEPA. The data and documentation contained in the record can also be used as the starting point for any follow-on environmental studies.

Field facility personnel shall consult with their Service Area Environmental Specialist to obtain guidance on what should or should not become part of the Administrative Record. Regional counsel or AGC-620, as appropriate, should also be consulted on this. Federal court rules provide that when an FAA action is challenged in court, the agency has 40 days to compile the Administrative Record, make necessary copies, and file an index to the record with the court. Therefore, it is preferable to begin development of the record at an early stage of a project, instead of waiting until a lawsuit is filed.

32–3–7. APPENDICES

a. Appendix 1. Environmental Study Process Flow Chart.

b. Appendix 2. Special Use Airspace Aeronautical Processing Flow Chart

c. Appendix 3. Special Use Airspace Environmental Processing Flow Chart

d. Appendix 4. FAA Procedures for Processing SUA Actions Summary Table

e. Appendix 5. Air Traffic Initial Environmental Review (IER)

f. Appendix 6. Sample Categorical Exclusion Declaration.

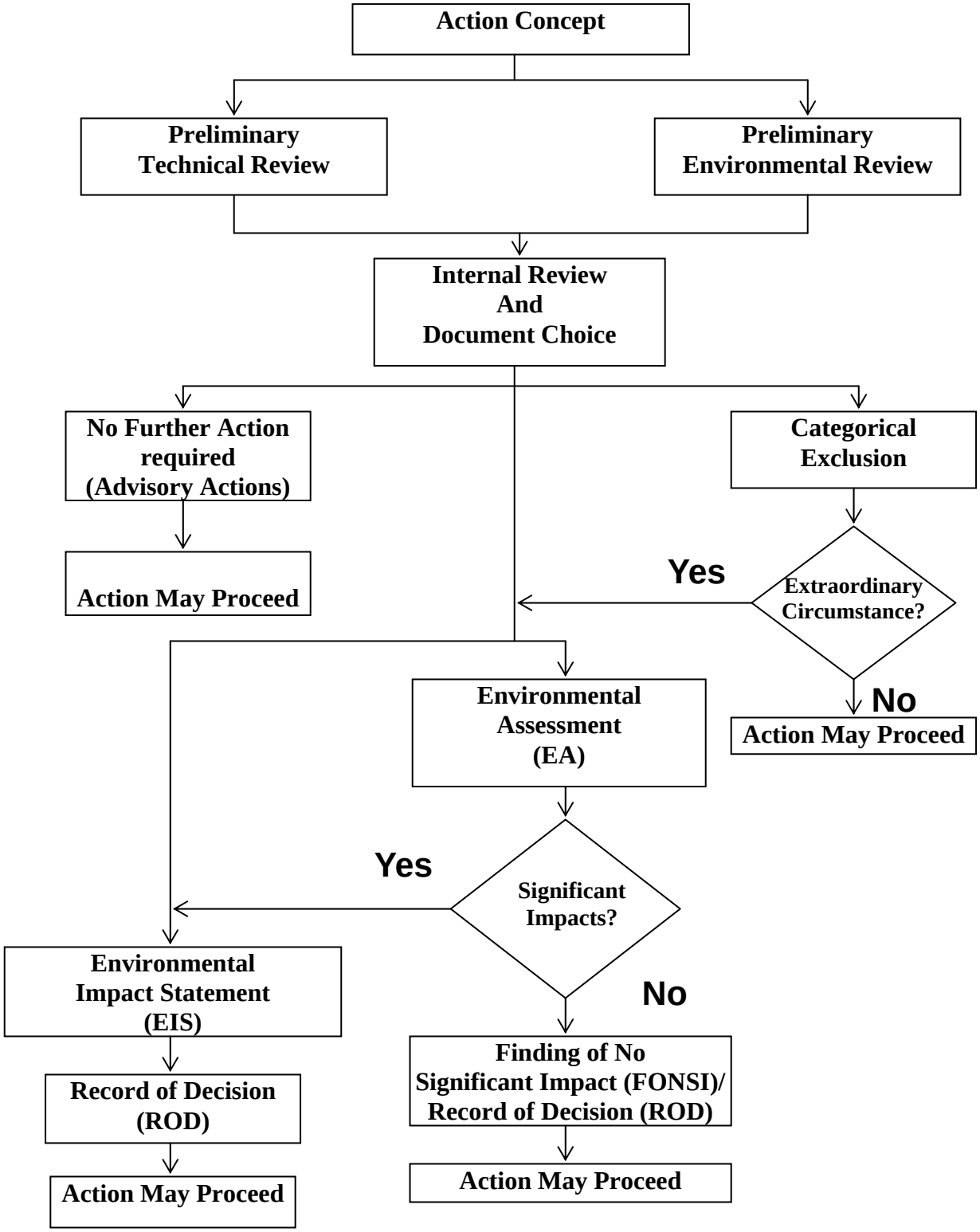
g. Appendix 7. FAA/DOD Memorandum of Understanding.

h. Appendix 8. FAA Special Use Airspace Environmental Processing Procedures.

i. Appendix 9. Noise Policy for Management of Airspace Over Federally Managed Lands.

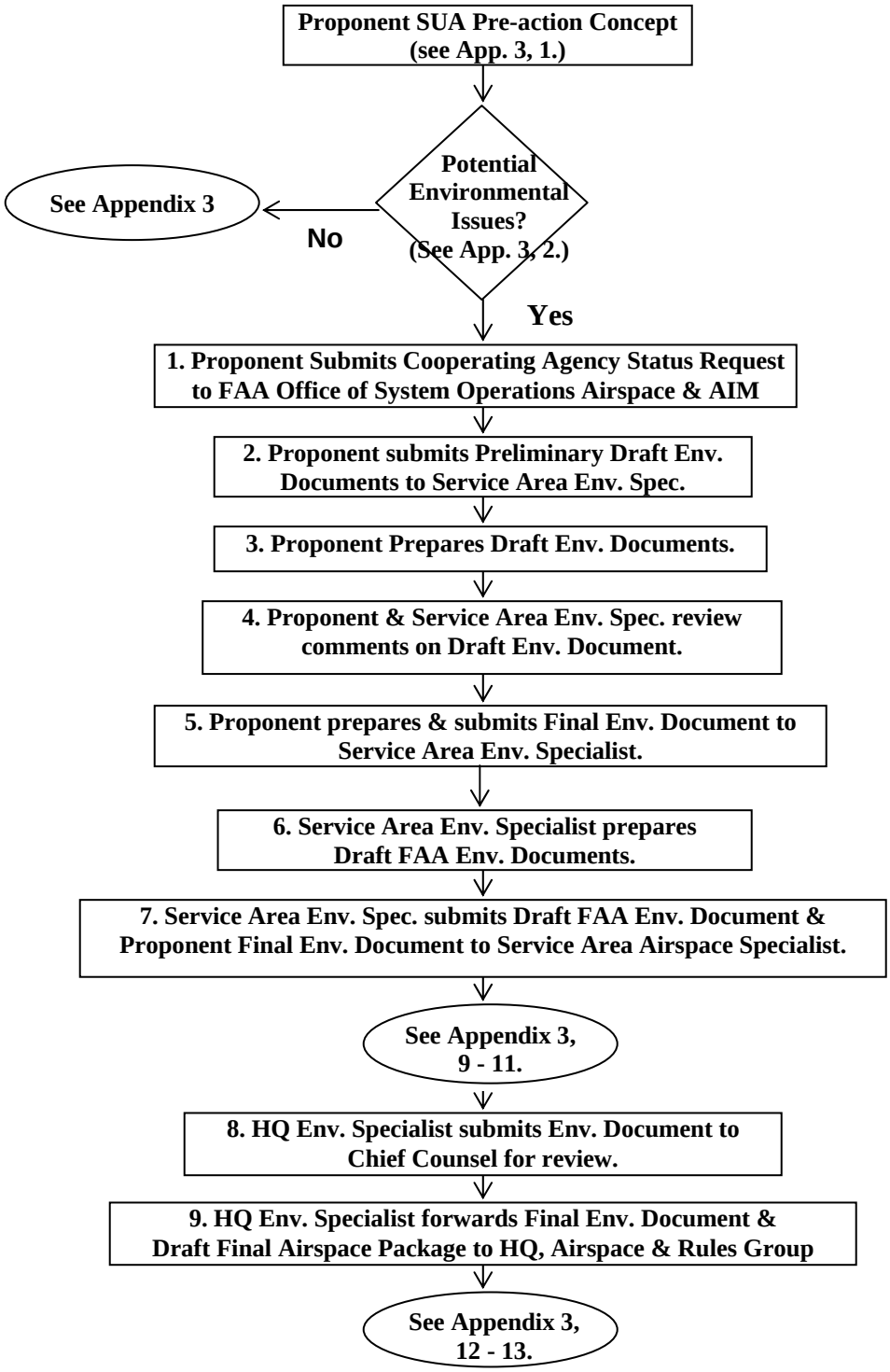
j. Appendix 10. Community Involvement Policy.

Appendix 1. Environmental Study Process Flow Chart



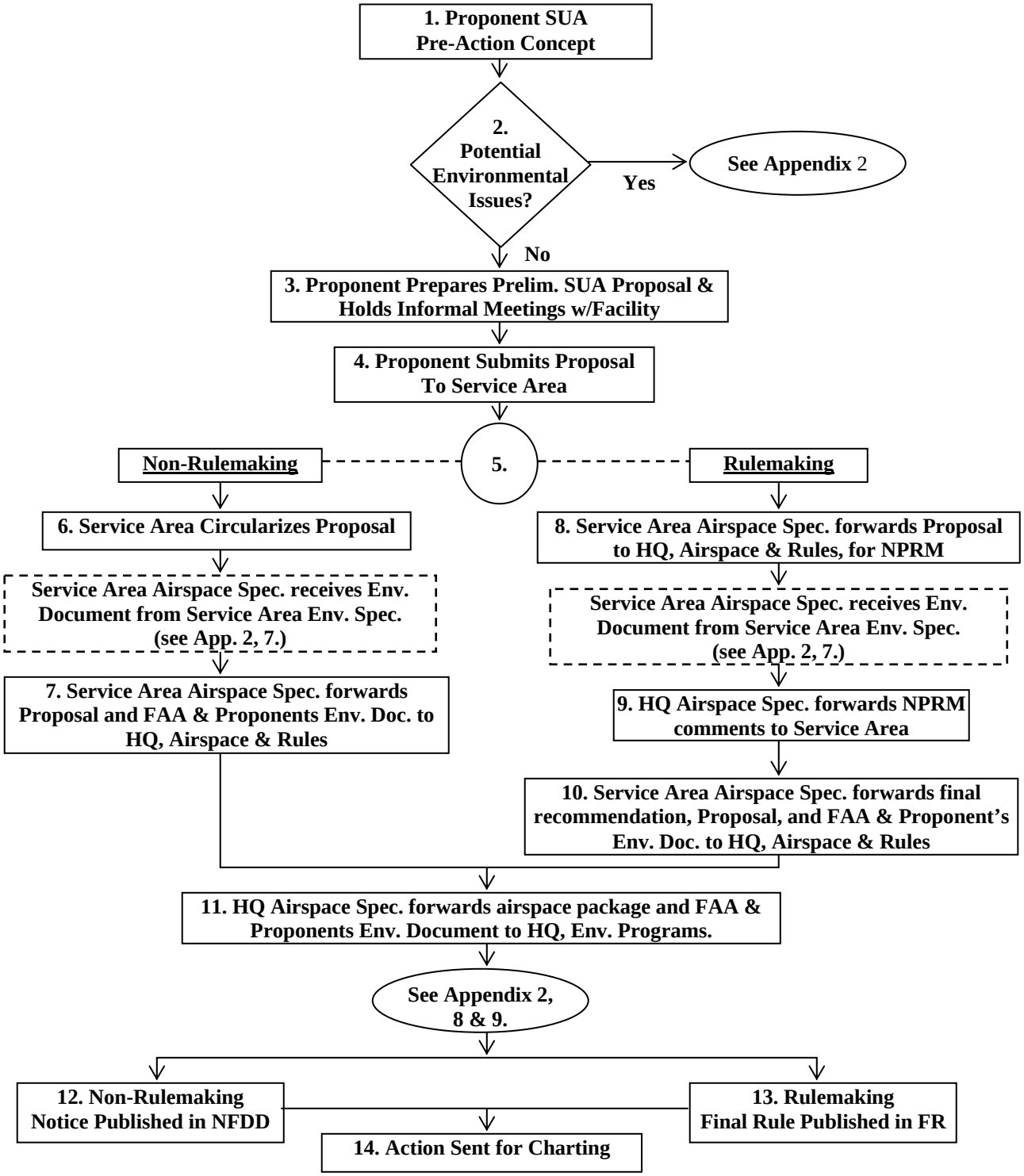
Appendix 2. Procedures For Processing SUA Actions Environmental Process Flow Chart

(This Chart is for use with Appendix 4 and the numbers correlate to the numbers in the Environmental column of that table.)



Appendix 3. Procedures For Processing SUA Actions Aeronautical Process Flow Chart

(This Appendix is for use with Appendix 4 and the numbers correlate to the numbers in the Aeronautical column of that table.)



Appendix 4. FAA Procedures for Processing SUA Actions Aeronautical and Environmental Summary Table

(The aeronautical and environmental processes may not always occur in parallel.)
(This Appendix is for use with Appendix 2 and Appendix 3, and the numbers correlate to numbers on those charts.)

(See note below.)

AERONAUTICAL	ENVIRONMENTAL
1. Proponent shall present to the Facility a Pre-draft concept (i.e., new/ revisions to SUA needed or required).	1. Proponent shall discuss with the Service Area, at the earliest time, the potential for environmental impacts associated with the proposal.
	2. If there is the potential for environmental impacts, Proponent shall make a request to the FAA for a Cooperating Agency (CA) status when Proponent decides to initiate the environmental process. Proponent shall forward the request to the Director of the System Operations Airspace and AIM. The Director will transmit the request to the Environmental Programs Group who prepares and forwards the response to Proponent. The Environmental Programs Group will send a courtesy copy of the response to the responsible Service Area. The Service Area environmental specialist works as the FAA point of contact throughout the process in development of any required environmental documentation.
	3. Proponent submits a Preliminary Draft EA or EIS to the Service Area environmental specialist. The Service Area environmental specialist shall provide comments, in consultation with the airspace specialist and the Environmental Programs Group, back to Proponent.

2. Proponent forwards the aeronautical proposal to the FAA Service Area for review and processing by the airspace specialist.	4. Proponent prepares a Draft EA or EIS with a 45-day public comment period. As the FAA CA point of contact, the Service Area environmental specialist reviews the associated draft environmental documentation to ensure that the Proponent addressed adequately all environmental concerns submitted on the Preliminary Draft. If required, the Service Area environmental specialist forwards the draft environmental documentation to the Environmental Programs Group for review and comment by the headquarters environmental specialist and the Office of Chief Counsel.
3. The Service Area airspace specialist, in accordance with this order, determines the type of airspace action(s) necessary, either Non-Rulemaking or Rulemaking. FAA Service Area and Proponent determine if informal Airspace Meetings are required.	
For Non-Rulemaking:	
4. The Service Area airspace specialist sends out a circularization with a 45-day public comment period. The Service Area airspace specialist reviews and prepares, in consultation with the Proponent, responses to the aeronautical comments from the study and circularization in accordance with Chapter 21 of this order.	5. The Proponent reviews comments received on their Draft EA/FONSI or EIS and prepares their responses to the comments, in consultation with the FAA and other cooperating agencies, if necessary, and in accordance with Chapter 32 of this order.
	6. Proponent prepares and submits their Final EA/FONSI or EIS/ROD to the Service Area environmental specialist.
	7. The Service Area environmental specialist prepares a Draft FAA FONSI/ROD or Draft FAA Adoption Document/ROD.
	8. The Service Area environmental specialist submits the Draft FAA FONSI/ROD or Draft FAA Adoption Document/ROD and the Proponent's Final EA/FONSI or EIS/ROD to the Service Area airspace specialist for inclusion with the airspace proposal package.
5. The Service Area airspace specialist then sends the completed package containing the aeronautical proposal, response to comments, Proponent's Final EA/FONSI, and the Draft FAA FONSI/ROD to the Headquarters Airspace and Rules Group with their recommendation.	

For Rulemaking:	
6. The Service Area airspace specialist sends the proposal to the Airspace and Rules Group who prepares a Notice of Proposed Rulemaking (NPRM). The Headquarters Airspace and Rules Group submits the NPRM for publication in the Federal Register with a 45-day comment period in accordance with Chapter 2 of this order.	
7. The Headquarters airspace specialist sends comments received on the NPRM to the Service Area airspace specialist for resolution.	
8. The Service Area airspace specialist then sends the completed package containing the response to comments, final service area recommendation, the proposal, Proponent's Final EA/FONSI or EIS/ROD, and the Draft FAA FONSI/ROD or Draft FAA Adoption Document/ROD to the Headquarters Airspace and Rules Group for preparation of the Final Rule.	
9. The Headquarters airspace specialist forwards the draft final rule package or draft non-rulemaking case summary (NRCS) with all supporting documentation to the Headquarters Environmental Programs Group for review (after all aeronautical comments have been resolved).	9. The Headquarters environmental specialist reviews the package for environmental technical accuracy; then submits the environmental documentation to the Office of the Chief Counsel, Airports and Environmental Law Division, for legal sufficiency review (having collaborated throughout the process).
	10. The Chief Counsel's environmental attorney's comments are incorporated into the final FAA environmental decision and signed by Headquarters Environmental Programs Group Manager. The package is then returned to the Headquarters Airspace and Rules Group.
10. For Non-rulemaking: The non-rulemaking action is published in the National Flight Data Digest. 11. For Rulemaking: The Final Rule is published in the Federal Register. The Final Rule will contain a reference to the decision rendered and location of documentation for the associated environmental process.	

Consult the following documents throughout the process for further information:

- Council on Environmental Quality Regulations for Implementing the National Environmental Policy Act (NEPA), 40 CFR Parts 1500–1508
- FAA Order 1050.1E, "Environmental Impacts: Policies and Procedures"
- FAA Order 7400.2, "Procedures for Handling Airspace Matters," Part 5
- FAA Order 7400.2, Chapter 32, "Environmental Matters" and the associated appendixes (for specific SUA environmental direction)

NOTE: The time periods below are for a non–controversial aeronautical proposal and its associated environmental process. The time periods are for FAA review/processing only. Times for proponent and/or environmental contract support processing must be added.

ENVIRONMENTAL: The estimated time of completion for EA processing is 12 to 18 months or, for EIS processing, 18 to 36 months.

AERONAUTICAL (Non–Rulemaking): A minimum 4 months is required from submission of the Formal Airspace Proposal by the Proponent to the Service Area through completion of the circularization process. Additionally, a minimum of 6 months is required from submission of the Formal Airspace Proposal by the Service Area to Headquarters through completion of the charting process.

AERONAUTICAL (Rulemaking): A minimum 6 weeks for Service Area processing, and a minimum of 9 months to complete rulemaking once the formal package is received at Headquarters.

Appendix 5. Air Traffic Initial Environmental Review

Facility/Office:_____ Date:_____

Prepared by: _____Phone: _____Fax:_____
(Also see Section X for the complete listing of preparers.)
==========
This initial environmental review should provide some basic information about the proposed project to better assist in preparing for the environmental analysis phase. Although it requests information in several categories, not all the data may be available initially. However, it does represent information, in accordance with FAAO 1050.1E, "Environmental Impacts: Policies and Procedures," which ultimately will be needed for preparation of the environmental document.

Project Description

A. Attach copy of the most recent Project Status Report.

B. Has airspace modeling been conducted using SDAT, TAAM, TARGETS, or other airspace/air traffic design tool? ☐ Yes Model: _____ ☐ No
If yes, provide a summary of the output from the modeling.

C. Describe the present (no action alternative) procedure in full detail. Provide the necessary chart(s) depicting the current procedure. Describe the typical fleet mix, quantifying (if possible) the number of aircraft on the route and depict their altitude(s) along the route.

D. Describe the proposed project, providing the necessary chart(s) depicting changes. Describe changes to the fleet mix, numbers of aircraft on the new route, and their altitude(s), if any.

1. Will there be actions affecting changes in aircraft flights between the hours of 10 p.m. – 7 a.m. local? Yes ☐ No

2. Is a preferential runway use program presently in effect for the affected airport(s), formal or informal? ☐ Yes ☐ No

3. Will airport preferential runway configuration use change as a result of the proposed project? ☐ Yes ☐ No

4. Is the proposed project primarily designed for Visual Flight Rules (VFR), Instrument Flight Rules (IFR) operations, or both? ☐ VFR ☐ IFR ☐ Both

If this specifically involves a charted visual approach (CVA) procedure, provide a detailed local map indicating the route of the CVA, along with a discussion of the rationale for how the route was chosen.

5. Will there be a change in takeoff power requirements? ☐ Yes ☐ No

If so, what types if aircraft are involved, i.e., general aviation propeller-driven versus large air carrier jets?

6. Will all changes occur above 3,000 feet above ground level (AGL)? ☐ Yes ☐ No

What is the lowest altitude change on newly proposed routes or on existing routes that will receive an increase in operations?

7. Will there be actions involving civil jet aircraft (heavier than 75,000 pounds gross weight) arrival procedures between 3,000-7,000 feet AGL or departures between 3,000-10,000 feet AGL? Attach a copy of the completed Air Traffic Noise Screening (ATNS) Model report.

8. If noise analysis was already performed using the FAA's Integrated Noise Model (INM) or Noise Integrated Routing System (NIRS), provide a summary of the results.

Purpose and Need

A. Describe the purpose and need for the proposed project. If detailed background information is available, summarize here and provide a copy as an attachment to this review.

B. What operational/economic/environmental benefits will result if this project is implemented?

1. If a delay reduction is anticipated, can the reduction be quantified? ☐ Yes ☐ No ☐ N/A

2. Can reduced fuel costs/natural energy consumption be quantified? ☐ Yes ☐ No ☐ N/A

If not quantifiable, describe the approximate anticipated benefits in lay terms.

C. Is the proposed project the result of a user or community request or regulatory mandate?

☐ Community Request ☐ Regulatory Mandate

If not, what necessitates this action?

Describe the Affected Environment

A. Provide a description of the existing land use in the vicinity of the proposed project.

B. Will the proposed project introduce air traffic over noise sensitive areas not now affected?

☐ Yes ☐ No

Will they be affected to a ☐ greater or ☐ lesser extent?

Note: An area is noise sensitive if aircraft noise may interfere with the normal activities associated with the use of the land. See FAAO 1050.1E for full definition of noise sensitive areas.

C. Are wildlife refuge/management areas within the affected area of the proposed project?

☐ Yes ☐ No

If so, has there been any communication with the appropriate wildlife management regulatory (federal or state) agencies to determine if endangered or protected species inhabit the area? ☐ Yes ☐ No

1. At what altitude would aircraft overfly these habitats?

2. During what times of the day would operations be more/less frequent?

D. Are there cultural or scenic resources, of national, state, or local significance, such as national parks, outdoor amphitheaters, or stadiums in the affected area? ☐ Yes ☐ No
If so, during what time(s) of the day would operations occur that may impact these areas?

E. Has there been communication with air quality regulatory agencies to determine if the affected area is a non-attainment area (an area which exceeds the National Ambient Air Quality Standards for ozone, carbon monoxide, lead, particulate matter, sulfur dioxide, or nitrogen dioxide) or maintenance area (an area which was in non-attainment but subsequently upgraded to an attainment area) concerning air quality?
☐ Yes ☐ No
If yes, please explain:

F. Are there reservoirs or other public water supply systems in the affected area?
☐ Yes ☐ No

Community Involvement

Formal community involvement or public meetings/hearings may be required for the proposed project. Make a determination if the proposed project has the potential to become highly controversial. The effects of an action are considered highly controversial when reasonable disagreement exists over the project's risks of causing environmental harm. Opposition on environmental grounds by a Federal, State or local government agency or by a Tribe, or by a substantial number of the person affected by the action should be considered in determining whether reasonable disagreement regarding the effects of a proposed action exists (see FAAO1050.1E, paragraph 304i).

A. Have persons/officials who might have some need to know about the proposed project due to their location or by their function in the community been notified, consulted, or otherwise informed of this project?
☐ Yes ☐ No

1. Are local citizens and community leaders aware of the proposed project?
☐ Yes ☐ No

2. Are any ☐ opposed to or ☐ supporting it? If so, identify the parties and indicate the level of opposition and/or support.
a. If they are opposed, what is the basis of their opposition?
b. Has the FAA received one or more comments objecting to the proposed project on environmental grounds from local citizens or elected officials? ☐ Yes ☐ No

Has the FAA received one or more comments objecting to the proposed project on environmental grounds from local citizens or elected officials? ☐ Yes ☐ No

If so, state the nature of the comment and how the FAA was notified (e.g. resolution, Congressional, Public meeting/workshop, etc.).

1. Are the airport proprietor and users providing general support for the proposed project?
☐ Yes ☐ No

2. Is the proposed project consistent with local plans and development efforts?
☐ Yes ☐ No

3. Has there been any previous aircraft-related environmental or noise analysis, including
   a. FAR Part 150 Studies, conducted at this location? ☐ Yes ☐ No
   b. If so, was the study reviewed as a part of this initial review? ☐ Yes ☐ No ☐ N/A

Extraordinary Circumstances

The determination of whether a proposed action may have a significant environmental effect is made by considering any requirements applicable to the specific resource (see FAAO 1050.1E, Appendix A).

A. Will implementation of the proposed project result in any of the following? As stated in 1050.1E, paragraph 304, extraordinary circumstances exist when a proposed action involves any of the following circumstances AND may have a significant effect (40 CFR 1508.4).

1. An adverse effect on cultural resources protected under the National Historic Preservation Act of 1966, as amended (see FAAO 1050.1E, paragraph 304a). ☐ Yes ☐ No ☐ Possibly
Comment:

2. An impact on properties protected under section 4(f) of the Department of Transportation Act (see paragraph 304b). ☐ Yes ☐ No ☐ Possibly
Comment:

3. An impact on natural, ecological (e.g. invasive species) or scenic resources of Federal, Tribal, State, or local significance (for example, Federally listed or proposed endangered, threatened, or candidate species or proposed or designated critical habitat under the Endangered Species Act); resources protected by the Fish and Wildlife Coordination Act; wetlands; floodplains; prime, unique, State, or locally important farmlands; energy supply and natural resources; wild and scenic rivers, including study or eligible river segments; and solid waste management. (See paragraph 304c.) ☐ Yes ☐ No ☐ Possibly
Comment:

4. A division or disruption of an established community; a disruption of orderly, planned development; or an inconsistency with plans or goals that have been adopted by the community in which the project is located (see paragraph 304d). ☐ Yes ☐ No ☐ Possibly
Comment:

5. An increase in congestion from surface transportation, by causing a decrease in the Level of Service below the acceptable level determined by the appropriate transportation agency (i.e., a highway agency). (See paragraph 304e.) ☐ Yes ☐ No ☐ Possibly
Comment:

6. An impact on noise levels of noise-sensitive areas (see paragraph 304f). ☐ Yes ☐ No ☐ Possibly
Comment:

7. An impact on air quality or a violation of local, State, Tribal, or Federal air quality standards under the Clean Air Act amendments of 1990 (see paragraph 304g). ☐ Yes ☐ No ☐ Possibly
Comment:

8. An impact on water quality, sole source aquifers, a public water supply system, or State or Tribal water quality standards established under the Clean Water Act and the Safe Drinking Water Act (see paragraph 304h). ☐ Yes ☐ No ☐ Possibly
Comment:

9. Effects on the quality of the human environment that are likely to be highly controversial on environmental grounds (see paragraph 304i). ☐ Yes ☐ No ☐ Possibly
Comment:

10. Likelihood of an inconsistency with any Federal, State, Tribal, or local law relating to the environmental aspects of the proposed action (see paragraph 304j). ☐ Yes ☐ No ☐ Possibly
Comment:

11. Likelihood of directly, indirectly, or cumulatively, creating a significant impact on the human environment (see paragraph 304k). ☐ Yes ☐ No ☐ Possibly
Comment:

Alternatives

A. Are there alternatives to the proposed project? ☐ Yes ☐ No

If yes, describe any alternatives to the proposed action.

B. Please provide a summary description of alternatives eliminated and why.

Mitigation

Are there measures, which can be implemented that might mitigate any of the potential impacts, i.e., GPS/FMS plans, NAVAIDS, etc.? ☐ Yes ☐ No ☐ N/A

Cumulative Impacts

What other projects (FAA, non-FAA, or non-aviation) are known to be planned, have been previously implemented, or are ongoing in the affected area that would contribute to the proposed project's environmental impact?

References/Correspondence

Attach written correspondence, summarized phone contacts using Memorandums for the File, etc.

Additional Preparers

The person(s) listed below, in addition to the preparer indicated on page 1, are responsible for all or part of the information and representations contained herein:

A. Name
B. Title
C. Facility/Agency/Company
D. Telephone Number
E. Specific area of Responsibility

Facility/Service Area Conclusions

This initial review and analysis indicates that extraordinary circumstances or other reasons exist that would cause the responsible federal official to believe that the proposed project might have the potential for causing significant environmental impacts.

The undersigned have determined that the proposed project may not qualify as a categorically excluded action in accordance with FAAO 1050.1E, and on this basis, recommend that further environmental review be conducted before the proposed project is implemented.

The undersigned recommend that the proposed project be submitted for environmental funding for preparation of an ☐ EA ☐ EIS ☐ Not sure ¿ more analysis is needed.

Facility Manager Review/Concurrence

Signature: _____ Date:_____

Title: _____

Address: _____

_____

Phone: _____ Fax: _____

Service Area Environmental Specialist Review/Concurrence

Signature: _____ Date: _____

Title: _____

Address: _____

_____

Phone: _____ Fax: _____

Service Area Director Review/Concurrence, if necessary

Signature: _____ Date: _____

Title: _____

Address: _____

_____

Phone: _____ Fax: _____

Appendix 6. Sample Department of Transportation Federal Aviation Administration Categorical Exclusion Declaration

(Facility/Airport)
(Title of Proposed Action)

Description of Action:

From the Initial Environmental Review, summarize the description of the action, and the purpose and need.

Declaration of Exclusion: The FAA has reviewed the above referenced proposed action and it has been determined, by the undersigned, to be categorically excluded from further environmental documentation according to FAAO 1050.1E, "Environmental Impacts: Policies and Procedures." The implementation of this action will not result in any extraordinary circumstances in accordance with FAAO 1050.1E.

Basis for this Determination: An Initial Environmental Review was conducted by _____ (INSERT the facility name) and reviewed by the _____ (INSERT the Terminal, or En Route & Oceanic Operations Service Area where Environmental Specialist is located). This review was conducted in accordance with policies and procedures in Department of Transportation Order 5610.1C, "Procedures for Considering Environmental Impacts" and FAAO 1050.1E.

The applicable categorical exclusion(s) is/are: _____ (INSERT a description of the appropriate CATEX(s) with FAAO 1050.1E paragraph reference(s) here).

Recommended by:

_____ Date: _____
(Name – Title of Facility Manager)

Concurrence:

_____ Date:_____
(Name – Service Area Environmental Specialist)

Approved by:

_____ Date:_____
(Name – Service Area Director (or Designee))

Appendix 7. FAA/DOD Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING BETWEEN
THE FEDERAL AVIATION ADMINISTRATION AND
THE DEPARTMENT OF DEFENSE
Concerning
Environmental Review of Special Use Airspace Actions

I. Purpose and Scope.

The purpose of this Memorandum of Understanding (MOU) is to describe the guidelines for compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321) and the Council on Environmental Quality (CEQ) Regulations (40 CFR Parts 1500–1508) without unnecessary duplication of effort by the Federal Aviation Administration (FAA) and the Department of Defense (DOD). This MOU promotes early coordination between FAA and DOD during the environmental review process associated with the establishment, designation, and modification of Special Use Airspace (SUA); permits the application of "lead agency" and "cooperating agency" procedures to environmental assessments (EA) and findings of no significant impact as well as to environmental impact statements (EIS); and provides for the issuance of environmental documents for the development, designation, modification, and use of SUA.

II. Definitions.

The definitions contained in the CEQ Regulations (40 CFR Parts 1500–1508), FAA Orders, and relevant DOD and/or Service guidance are applicable to this MOU.

III. Designation of Lead and Cooperating Agency.

A. Introduction: The actions taken by DOD and FAA in the establishment, designation, or modification of SUA are subject to environmental impact evaluation pursuant to NEPA, as implemented by the CEQ regulations. The CEQ regulations encourage a lead agency be designated where related actions by several Federal agencies are involved.

The lead agency, in such instances, is responsible for consultation with other agencies, for coordination of appropriate environmental studies and evaluations, and for preparation of any NEPA–related determinations or documents in cooperation with other Federal agencies. Each agency recognizes the need to eliminate duplication. The cooperating agency assumes responsibility to independently review the environmental documents prepared by the lead agency and to assess whether the environmental documents meet the standards for adequacy under NEPA.

The DOD and the FAA will ensure appropriate consideration of all actions and impacts, including cumulative impacts. The resultant environmental documents of the lead agency are accepted and used in decisions and planning by all agencies involved with the proposed action.

B. Designation of lead agency. When the DOD proposes that the FAA establish, designate, or modify SUA, the DOD shall serve as the lead agency for the evaluation of environmental impacts and the preparation and

processing of environmental documents. However, when the FAA proposes the establishment, designation, or modification of SUA affecting DOD, the FAA shall serve as the lead agency for the evaluation of environmental impacts and the preparation and processing of environmental documents.

C. Designation of cooperating agency. When the DOD proposes that the FAA establish, designate, or modify SUA, the FAA shall act as a cooperating agency for the evaluation of environmental impacts. However, when the FAA proposes the establishment, designation, or modification of SUA affecting DOD, the DOD shall act as a cooperating agency for the evaluation of environmental impacts.

IV. Level of Environmental Documentation

A. General. Environmental documentation will be processed in accordance with applicable FAA Orders, and DOD and/or Service directives.

B. Categorical Exclusions. Where the actions of one agency are subject to a categorical exclusion (CATEX), and the actions of the other agency, with respect to the same SUA request, require an EA, the agency requiring the EA will prepare the appropriate environmental documentation. The applicability of a CATEX to parts of the actions of one of the agencies will be noted in the environmental document. The background information in support of CATEXs, identified by either DOD or FAA, shall be forwarded to the agency requiring preparation of the EA and may be used by either agency, as allowed by their respective regulations/directives. When the categorical exclusion of the proponent is not listed in FAAO 1050.1E, Chapter 3, which would require FAA to prepare the environmental documentation; FAA budget constraints may delay processing and implementation of a proponent's proposal.

V. General Guidance

A. Scheduling. Whenever an action under this MOU requires cooperation or coordination between the FAA and DOD, the two agencies shall agree on a schedule to ensure that required actions are taken on a timely basis. Each agency will notify the other of any difficulty with meeting scheduled deadlines or any need to revise the schedule.

B. Resolution of disagreements. If the FAA and DOD fail to reach agreement at the normal working level on any issue relating to environmental processing of SUA proposals, the matter will be referred, in ascending order, as outlined in the table below. At any time, the FAA's Office of the Chief Counsel and the Office of the General Counsel of the Service Department involved shall be consulted for assistance with legal issues.

Equivalent Levels of Responsibility for Resolution of Disagreements	
FAA Administrator	Service Secretary
Vice President, System Operations Services	Policy Board on Federal Aviation (PBFA) Principal Member
Director, System Operations & Safety	PBFA Alternate Principal Member
Manager, System Operations & Safety, Environmental Programs	PBFA Working Group Member

VI. Effective Date. This MOU shall become effective on the last signature date below and shall remain in effect until otherwise rescinded or modified by both signatory parties. If either party determines that it is necessary to amend this MOU, the other party shall be notified in writing of the specific change(s) desired, with proposed language and the reason(s) for the amendment. The proposed amendment shall become effective upon written agreement of both parties.

SIGNED: DATE: October 4, 2005

Carl P. McCullough
Department of Defense

Michael A. Cirillo
Federal Aviation Administration

Appendix 8. FAA Special Use Airspace Environmental Processing Procedures

1. GENERAL.

This appendix provides guidance for FAA participation in the environmental review of proposed special use airspace (SUA) actions. The requirements in this appendix are in addition to the airspace proposal processing procedures contained in this order. The aeronautical and environmental processes for SUA proposals involve some overlap and the actions taken, or modifications made, to the proposal in one process may affect the actions required and/or the outcome of the other process.

2. BACKGROUND.

a. The SUA program is designed to accommodate national security requirements and military training activities wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations.

b. SUA proposals are subject to both NEPA and aeronautical processing requirements. Since the FAA is the approval authority for SUA actions, the agency cannot make a final decision on any particular SUA proposal prior to the completion of the NEPA and aeronautical processing phases.

3. POLICIES.

The following policies apply to the processing of SUA proposals:

a. In addition to responsibilities of a cooperating agency as defined in 40 CFR Parts 1500–1508, FAA shall:

1. Provide to DOD information and technical expertise within the special expertise and jurisdiction of the FAA as it relates to the proposed action.

2. Resolve or respond to environmental issues raised during the NEPA process relating to aeronautical issues.

3. If an EA or EIS is required, identify and evaluate the environmental impacts relating to the proposal.

4. Furnish to DOD the names of organizations, agencies, or other parties the FAA believes may be interested in the DOD proposal.

5. Notify and coordinate FAA proposed airspace actions with DOD components that may be affected.

b. FAA Participation in NEPA Meetings. The FAA shall participate in scoping, interagency, and public NEPA meetings conducted by the proponent. The Air Traffic Service Area Director (or the Director's Designee) with responsibility for Cooperating Agency participation will determine FAA representation in the meetings. When FAA personnel participate in such meetings:

1. The audience shall be informed that FAA participation is to provide aeronautical technical expertise and is not to be construed as FAA endorsement or support of any SUA proposal, and that no decisions concerning the proposal will be made at the meeting.

2. If requested, the FAA will provide an overview of the procedures followed by the FAA for processing SUA proposals.

3. The FAA will advise the audience of the Service Area handling the processing of the aeronautical proposal. Additionally, the audience should be advised that written comments on the aeronautical aspects of the proposal should be submitted during the public comment period associated with the aeronautical circularization.

c. FAA NEPA Compliance Options. In accordance with CEQ regulations, the FAA shall participate in the NEPA process as a cooperating agency. The FAA may adopt an EA or EIS prepared by DOD if the FAA independently evaluates the information in the document and takes full responsibility for the scope and content that addresses FAA actions. Where the proponent's NEPA documentation is insufficient, additional NEPA documentation will be required before the FAA can make a final decision. The FAA may ask the applicant to correct any deficiencies and re-submit the assessment if the FAA is not satisfied (see FAAO 1050.1E, "Environmental Impacts: Policies and Procedures," paragraph 203b). The FAA must issue its own FONSI and/or ROD. See FAAO 1050.1E, paragraphs 404d and 518h.

d. Time Limits for Final Environmental Impact Statements (EISs). If three years have expired following the approval of a final EIS, and major steps towards implementation have not commenced, a written reevaluation of the adequacy, accuracy, and validity of the final EIS shall be prepared by the proponent. Written reevaluations must comply with the requirements set forth in FAAO 1050.1E, paragraph 515. The proponent may also elect to prepare new documentation if circumstances dictate.

4. LEAD AND COOPERATING AGENCIES.

The FAA/DOD MOU provides for the application of "lead agency" and "cooperating agency" responsibilities in the SUA environmental process. When the DOD is the proponent, the DOD will serve as lead agency for the evaluation of SUA environmental impacts and the preparation and processing of environmental documents.

a. The DOD, as lead agency, will determine whether an SUA proposal:

1. Is a major action significantly affecting the quality of the human environment requiring an environmental impact statement (EIS);

2. Requires an environmental assessment (EA); or,

3. Is categorically excluded in accordance with FAAO 1050.1E, paragraphs 307 through 311.

These determinations shall be coordinated with the FAA at the earliest possible time to prevent delay in preparation of any required NEPA documentation.

b. The appropriate FAA Service Area, as identified in response to a request to participate, will act as the point of contact for Cooperating Agency status during the evaluation of the proposal's environmental study. FAA may use documents prepared by the proponent in its environmental process, provided the FAA has independently reviewed the scope and content of the documentation and assumes responsibility as described in subparagraph 3c, above. (See FAAO 1050.1E, paragraphs 404d and 518.)

c. Where the actions of one agency are subject to a categorical exclusion and the actions of the other agency with respect to the same SUA is not subject to a categorical exclusion, then the other agency will prepare the appropriate environmental documentation. The applicability of a categorical exclusion to parts of the action will be noted in the environmental document. FAA budget constraints may delay processing and implementation of a proponent's proposal when the categorical exclusion of the proponent is not listed in FAAO 1050.1E, Chapter 3.

5. SUA ENVIRONMENTAL CONCERNS.

In addition to other environmental considerations required under NEPA, CEQ regulations, and FAAO 1050.1E, the following are items the FAA expects to be considered, if applicable, in SUA environmental documents. This list should not be considered all-inclusive:

a. Other Times by NOTAM. When specified in the proposal, this provision permits access to the SUA area 24 hours per day. The environmental document must address the potential impact for use of the SUA during the "other times by NOTAM" period.

b. Flares and Chaff. Address the potential impact of flare and/or chaff use when this activity is specified in the SUA proposal.

c. "No Action Alternative." Include discussion of this alternative.

d. Coastal Zone Consistency Determination. Include if applicable.

e. Proposed Airspace Parameters. The environmental analysis in the EA or EIS for the SUA proposal must match the airspace parameters contained in the SUA proposal (i.e., boundaries, altitudes, times of use, and type and extent of activities).

f. Non-participating Aircraft. Include a discussion of the effect of the SUA proposed action on non-participating aircraft, if applicable.

g. Mitigation. As defined in CEQ regulations, mitigation includes:

1. Avoiding the impact altogether by not taking a certain action or parts of an action;
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
5. Compensating for the impact by replacing or providing substitute resources or environments.

h. Cumulative Impacts. Cumulative impacts on the environment are those that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal and Non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

i. Consultation. Consultation shall be conducted in accordance with the National Historic Preservation Act, Section 106; the Endangered Species Act, Section 7; FAAO 1210.20 "American Indian and Alaska Native Tribal Consultation Policy and Procedures," and other applicable laws, regulations, and Department of Transportation and FAA Orders.

6. INTERAGENCY SUA ENVIRONMENTAL PLANNING MEETING.

To facilitate early coordination between the FAA and the DOD proponent, the DOD proponent shall make a request to the FAA for Cooperating Agency status as soon as the proponent decides to initiate the environmental process.

When the FAA is invited to participate as a cooperating agency, it is suggested that a planning meeting be held as soon as practical. The agenda of the meeting should be based on the type of SUA proposal, the extent of the planned environmental analysis.

a. The appropriate Regional Military Representative (Milrep) will coordinate the proponent's request for a planning meeting with the appropriate Service Area Director (or their designee). Representatives of the FAA, the proponent, and the proponent's NEPA consultant, if any, should be invited to participate by the military representative.

b. The meeting should include discussion of pertinent issues, including but not limited to:

1. The type of SUA proposal to be submitted,
2. Identification of points-of-contact and establishment of liaison between concerned parties,
3. Determination of the appropriate type of environmental documentation,
4. The appropriate extent of FAA participation,
5. Identification of potentially significant impacts,
6. Consideration of the need for scoping, interagency, and/or other public meetings,
7. Setting processing milestones,
8. Clarifying any questions the proponent may have regarding the FAA's requirements for the environmental analysis and documentation; and,
9. Exchange of information on any environmental and/or aeronautical concerns in the area of potential effect.

c. At the meeting, the Service Area airspace representative should:

1. Brief attendees on the airspace processing procedures in Part 5. of this order that will apply to the SUA proposal.

2. Encourage the proponent to work proactively with aviation user groups and individuals to address aeronautical issues as they arise. This should ensure early consideration of aeronautical mitigation.

d. At the meeting, the Service Area environmental representative should:

1. Brief attendees on the environmental processing procedures in FAAO 1050.1E and Chapter 32 of this order that apply to the SUA proposal.

2. Encourage the proponent to work proactively with other Federal, State, and Local agencies; Tribal Governments; and the public on environmental concerns as they arise. This will ensure that mitigation to address environmental concerns is considered early in the process.

3. Advise attendees that the FAA cannot render a final determination on the environmental effects of the SUA proposal until after completion of the proponent's environmental process, the FAA's aeronautical process, the FAA's independent review of the proponent's environmental documentation, and any additional environmental analyses conducted by the FAA.

e. The meeting format may be tailored to the needs of the specific proposal. It may be conducted by a teleconference, if permitted by the scope of the proposal or if necessary due to funding or other constraints.

f. Additional meetings should be scheduled as needed to discuss changes, revise milestones, share updated environmental and/or aeronautical impact data or public comments, discuss alteration of the proposal in order to mitigate valid aeronautical objections, incorporate agreements by the proponent to mitigate environmental impacts, or discuss other matters.

7. RELATIONSHIPS AND TIMING OF ENVIRONMENTAL AND AERONAUTICAL PROCESSES.

a. SUA proposals are subject to both environmental and aeronautical processing requirements. These processes are separate but closely related. Any actions by a proponent to mitigate environmental impacts, and/or changes to the proposal to address valid aeronautical objections, may alter the type and extent of environmental analysis required.

b. Normally, the SUA proponent will initiate the environmental process well in advance of submitting an actual SUA proposal to the FAA for review. The appropriate Milrep should inform the appropriate Service Area as soon as possible after receiving notice that a DOD proponent plans to initiate the environmental study process. A letter requesting FAA participation in the environmental study process as a Cooperating Agency should be forwarded to the Director of the Office of System Operations Airspace and Aeronautical Information Management (AIM), at FAA Headquarters.

c. Proponents should submit SUA proposals to the FAA Service Area prior to completion of the NEPA process. This will enable the FAA to initiate the aeronautical processing phase prior to completion of any required NEPA documents, which will facilitate the earlier consideration of aeronautical factors that may result in modification of the proposal and may affect the environmental analysis. In all cases, the FAA will defer a final decision on the proposal until the required NEPA process is completed.

d. During the aeronautical processing of a proposal with alternatives, only the alternative submitted to the FAA in accordance with Part 5. of this order will be subjected to the aeronautical process described in this order (i.e., non-rulemaking circularization or Notice of Proposed Rulemaking (NPRM)) by the FAA. However, all reasonable alternatives, including the alternative of no action, must be evaluated in the environmental document.

8. SERVICE AREA PROCEDURES.

a. Normally, FAA participation in the SUA environmental process will begin at the headquarters level with a request by the proponent of an SUA proposal for the FAA to participate in the process as a Cooperating Agency. However, the FAA point of contact will generally be a representative from the Air Traffic Organization at the Service Area level. Close coordination is required between the Service Area Airspace Specialist and Environmental Specialist throughout the process. This will ensure that FAA concerns are provided to the proponent for consideration, and that NEPA and DOT/FAA environmental requirements are met.

b. Once notified of the initiation of the environmental process by the SUA proponent, the Service Area environmental specialist should request that the proponent provide a minimum of five copies of all preliminary, draft, and final environmental documents for FAA review. The Service Area environmental specialist will forward three copies of the documents to FAA Headquarters (System Operations Airspace and AIM, Airspace and Rules or Environmental Programs Groups).

c. To the extent practicable, the Service Area should provide FAA representation at pre-scoping, scoping, and/or other NEPA public meetings concerning the SUA proposal. If requested by the Service Area, representation from the headquarters Airspace and Rules and/or Environmental Programs Groups will be provided.

d. Service Area Airspace Specialist Responsibilities:

1. Coordinate requests from the Milrep to schedule an interagency SUA environmental planning meeting with the Service Area Director (or the Director's designee) and the environmental specialist.

2. Participate in interagency SUA environmental planning meetings as directed, by the Service Area Director (or the Director's designee). (See paragraph 6, above.)

3. Participate in pre-scoping, scoping and/or other public meetings as directed.

4. Provide information and assistance as required to the proponent regarding the aeronautical aspects of the proposal and processing procedures under Part 5. of this order.

5. Coordinate with and assist the environmental specialist in the review of environmental documents to ensure consideration of pertinent aeronautical issues. Compare the SUA proposal parameters with the analysis in the environmental document to ensure that the analysis is consistent with the proponent's airspace request. Provide corrections and/or comments to the environmental specialist for transmittal to the proponent.

6. Maintain liaison with the proponent's environmental team to determine if any comments received pertain to aeronautical issues; provide information regarding the aeronautical aspects of alternatives developed by the proponent.

7. Provide to the proponent aeronautical impact information obtained from the formal aeronautical study conducted in accordance with Chapter 21 of this order and during the aeronautical public comment period. As required, negotiate with the proponent to modify the proposal to mitigate valid aeronautical objections or adverse aeronautical impact.

8. Upon receipt of the SUA proposal, initiate processing in accordance with Part 5. of this order.

(a). Determine if an Informal Airspace Meeting will be held in accordance with the procedures in Part 5. of this order. If a meeting is planned, request participation by the proponent to explain and answer questions about the proposal.

Note:
Informal Airspace Meetings are optional for SUA proposals. Normally, they are held only if the Service Area determines that there is a need to obtain additional aeronautical facts and information relevant to the SUA proposal under study. Informal airspace meetings may also be held based on known or anticipated controversy of the proposal.

(b). Complete the appropriate rulemaking or non-rulemaking processing requirements as defined in Part 5. of this order.

9. In consultation with the Service Area environmental specialist and the Regional Counsel, review the proponent's decision document to ensure that it is consistent with any modifications made to the SUA proposal, if applicable, and that any agreed upon aeronautical mitigation measures are included.

10. If the Service Area airspace specialist recommends approval of the SUA proposal, submit the completed proposal package to the Airspace and Rules Group for final review and determination. The Environmental Programs Group will receive the SUA package from the Airspace and Rules Group for review of any environmental documentation.

e. Service Area Environmental Specialist Responsibilities.

1. Coordinate as required with the Service Area Airspace Specialist regarding SUA matters.

2. Notify the Environmental Programs Group when informed of scheduled interagency SUA environmental planning meetings. Participate in such meetings as directed by the Service Area Director (or the Director's designee) (see paragraph 6 above).

3. Provide information as required to the SUA proponent regarding FAA environmental requirements and concerns.

4. In coordination with the Service Area Airspace Specialist, review the SUA proponent's environmental documents to ensure that applicable impact categories and any specific FAA environmental concerns are considered. After each review, forward any corrections and FAA comments to the proponent.

5. Review the proponent's final document to assess whether it meets the standards for an adequate document under NEPA, the CEQ regulations, DOT Order 5610.1C, and FAAO 1050.1E. Following consultation with the Regional Counsel, determine if the FAA considers the document adequate for adoption. Provide documentation of the results of this review and a recommendation regarding FAA adoption to the Environmental Programs Group.

6. If the proponent takes the position that a categorical exclusion (CATEX) applies to an SUA proposal:

(a). Determine if FAA Order 1050.1E, Chapter 3, Advisory and Emergency Actions and Categorical Exclusions, lists the CATEX. Verify that no extraordinary circumstances exist that would preclude use of the CATEX for the SUA proposal. Determine what additional environmental analysis would be required if the CATEX is not listed.

(b). Document the results of the review in subparagraphs (a) and (b) above, and submit the findings to the Environmental Programs Group.

7. Retain the administrative record in accordance with FAA retention guidelines. If DOD is the lead agency for the proposed project, a copy of relevant documents in its administrative record should be obtained and included in the FAA record.

9. SYSTEM OPERATIONS AIRSPACE and AIM, ENVIRONMENTAL PROGRAMS GROUP PROCEDURES:

a. Review the proponent's environmental document(s) to verify that the analysis matches the parameters specified in the SUA aeronautical proposal and that any required environmental issues are considered. Conduct this review simultaneously with the Service Area's review as described in paragraph 8. Provide corrections and identify deficiencies to the Service Area Airspace and/or Environmental Specialist for transmittal to the proponent.

b. The Environmental Programs Group shall review the proponent's environmental documents for content and compliance with NEPA, CEQ regulations, and applicable DOT and FAA Orders. Coordinate with the Airspace and Rules Group as needed, regarding concerns, corrections, or other comments on aeronautical

impacts. Provide FAA Headquarters comments to the Service Area Environmental Specialist for transmittal to the proponent.

c. Provide concurrent assistance and policy guidance regarding SUA environmental processing to the Service Area environmental specialist upon request.

d. Coordinate with the Airspace and Rules Group as needed for additional information concerning the SUA proposal and aeronautical impact matters.

e. Review the proponent's Final EIS or EA/Finding of No Significant Impact (FONSI), and the Service Area environmental specialists' comments regarding compliance with NEPA, CEQ, and applicable DOT and FAA requirements. Determine if the document is suitable for adoption by the FAA. Prepare FAA adoption memorandum and provide a copy to the Airspace and Rules Group for inclusion in the airspace docket or case file.

f. Review the proponent's and Service Area environmental specialist's comments regarding applicability of a categorical exclusion. If the categorical exclusion does not apply, determine if additional environmental analysis is required. Consider if categorical exclusion documentation is required in accordance with FAAO 1050.1E, Paragraph 305. Provide a copy of the determination to Airspace and Rules Group for inclusion in the airspace docket or case file.

g. As appropriate, coordinate with the FAA Office of the Chief Counsel, Airports and Environmental Law Division. See, e.g. FAAO 1050.1E paragraphs 214d, 304i, 404e, 508a, and 509a.

h. Prepare a separate FAA FONSI and/or Record of Decision (ROD) if circumstances dictate. Provide a copy to the Airspace and Rules Group for inclusion in the airspace docket or case file.

i. In the case of rulemaking SUA actions, assist the Airspace and Rules Group by preparing the statement to be included in the ENVIRONMENTAL REVIEW sections of the NPRM and the Final Rule. In the case of non-rulemaking SUA actions, prepare the FONSI/ROD for the airspace case file for the non-rulemaking documentation and notify the public in accordance with FAA Order 1050.1E, Paragraph 512e.

10. SYSTEM OPERATIONS AIRSPACE and AIM, AIRSPACE AND RULES GROUP PROCEDURES:

a. Upon receipt at headquarters, review the proponent's environmental document(s) from an airspace/aeronautical impact perspective to verify that the environmental analysis matches the parameters specified in the SUA proposal and that any required aeronautical issues are considered. Conduct this review simultaneously with the Service Area aeronautical review as described in paragraph 8, above.

b. Ensure that the Service Area airspace specialist provided a copy of the proposal, including any environmental documentation, to the Service Area environmental specialist.

c. Coordinate with the Environmental Programs Group, as required, to discuss the environmental analysis of the proposal.

d. Submit all SUA NPRMs, final rules, and non-rulemaking airspace determinations to the Environmental Programs Group for coordination prior to issuance.

e. Insert the following statement in the environmental review section of SUA NPRMs:

> "This proposal will be subject to appropriate environmental impact analysis by the FAA prior to any final FAA regulatory action."

f. Consult with the Environmental Programs Group to draft the text for the ENVIRONMENTAL REVIEW section for SUA final rules. In the case of rulemaking SUA actions, assist the Airspace and Rules Group by preparing the statement to be included in the ENVIRONMENTAL REVIEW sections of the NPRM and the Final Rule. In the case of non-rulemaking SUA actions, prepare the FONSI/ROD for the airspace case file for the non-rulemaking documentation and notify the public in accordance with FAAO 1050.1E, Paragraph 512e.

Note:
For "Direct-to-Final-Rule" actions which are categorically excluded under FAAO 1050.1E, the following statement may be inserted in the environmental review section of the Final Rule:

> "This action is categorically excluded under FAAO 1050.1E, "Environmental Impacts: Policies and Procedures," Paragraph (insert Paragraph Number). Therefore, this action is not subject to environmental review."

g. Coordinate with the Environmental Programs Group to determine the status of FAA adoption of the proponent's environmental document(s). Obtain a copy of FAA adoption documentation for inclusion in the rulemaking docket file or non-rulemaking airspace case file.

h. Complete final airspace processing requirements in accordance withPart 5. of this order, including the final determination on the airspace request. In all cases the FAA must not issue a final decision until after the NEPA process is completed; the FAA has adopted the proponent's EIS or EA, as applicable; and any additional FAA environmental requirements are satisfied.

Appendix 9. Noise Policy for Management of Airspace Over Federally Managed Lands

NOISE POLICY FOR MANAGEMENT OF AIRSPACE OVER FEDERALLY MANAGED LANDS

The FAA shares the national concern for the preservation of the natural environment. A critical objective in the FAA Strategic Plan is to provide leadership in mitigating the environmental impact of aviation. It is the policy of the FAA in its management of the navigable airspace over locations in national parks and other federally managed areas with unique noise-sensitive values to exercise leadership in achieving an appropriate balance between efficiency, technological practicability, and environmental concerns, while maintaining the highest level of safety. This policy envisions joint efforts between the FAA and the Federal agencies managing these locations to enhance the compatibility between management of the airspace and the management goals of these agencies.

The National Park System and other natural resource management areas under Federal jurisdiction include many locations with unique values which merit special environmental protection. Some areas provide opportunities for solitude and natural quiet and allow visitors to experience nature unaffected by civilization. Some provide opportunities for people to visit historically authentic settings, as they existed before the introduction of mechanized power. Others contain designated wilderness, critical habitat for endangered species, or solemnity of purpose, which would be diminished by the intrusion of noise. While aircraft noise is not the only noise or environmental impact that may be incompatible with areas having such unique values, this is the area of FAA's special expertise and jurisdiction.

In order to carry out the policy effectively, FAA staff and management will-

- Promote public participation to increase understanding and gain the cooperation of concerned parties when assessing noise impacts on designated locations in federally managed areas. An appropriate public process will be designated for each assessment to identify the stakeholders and provide for their effective participation.
- Communicate this policy to all stakeholders clearly. Educational information will be developed and disseminated to airspace users and other stakeholders, and appropriate advisories will be issued to minimize overflight activity and noise over particularly sensitive locations. A measured and balanced approach to the need for protective measures over specific unique locations will be taken in consultation with Federal agencies administering these areas.
- Consult actively with other Federal agencies to identify and mitigate appropriately aircraft noise levels that are not compatible with designated locations in federally managed areas. Such consultation will ensure that any resulting mitigation strategies will not transfer impacts to other noise-sensitive locations within or beyond the federally managed area. The FAA will evaluate appropriate airspace management options in consultation with the Federal agencies administering these resources to identify particular locations of concern on a priority basis. Such evaluation of alternatives will ensure that safety is not derogated and that technological and economic factors are weighed consistent with the FAA's responsibilities under 49 USC §§40101-46507 (former Federal Aviation Act).
- Develop or refine on a continuing basis methods and criteria to assess aircraft noise on designated locations in federally managed areas, in conjunction with the Federal Interagency Committee on

Aviation Noise (FICAN). Recognizing the lack of complete information and agreement on noise methodology, metrics, noise effects on animals, and appropriate land use compatibility criteria for uniquely quiet areas, the FAA in conjunction with the FICAN will continue to develop, refine, and reach more effectively aircraft noise impacts on unique national land and water resources.

- Train FAA airspace management personnel on effective airspace design techniques for mitigation of adverse aviation impacts on designated locations in federally managed areas.

This policy statement and the underlying actions are consistent with the goals of environmental responsibility and communication in the FAA's Strategic Plan, which state that FAA will:

- Provide strong leadership regarding the environmental impacts of aviation and commercial space transportation.
- Establish and maintain lines of communication with the public and with employees to promote understanding, awareness, and cooperation and to serve the interests of the traveling public.

Signed by

David Hinson

Administrator

Dated November 8, 1996

Appendix 10. Community Involvement Policy

Community Involvement Policy Statement

The first step in meeting the needs of the public is to understand the public's needs. Community involvement lets the agency know what the citizens think about our activities. Though community involvement, we will broaden our information base and improve our decisions.

The Federal Aviation Administration (FAA) is committed to complete, open, and effective participation in agency action. The agency regards community involvement as an essential element in the development of programs and decisions that affect the public.

The public has a right to know about our projects and to participate in our decision making process. To ensure that FAA actions serve the collective public interests, all stakeholders will have an opportunity to be heard. Our goals are:

- To provides active, early, and continuous public involvement;
- To provide reasonable public access to information;
- To provide the public an opportunity to comment prior to key decisions; and
- To solicit and consider public input on plans, proposals, alternatives, impacts, mitigation and final decision.

This task will require agency management and staff:

- To identify and involve the public and to consider specific concerns;
- To use public involvement techniques designed to meet the diverse needs of the broad public, including not only interested groups and the general public, but individuals as well;
- To ensure FAA planning and project managers commit appropriate financial and human resources to community involvement;
- To sponsor outreach, information, and educational assistance to help the public participate in FAA planning, programming, and project development activities;
- To ensure key personnel are trained properly in community involvement techniques and methods; and
- To development and evaluate public involvement processes and procedures to assess their success at meeting our goals.

The goals of community involvement are:

- To promote a shared obligation of the public and FAA decision makers in identifying aviation-related concern and developing and evaluating alternatives to address them; and
- To promote an active public role to minimize potential adverse community reaction to agency plans that are necessary for safe, effective, and environmentally responsible management of our airspace.

Signed by

David R. Hinson

Administrator

Dated: April 17, 1995

Nye County Independent Scientific Investigations Cooperative Agreement Revised Application (November 27, 2007)

Attachment "B"

Nye County
Nuclear Waste Repository Project Office
1210 E. Basin Rd. Ste. #6 · Pahrump, Nevada 89060
(775) 727-7727 · Fax (775) 727-7919

07-236-DL (L)

November 27, 2007

Drew Coleman
Office of Civilian Radioactive Waste Management
U.S. Department of Energy (DOE)
1551 Hillshire Dr. M/S 523
Las Vegas, NV 89036-0307

Subject: Independent Scientific Investigations Cooperative Agreement Revised Application

Dear Mr.Coleman:

Per your request, enclosed please find our second revision of the Nye County Nuclear Waste Repository Project Office Independent Scientific Investigations Cooperative Agreement Application for Fiscal Years ending in 2008-2012 (April 1, 2007 – March 31, 2012). Included in this package is a revised proposal with a total budget of $14,800,000. The reduction was made based on the past history of funding levels and discussions with you and other DOE staff. Should additional funding become available, we would like to reinstate tasks eliminated from the original proposal due to the current budget restraints.

We have reduced the budget and scope of work from the previous Independent Scientific Investigations Program Cooperative Agreement Applications presented in February 2007 for $52,394,000 and the April 2007 re-submittal for $25,409,000. The following tasks were deleted from the proposal: Paleozoic deep monitoring, intermediate-field repository monitoring, northern Fortymile Wash aquifer testing complex, alluvial tracer testing west of Fortymile Wash, horizontal well drilling, and seismic surveying. The scopes of the following tasks were greatly reduced: site-scale monitor well drilling, resistivity surveying, repository design and EBS studies, and regional tectonism and volcanism studies and evaluations.

If you have any questions regarding this application, please do not hesitate to call.

Respectfully,
NYE COUNTY, NEVADA

Darrell Lacy
Director

Enclosure: As Stated

DS/zc

cc: Gary Hollis, Nye County, Chairman
Joni Eastley, Nye County, Vice Chair
Allen Benson, DOE/OCRWM
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Nye County Proposal for Additional Independent Scientific Investigations Program Activities for Fiscal Years 2007 – 2011 – Reduced Budget

Prepared for:

U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Office of Repository Development

Prepared by:

Nye County Nuclear Waste Repository Office

November 2007

NWRPO-2007-XX
Rev. Draft

Nye County Proposal for Additional Independent Scientific Investigations Program Activities from April 2007 through March 2012 – REDUCED BUDGET

1. INTRODUCTION

This proposal describes the technical investigations proposed by the Nye County Nuclear Waste Repository Project Office (NWRPO) for the five-year period from April 2007 through March 2012. These proposed investigations build on and extend the NWRPO's Independent Scientific Investigations Program (ISIP), which has been funded by the U.S. Department of Energy (DOE) since 1996. The main goal of the ISIP has been and will continue to be, the independent evaluation of technical issues potentially affecting human health, safety, and the environment in Nye County.

The objectives, activities, and results from the past ISIP grants are described in Section 2. Justification for additional investigations based on the original funding request of $52.4M is presented in Section 3. Section 4 provides an overview of proposed additional investigations (e.g., work elements), and their estimated costs. Finally, a more detailed description of each work element is provided in Section 5, which include the scopes of work, specific objectives, planning assumptions, budget, deliverables, and schedule information for each proposed element.

The scopes of work are based upon Nye County's current understanding of the data and models developed by the Yucca Mountain Project and the need for: 1) additional data to address key unresolved technical issues that may be important in licensing; 2) continued evaluation of issues important to the assessment of natural resources; 3) better definition of the potential impacts on those resources and the County's residents; and 4) confirmation of existing data and analyses. The scopes, schedules and budgets for borehole or monitor well related tasks are based upon assumed numbers of wells that may be adjusted upward or downward to address specific programmatic requirements or budgetary constraints.

2. INDEPENDENT SCIENTIFIC INVESTIGATIONS PROGRAM GOALS, AND SUMMARY RESULTS FROM FISCAL YEARS 1996–2006

In this section, the ISIP goals are presented along with a summary of the activities that Nye County has successfully completed over the last decade.

2.1 OVERVIEW

During calendar year 2007, the NWRPO will complete over ten years of technical investigations conducted under the auspices of the ISIP and a program within the ISIP called the Early Warning Drilling Program (EWDP). Through the successful implementation of these programs, the NWRPO has conducted tests, collected data, and performed analyses primarily aimed at filling data gaps and addressing technical issues at a number of spatial scales. Studies related to ventilation, corrosion, thermal loading, and volcanic hazards have been focused on areas within and in the vicinity of the proposed repository. The EWDP studies have targeted data gaps to address technical issues on a somewhat broader scale, including studies of the Fortymile Wash, Crater Flat, and Amargosa Desert areas. The results of the EWDP have significantly contributed to a better

understanding of the conditions along flow paths between Yucca Mountain and the populated areas of Nye County. Other studies have focused on the even larger regional scale of the Death Valley regional groundwater flow system through the evaluation of the efficacy and accuracy of the data and assumptions on which flow and transport models are based.

2.2 GOALS AND OBJECTIVES OF THE ISIP

The primary goal of the ISIP is to ensure the health and safety of current and future residents potentially affected by the DOE activities to transport, store, and dispose of highly radioactive wastes at Yucca Mountain; and to provide this assurance in a manner consistent with the authority of the local government, to the maximum extent feasible, rather than by exclusive reliance on the federal government or its contractors. The ISIP is designed to be the science program that, together with other oversight activities, allows Nye County to realize it's primary goal.

The ISIP has two major objectives or areas of focus related to the DOE's Yucca Mountain repository program. The first includes independent technical work that provides information needed by the County to verify the adequacy of selected DOE data, analyses, and models that will be used to support evaluation of compliance with NRC licensing requirements (and hence, the safety of our citizens). This focus area or objective includes confirmatory studies, activities to fill apparent data gaps, and investigation of alternative models. The second focus area or objective involves additional independent studies that provide information needed by the County to evaluate the potential direct and indirect impacts of repository development on County residents and the environment including natural resources, both in the near-term and in the future.

As the YMP proceeds, independent monitoring, testing, and evaluation conducted by Nye County must be expanded, with a significant focus on the DOE performance confirmation program. Nye County sees the primary role of the ISIP in performance confirmation is to continue the exploration, testing, and monitoring of potentially affected natural media, and to extend our understanding of the natural processes present, and the potential for their alteration. This will include site-specific measurements of soil, rock, and water in areas where there are currently little or no data; thereby increasing the understanding of the geologic and hydrologic frameworks used in conceptual and predictive models.

The work elements described in this proposal are designed to meet the major goal and objectives of the ISIP. Specific objectives for each of the work elements in this proposal are given in the work element descriptions provided in Section 5 of this proposal.

2.3 SUMMARY RESULTS OF THE ISIP AND EWDP

The ISIP and EWDP have been used by the NWRPO to address technical issues and data gaps in the area between Yucca Mountain and the potentially affected environment where the County's citizens live and work. The EWDP has studied the valley-fill aquifers between Yucca Mountain and Amargosa Valley, and defined their number, type, distribution, and hydraulic properties. A great deal of information has also been gathered concerning the relationship between geologic structures and groundwater; leakance

between the underlying Paleozoic aquifers and the valley-fill aquifers; and temperature distributions, mineralization, and baseline water chemistry. These findings have helped NWRPO scientists to better define the degree and significance of aquifer compartmentalization and potential pathways for preferential groundwater flow and transport from a proposed repository toward populations down gradient of Yucca Mountain.

Activities that have been completed (or are underway) under the ISIP and EWDP include the completion of approximately 45,000 feet of exploratory borehole and monitoring well drilling, sampling over 40,000 feet of borehole cuttings, approximately 600 feet of alluvial core samples, and geologic and geophysical logging. A total of 38 monitoring wells and piezometers have been completed with a total of 81 saturated zone and 10 unsaturated screened intervals.. Aquifer tests have been conducted in selected EWDP wells and privately owned wells in Amargosa Desert.

Groundwater samples collected from EWDP wells have been analyzed for an extensive suite of chemical and isotopic parameters. The laboratory analyses of these samples have significantly expanded information on hydrochemical conditions and have led to refined interpretations of regional groundwater flow patterns.

Data collected during water level monitoring in all EWDP and a number of strategic regional wells has been compiled into Nye County's Regional Groundwater Database. This data collection effort has led to better definition of spatial and temporal trends in water levels and an increased understanding of the effects of pumping, geologic structures, drought, and seismic events on water levels in the region.

In cooperation with the U.S. Geological Survey and other agencies, Nye County has sponsored the collection of new geophysical data through a regional airborne magnetic survey and the expansion of an isostatic residual gravity survey to encompass the area of proposed EWDP wells and significant portions of the Amargosa Desert basin. The results of these surveys have supported the refinement of the geologic framework and the definition of the structural history of Yucca Mountain. Additionally, these surveys have provided better definition of a number of volcanic anomalies that are one of the focuses of the volcanic risk hazard assessment.

Other ISIP activities have included geologic mapping of several quadrangles in Pahrump Valley in cooperation with the Nevada Bureau of Mines and Geology and the University of Nevada, studies of alternative modes of repository ventilation, the development of numerical models of key hydrologic processes to test the assumptions made and approach in the regional and site-scale models developed for the YMP. All ISIP data collection and analysis activities conducted by Nye County have been carried out under the NWRPO Quality Assurance (QA) Program. This program was designed to meet the criteria of 10 CFR 50, Appendix B, as well as relevant requirements of ANSI/ASME-NQA-1.

The results of ISIP activities have been published in annual summary reports, periodic data reports (packages), and the 2001 five-year summary report (NWRPO, 2001). In addition, a second summary five-year report will be produced by the end of March 2007.. Many of these reports and much of the QA-qualified data collected under the ISIP are available on Nye County's web page (www.nyecounty.com). Summaries of methods, data, and analyses

of major ISIP studies have been communicated by NWRPO staff and contractors to members of the scientific community through presentations to the Nuclear Waste Technical Review Board (NWTRB), the Advisory Committee on Nuclear Waste, NRC/DOE technical exchanges, Devils Hole workshops, the Nevada Test Site's Community Advisory Board, and others. NWRPO staff and contractors plan to publish key technical data and analyses in peer-reviewed professional journal papers during 2006 and 2007.

3.0 JUSTIFICATION FOR ADDITIONAL ISIP TASKS

Although much work has been, and will be, accomplished under existing ISIP grants through FY 2006, additional work is needed to address important technical issues and to fill in remaining data gaps on repository, expanded site, and regional scales. For the purposes of discussion, justification for proposed repository-scale and larger-scale investigations will be discussed separately in the following sections. It should be emphasized that the proposed studies will build upon the results of previous ISIP studies, successfully expand the EWDP groundwater monitoring network, and collect data to address concerns of Nye County, as well as some concerns expressed by the NRC, the NWTRB, and others in the scientific community.

3.1 NEED FOR ADDITIONAL REPOSITORY-SCALE INVESTIGATIONS

Since 2002, the ISIP through the University of Nevada Reno has conducted independent, numerical modeling studies with the MULTIFLUX model to evaluate the design and performance of the proposed repository at Yucca Mountain. The main results have included the development of the MULTIFLUX model to: simulate the coupled, multi-scale, thermal-hydrologic-air flow; evaluate in-drift heat and mass transport in the waste package storage environment including in-drift condensation; demonstrate the importance of incorporating barometric pressure variations in the thermal-hydrologic studies; and define potential problems with the high-temperature storage operation due to humidity variations resulting in potential salt accumulation.

Nye County's ventilation studies program has analyzed the transport of heat and moisture under variable barometric pressure. The constant barometric pressure assumption has been replaced with real input data on barometric pressure variation in the MULTIFLUX model used by Nye County. The results, given in Danko (2003) (NWRPO-2003-05), show very significant, periodic humidity variations with time in the emplacement drift due to pressure variations. The effects of cyclic humidity variations between dry and wet in the emplacement drift need further studies and careful evaluation regarding condensation, salt accumulation, ion separation, and waste package corrosion. Continued evaluations through a series of analyses and sensitivity studies are necessary and warranted to enhance the model and the ability to evaluate proposed DOE design solutions, alternatives, and contingencies for the repository at Yucca Mountain.

3.2 NEED FOR ADDITIONAL SITE-SCALE AND REGIONAL-SCALE INVESTIGATIONS

Although studies funded under the ISIP Cooperative Agreement through March 2007 have generated, and will generate, valuable new information, they also suggest that the

hydrogeologic system down gradient of Yucca Mountain is very complex. Continued investigation is needed to further characterize the hydrogeologic framework, identify and test potential preferential flow pathways, and ensure that an adequate monitoring network is in place down gradient of the proposed repository site. These additional hydrogeologic and flow path data may also prove beneficial to the DOE YMP by helping to reduce uncertainty flow and transport model results and the total system performance assessment.

The NWRPO recommends continuing studies under a new ISIP Cooperative Agreement for five additional years to continue to fill data gaps and increase confidence in conceptual and numerical models of the natural systems present, and their interactions. It is anticipated that many of the same hydrogeologic characterization methods that have been used successfully in the first five phases of the EWDP will be successful in proposed future phases. These methods include borehole drilling, sampling, logging, aquifer and tracer testing, and monitoring of temperature, barometric pressure, water levels, and water quality. Additionally, several surface geophysical methods should be useful in identifying tuff/valley-fill contacts and water table depths. If successful, these surface-based methods could potentially reduce the number of monitor wells required.

Groundwater travel time and the link between the alluvial aquifer and underlying carbonate aquifers in the region between Yucca Mountain and Death Valley at the points of recharge and discharge are issues of concern. Evidence obtained from EWDP drilling suggests an upward movement of warm water from deep carbonate aquifer into the alluvial aquifer in the vicinity of several wells located along Highway 95 south of Yucca Mountain. Additional EWDP drilling and monitoring will be required to confirm and characterize this discharge pathway and its effect on potential alluvial aquifer flow and transport pathways from Yucca Mountain to Amargosa Valley.

More detailed information is needed on the geologic and hydraulic conditions in the Yucca Mountain Region, particularly in the area encompassed by the DOE's site-scale model. The results of past investigations by Nye County have verified that the volcanic and valley-fill aquifers in this area are far more variable than the conditions simulated by the model. While the data collected thus far has provided important refinement of this model, information gaps still exist and additional subsurface investigations including testing, sampling, and analysis are not only needed, they are essential to the development of confirmation models. Further definition of fault boundaries of groundwater compartments and the effects of faults on groundwater distribution and flow is also needed.

Nye County's studies have also confirmed that the complex geologic and tectonic history of the region has resulted in extensive compartmentalization of the aquifers (and aquitards) of the site-scale model domain. Faults have been identified and shown to have a pronounced effect on groundwater flow in the model domain. Uncertainties remain with respect to the boundaries of specific compartments in the vicinity of Yucca Mountain and the hydrologic conditions across those boundaries. The proposed investigations will further define these compartments by building on the results of past studies, and will further help define the effects of these features on groundwater distribution and flow.

In general, groundwater models are driven by the hydraulic conditions and flux of groundwater flow across each boundary of the model. For defining boundary conditions,

the site-specific model has relied upon the regional flow model and the shared geologic framework model. Calibration has largely been based upon the mass balance of the fluxes of groundwater into and out of the model. These fluxes are based on simulations of regional flow that are at best, gross approximations of flows into and out of the model domain. Definition of the actual conditions in the vicinity of the site-scale boundaries is an important focus of the proposed drilling and testing program.

Performance confirmation can not be bound by the constraints imposed on previous investigations in the region. For example, with the exception of human intrusion scenarios for the post-closure period, site characterization did not take into account transient changes in the population or use of resources in the vicinity of Yucca Mountain. The demand for the groundwater resources of the region has never been greater, and future groundwater withdrawals may result in significant changes in ground water flow directions and rates in the vicinity of Yucca Mountain. The aquifer testing proposed in the following sections will provide the tests needed to evaluate transient stresses not accounted for in previous models. The proposed investigations will provide a great deal of information at a critical point in the overall progress of the YMP. By taking advantage of the lag time between licensing and construction and the actual operation of the repository, the program will ensure that the data needed for performance confirmation is available and presented in a timely manner.

4.0 PROPOSED ADDITIONAL INDEPENDENT SCIENTIFIC INVESTIGATIONS PROGRAM ACTIVITIES

Past ISIP studies conducted by Nye County have been carried out under the constraints and controls of the NWRPO QA Program. Selected ISIP studies by other government entities have been conducted under the constraints and controls of those entities' QA programs. All proposed ISIP studies described below would continue to be administered under either the NWRPO QA Program or the QA program of the responsible government entity. The proposed activities are categorized into 10 work elements:

Work Element 1 - Early Warning Drilling Program
Work Element 2 - Site-Scale Monitoring Network
Work Element 3 - Large-Scale Alluvial Aquifer Testing Program
Work Element 4 - Tracer Testing
Work Element 5 - Geophysical Surveying
Work Element 6 - Water Chemistry Monitoring
Work Element 7 - Water Level Monitoring
Work Element 8 - Repository Design and EBS Studies
Work Element 9 – Regional Tectonism and Volcanism
Work Element 10 – Data Management, Analysis, and Reporting

The time-phased budgets for the completion of these work elements are summarized in Table 1. Descriptions of the purpose, objectives, and scope are provided in subsequent sections of this proposal along with the assumptions, deliverables, and task level budgets.

Table 1. Budget Summary (values in thousands of dollars (2007) and are escalated at 3.5%)

WORK ELEMENT/FISCAL YEAR	FY07-08	FY08-09	FY09-10	FY10-11	FY011-12
1. EARLY WARNING DRILLING PROGRAM	20	1,400	1,550	1,650	1,700
2. SITE- SCALE MONITORING NETWORK	10	250	330	350	400
3. LARGE-SCALE ALLUVIAL TESTING PROGRAM	20	250	250	300	350
4. TRACER TESTING	200	200	210	220	230
5. GEOPHYSICAL SURVEYING	50	100	110	175	175
6. WATER CHEMISITRY MONITORING	150	160	170	180	190
7. WATER LEVEL MONITORING	150	160	170	180	190
8. REPOSITORY DESIGN AND EBS STUDIES	75	75	75	80	80
9. REGIONAL TECTONISM AND VOLCANISM EVALUATIONS	50	100	110	120	130
10. DATA MANAGEMENT, ANALYSIS, AND REPORTING	275	305	325	345	455
TOTAL	**1000**	**3,000**	**3,300**	**3,600**	**3,900**

GRAND TOTAL = $14,800

The proposed work elements are synergistic in that the data collected as part of one work element provides information that will be used in other elements. For example, the information collected in the geophysical surveying work element will be used to further evaluate the locations for wells that will be drilled as part of other work elements. Similarly, the large-scale aquifer testing program will utilize new EWDP wells that are located in key areas west of Fortymile Wash to allow better definition of the interrelationships between the volcanic and alluvial aquifers.

At the successful completion of the proposed task, a great deal of new data will be available at key locations. The first two work elements (EWDP and Site-Scale Monitoring Network) are targeted to fill in data gaps and provide field data to define the important flow model boundary conditions that are currently based on abstractions. The large-scale alluvial testing and tracer testing elements (Work Elements 3 and 4) will measure the response of the volcanic and valley-fill aquifers to stresses and provide detail on aquifer parameters at the borehole, site, and sub-basin scales. The geophysical methods proposed in Work Element 5 will aid in the location of wells and the definition of the extent of the regional discharge area at Ash Meadows.

The water chemistry and water level monitoring conducted in Work Elements 6 and 7 will continue the collection of basic hydrologic and hydrochemical data that will be of use in defining preferential flow pathways and the validation and verification of flow and transport models. Work Element 8 will continue and expand the ventilation studies. Evaluations of the structural geology, tectonism, and volcanoloy of the region will be expanded through the completion of Work Element 9. Work Element 10 provides for the comprehensive analysis and interpretation of the data generated by the other work elements.

4.1 WORK ELEMENT 1: EARLY WARNING DRILLING PROGRAM

Purpose - The purpose of this work element is to obtain additional information on the geologic and hydrologic characteristics of the volcanic and alluvial aquifers to enhance understanding of groundwater flow and transport from the repository to the accessible environment. The aquifers properties control the groundwater flow path, travel time, and retardation of dissolved constituents. Better definition of the transition from the volcanic to the alluvial aquifer will permit better representation of the relative contributions of the two aquifers.

Specific Objectives – The objectives of this work element are to:

- Expand on the Early Warning Drilling Program by completing additional wells to define the alluvial aquifer in the Fortymile Wash area;
- Construct wells to address data gaps in the are south of Yucca Mountain; and
- Summarize, interpret, and publish results.

Scope of Work: Two well drilling and completion tasks have been identified for this work element. Proposed well locations for each task are shown in Figure 1 subject to final site selection based on environmental and other constraints.

Task 1. Alluvial Flow Path Definition – This task will further define the alluvial aquifer and uppermost volcanic units in the Fortymile Wash area. Past EWDP drilling and testing has found that flow in the alluvial aquifer is not homogeneous, but rather complex, reflecting the environment of deposition of the sediments. For example, EWDP wells in the vicinity of the present day Fortymile Wash channel penetrated thick accumulations of alluvial and fluvial deposits, while wells drilled eastward away from the present channel exhibit progressively more fine-grained sediments reflecting the transition to a deltaic environment. Six wells sites will be selected to further define hydrogeologic conditions within the alluvial aquifer between Yucca Mountain and the compliance boundary. The wells will be drilled to complete an east-west transect though the alluvial aquifer from the Striped Hills on the east to the southern Windy Wash area on the west as shown in Figure 1. Information from these wells will provide a significant new data set on the alluvial aquifer. The results of past ISIP investigations indicate that the alluvial aquifer is generally less than 1,500 ft thick along this transect. The wells will be drilled to the Tertiary bedrock at each location (usually a consolidated volcanoclastic unit). Wells will be completed as either monitoring wells or multiple-string small-diameter piezometers and will, include distributed temperature (DT) sensors, and U-tube instrumentation. In addition a standard EWDP suite of borehole geophysical logs will be conducted and where possible will include fluid electrical conductivity (FEC) logging.

Task 2. Data Gap Exploration – This task will further define the hydrogeologic conditions in the volcanic rocks south of the repository location by installing 6 new exploratory boreholes (Figure 1) completed as multiple-string small-diameter piezometers. The boundary between the volcanic aquifers and valley-fill deposits, and the location and magnitude of the flux between these units are not well understood. Past EWDP drilling in this region suggests that there is a transition between the layered volcanic rocks at Yucca Mountain and the volcanoclastic deposits in the valley-fill. This task will better define this transition through further definition of the volcanic stratigraphy south of Yucca Mountain, and sampling and chemical analysis of the groundwater. The final location for these wells will be based in part on the geophysical survey work proposed in Work Element 5. Boreholes will be drilled to depths of 2,500 ft or less to characterize the aquifers present and multiple-string piezometers will be completed in the water table aquifer at each location. FEC logging will be completed in the boreholes where possible along with a standard geophysical logging suite and DT sensors and U-tube instrumentation will be included in the piezometers completions.

Assumptions: Access will be provided to portions of the Nevada Test Site as required and the Bureau of Land Management will grant the necessary rights-of-way. Well construction and discharge permits will be granted by appropriate state of Nevada agencies.

Deliverables: Deliverables will include a report on each task with updated geologic cross sections, stratigraphic sequences, and test results along with revised interpretations of the hydrologic conditions and conclusions. Additionally, drilling, well construction, and chemical data will be posted on Nye County's web page.

Table 2 Budget Summary for Work Element 1

Task	Fiscal Year	2007/08	2008/09	2009/10	2010/11	2011/12
1. Alluvial Flow Path Definition	Nye Labor	8	70	78		
	Contractor Labor	12	210	232		
	Drilling/Testing		1,120	1,240		
	Task Total	20	1,400	1,550		
2. Data Gap Exploration	Nye Labor				83	85
	Contractor Labor				247	255
	Drilling/Testing				1,320	1,360
	Task Total				1,650	1,700
	Work Element Total	20	1,400	1,550	1,650	1,700

NOTE: Totals are expressed in FY 2007 dollars escalated at 3.5% annually

4.2 WORK ELEMENT 2: SITE-SCALE MONITORING NETWORK

Purpose – The purposes of this work element are to investigate the aquifer characteristics along the boundaries of the site scale model through the drilling and instrumentation of boreholes.

The current site-scale model is constrained by boundary conditions imposed from the regional model. There is not always a good correlation between the simulated conditions in the regional model and the conditions simulated in the site-scale model, which has important consequences for saturated zone modeling. This work element is intended to provide data to validate the existing boundary conditions for the site-scale model by installing a series of well sets along the eastern boundary of the site scale model and testing and sampling each set of wells.

Specific Objectives – The objectives of this work element are to:

- Drill, instrument, and test wells along the eastern boundary of the site-scale model;
- Evaluate fluxes across the site-scale model boundary;
- Characterize groundwater conditions in eastern Jackass Flats; and
- Summarize, interpret, and publish results.

Scope of Work- One task has been identified for this work element. Potential locations for boreholes proposed for this task are shown in Figure 2.

Task 1. Site-Scale Flow Boundary Definition – This task will provide information on the hydraulic gradients, aquifer properties, and groundwater fluxes on the east boundary of the site-scale model. The tentative locations for these wells are shown on Figure 2. The final locations will be established on the basis of site access and environmental considerations, consultations with participating agencies, and the field conditions found during drilling. The data available that was used in the definition of the subsurface conditions in the regional and site scale models along this boundary relies on information extrapolated from wells located at considerable distances from the boundary. Field-based measurements of the heads, aquifer permeability, and water chemistry are lacking in the area, but are needed to better constrain the actual fluxes of groundwater into the model domain.
One well set will be installed at locations on or near the eastern boundary of the site-scale model. The well set will comprise a test well and two multiple completion (i.e. multiple string) piezometers. Tests will be conducted to define the aquifer characteristics and groundwater fluxes in eastern Jackass Flats and in western Rock Valley along or near the site-scale model boundary.

Assumptions: Access will be provided to portions of the Nevada Test Site as required and the Bureau of Land Management will grant the necessary rights-of-way.

Deliverables: Deliverables will include a report with updated geologic cross sections, stratigraphic sequences, and test results along with revised interpretations of the hydrologic conditions, and conclusions regarding the fluxes of groundwater flow through the alluvial and shallow rock aquifers along the eastern boundary of the site-scale model. Additionally, pertinent drilling well construction, and groundwater chemical data will be posted on Nye County's web page.

Table 3 Budget Summary for Work Element 2

Task	Fiscal Year	2007/08	2008/09	2009/10	2010/11	2011/12
1. Site-Scale Model Boundary Definition	Nye Labor	4	12	16	17	20
	Contractor Labor	6	38	50	53	60
	Drilling/Testing		200	264	280	320
	Task Total	10	250	330	350	400
	Work Element Total	10	250	330	350	400

NOTE: Totals are expressed in FY 2007 dollars escalated at 3.5% annually

4.3 WORK ELEMENT 3: LARGE-SCALE AQUIFER TESTING PROGRAM

Purpose – The purpose of this work element is to conduct a high-volume, long-term aquifer tests to determine aquifer characteristics in the area down gradient of Yucca Mountain on a sub-basin level, provide additional data to validate model properties, and to measure the response of the hydrologic system to large volume groundwater withdrawals. The additional wells and planned tests will also provide a great deal of new information on the hydrologic conditions along the southern boundary of the site-scale model.

Specific Objectives – The objectives of this work element are to collect data that will be used to:

- Measure aquifer properties at the sub-basin scale;
- Validate model properties and bound flux volumes and groundwater travel times;
- Provide additional data for the site-scale model in key areas;
- Validate the conditions at the southern boundary of the site-scale model;
- Better define the groundwater resources of Amargosa Valley and the potential impacts on these resources from future withdrawals associated with future development; and
- Summarize, interpret, and publish results.

Scope of Work – One task has been identified for this work element the locations of which are shown in Figure 3.

Task 1. Highway 95 Aquifer Testing Complex – Information is needed to determine the response of the valley-fill aquifer to increased groundwater withdrawals in the vicinity of Highway 95, and the potential impact of such withdrawals on groundwater flow paths and travel times down gradient of Yucca Mountain. To address this data need, a maximum of three observation wells will be drilled at or near Nye County site NC-EWDP-2 across the Highway 95 Fault system to determine the hydraulic nature of the Highway 95 Fault and the hydraulic characteristics of the valley-fill sediments along the southern site-scale boundary. Existing well NC-EWDP-2DB will serve as the test well. The location of the proposed testing complex is shown on Figure 3.
First a step-drawdown test and 48-hour constant discharge test will be performed to determine the maximum and optimum pumping rates for longer-term testing. Water levels will be allowed to recover to their pre-test levels. A test plan will then be prepared and baseline water level and barometric pressure data will be collected at the testing complex, and selected existing EWDP wells, for 60 days prior to testing. A high-volume, long-term (60 day) test will be conducted at the maximum sustainable pumping rate while water levels are monitored at a selected sub-basin scale network of EWDP monitoring wells and privately owned water wells.

It is anticipated that observation wells will include EWDP wells at sites NC-EWDP-4, 15, 19, 22, 23, 24, 29, and the Washburn site, as a minimum. Additional monitoring wells will be selected on the basis of the analyses of the step-drawdown and 48-hour constant discharge tests. The long-term aquifer test will be followed by a 15-day recovery test. This test will be followed by a staged sub-regional test of both test wells (i.e. Task 1 and Task 2) to place the maximum possible stress on the aquifer system. Existing Nye County monitoring wells will also serve as observation points during the final test.

Assumptions: Access will be provided to required portions of the Nevada Test Site and the Bureau of Land Management will grant the necessary rights-of-way. Private well owners will grant access to their wells for monitoring during the testing. Well construction and discharge permits will be granted by appropriate state of Nevada agencies. Water rights will be available to conduct pumping tests at each large-scale pumping test location. Upon completing of well constructing and testing defined in this work element, the wells will become a part of the EWDP.

Deliverables: Deliverables will include a report with data, analysis, and results of the tests; updated interpretations of the hydrogeologic conditions, estimates of the effects of pumping one system on the other, and the effects of groundwater withdrawals on flow directions and travel times in the valley-fill and volcanic aquifers down gradient of Yucca Mountain. Additionally, pertinent drilling well construction, and groundwater chemical data will be posted on Nye County's web page.

Table 4 Budget Summary for Work Element 3

Task	Fiscal Year	2007/08	2008/09	2009/10	2010/11	2011/12
1. Highway 95 Aquifer Testing Complex	Nye Labor	8	12	12	15	17
	Contractor Labor	12	38	38	45	53
	Drilling/Testing		200	200	240	280
	Task Total	20	250	250	300	350
	Work Element Total	20	250	250	300	350

NOTE: Totals are expressed in FY 2007 dollars escalated at 3.5% annually

4.4 WORK ELEMENT 4: TRACER TESTING

Purpose – The purpose of this work element is to enhance the understanding of groundwater flow through the saturated zone and the retardation capability and radionuclide transport characteristics of this aquifer. Retardation will affect the arrival time and concentration of radionuclides in groundwater at the compliance boundary.

Specific Objectives – The objectives of this work element are to:

- Continue tracer testing at two Nye County well complexes;
- Identify and quantify pathways for preferential groundwater flow;
- Provide data on the dispersion coefficients and the processes governing the attenuation of dissolved constituents; and
- Summarize, interpret, and publish results.

Scope of Work – This work element describes tracer testing plans at two alluvium aquifer tracer testing complexes shown in Figure 4.

Task 1. NC-EWDP-22S Tracer Testing – This task will continue additional Nye County cross-hole tracer testing at the existing NC-EWDP-22 site (see Figure 4). A number of testing schemes are under consideration by Nye County, who will continue to take the lead in planning, permitting, and conducting these tests. The University of Nevada Las Vegas – Harry Reid Center will continue tracer preparation and chemical analysis support; and the U.S. Geological Survey, Los Alamos National Laboratory, and Bechtel SAIC will continue to provide technical review and field support as required. No additional wells will be drilled as the complex is already adequate for the proposed additional tests.

Task 2. NC-EWDP-19 Tracer Testing – This task will include cross-hole testing at the NC-EWDP-19 site (see Figure 4). Although extensive single-zone, single-well testing has been done at this complex, cross-hole tracer testing has not been performed. Cross-hole testing is needed to determine if the results of the single-well tests can be applied to a larger area and volume and provide a three-dimensional understanding of the flow regime similar to that produced by cross-hole testing.

No additional wells will be drilled as there are already 17 zones completed in three wells that can potentially be instrumented for tracer testing. Nye County will develop test plans based upon the successes at the 22S tracer complex and consultations and he U.S. Geological Survey, National Laboratories, and other participants will provide technical review.

Assumptions: Access will be provided to the required portions of the Nevada Test Site and the Bureau of Land Management will grant the necessary rights-of-way. Underground Injection Control permits will be issued by the Nevada Division of Environmental Protection for conducting the tests. Discharge permits will be issued by the Nevada Division of Water Resources.

Deliverables: Deliverables will include a report for each Task containing data, analyses, and results of the tests; updated interpretations of the hydrogeologic conditions, and conclusions regarding the groundwater flow, dispersion, and attenuation. Additionally, pertinent groundwater chemical data will be posted on Nye County's web page.

Table 5 Budget Summary for Work Element 4

Task	Fiscal Year	2007/08	2008/09	2009/10	2010/11	2011/12
1. NC-EWDP-22S Tracer Testing	Nye Labor	10	10			
	Contractor Labor	30	30			
	Drilling/Testing	160	160			
	Task Total	200	200			
2. NC-EWDP-19 Tracer Testing	Nye Labor			10	11	11
	Contractor Labor			32	33	35
	Drilling/Testing			168	176	184
	Task Total			210	220	230
	Work Element Total	200	200	210	220	230

NOTE: Totals are expressed in FY 2007 dollars escalated at 3.5% annually

4.5 WORK ELEMENT 5: GEOPHYSICAL SURVEYING

Purpose – The purpose of this work element is to provide more detailed geophysical survey data and information, and logging in the area between Yucca Mountain and Amargosa Desert hydrographic basin. The data will be used to more accurately define the locations of large-scale features and faults that are likely controlling groundwater flow, the depth to groundwater in regional discharge areas, and the properties of the valley-fill aquifer in wells drilled by private owners.

Specific Objectives – The objectives of this work element are to:

- Refine estimates of the depth to groundwater in the regional discharge area in southern Amargosa Desert;
- Improve the characterization of the stratigraphy in selected new and existing water wells in the Amargosa Desert region;
- Use surface geophysical surveys to help determine final selection of well sites for other work elements; and
- Summarize, interpret, and publish results.

Scope of Work – This work element has been divided into two tasks.

Task 1. Resistivity Surveying – This task will reduce the uncertainty in estimates of the groundwater discharge losses simulated in the regional flow model by refining the area under which shallow groundwater is present. Better definition of this discharge is necessary as it remains one of the key calibration parameters for the model. Past estimates of discharge have not taken the depth to groundwater into account, and are believed to have appreciably underestimated the total volume of groundwater discharge in some areas, especially in southern Amargosa Desert. Resistivity lines will be run in the regional discharge area at Ash Meadows to better define the extent of the discharge area. In addition, lines will be run in the Amargosa Flat area and in the area to the west. Lines will also be run west of Highway 373 to better define the area of shallow groundwater that may be contributing to discharge losses in this area.

Task 2. Borehole/Well Logging - Suites of geophysical logs will be run in privately owned wells in Amargosa Desert that are made available by their owners for logging. Nye County will monitor new well drilling in Amargosa Desert and contact well owners to seek access to the borehole for logging. Some existing cased wells may be selected for logging to provide additional information in key areas; if the wells are in suitable condition, the surveys will include gamma, neutron, and density logging. A total of approximately 25 wells will be logged, if made available.

Assumptions: Access will be made available to required portions of the Ash Meadows National Wildlife Refuge and the Bureau of Land Management will grant the necessary rights-of-way for other areas. Permits related to drilling and monitor well completion will be obtained from the appropriate state agency.

Deliverables: Deliverables will include a report for each task that will contain data, data processing, analyses, and results of the surveys; updated interpretations of the location and attitude of faults and subsurface conditions; and recommendations regarding the final locations for boreholes to be drilled under other work elements. Additionally, pertinent survey data will be posted on Nye County's web page.

Table 6 Budget Summary for Work Element 5

Task	Fiscal Year	2007/08	2008/09	2009/10	2010/11	2011/12
1. Resistivity Surveying	Nye Labor		3	4	8	8
	Contractor Labor		11	14	24	24
	Surveying		56	72	128	160
	Task Total		70	90	160	160
2. Borehole/Well Logging	Nye Labor	3	3	3	1	1
	Contractor Labor	7	7	5	3	3
	Logging	40	20	12	11	11
	Task Total	50	30	20	15	15
	Work Element Total	50	100	110	175	175

NOTE: Totals are expressed in FY 2007 dollars escalated at 3.5% annually

4.6 WORK ELEMENT 6: WATER CHEMISITRY MONITORING

Purpose - The purpose of this work element is to continue the water chemistry monitoring program that has already been established for the EWDP network of wells by providing for the sampling and analysis of new wells described in Work Elements 1 through 3 along with periodic resampling of existing wells. Water chemistry data will be used to identify groundwater flow paths, sources and ages.

Specific Objectives – The objectives of this work element are to:

- Continue long-term monitoring program plan implemented in the previous EWDP 5 year grant;
- Sample new wells after completion and incorporate into long term monitoring plan;
- Obtain results from laboratory analysis of water samples and QA qualify data (i.e. produce metadata); and
- Summarize, interpret, and publish results.

Scope of Work – This work element has been organized into two tasks:

Task 1. EWDP Monitoring – This task will continue the existing Nye County water chemistry monitoring effort and expand the monitoring to include each new well that is drilled as part of other work elements. Groundwater samples will be collected and, as in the past, sample splits will be provided to other participating agencies. Samples will be shipped to qualified laboratories for a complete suite of analytes including major anions, cations, and trace elements; gross alpha and gross beta, tritium, and carbon-14; stable isotopes of carbon, oxygen, and hydrogen; and stable isotopes ratios of nitrogen and sulfur; and lead, uranium, and strontium isotope ratios.

Task 2. Regional Monitoring – This task will continue and expand the sampling and analysis of water from wells and springs in the Yucca Mountain region. Selected private wells and springs will be sampled and analyzed for the same suite of parameters as Task 1.

Assumptions: Access will be made available to wells located on private and federal lands.

Deliverables: Deliverables will include a five-year summary report for each task. Additionally, the laboratory results will be posted on Nye County's web page.

Table 7 Budget Summary for Work Element 6

Task	Fiscal Year	2007/08	2008/09	2009/10	2010/11	2011/12
1. EWDP Water Chemistry Monitoring	Nye Labor	30	33	36	39	42
	Contractor Labor	10	11	12	13	14
	Laboratory	60	66	72	78	84
	Task Total	100	110	120	130	140
2. Regional Water Chemistry Monitoring	Nye Labor	20	20	20	20	20
	Contractor Labor	5	5	5	5	5
	Laboratory	25	25	25	25	25
	Task Total	50	50	50	50	50
	Work Element Total	150	160	170	180	190

NOTE: Totals are expressed in FY 2007 dollars escalated at 3.5% annually

4.7 WORK ELEMENT 7: WATER LEVEL MONITORING

Purpose – The purpose of this work element is to expand the EWDP water level monitoring program to include all new wells described in Work Elements 1 through 4 and to continue this monitoring effort along with the ISIP regional water level monitoring program over the next 5 years. Water levels and changes in water levels provide baseline data for understanding of groundwater flow directions, groundwater flow rates, air permeability of the vadose zone, and rates of recharge.

Specific Objectives – The objectives of this work element are to:

- Conduct periodic water level monitoring in all EWDP wells, and selected wells in the Amargosa and Pahrump Valleys;
- Define baseline water level conditions, variability and trends; and
- Summarize, interpret, and publish results.

Scope of Work – This work element comprises two tasks:

Task 1. EWDP Monitoring - This task will continue the existing Nye County water level monitoring effort and expand the monitoring to include each new well that is drilled as part of other work elements (i.e. Work Elements 1-3).

Task 2. Regional Monitoring - This task will continue and expand the regional water level monitoring for wells and springs in the Yucca Mountain region.

Assumptions: Access will be made available to wells located on private and federal lands.

Deliverables: Deliverables will include an annual update of the Regional Groundwater Evaluation Database (RGED), and a five-year summary report on water level trends. Additionally, the water level data and metadata will be distributed each year to the U.S. Geological Survey for incorporation into the National Water Information System, and will be posted on Nye County's web page.

Table 8 Budget Summary for Work Element 7

Task	Fiscal Year	2007/08	2008/09	2009/10	2010/11	2011/12
1. EWDP Water Level Monitoring	Nye Labor	63	67	71	76	80
	Contractor Labor	14	15	16	16	17
	Materials	13	14	15	16	17
	Task Total	90	96	102	108	114
2. Regional Water Level Monitoring	Nye Labor	42	45	48	50	53
	Contractor Labor	9	10	10	11	12
	Materials	9	9	10	11	11
	Task Total	60	64	68	72	76
	Work Element Total	150	160	170	180	190

NOTE: Totals are expressed in FY 2007 dollars escalated at 3.5% annually

4.8 WORK ELEMENT 8. REPOSITORY DESIGN AND EBS STUDIES

Purpose – The purpose of this work element is to continue past NWRPO investigations into pre- and post-closure repository ventilation.
Specific Objectives – The objectives of this work element are to:

- Evaluate the effects of alternate ventilation schemes on the Engineered Barrier System (EBS);
- Track the evolution of the final repository design and provide independent evaluation and verification of the license application design and analysis results; and
- Summarize, interpret, and publish results.

Scope of Work – This work element comprises three tasks:

Task 1 The Effects of Pre-Closure Ventilation on EBS Performance. - This task will continue Nye County's evaluation of pre-closure repository ventilation and its potential effects on EBS performance. EBS performance is critical for a long time period, defined to be for the duration of the thermally active time period, e.g., several thousands of years. While DOE's baseline model may be adequate for evaluating the heat removal efficiency during the pre-closure time period, it won't establish the hydraulic initial condition, that is, rock de-saturation, for the evaluation of the post-closure thermal peak, which is the ultimate goal of thermal management. With changing thermal properties due to de-saturation during pre-closure ventilation, the maximum rock and waste package temperatures during the thermal peak will be affected. This study will address the adequacy of the ventilation layout design regarding the use of natural buoyancy driving force as a contribution to (or substitution for) powered fans.

Task 2. Post-Closure Natural Ventilation and Convection Studies - This task will continue Nye County's evaluation of the coupled, thermal-hydrologic, near-field in-rock and in-drift processes during the post-closure period, as they relate to EBS performance and repository safety. Natural ventilation is assumed in closed emplacement drifts with no provisions for engineered, cross-flow ventilation. This task connects the EBS to the natural barrier system, including the flow paths and water recharge sources originating in the unsaturated zone and discharging to the saturated zone.

The NWRPO has been interested in the potential use of natural ventilation to keep repository temperatures below 100 degrees centigrade (°C) and simultaneously controlling relative humidity (RH) below 100 percent, as well as to identify the smallest portion of the mountain for long-term isolation of the nuclear waste, which would help to maximize repository capacity should that become an issue. The NWRPO, other stakeholders, and numerous independent reviewers believe that keeping repository temperatures and RH low can reduce uncertainties in performance assessment models, improve safety, and ultimately enhance confidence that the citizens living down gradient of Yucca Mountain would be adequately protected. Design variations along these lines (originating from DOE, Electric Power Research Institute (EPRI), or other contributors) will be analyzed and evaluated.

Assumptions: DOE and EPRI will continue to share EBS design options in a timely manner with Nye County

Deliverables: Deliverables will include a report for each task that will contain data, data processing, analyses, and results; along with updated interpretations.

Table 9 Budget Summary for Work Element 8

Task	Fiscal Year	2007/08	2008/09	2009/10	2010/11	2011/12
1. Effects of Pre-Closure Ventilation on EBS Performance	Nye Labor	2	2	2	2	2
	Contractor Labor	23	23	23	28	28
	Task Total	25	25	25	30	30
2. Post-Closure Natural Ventilation and Convection Studies	Nye Labor	2	2	2	2	2
	Contractor Labor	48	48	48	48	48
	Task Total	50	50	50	50	50
Work Element Total		75	75	75	80	80

NOTE: Totals are expressed in FY 2007 dollars escalated at 3.5% annually

4.9 WORK ELEMENT 9. REGIONAL TECTONISM AND VOLCANISM

Purpose – The purposes of this work element are to further evaluate the structural setting of the Yucca Mountain region; the key structures in the vicinity of the repository; the significance of geologic structures on groundwater flow paths and travel times; and to provide continued participation by Nye County in the assessment of volcanic hazards and the potential for disruption of the repository.

Specific Objectives – The objectives of this work element are to continue to:

- Evaluate key tectonic features that may affect groundwater flow directions and/or groundwater travel times;
- Identify potential fault-related compartment boundaries at regional, sub-basin, and local scales;
- Evaluate the relationship between regional tectonism and water level trends in the Yucca Mountain region;
- Participate in the volcanic hazard risk assessments being performed by other agencies;and
- Summarize, interpret, and publish results.

Scope of Work – One task has been designated for this work element.

Task 1. Regional Tectonism and Volcanism Evaluations – This task will address the need for additional information on the geologic structures in the Yucca Mountain region, and their significance with respect to groundwater flow. Additional evaluations will better define the location of controlling structures at both the regional and site-scales; the sequence and timing of tectonic events; the present day stress field and it's significance with respect to long-term water level trends in the regional carbonate aquifer; and the location and nature of geologic structures that have resulted in compartmentalization of groundwater flow.

Task 1 will also provide for continued participation by Nye County in the on-going volcanic hazard risk assessment. This participation includes attendance at workshops and field trips, the review of reports, papers, and presentations regarding the volcanic hazards and assessment process, and the preparation of formal reviews, presentations, and summary documentation to convey the results of the risk assessment to the citizens of Nye County.

Assumptions: Access will be made available through a right-of-way grant from the Bureau of Land Management. Drilling and discharge permits will be obtained from state agencies.

Deliverables: Deliverables will include a report for both tasks that will include the updated interpretations and findings. Additionally, the data collected during drilling, testing, and sampling will be posted on Nye County's web page.

Table 10 Budget Summary for Work Element 9

Task	Fiscal Year	2007/08	2008/09	2009/10	2010/11	2011/12
1. Regional Tectonism and Volcanism Evaluations	Nye Labor	5	5	5	5	5
	Contractor Labor	45	95	105	115	125
	Task Total	50	100	110	120	130
Work Element Total		50	100	110	120	130

NOTE: Totals are expressed in FY 2007 dollars escalated at 3.5% annually

4.10 WORK ELEMENT 10. DATA MANAGEMENT, ANALYSIS, AND REPORTING

Purpose–The purpose of this task is to manage ISIP data using databases, conduct analyses of these data to support conceptual model development and revision, and perform numerical modeling as needed to evaluate DOE YMP models and modeling results. Over the last several years, Nye County has compiled extensive databases of borehole data, including geologic logs, borehole pneumatic pressure and temperature, groundwater levels, and groundwater chemistry. As additional boreholes are drilled and tested, these databases will continue to grow, and it is essential that they be maintained and developed to ensure that data can be easily and accurately retrieved for analysis, modeling, and reporting purposes. In addition, other types of data to be collected over the next five years (e.g., surface geophysical surveys) will require new databases. This work element will support database maintenance and development.

Gathering and managing data is not enough; that data must be analyzed, evaluated, and interpreted to improve and refine conceptual and numerical models of the hydrogeologic system not just at Yucca Mountain, but also in Fortymile Wash, Crater Flat, Amargosa Desert, and Pahrump Valley. This work element includes the use of databases to revise and improve conceptual geologic and hydrologic models, and to conduct numerical modeling as needed. This work element differs from other work elements in that it will draw on and analyze numerous types of data from different sources (i.e., other work elements) and will attempt to integrate these data into conceptual and numerical models of the hydrogeologic system on several different scales.

Specific Objectives–The objectives of this work element are to:

- Develop and maintain databases as needed (data in these databases will be accessible and retrievable using Nye County's web page);
- Use databases (when possible) to help screen and qualify data to ensure its accuracy and reliability;
- Conduct analyses of new data and/or conduct new analyses of existing data to revise conceptual geologic and hydrologic models;
- Perform numerical modeling as needed to evaluate impacts of Nye County data and analyses on DOE YMP models and analyses; and
- Summarize, interpret, and publish results.

Scope of Work– This work element is covered under a single task that will provide for the management of data, data analysis and interpretation, and reporting on ISIP activities. Investigations will include the research and evaluation of the data generated through the completion of Work Elements 1 through 10. Analyses will include all aquifer tests, water chemistry results, and water level monitoring results. Reporting will include the preparation of task reports, annual reports, and papers for formal publication, and the preparation and delivery of presentations at scientific symposia and workshops.

Under this task, the NWRPO will develop and maintain databases as required to ensure data is easily accessible for analysis; screen and qualify data using databases where possible and appropriate; analyze data to improve and refine conceptual and numerical models of the site-scale, expanded site-scale, and regional-scale hydrogeologic system; and compare data and analyses to results from various saturated and unsaturated zone models and/or abstractions to evaluate their

consistency with or divergence from such models/abstractions. When needed, existing conceptual models will be used or new models developed to incorporate and understand the similarities and differences between the ISIP data and other data sources.

Finally, hydrologic modeling will be performed as needed to evaluate the impacts of the ISIP measurements on various other models or analyses. It is not possible, nor prudent for Nye County to attempt to reproduce the complex models that have been developed for YMP. Rather, the County has taken the approach of developing process models to evaluate the assumptions used in the YMP models.

Assumptions–A Nye County employee will perform the initial data screening and qualification. Nye County contractors will be used for particular tasks within this work element based on their specialized abilities and experience. Database maintenance and upkeep costs will escalate at 20% per year during the course of this work element because of increases in the amount of data gathered and stored, and in database capabilities.

Deliverables–Electronic databases of all data will be maintained and verified. Annual reports will be prepared to document conceptual model revisions and improvements, supporting data analyses, and numerical model evaluations and results. In addition, a final report will be prepared to summarize the overall results of the five-year effort.

Table 11 Budget Summary for Work Element 10

Task	Fiscal Year	2007/08	2008/09	2009/10	2010/11	2011/12
1. Data Management, Analysis, and Reporting	Nye Labor	75	90	95	100	155
	Contractor Labor	200	215	230	245	300
	Task Total	275	305	325	345	455
Work Element Total		275	305	325	345	455

NOTE: Totals are expressed in FY 2007 dollars escalated at 3.5% annually

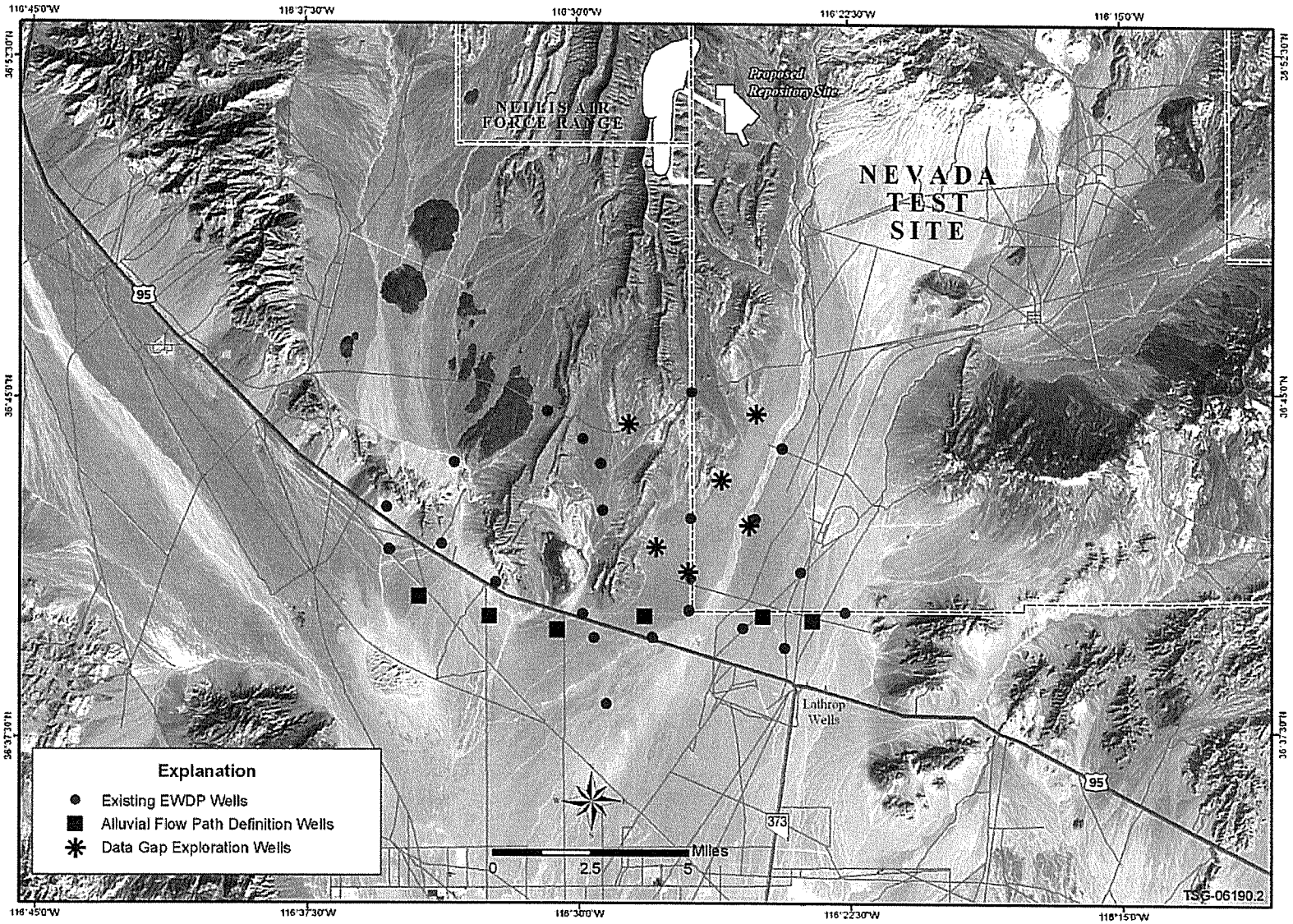

Figure 1. Location of Work Element 1 – Early Drilling Program wells.

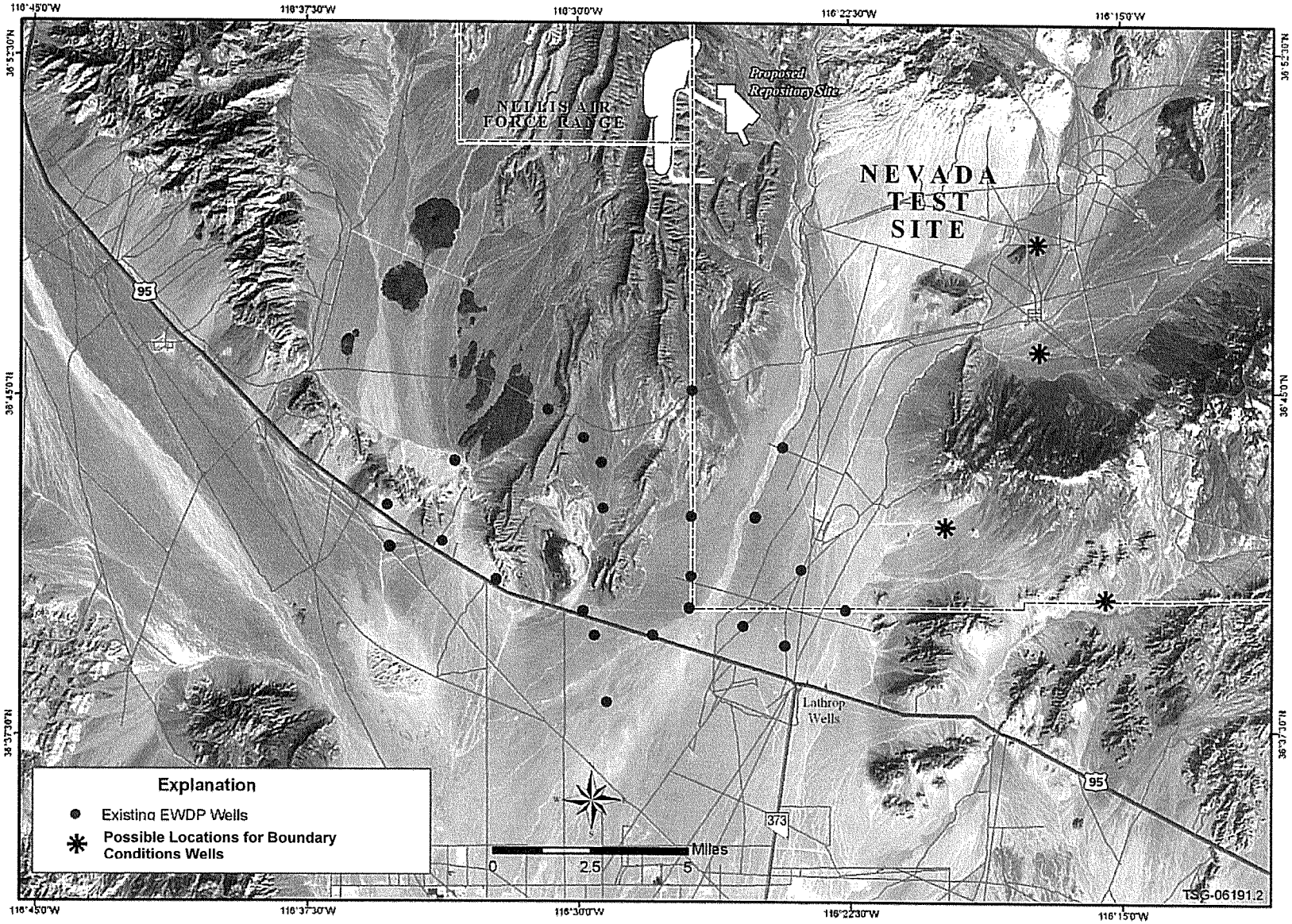

Figure 2. Location of Work Element 2 – Site-Scale Monitoring Network wells.

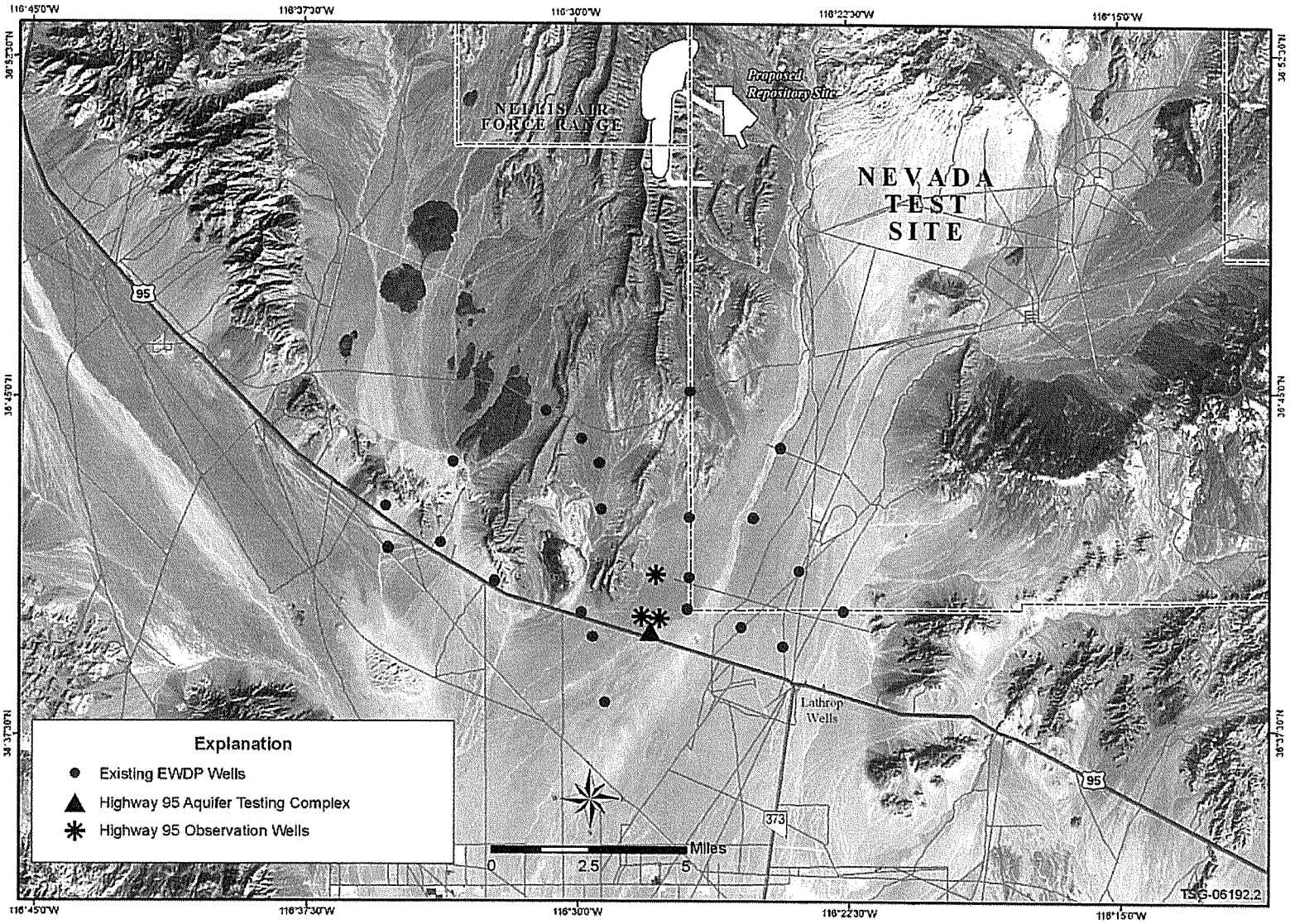

Figure 3. Location of Work Element 3 – Large-Scale Alluvial Aquifer Testing Program wells.

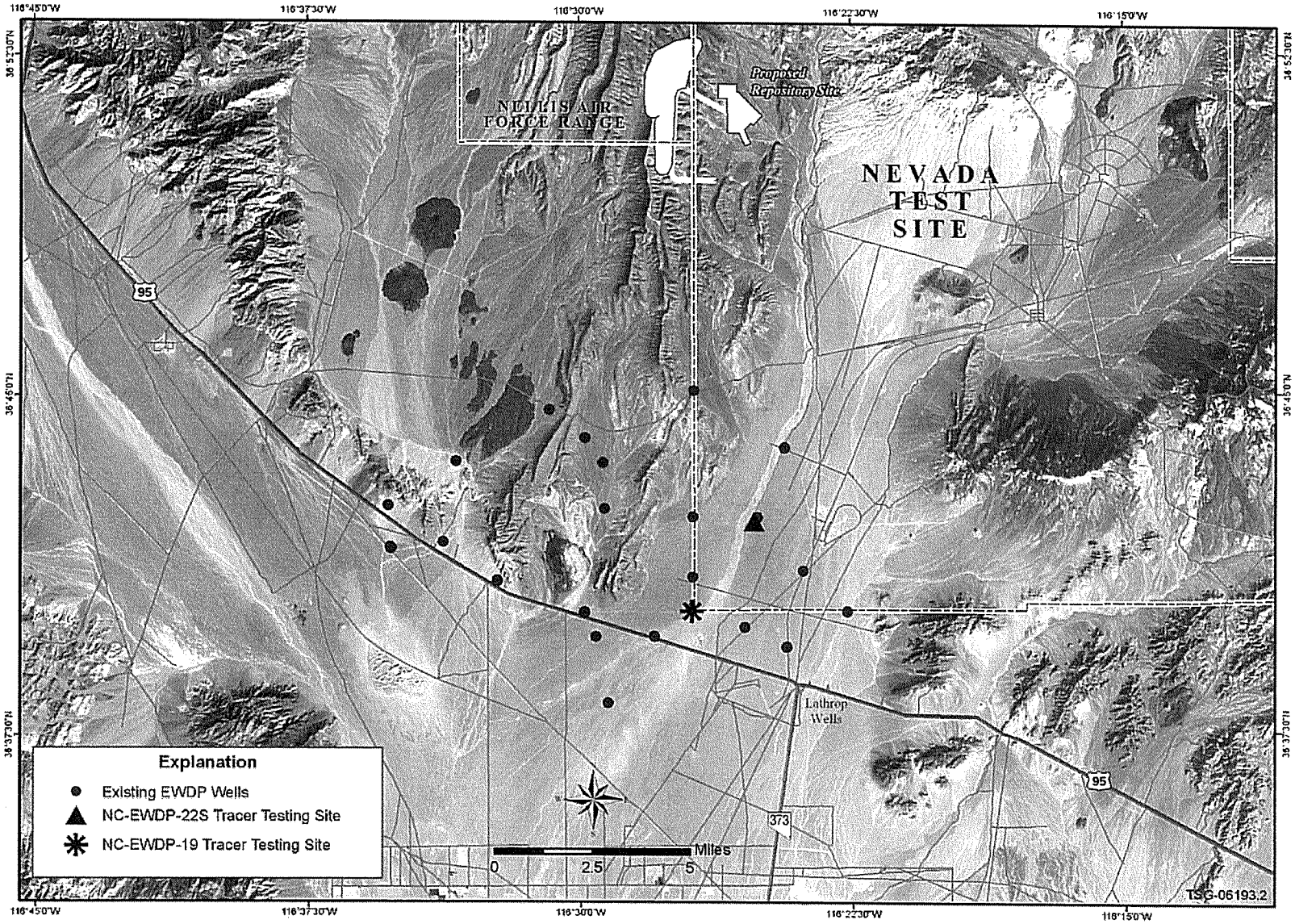

Figure 4. Location of Work Element 4 – Tracer Testing sites.

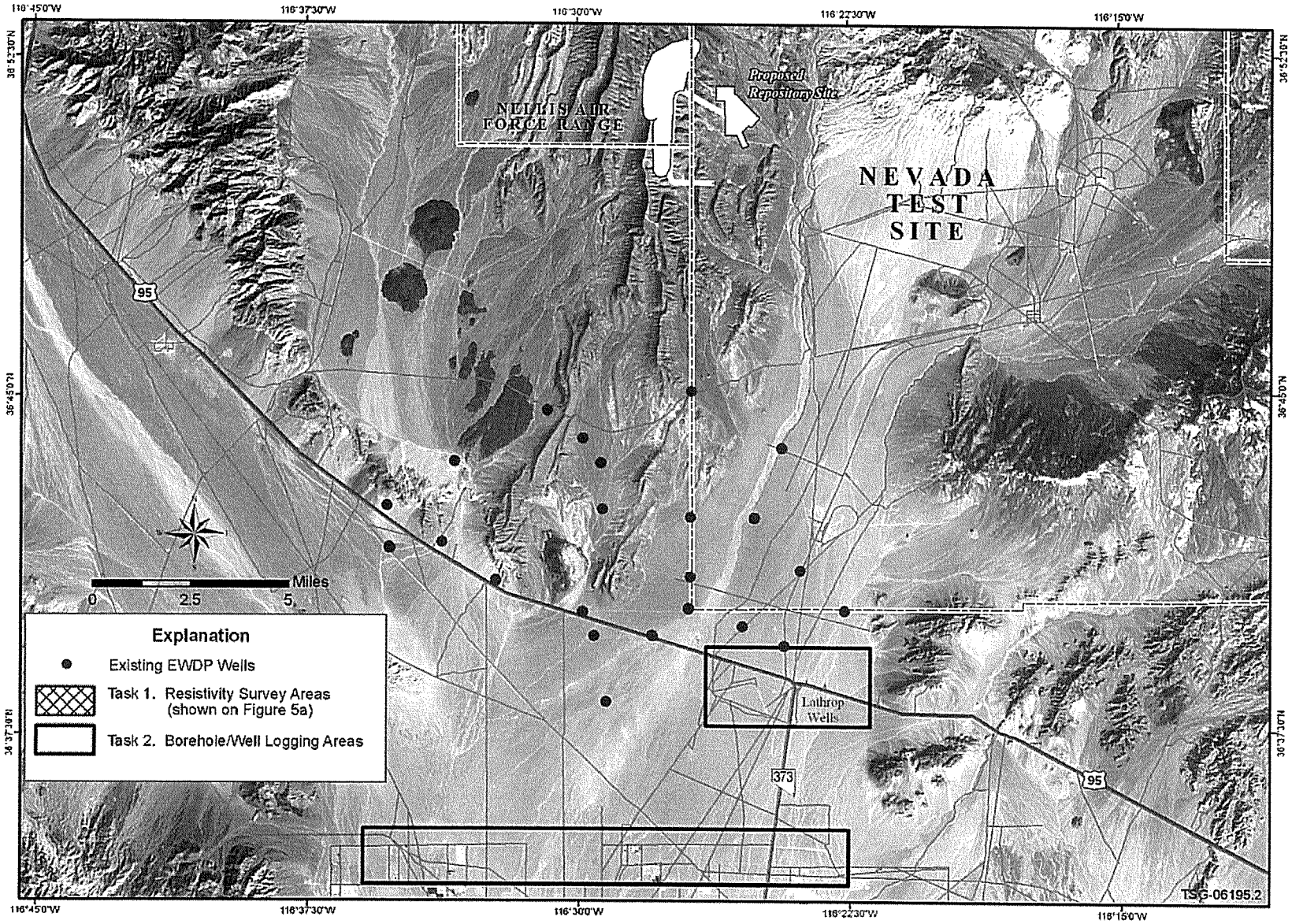

Figure 5. Location of Work Element 5 – Geophysical Surveying lines and areas (see Figure 5a for location of resistivity surveys).

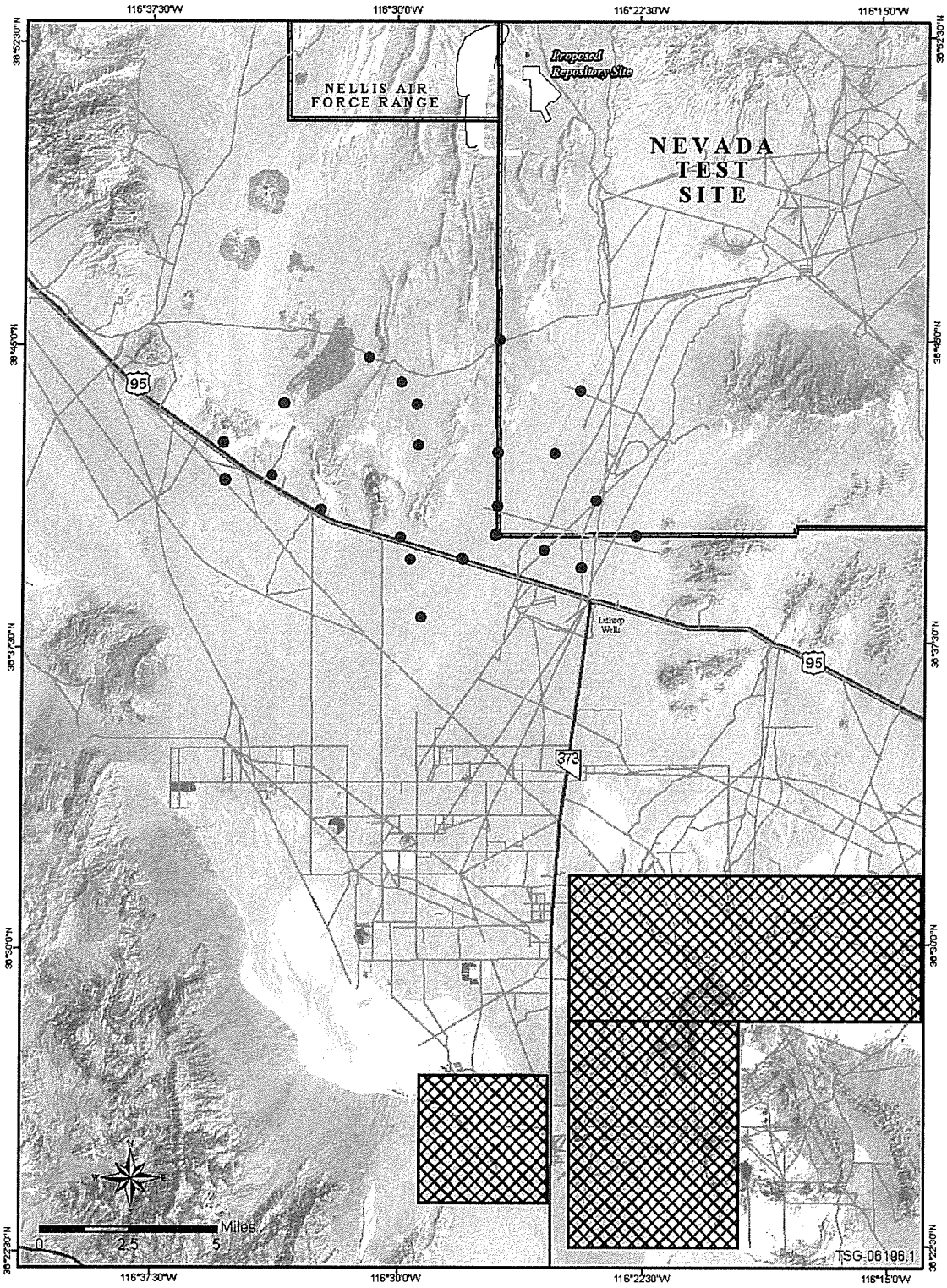

Figure 5a. Preliminary location of geophysical surveys (resistivity) in Amargosa Desert

APPLICATION FOR FEDERAL ASSISTANCE

Version 7/03

1. TYPE OF SUBMISSION:

Application: ☐ Construction ☒ Non-Construction

Preapplication: ☐ Construction ☐ Non-Construction

2. DATE SUBMITTED	Applicant Identifier
3. DATE RECEIVED BY STATE	State Application Identifier
4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier

5. APPLICANT INFORMATION

Legal Name: Nye County, Nevada

Organizational DUNS: 064813926

Address:

Street: 1210 E. Basin Road, Suite 6

City: Pahrump

County: Nye

State: Nevada

ZIP: 89060

Country:

Organizational Unit:

Department: Nuclear Waste Repository Project Office

Division:

Name and telephone number of the person to be contacted on matters involving this application *(give area code)*

Prefix: Mr.

First Name: Darrell

Middle Name:

Last Name: Lacy

Suffix:

Phone Number *(give area code)*: 775-727-7727, ext 22

FAX Number *(give area code)*: 775-727-7919

6. EMPLOYER IDENTIFICATION NUMBER *(EIN)*: 8 8 - 6 0 0 0 1 1 1

7. TYPE OF APPLICANT: *(See back of form for Application Types)*: B. County

Other *(Specify)*:

8. TYPE OF APPLICATION: ☒ New ☐ Continuation ☐ Revision

If Revision, enter appropriate letter(s) in box(es): (See back of form for description of letters) ☐ ☐

Other *(specify)*:

9. NAME OF FEDERAL AGENCY: Department of Energy

10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: ☐☐ - ☐☐☐

TITLE: *(Name of Program)*:

11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Independent evaluation of selected repository design and performance issues potentially affecting human health, safety and the environment of Nye County.

12. AREAS AFFECTED BY PROJECT *(cities, counties, states, etc.)*: Nye County, Nevada

13. PROPOSED PROJECT:

Start Date: 4/1/07

Ending Date: 3/31/12

14. CONGRESSIONAL DISTRICTS OF:

a. Applicant: Congressional District 2

b. Project: Independent Science Program

15. ESTIMATED FUNDING:

a. Federal	$ 14,800,000.00
b. Applicant	$
c. State	$
d. Local	$
e. Other	$
f. Program Income	$
g. TOTAL	$ 14,800,000

16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?

a. ☐ YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON:

DATE

b. ☒ NO. PROGRAM IS NOT COVERED BY E.O. 12372 OR PROGRAM HAS NOT BEEN SELECTED STATE FOR REVIEW

17. IS APPLICATION DELINQUENT ON ANY FEDERAL DEBT?

☐ YES If "Yes," attach an explanation. ☒ No

18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT, THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.

a. Authorized Representative

Prefix: Mr.

First Name: Darrell

Middle Name:

Last Name: Lacy

Suffix:

b. Title: Director, Nuclear Waste Repository Project Office

c. Telephone Number *(give area code)*: 775-727-7727, ext 22

d. Signature of Authorized Representative

e. Date Signed: 11/27/07

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U.S. DEPARTMENT OF ENERGY
Federal Assistance Budget Information

OMB Control No.
1910-0400

OMB Burden Disclosure Statement

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1. Program/Project Identification No.	2. Program/Project Title
3. Name and Address **Nye County, Nevada** **Nuclear Waste Repository Project Office** **1210 East Basin, Suite 6** **Pahrump, Nv 89060**	4. Program/Project Start Date **4/1/2007** 5. Completion Date **3/31/2012**

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Federal Catalog No. (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal	Non-Federal	Federal	Non-Federal	Total
1.						
2.						
3.						
4.						
5. TOTALS		$	$	$	$	$

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	Grant Program, Function or Activity				Total (5)
	(1)FY 08	(2)FY 09	(3)FY 10	(4)FY 11	
a. Personnel	**$368539**	**$508585**	**$526385**	**$544808**	**$Cont. on p2**
b. Fringe Benefits	**129274**	**178398**	**184642**	**191104**	**Cont. on p2**
c. Travel	**20794**	**21522**	**22275**	**23055**	**Cont. on p2**
d. Equipment	**115061**	**107580**	**126750**	**120494**	**Cont. on p2**
e. Supplies	**83800**	**86733**	**89769**	**92911**	**Cont. on p2**
f. Contractual	**282532**	**2097182**	**2350179**	**2627628**	**Cont. on p2**
g. Construction					
h. Other					
i. Total Direct Charges	**1000000**	**3000000**	**3300000**	**3600000**	**Cont. on p2**
j. Indirect Charges					
k. TOTALS	**$1000000**	**$3000000**	**$3300000**	**$3600000**	**$Cont. on p2**
7. Program Income	$	$	$	$	$

DOE F 4600.4##
(09-92)
Replaces EIA-459CF
All Other Editions Are Obsolete

U.S. DEPARTMENT OF ENERGY
Federal Assistance Budget Information

OMB Control No.
1910-0400

OMB Burden Disclosure Statement

The reporting burden for this collection of information is estimated to average 1.87 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management, AD-241.2 - GTN, Paperwork Reduction Project (1910-0400), U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget (OMB), Paperwork Reduction Project (1910-0400), Washington, DC 20503.

1. Program/Project Identification No.	2. Program/Project Title
3. Name and Address **Nye County, Nevada** **Nuclear Waste Repository Project Office** **1210 East Basin, Suite 6** **Pahrump, Nv 89060**	4. Program/Project Start Date **4/1/2007** 5. Completion Date **3/31/2012**

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Federal Catalog No. (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal	Non-Federal	Federal	Non-Federal	Total
1.						
2.						
3.						
4.						
5. TOTALS		$	$	$	$	$

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	Grant Program, Function or Activity				Total (5)
	(1)FY 12	(2)	(3)	(4)	
a. Personnel	**$563877**	$	$	$	**$2512194**
b. Fringe Benefits	**197793**				**881211**
c. Travel	**23862**				**111508**
d. Equipment	**106935**				**576820**
e. Supplies	**96162**				**449375**
f. Contractual	**2911371**				**10268892**
g. Construction					
h. Other					
i. Total Direct Charges	**3900000**				**14800000**
j. Indirect Charges					
TOTALS	**$3900000**	$	$	$	**$14800000**
7. Program Income	$	$	$	$	$

Summary of Proposed Work Elements and Costs

Proposed Work Element	Fiscal Year				
	2007	2008	2009	2010	2011
1. Early Warning Drilling Program	$20	$1,400	$1,550	$1,650	$1,700
2. Site-scale Monitoring Network	$10	$250	$330	$350	$400
3. Large-scale Alluvial Testing Program	$20	$250	$250	$300	$350
4. Tracer Testing	$200	$200	$210	$220	$230
5. Geophysical Surveying	$50	$100	$110	$175	$175
6. Water Chemistry Monitoring	$150	$160	$170	$180	$190
7. Water Level Monitoring	$150	$160	$170	$180	$190
8. Repository Design and EBS Studies	$75	$75	$75	$80	$80
9. Regional Tectonism and Volcanism Evaluations	$50	$100	$110	$120	$130
10. Data Management, Analysis, and Reporting	$275	$305	$325	$345	$455
TOTAL	**$1,000**	**$3,000**	**$3,300**	**$3,600**	**$3,900**

values in thousands of dollars; escalated at 3.5%

U.S. DEPARTMENT OF ENERGY

BUDGET EXPLANATION PAGE FOR FORM DOE F 4600.4

Grantee: Nye County Budget Period 4/1/07 – 3/31/12

Grant/Proposal Number: ????? Amendment Number: NA

Negotiation and administration of Financial Assistance awards will be in accordance with DOE Financial Assistance Rules (10 CFR Part 600). Post award forms and other reference documents may also be obtained electronically through the Internet.

1. **BUDGET INFORMATION**
   THE FOLLOWING INFORMATION MUST BE SUPPLIED AND MUST INCLUDE ALL PROJECT COSTS, INCLUDING DOE REQUESTED FUNDING, AND ANY RECIPIENT COST SHARE. Please provide detailed data to support each cost category as follows. The information can either be provided in the Applicant's format or included on this form.

   a. **PERSONNEL**
      1. Identify, by title and name, each position to be supported under the proposed award.

         See Attached List

      2. Briefly specify the duties of professionals to be compensated under this project and provide resumes for each individual.

         See Attached Resumes

      3. State the amounts of time, such as hours, to be expended by each position, their base pay rate and total direct compensation under this project. Provide the amounts of time by tasks as proposed in the Statement of Work.

         See Nye County ISIP Staff Projections – Attachment 1

      4. Supply rate verification documentation (e.g., labor distribution report).

         See Nye County classifications and wage tables - Attachment 2
         Note: Budget reflects 3.5% in above rates for years 2-5 to reflect annual COLA

1A – PERSONNEL

On-Site Geotechnical Representative: *Overall program planning and supervision. Monitor progress and assure goals and objectives of work elements are met. Establish contacts with key agency personnel and act as liaison with DOE and other agencies involved in program. Represents Nye County at meetings, field trips, technical exchanges, quality control audits, etc. Responsible for preparation of report as required.*

Geoscience Manager: *Responsibilities include: analyzing and interpreting hydrogeologic and other technical data; writing and reviewing technical reports and quality assurance plans and procedures; creating/making oral technical presentations; developing and tracking budgets, schedules, and deliverables; supervising selected department employees and contractors; and interfacing with outside agencies and other interested parties regarding data and technical reports.*

Geoscientist I and II: *Provide all required field technology support during drilling, testing and monitoring activities – including assisting with core and drill cuttings sample handling, sample control, field data sheets, water sampling, and water level monitoring.*

Geoscience Technician: *Performs field and office technical support tasks following written technical procedures. Major tasks include: routine collection of borehole monitoring data; field site set-up, clean up, and housekeeping; equipment and supply ordering; calibration and maintenance of surface and borehole instruments.*

Quality Assurance Records Specialist: *Familiar with controlling quality assurance program procedures, including changes, revisions, assigning manuals, etc. Verifies all records received, assigns record index designator, enter records in database, file. Organize and maintain copies of field records and notebooks for Program. Ensures all quality assurance records are secure and retrievable. Assist in the data that is posted to Nye County website.*

Project Secretary I: *Perform the organization, data entry, and distribution of the ISIP Field Forms, Daily Drilling Activities, and the ISIP budget database. Administer all purchasing procedures. Assist in the preparation of vendor and travel claim forms-distribute. Maintain the excess inventory database of office and field equipment. Prepare all Nevada Test Site badging for contractors and staff. Facilitator in preparation of correspondence for distribution, ISIP office calendar, scheduling, presentations, travel arrangements, conference calls, and workshops.*

Database Specialist: *Design, construct, and maintain databases for ISIP site analysis and monitoring data, as well as develop and maintain databases for equipment calibration, budget tracking, daily drilling activities, and the office-wide library.*

Budget/Fiscal Analyst I: *Assist On-Site Geotechnical Representative with grant preparation and monitoring. Spreadsheet tracking of all costs associated with Program, preparation of quarterly reports, contract administration of Nye County contractors and vendors, assure compliance with grant requirements, audit and approve invoices for payment.*

COUNTY OF NYE

CLASS TITLE: GEOTECHNICAL REPRESENTATIVE

BASIC FUNCTION:
Under the direction of the Manager, Natural Resources and Federal Facilities, responsible for monitoring the Department of Energy's (DOE) Site Characterization Work at Yucca Mountain; liaising with DOE scientific, technical, and administrative personnel at Yucca Mountain, including attending DOE technical and administrative meetings on Nye County's behalf; summarizing technical literature and reports produced by DOE on Yucca Mountain to the Department Manager; and advising Department Manager on relationship between scientific work being conducted at Yucca Mountain and the Nuclear Regulatory Commission (NRC) and Environmental Protection Agency (EPA) licensing criteria.

REPRESENTATIVE DUTIES:

1. Monitors the progress of all phases of DOE's site characterization work at Yucca Mountain.
2. Establishes contacts with key DOE technical and administrative personnel at Yucca Mountain in order to better ensure knowledge of the status of specific site characterization activities.
3. Reviews and summarizes technical reports written by DOE, and its contractors regarding site characterization work, including quality assurance reports.
4. Represents Nye County at meetings, field trips, technical exchanges, quality control audits, etc. at Yucca Mountain and elsewhere.
5. Advises Department Manager on relationship between DOE's site characterization work and NRC and EPA licensing criteria.
6. Prepares periodic summary reports to the Department Manager on the status of DOE's site characterization work.
7. Assists Nye County's geotechnical contractor in the executive of Nye County's independent scientific work related to Yucca Mountain.
8. Performs other duties as may be assigned.

EDUCATION AND EXPERIENCE:
Any combination equivalent to: Graduation from accredited college with a Masters Degree in Geology and/or related earth science fields (preferably Hydrology).

LICENSES:
Valid Nevada Driver's License.

WORK DIRECTION, LEAD AND SUPERVISORY RESPONSIBILITIES:

Onsite Geotechnical Representative

ROBERT P. GAMBLE, PhD

9495 W Hammer Lane
Las Vegas, NV 89149
(702) 493-7490 Day
(702) 656-3079 Evening
gamble.robert@gmail.com

SUMMARY

Experienced manager and technical/regulatory/policy analyst with a Doctorate in geology and experience in both the commercial and government sectors, who is committed to completing high-quality work products and has demonstrated problem-solving accomplishments in:

- Managing technical and regulatory tasks
- Developing policies and strategies to resolve technical and regulatory/licensing issues
- Nuclear waste management and nuclear licensing
- Evaluating and applying technical data and analyses in decision-making

PROFESSIONAL EXPERIENCE

May 1997 – November 2005 Booz Allen Hamilton, Inc. Las Vegas, NV

TEAM LEAD/FUNCTIONAL EXPERT (regulatory analysis/licensing)(full time position)

- Supported the Department of Energy's Office of Repository Development in planning, developing, and reviewing a draft license application and the supporting technical documents for a geologic repository at Yucca Mountain, Nevada
- Advised the Department on regulatory issues, program policy, and strategy for geologic disposal of spent nuclear fuel and high-level radioactive waste
- Led reviews of information provided to the Nuclear Regulatory Commission to resolve technical and regulatory issues prior to licensing
- Supported the Department in developing and completing documents to achieve statutorily required milestones: viability assessment (1998) and site recommendation (2002)
- Supported the Department in technical and management interactions and in preparing correspondence with the Nuclear Regulatory Commission staff on technical and licensing issues for a Yucca Mountain repository

Supervisor: Robert Murray, 702-794-5566
Annual salary: starting $110,000; ending $120,000 (eligible for annual bonus in addition to salary)

Supervisor: Robert E. Jackson
Annual salary: starting $58,000; ending $98,000

January 1979 – April 1985 Ebasco Services Incorporated Greensboro, NC

FUNCTIONAL EXPERT (regulatory analysis/site characterization)(full time position)

- Provided support on technical and regulatory aspects of site evaluation and licensing for a geologic repository in salt host rock as a member of four-person team assigned to the Office of Nuclear Waste Isolation (Battelle), a prime contractor to the Department of Energy's Salt Repository Project Office
- Supported the Office of Nuclear Waste Isolation in developing and implementing strategies and plans for regulatory activities leading to preparation of the Site Characterization Plan required by the Nuclear Waste Policy Act and Nuclear Regulatory Commission regulations
- Supported the Office of Nuclear Waste Isolation in technical and regulatory tasks in preparation for characterization of repository sites in various geologic media
- Conducted technical and regulatory reviews and provided suggested revisions for draft site characterization plans for potential repository sites in tuff and basalt, and developed draft Licensing Topical Reports on generic issues for potential salt sites
- Conducted geotechnical and licensing reviews of geotechnical sections of Final Safety Analysis Reports for nuclear power plants in the Philippines (PNPP-1), Washington (Washington Public Power Supply System Unit 3), and Louisiana (Waterford Unit 2)
- Prepared responses to selected Nuclear Regulatory Commission questions regarding geotechnical sections of Safety Analysis Reports
- Evaluated potential volcanic hazards for the Philippine and Washington sites, and participated in developing the design-basis ash fall for these plants

Supervisor: Robert P. Cannon
Annual salary: starting $25,000; ending $45,000

EDUCATION

Yale University: PhD – Geology, January 1979
Cornell University: MS - Materials Engineering, January 1969
University of Michigan: BS - Metallurgical Engineering, April 1966

PROFESSIONAL REGISTRATIONS

Certified Professional Geologist: Virginia
Licensed Professional Geologist: North Carolina

COUNTY OF NYE

CLASS TITLE: GEOSCIENCE MANAGER

BASIC FUNCTION:
Under the supervision of the Nuclear Waste Repository Project Office (NWRPO) On-Site Geotechnical Representative (OSGR), the employee in this position performs scientific and engineering field and office tasks similar to those specified for the Geoscientist II. In addition, the Geoscience Manager position requires the performance of a number of important senior-level geoscientist and project management related activities. Some of these major activities as well as the qualifications required are listed in the following. The Geoscience Manager position is second only to the OSGR position in responsibility and authority regarding the implementation and management of the NWRPO technical program.

REPRESENTATIVE DUTIES:
In addition to the technical duties required for the Geoscientist II position, the Geoscience Manager position requires the employee to carry out the following senior level geoscientist and project management related duties:

1. Analyzing and interpreting hydrogeologic and other technical data.
2. Writing technical reports that include these data, analyses, and interpretations.
3. Reviewing and editing technical documents written by other NWRPO employees and contractors.
4. Developing and making oral technical presentations to the technical community, local government, and other interested parties.
5. Supervising selected NWRPO technical employees and support contractors.
6. Developing plans, budgets, schedules for the NWRPO technical program.
7. Tracking budgets, schedules, and deliverables.
8. Authoring quality assurance technical plans and procedures.
9. Creating and editing quality assurance metadata (data limitations) for NWRPO data packages.
10. Attending and participating in technical meetings with NWRPO contractors, Department of Energy (DOE) and its contractors, and other government and organizations.
11. Communicating and interacting with DOE management and its contractors to plan, schedule, support, and conduct cooperative data collection activities.

FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES:

Primarily will work in an office environment. Occasionally may work in a field environment where conditions may be hot, cold, windy, and dusty.

NOTE: THIS CLASS IS NOT SUBJECT TO THE PROVISIONS OF FLSA AND IS REFERRED TO AS EXEMPT.

KATHY J. GILMORE

140 E. DOMINGO
PAHRUMP, NV 89048
(775) 751-3426 home
(775) 513-1216 cell

Professional Experience

***Geoscience Manager;* Nye County Nuclear Waste Repository Project Office (NWRPO), Pahrump, Nevada; 4/06 - present**

Responsibilities include implementation and management of the NWRPO technical program. Specific duties include:

- Supervise over 15 professional contractors and 3 technical staff performing field work, writing technical reports, and various scientific investigations.
- Develop grant proposals, professional services contracts and drilling contracts.
- Review contractor invoices and progress reports.
- Supervise multi-agency water sampling events and aquifer testing fieldwork.
- Evaluate geochemistry data submitted by laboratories.
- Verify geologic sampling lab data prior to submittal to QARC.
- Write and review metadata, technical reports, technical procedures, and progress reports.
- Create well completion diagrams using AutoCAD.
- Communicate and interact with Department of Energy management, Los Alamos National Laboratory, United States Geological Survey, University of Nevada Las Vegas, and other government and private organizations.

***Geoscientist II;* Nye County Nuclear Waste Repository Project Office, Pahrump, Nevada; 8/02 – 4/06**

Responsibilities include installing field instrumentation, collection and preliminary analysis of data, supervising support contractors and technical staff, and reviewing data packages and other deliverables from contractors to ensure compliance with Quality Assurance (QA) and contractual specifications.

- Performed calibration, installation and maintenance of borehole data collection equipment.
- Downloaded data from logging systems and processes and analyzes data.
- Supervised contractors in the field and reviews scientific work products.
- Created graphs and tables to summarize geologic data using MS Excel.
- Created well completion diagrams using AutoCAD.
- Supervised multi-agency water sampling events and aquifer testing fieldwork.
- Performed water sampling and evaluates geochemistry data submitted by laboratories.
- Verified geologic sampling lab data prior to submittal to QARC.
- Operated GPS and processes data for submittal to QARC.
- Trained staff on field equipment including GPS, water level sounders and water quality analysis equipment.
- Wrote and reviewed metadata, technical reports, technical procedures, and progress reports.

***Engineering Technician II;* Nye County Nuclear Waste Repository Project Office, Pahrump, Nevada; 6/01 – 8/02**

Responsibilities include installing field instrumentation and collection and preliminary analysis of data.

COUNTY OF NYE

CLASS TITLE: GEOSCIENTIST II

BASIC FUNCTION:

Under the supervision of the Geoscience Manager, the employee in this position performs scientific and engineering field and office tasks similar to those specified for the Geoscientist I. In addition, the Geoscientist II conducts a number of higher level technical and managerial tasks including: assisting the Geoscience Manager in supervising lab and field data collection activities by selected Nuclear Waste Repository Project Office (NWRPO) contractors, supervising NWRPO Geoscience field technician(s), conducting statistical analysis of laboratory and field data; drafting maps, diagrams, and illustrations to support data analysis and interpretation; writing reports summarizing data collection methods, data trends and interpretations; and verifying data prior to submission to the Nye County web site and the Yucca Mountain Project Technical Data Management System.

REPRESENTATIVE DUTIES:

In addition to the technical duties required for the Geoscientist I position, the Geoscientist II position requires the employee to carry out the following project management and geotechnical related duties:

- Supervises the Geoscience Field Technician(s) activities.
- Assists Geoscience Manager with supervision of Geoscience employee(s) and selected NWRPO contractors involved in field and lab data collection activities.
- Support Geoscience Manager in planning, budgeting, scheduling, and identifying personnel requirements for field lab tasks.
- Provides development assistance to Geoscience Manager in design of databases.
- Reviews databases, identifies errors and corrections, and makes suggestions for improvements.
- Uses descriptive statistics to analyze lab and field data and determine spatial trends.
- Creates maps, diagrams, and illustrations to support data analysis and interpretation.
- Verifies geologic, hydrologic, geochemical, geophysical, and water quality data prior to submission to the Nye County web site and Yucca Mountain Project Technical Data Management System.

LICENSES:

Valid Nevada Driver's License.

WORK DIRECTION, LEAD AND SUPERVISORY RESPONSIBILITIES:

Assists Geoscience Manager with supervision of Geoscience employee(s) and selected NWPRO technical contractors.

CONTACTS:

Supervisor, co-workers, NWRPO and Department of Energy (DOE) technical and support contractors, and NWRPO and DOE management personnel.

PHYSICAL EFFORT:

Subject to physical effort on an ongoing basis.

WORKING CONDITIONS:

Subject to adverse field conditions including long hours and hot, cold, windy, and dusty conditions.

NOTE: THIS CLASS IS NOT SUBJECT TO THE PROVISIONS OF FLSA AND IS REFERRED TO AS EXEMPT.

Levi Kryder
1781 Hiawatha St. Apt. B
Pahrump, NV 89048
775-727-7727 x43 (W) 702-280-0071 (H) lkryder@gmail.com

Experience

December 2005 to Present: Geoscientist II at Nye County Nuclear Waste Repository Project Office (NWRPO), Pahrump, NV.

- Prepared and implemented a test plan for thermal logging of wells using fiber optic sensing equipment;
- Revised and implemented a site specific and a general Health and Safety Plan as Field Safety Supervisor;
- Reviewed data packages and other deliverables to ensure compliance with Quality Assurance (QA) program; and
- Edited various technical procedures and test plans.

December 2004 to December 2005: Geoscientist I at NWRPO, Pahrump, NV

- Performed all Geoscience Technician duties;
- Interpreted geophysical logs for 6 boreholes and wells;
- Constructed geophysical log/lithology correlation plates using WellCAD software;
- Wrote Geophysical Logging section of NWRPO Phase IV Drilling Report;
- Served as field lead during single- and multiple-well tracer testing; and
- Reviewed data packages and other deliverables to ensure compliance with QA program.

September 2003 to December 2004: Geoscience Technician at NWRPO, Pahrump, NV

- Performed installation, removal, and maintenance of field instrumentation;
- Provided support for field operations, including groundwater sampling, aquifer testing, and well drilling; and
- Maintained calibration database for all field instrumentation.

Education

- B.S., Geophysical Engineering, Montana Tech, 2001.

Interests

- Woodworking;
- Mountain biking; and
- Homebrewing.

COUNTY OF NYE

CLASS TITLE: GEOSCIENTIST I

BASIC FUNCTION:

Under the supervision of the Geoscience Manager or their designee, the employee in this position performs scientific and engineering field and office tasks following written technical procedures where applicable. Major tasks include installing field instrumentation and the collection and preliminary analysis of data from this instrumentation, supervising Nuclear Waste Repository Project Office (NWRPO) support contractors in the field, and reviewing and checking data and other deliverables from NWRPO technical contractors to ensure compliance with NWRPO Quality Assurance Program (QAP) and contractual specifications.

REPRESENTATIVE DUTIES:

Duties include those of the Geoscience Technician plus the following:

- Oversees calibration and maintains surface and borehole data collection equipment.
- Installs and removes borehole instruments and data logging system.
- Downloads data logging systems and transfers data to Quality Assurance Records Center (QARC).
- Processes data into tables and graphs to illustrate and summarize data collection activities and trends.
- Analyzes data and solves problems affecting daily field operations.
- Supervises NWRPO support contactors (e.g. instrumentation and pump contractors) in the field to meet NWRPO data collection requirements.
- Reviews and checks Nye County contractor's scientific work-products for accuracy and compliance with applicable guidelines. These work products include plans, specifications, calculations, and drawings.
- Performs research and investigation functions, as needed, to ensure contractor work product accuracy and compliance to guidelines.
- Performs research and investigation functions, as needed, to identify appropriate equipment and supplies needed in field operations.
- Assists in the validation of data submitted to the NWRPO QARC.

FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES:

WORKING CONDITIONS:

Subject to adverse field conditions including long hours and hot, cold, windy, and dusty conditions.

NOTE: THIS CLASS IS NOT SUBJECT TO THE PROVISIONS OF FLSA AND IS REFERRED TO AS EXEMPT.

JOHN KLENKE

5041 Cedar Lawn Dr
Las Vegas, NV 89130
(702) 645-8135
geotravman@aol.com

OBJECTIVE

Acquire a challenging full-time position in hydrogeology, with the possibility of advancement.

PROFESSIONAL PROFILE

- Experienced hydrogeologist with excellent organizational, troubleshooting, and problem-solving skills.
- Understanding of core logging, and core processing as applied to hydrologic investigation.
- Understanding of geophysical techniques as applied to hydrologic investigation.
- Computer-proficient in Windows Xp, Microsoft Word, Microsoft Excel, Quatro Pro, Fortran, and Quick Basic.

EDUCATION

- **Bachelor of Science, Geology with a minor in Mathematics**, University of Nevada Las Vegas, Las Vegas, NV, Dec 1984
- **Classes in Water Resources Engineering,** at Oregon State University Jan 1990 - June 1990.
- Graduate level courses: Ground Water Modeling, and Ground Water Hydrology
- Undergraduate level courses: Fluid Mechanics, Soil Mechanics, and Measurement & Detection of Radiation

PROFESSIONAL EXPERIENCE

Exploration Geologist / Consulting Geologist **6/95 - present**
Self-employed, 5041 Cedar Lawn Drive, Las Vegas, NV 89130
Seasonal prospecting for economic gemstone deposits and rare mineral pegmatites. Areas of field work include: Alluvial sapphire deposits of central Montana, gem pegmatites of Southern California, and rare mineral pegmatites of Central and Southern Arizona. Consulting geologist, partner, and miner from 1997 to 2002 at the Cryogenie mine in San Diego County, CA. Mining activity in 2001, led to the discovery of the "Big Monday" gem tourmaline pocket which was featured in Rocks & Minerals, Vol. 78, No. 3, May/June 2003.

Radioactive Waste Management Specialist / Senior Geologist **9/92 – 9/94**
Raytheon Services, P. O. Box 498, Mercury, NV 89023
Supervise technicians in the acquisition of neutron logging data. Reduce neutron logging data, plot graphs, and generate reports summarizing results. Responsible for data collection from logging instruments, equipment maintenance and servicing, data reduction, and reporting results to project supervisor. Calibration of transducers and alpha spectrometers. Design TDR (Time Domain Reflectometry) molds and build three probe TDR units. Calibrate TDR probes for site-specific soils. Participate in planning methods of installing TDR arrays, and developing data acquisition systems for use under leachate liners. Gas sampling for organic vapor constituents and sulfur hexaflouride.

COUNTY OF NYE

CLASS TITLE: GEOSCIENCE TECHNICIAN

BASIC FUNCTION:

Under the supervision of the Geoscientist Supervisor or their designee, the employee in this position performs field and office technical support tasks following written technical procedures where applicable. Major tasks include supporting Nuclear Waste Repository Project Office (NWRPO) scientists, managers, and contractors in performing field tasks; routine collection of borehole monitoring data; field site set-up, clean-up, and housekeeping; equipment and supply ordering; and calibration and maintenance of surface and borehole instruments.

REPRESENTATIVE DUTIES:

Performs the following duties in accordance with written technical procedures where applicable:

1. Calibrates and maintains surface and borehole data collection equipment.
2. Collects routine borehole monitoring data including water levels.
3. Supports NWRPO technical personnel and contractors in the collection of field geologic and hydrologic data.
4. Assists NWRPO support contractors (e.g. instrumentation and pump contractors) in the installation and removal of borehole field equipment.
5. Inventories and orders equipment and supplies necessary to support field operation.
6. Transports equipment and supplies to and from field.
7. Performs field site maintenance and cleanup.
8. Oversees set-up and removal of field office and storage transportainers.
9. Fills out Transfer of Custody documentation and transports geologic and water quality samples to appropriate commercial testing laboratories.

FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES:

Knowledge, skill, and ability requirements include the following:

1. Working knowledge of the NWRPO Quality Assurance (QA) technical procedures concerned with routine data collection and equipment calibration procedures.
2. Ability to accurately and precisely follow these NWRPO technical procedures and related equipment manufacturers operating instructions.

Judd Sampson

P.O. Box 1761, Pahrump NV 89041
Cell: (808) 375-9946
Judd_Sampson@hotmail.com

EDUCATION

Hesser College, Concord, NH — **2005**
Business Administration
Six semester hours, 4.0 GPA

Oklahoma University, Norman, OK — **2004-2005**
Calculus and Chemistry
Nineteen semester hours, 4.0 GPA

University of Phoenix, Phoenix, AZ — **1998**
A.A. Electronics Technology
4.0 GPA

AWARDS

- Navy and Marine Corps Achievement Medal, Operation Iraqi Freedom — **2003**
- Top Secret Clearance, U.S. Navy — **2002**
- Navy and Marine Corps Achievement Medal, Professional Achievement — **1999-2001**
- Secret Clearance, U.S. Navy — **1990**

EXPERIENCE

2002-2005

USS Paul Hamilton, Pearl Harbor, HI

Systems Engineer – Performed systems analysis and engineering, integrating secured satellite IP-based communications paths, multiple digital processing and conversion systems, and UHF, SHF and EHF voice and data communications ensuring accurate employment of the Tomahawk weapons system. Co-authored a revision to fleet data transmission configuration procedures that increased reporting efficiency by 70%.

Operations Manager – Managed casualty control response and implemented preventive maintenance plan for shipboard electronic, radar, and computer systems. Administered the lockout / tagout program, radiation hazard, ammunition handling, and aloft safety programs for all ship's electronic systems. Directly supervised six personnel in the preventive and corrective maintenance of the Tomahawk and Harpoon weapons systems. Arranged all materials for maintenance, scheduled system and personnel availability within the organization, and procured parts or external assistance as required.

Training Coordinator – Scheduled in house and external training sessions, including all required formal correspondence. Maintained all operational and maintenance training records, arranged for system specific and general career enhancement training, assessed divisional personnel and developed customized remedial training packages to ensure top team performance.

System Administrator – Directed the accomplishment of all software maintenance, including software patch installation, ground-up software loads, periodic maintenance, data extraction, and monitoring. Trained all junior technicians on classified material handling procedures, system administration, and user operations.

COUNTY OF NYE

CLASS TITLE: ADMINISTRATIVE TECHNICAL COORDINATOR

BASIC FUNCTION:
Under the direction of the Department Manager, and in coordination with On-Site Representative and other project staff, responsible for coordination of Pahrump, Las Vegas, and Nevada Test Site office activities, including coordination of contractor activities with project staff and performance of support activities for project staff as assigned. Supervises office clerical staff.

REPRESENTATIVE DUTIES:

1. Ensure that contractor and vendor invoices are reviewed, audited, approved and submitted for payment. Monitor project expenditures; prepare analysis and/or reports as appropriate.
2. Assist in preparation of grant requests; prepare reports for grant monitoring and compliance; prepare requests for grant reimbursements or advances.
3. Develop and standardize office procedures; coordinate and standardize hard copy and electronic data and information management and transfer among office personnel and contractors; ensure compliance by clerical and secretarial staff to departmental quality assurance procedures.
4. Supervise clerical and secretarial personnel; ensure training of personnel regarding office procedures and County policies.
5. Coordinate purchasing; maintain inventory of office property in compliance with County policies. Coordinate arrangements for conferences, tours, meetings, travel and special events.
6. Maintain work breakdown structure (WBS) spreadsheets; prepare monthly reconciliations and/or reports and/or projections of expenditures and funding; coordinate maintenance of financial data filing system.
7. Provide support to department manager and on-site representative for special projects, as requested; other duties as assigned.

EDUCATION AND EXPERIENCE:
Any combination equivalent to graduation from high school or G.E.D. and/or work experience directly related to the duties and responsibilities of the class including clerical, secretarial, supervisory, accounting, budgeting, purchasing and office administration. Knowledge of office practices, procedures and commonly used equipment including a personal computer and basic software.

LICENSES:
Valid Nevada driver's license.

SHERRY A. DUDLEY
PO BOX 3453
PAHRUMP, NV 89041
Home Phone 775-727-5734

QUALIFICATIONS

Computer skills (Windows for Workgroups 3.11, Windows 95, Windows 98, NT, Word, Excel, Filemaker Pro, E-mail, Internet). Accurate typing skills. Familiar with use of other office equipment (fax, copier, audio/visual equipment).

Get along well with others, work well independently with little or no supervision, self-starter, flexible, able to do a variety of tasks with interruptions, dependable and hard working.

WORK HISTORY

08/00-Present

Quality Assurance Records Specialist (Clerk-Typist/Secretary I), Nye County Department of Natural Resources and Federal Facilities
Responsible for QA records management activities which includes reviewing records to make sure they are legible and complete and ensuring corrective action is taken by originator if necessary; entering and maintaining record information and status in the QA Database; maintaining hardcopy and electronic QA records in secure, fire resistant file cabinets; ensure all required records are submitted to the QA Records Center (QARC); make sure appropriate technical staff is aware of data and technical reports received; and be able to retrieve record information as required. Issue controlled copies of new and revised Quality Administration Procedures, Work Plans and Technical Procedures to technical staff and contractors. Prepare reports as required.

06/97-06/00

Associate Engineer, North Star Communications Group
Created Excel spreadsheets and forms for shared network use and tracking work status. Checked billing packets to ensure documentation matched units billed; prepared billing report. Reviewed past timesheets to ensure maximum hourly recovery on jobs. Reviewed jobs before sending to client. Transferred files to other offices via E-mail. Maintained inventory of office equipment and furniture. Ordered forms and supplies. Posted info. to cable maps. General clerical duties (i.e. answering phones, filing, faxing, making copies).

07/88-02/97

Secretary/Secretary II, Cooperative Extension
Typed and edited administrative and public reports and publications for reproduction and distribution; wrote news releases and replied to correspondence; researched and answered public requests for information; maintained contacts with other agencies; supervised clerical employee and volunteers; assisted in annual budget preparation and maintained records on personnel, purchasing, travel expenses, contracts, billing and other office activities.

08/84-07/88

Administrative Aid II, Cooperative Extension
Processed bills; maintained budget records; ordered & maintained inventory of supplies, publications and equipment; answered phones and clientele questions for information; maintained files; and performed other duties as assigned by my supervisor.

07/77-08/84

Homemaker and Volunteer
Wanted to be home with my young children and took care of other children. Volunteer activities included Pahrump Community Church youth programs, Pahrump Elementary School aide, Pahrump Community Library and Board member, Youth Summer Activities Programs, Pahrump Swimming Pool District Board member, Pahrump Valley Fire Dept. support activities, Cub Scouts, Girl Scouts, Pahrump PTSA member and officer.

COUNTY OF NYE

CLASS TITLE: DATABASE SPECIALIST

BASIC FUNCTION:

Under the supervision of the Department Manager, the employee in this position performs database design, construction, and maintenance in support of the NWRPO Independent Scientific Investigations and Oversight Programs. Major tasks may include developing and managing a variety of databases for different types of geoscience site characterization and monitoring data, including geologic logs of drill cuttings and core samples, borehole geophysical survey logs, and groundwater level and water chemistry monitoring data in wells. In addition, the employee will develop and manage budget-tracking databases for both the Independent Scientific Investigations and Oversight Programs.

REPRESENTATIVE DUTIES:

Database Specialist duties include the following:

- Works with Nye County employees and contractors (users) to identify specific database requirements and objectives.
- Plans and designs individual custom databases to meet requirements and objectives of users. Ensures database designs are consistent, compatible, and relational, where applicable.
- Constructs test versions of databases and operating instructions for preliminary testing and evaluation by users. Modifies test versions to address user comments and concerns.
- Finalizes databases and operating instructions and installs on users network.
- Maintains user databases on NWRPO network. Maintenance activities include: troubleshooting, providing additional and/or specialized training to users, compacting databases, and removing error tables from databases.
- Makes customized modifications to databases as required by users. These may include additional entered and/or calculated fields, and additional or modified graphical and tabular reports.
- Provides reports, printouts, presentation materials, etc. based on materials in the various NWRPO databases.

FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES

Databases knowledge, skill, and ability requirements include the following:

- In-depth knowledge of MS Access database software.
- Interpersonal skills and abilities to work closely with users to identify database objectives and requirements.
- Proven ability and skill to construct custom Access databases for both scientific and budget management purposes.

COUNTY OF NYE

CLASS TITLE: BUDGET / FISCAL ANALYST

BASIC FUNCTION:
Under the direction of the Budget & Fiscal Director, is responsible to prepare, monitor and advise appropriate staff concerning budget items; prepares and interprets economic implications for labor negotiations and administration; conducts analysis and provides interpretive recommendations for solutions to problems and system improvements; performs other duties as may be assigned. This is the first level in the Budget/Fiscal Analyst class series. Incumbents are expected to work with a moderate to high degree of independence. Work assignments may be limited in nature and/or reviewed more frequently than a journey level Budget/Fiscal Analyst II class. The incumbent is fully aware of the operating procedures and policies that apply to budget and fiscal administration.

REPRESENTATIVE DUTIES:

1. Compiles budget information returned from department heads and elected officials for review by supervisor; assists in dissemination of information and making presentations to the County Manager, County Commissioners, and the State Department of Taxation. Principally responsible to improve budget request forms with historic data, including budgeted amounts vs. actual expenditures for previous years and monthly expenditures for the current year.
2. Responsible for ongoing review and analysis of county and town revenues and expenditures to assure that revenues are being received as projected and expenditures are in conformance with budget and revenues received.
3. Assists in preparation of budget documents for county and towns; calculates revenue estimates for county, town and special districts. Compiles budget status report to demonstrate current and projected condition of comprehensive county budget. Identifies and initiates budget augmentations during the year for grants and donations.
4. Prepares and monitors economic implications for labor negotiations and administration; determines cost estimates for employee benefits; serves as information source to the management negotiation team, and may serve as a member of that team as requested.
5. Computes percentages to indicate trends, interprets trends, and tabulates statistical data for presentation in miscellaneous budget and financial reports. Provides direction and assistance to departments in determining project costs.
6. Prepares financial statements and compiles other budget and financial information to assist the outside auditor in researching, compiling, and interpreting data for the annual audit report.
7. Compiles and prepares annual accumulated sick and annual leave reports;

community relations; and at least five (5) years of increasingly more responsible full-time professional experience in financial management for a public agency; or equivalent combination of related education and experience.

LICENSES:
Valid Nevada driver's license.

WORK DIRECTION, LEAD AND SUPERVISORY RESPONSIBILITIES:
Coordinates work assignments of support staff as assigned. May serve as a project team leader.

CONTACTS:
Co-workers; department heads and personnel; elected officials; County Manager and Board of Commissioners; town staff members; various federal, state and local agency officials/staff members; outside vendors and consultants; and the general public.

PHYSICAL EFFORT:
Coordination and vision to use keyboard and video display terminal sometimes for prolonged periods. Strength, dexterity and coordination to handle files and various documents. Occasional lifting of items weight up to 25 pounds such as files, stacks of paper, and other materials. Endurance and vision to drive for extended periods of time throughout the county and state.

WORKING CONDITIONS:
Normal office environment; limited exposure to dust, fumes, odors or noise; regular travel within the county and state. Occasional evening meetings. Work evenings and/or weekends at certain times of the year.

NOTE: THIS CLASS IS NOT SUBJECT TO THE PROVISIONS OF FLSA AND IS REFERRED TO AS EXEMPT.

Carl A. Torelli
4841 West Jacks Drive
Pahrump, NV 89048
(775) 751-5106

Experience

9/02 to Present

Nye County, Pahrump, Nevada
Budget/Fiscal Analyst II

Financial reporting and analysis for the Nye County Nuclear Waste Repository Project Office. Review of actual vs budget expenditures for the Oversight and Independent Scientific Investigation Programs; review of contracts for compliance; submission of grant applications; grant management; maintenance of office facilities and computer support; staff supervision; coordination with Nye County officials and the Department of Energy regarding the Yucca Mountain Project.

5/93 to 6/02

Self-Employed

Provider of research and reconciliation services in all fixed income and equity areas: cash discrepancies, coupon outages, principal and interest payments, stock dividends/splits, cash dividends, security differences (equities, mutual funds, fixed income), reconciliation of accounts and review of automated computer systems (i.e., AIMS, POLARIS, ICI, ADP, BDAS, SIS, CSS, PASSPORT, RADAR, READQ, MSA and many proprietary systems). Clients include international and regional banks, investment banking firms (boutique – multinational), mutual funds and various corporations.

8/00 - 6/02 — **ICI** (A division of ADP) – Responsible for the installation and mapping of general ledger functionalities to their clients.

5/00 – 7/00 — **Southwest Securities** – Government Operations daily processing desk.

4/00 — **Mr. Stock** – Stock and Option reconciliation.

4/99 – 3/00 — **Deutsche Bank** – Reconciliation of domestic cash and stock dividends, and foreign tax credits.

4/98 – 10/98 — **Cantor Fitzgerald** – Reconciliation of internal accounting differences and review of computer systems.

6/97 – 1/98 — **Bear Stearns** – Regulatory and financial reporting: Focus I and Focus II, 15C3-1, 15C3-3, 10Q, 10K.

9/96 – 4/97 — **Bankers Trust** – Custody department – coupon outages, cash dividends, account reconciliation for stock outages and P&I discrepancies.

Bane Sheppard
P.O. Box 5496
Pahrump, NV 89041

SUMMARY

Beginning with my 19-year career in the Air Force to my most recent employment, the majority of my skills lie in supervisory and advanced technical accounting, budgeting and financial analysis, and Industrial/Manufacturing Project Management. This includes, but is not limited to, assistance with budget preparation and submission, accounting support and analysis to upper echelons, supply accounting, commercial accounting, accounting report preparation and submission, budget analysis, internal auditing, accounts payable and accounts receivable. I am also adept at most office machines including computers and applicable software such as word, excel, lotus and banking programs. The sheer diversity of my experience will make me an asset to any organization.

WORK HISTORY

Aug 2000-Jun 2001 *Project Manager/Coordinator, Goodrich Aerospace, (909) 351-5840, Mr. Ron Thompson*
Responsible for the start to finish management of special projects for the Environmental, Health and Safety Group. This included initial design and planning of projects, including selection, coordination and contract compliance with contractors. Acted as a liaison for plant personnel regarding matters involving the impact of special projects. Designed and implemented a standardized a Hazardous Waste Management Program for the plant which involved all 750 plant workers and encompassed over 1 million square feet of plant property. Designed and implemented a training program for the Hazardous Waste Management Program which included conducting the training for the initial class. Responsible for initiating and coordinating a comprehensive plant wide asbestos and lead survey. This included selection of, and coordination with, both the survey contractors and the removal (abatement) contractors. Developed and provided computerized drawings and specifications for over 90% of the projects.

Jan 2000-Jun 2000 *Casino Drop Team Manager, Terrible Herbst Casino, (775) 751-7777, Mr. John Thielman*
Managed the Drop Team supervising five team members. Responsible for the collection, accounting, security and transfer of funds for two casinos numbering over 500 slot machines. Implemented a training program to ensure complete job knowledge of all team members, accomplishing this in less than six months. Reduced overtime hours from 55 hours per week to less than 30 hours per week. Streamlined the drop procedures resulting in a reduction of time for each drop by over 18 percent. Responsible for compliance and coordination with the Nevada State Gambling Commission guidelines and audit requirements.

Apr 1997-Sep 1999 *Financial Services Supervisor, Nevada State Bank, (775) 727-7856, Ms. Cheryl Wallace*
Supervised six bank tellers and one supervisor. Responsible for exceeding branch budgetary goals for sales and expenditures. Monitored and maintained all branch operations, including all vault and daily cash balancing. Maintained Internal Control and Review procedures to ensure and exceed FDIC, bank and audit requirements. Prepared, scheduled, and controlled all incoming and outgoing shipment of funds for the branch. Achieved an exemplary record of no overages or shortages in the vault account for a two-year period.

Apr 1996-Oct 1996 *Accounting Manager, University of Hawaii Federal Credit Union, (808) 983-5500, Mr. John Kaneshiro*
Managed the accounting department supervising a staff of five accountants. Responsible for oversight of all accounting functions including investments and Chief Financial Officer duties in the absence of the CFO. Controlled and ensured correctness of all transactions affecting financial records culminating in monthly financial reports. Initiated a loss prevention and risk management program to identify and deter internal and external losses.

Dec 1976-Dec 1995 *Non-Commissioned Officer in Charge, Commercial Services Accounting, United States Air Force, (671) 366-4942, Mrs. Sandy Mesa*

COUNTY OF NYE

Equal Employment Opportunity

DIRECTOR, NUCLEAR WASTE REPOSITORY PROJECT OFFICE
Pahrump, NV

Nye County (pop. 44,437) has a challenging executive opportunity for a Director with proven abilities to lead, plan and manage. The position is located in Pahrump, NV.

REQUIREMENTS

Under the direction of Nye County Board of County Commissioners, through the County Manager, manages the County's Nuclear Waste Repository Project Office (NWRPO). In accordance with the Nuclear Waste Policy Act as amended, the NWRPO is responsible for all aspects of Nye County's association and involvement in the nation's nuclear waste repository program and the integration of that association and involvement with all other County Departments and County Staff Functions. Under the direction of the Director, the Nuclear Waste Repository Project Office proposes, drafts and implements Board policies relative to nuclear waste disposal in Nye County, including issues related to the Yucca Mountain high level waste disposal site and the Nevada Test Site low level waste disposal program; implements the Board's Yucca Mountain Oversight/On-site Representative Programs and the Independent Scientific Investigations (ISIP)/Performance Confirmation Programs in Nye County; uses knowledge of project history and the Nuclear Waste Policy Act as amended to develop forward-thinking strategies that ensure protections and benefits for Nye County. Interacts directly with Department of Energy (DOE) on issues related to the Yucca Mountain Project. Travel in and out of state, is occasionally required. *This classification exists only to the extent that funding is available.*

EDUCATION AND EXPERIENCE

Graduation from an accredited college or university with at least a Bachelor level degree in Physical Sciences, Engineering or related fields. Advanced degree in one of the above fields, or in law or public administration preferred. Knowledge of the Nuclear Waste Policy Act as amended; significant experience managing a large multi-disciplinary project or other similar large multi-disciplinary office, group or department. Valid Nevada driver's license

COMPENSATION

The salary range for the NWRPO Director is $82,243 – $106,849.

TO APPLY

Applications may be obtained and dropped off at the following NYE COUNTY HUMAN RESOURCES Departments: 1114 Globemallow Lane, Tonopah, NV 89049 or 250 N. Hwy 160 Suite 9, Pahrump, NV 89060. Applications and a complete job description may also be obtained by emailing amelton@nyecounty.net or can be downloaded from www.nyecounty.net / employment opportunities. Please call (775) 482-7240 / 751-6300 with any questions. Nye County Human Resources must receive all completed applications no later than 5 p.m. on January 26, 2007.

COUNTY OF NYE

CLASS TITLE: ASSISTANT PROJECT ADMINISTRATOR

BASIC FUNCTION:
Under the general direction of the Department Manager, organizes and directs a variety of management, administrative, and supervisory functions related to contractor activities and expenditures. Coordinates with federal, state and local government agencies and various community groups. Represents the Department Manager and Nye County in various technical meetings and conferences.

REPRESENTATIVE DUTIES:

1. Supervises, oversees and coordinates contractor activities. Assures contractor compliance with terms of contracts and work scopes. Coordinates project activities with federal, state, and local government agencies, various community interest groups, and local governmental entities.
2. Conducts research on topics of special interest and prepares recommendations to the department manager on possible policy positions in relation thereto, prepares written comments for submission to appropriate agency in a timely manner.
3. Represents department manager and Nye County at meetings and conferences. Presents Nye County policy positions in public forums. Oversees strategic/political arrangements for meetings, tours, and other similar events.
4. Oversees all project expenditures and related accounting/budgeting and grant administration functions. Maintains work breakdown structure (WBS). Oversees and conducts various analytical and administrative special projects as assigned.
5. Ensures office compliance with County policies and procedures and Office Quality Assurance Program (QAP). Coordinates all activities related to such matters personnel and benefits, employee relations, workplace health and safety, and equal employment opportunities policies and property management.
6. Performs other duties as may be assigned.

EDUCATION AND EXPERIENCE:
Bachelor's level degree preferably in the natural sciences, social sciences, engineering, law, public administration or closely related field. Management and supervisory work experience directly related to the duties and responsibilities of this class. Prefer large, multi-disciplinary multi-agency project(s) experience.

LICENSES:
Valid Nevada driver's license

RESUME

David E. Swanson
1591 Dandelion, Apt. #6
Pahrump, Nevada 89048
dswanson@air-internet.com (home)
dswanson@nyecounty.net (work)
775-727-7727 x26 (work)

EDUCATION

B.S. degree in Geology, 1966, Michigan State University.
M.S. degree in Water Resource Development (minor in Geology), 1970, Michigan State University

TRAINING

I have all the required US EPA, OSHA (annual refresher is out of date), and DOT training and certifications for hazardous materials work. Additional training has been completed in CPR, First Aid, Project Management, and numerous technical subjects. I am proficient in the use of most Microsoft software.

REGISTRATION

Professional Geologist in Georgia.

QUALIFICATIONS SUMMARY

I am a senior hydrogeologist and project manager with over 25 years of experience in all facets of hydrogeology and remedial investigations, particularly the investigation and remediation of contaminated ground water and soils. I have been responsible for multidisciplinary teams of scientists and engineers providing a variety of environmental services to both public and private sector organizations. Specific areas of expertise include environmental investigations, ground-water quality evaluation, ground-water supply development, ground-water treatment system development, waste treatment system design, and expert witness. I understand and have worked with environmental regulations, including RCRA and CERCLA. I have experience in all types of geologic terrain including metamorphic, igneous, sedimentary (including karst), and glacial.

EMPLOYMENT SUMMARY

I am currently the Acting Manager of the Natural Resources and Federal Facilities Department in Nye County, Nevada. In this capacity I am engaged in our program that oversees the Department of Energy's Yucca Mountain Project (YMP). Hence, I am involved in monitoring various YMP development activities, assessing the impact of those activities, and identifying assistance needed to mitigate adverse impacts. In addition to these responsibilities, I oversee activities related to local water resources, economic development, and federal land management activities.

My most recent private sector position was with Foster Wheeler Environmental Corp. as a Senior Hydrogeologist and Project Manager. With this firm, I managed multidisciplinary investigations for the U. S. Army Corps of Engineers, Savannah District Multitask Delivery Order Contract.

I have over 15 years experience with several consulting engineering firms (including Camp, Dresser, and McKee, Inc., and WW Engineering and Science Inc.) where my responsibilities ranged from project geologist to Project Manager. Clients have been almost exclusively private sector industrial or commercial firms, and most of the projects have involved solving problems associated with the loss of hazardous materials.

COUNTY OF NYE

CLASS TITLE: SECRETARY II

BASIC FUNCTION:
Responsible and varied secretarial work involving the performance of delegated administrative details. Involves responsibility for providing secretarial service to a major official or department head and occasionally to his/her immediate staff. Requires the exercise of considerable initiative, independent judgment and discretion in screening calls, visitors and mail; answering and disposing of requests for information; and in general public relations activities. Assignments and changes in policies and procedures are received in general outline and employees are expected to proceed with minimum supervision; however, advice and assistance are normally available. Work is reviewed for the achievement of desired results and adherence to established policies and procedures.

REPRESENTATIVE DUTIES:

1. Performs a variety of office and administrative tasks in relieving a superior of important details.
2. Establishes and maintains complex filing systems; plans and maintains an adequate supply of office materials and supplies; relays complex and important instructions and messages.
3. Maintains appointment schedules; screens and refers callers; provides detailed responses to information requests about programs and activities; makes travel arrangements.
4. Prepares correspondence in accordance with established policies and procedures; types a variety of materials, including administrative and public reports for reproduction and distribution; prepares complex work sheets and tables; makes various mathematical computations.
5. Handles accounts payable; processes purchase orders and vendor claims for outstanding invoices.
6. Maintains personnel records and processes timesheets.
7. Attends meetings and conferences; takes minutes; composes drafts of proceedings; prepares agenda and materials in accordance with established practices.
8. Maintains various records on office activities pertaining to personnel, purchasing, travel expenses, contracts, billings, insurance and related activities.
9. Performs related work as required.

EDUCATION AND EXPERIENCE:
Any combination equivalent to: graduation from high school or successful completion of a G.E.D. or high school equivalency exam and/or work experience closely related to the duties and responsibilities of the class.

COUNTY OF NYE

CLASS TITLE: SECRETARY I

BASIC FUNCTION:
Under direction, performs secretarial work to provide staff support for administrative functions and details and maintains office organization through maintenance and development of filing systems, office supplies and bulletins.

REPRESENTATIVE DUTIES:

1. Performs clerical typing of correspondence, note taking of meetings, and composes routine letters and notices.
2. Answers and screens telephone calls, refers callers, and provide information on departmental services and functions.
3. Coordinates activities with a variety of County departments and outside agencies in the performance of staff duties.
4. Maintains and organizes office filing systems.
5. Assists the general public in providing information on a variety of matters.
6. Operates and maintains office equipment such as computers, fax, copiers and audio/visual.
7. Orders office supplies and coordinates janitorial services.
8. Performs other duties as may be assigned.

EDUCATION AND EXPERIENCE:
Any combination equivalent to: graduation from high school or G.E.D. equivalency and/or general work experience.

LICENSES:
Not applicable.

WORK DIRECTION, LEAD AND SUPERVISORY RESPONSIBILITIES:
Not applicable.

CONTACTS:
Co-workers, supervisor, general public, and outside agencies.

PHYSICAL EFFORT:
Routine clerical setting—subject to filing of documents.

WORKING CONDITIONS:

6731 LONGMEADOW DR. • PAHRUMP, NV 89061
PHONE (775) 537-0517 • E-MAIL ZOIECHOATE@COX.NET

ZOIE L. CHOATE

OBJECTIVE

Seeking position with increased responsibilities, longevity and upward mobility.

FUNCTIONAL SUMMARY

Office Manager, Customer Relations, Financial Management Assistant, Administrative Manager, Problem Solving, Communicator, Trainer

EMPLOYMENT

[01/1992 - Present] Branchini Insurance Agency

Office Manager

- Support owner in daily operations of insurance/real estate business
- Extensive insurance research and problem solving
- Customer relations, explaining rules, policies and procedures
- Business Relations, working with underwriters, claims adjusters, and other agents
- Maintaining over 1300 company and customer files
- Receive payments and conduct company banking
- Create, edit and proof correspondence
- Daily and mass mailings
- Trainer of office assistants for other insurance agents and district office staff

SUMMARY OF QUALIFICATIONS

- Proficient with standard office equipment: multi-line phones, voice mail, fax, copier, printer, and PC computer, to include troubleshooting and maintenance
- Proficient with MS Office applications: Word, Excel, Publisher, and specialized databases
- Trained in legal document and correspondence preparation
- I handle many complaints, general questions and issue instruction daily over the telephone and in person explaining rules, policies, and procedures to many agencies, clients and companies. Much of this information is or can be confusing: long alphanumeric sequences, policy bi-law and many foreign names. Working with the public, I deal with various social, economic, and educational differences I have achieved this communication through clear and concise language.

Celeste H. Sandoval

2111 N. David St.
Pahrump, NV 89060
(775) 751-8081

QUALIFICATIONS

I am very qualified for this position due to my excellent computer skills, I also am a quick learner and willing to take on difficult tasks. I have experience in secretarial situations due to the requirements from my previous employer. I can run all office equipment and I am very proficient with Macintosh and IBM computers.

EDUCATION

1993-1997	*Pahrump Valley High school*	*Pahrump, NV*
1997-1998	*University of Nevada-Las Vegas*	*Las Vegas, NV*
1998-1999	*Community College of Southern NV*	*Pahrump, NV*

EMPLOYMENT

1999-2002 *Accounting Manager, Pahrump Valley Times*
When first hired on to staff I was a clerk in the front office, helping customers by taking classifieds, legal notices. After 3 months I was moved to the accounting office to assist the Accounting Manager. I posted the papers by verifying ads were placed in the paper for the run dates. I was then promoted to Accounting Manager and Accounts Receivable Clerk after 4 months. I billed out the ads in the papers, prepared legal notices and affidavits of Publication. My other responsibilities were to prepare the bank deposits and take them to the bank, cash out the register at the end of business day. I did all the ordering of supplies for the Printing Office and the Newspaper itself.

1999-2000 *Cheer leading Coach, Nye County School District*
I was responsible for the Cheer squad and Dance Team, managed practices and performances at games.

1997-1998 *Buser, dishwasher, Mike & Alma's Cotton Pickin Restaurant*
I bused tables and cleaned the dishes.

1996-1997 *Clerk, Country Discount Health Food Store*
Managed the cash register, stocked the shelves, took inventory and helped the customers

NYE COUNTY STAFF PROJECTIONS FY2007-08

ISIP BY TITLE

ATTACHMENT #1

rate = .2050% eff 7/1/07 | rate = 0.040577 | 420.85*12=5050.24 | 5050.24 / 2080 = 2.428

GRADE STEP	HIRE DATE	ANNIV DATE	NAME	LONG. RATE	RATE/HR	PAY PERIODS	ANNUAL SALARY	C.O.L. ADJ+ ANNUAL LONG.	TOTAL GROSS	OVERTIME HOURS	OVERTIME SALARY	TOTAL SALARY	RETIREMENT	WORKERS COMP	GROUP INS	MEDICARE	TOTAL BENEFITS		TOTAL STAFF SALARY/ BENEFITS
19/4	6/14/2001		GEOSCIENCE MANAGER		36.18	21	60,782.40	1,823.47	78,274.23	NCMEA		78,274.23	16,046.22	3,176.13	4,079.04	1,134.98	24,436.37		102,710.60
19/5		4/24/2008			38.03	5	15,212.00	456.36											
11/4	4/3/2006		GEOSCIENTIST I		24.11	20	38,576.00	1,157.28	52,256.43	NCMEA		52,256.43	10,712.57	2,120.41	3,884.80	757.72	17,475.50		69,731.93
11/5		4/3/2008			25.33	6	12,158.40	364.75											
14/3	7/19/2004		BUDGET/FISCAL ANALYST I @50%		26.65	1	1,066.00	31.98	30,020.38	NCMEA		30,020.38	6,154.18	1,218.14	2,525.12	435.30	10,332.73		40,353.11
14/4		7/19/2007			28.08	25	26,080.00	842.40											
15/1	EFF 7/1/07		OPEN-GEOSCIENTIST 1I		25.03	26	52,062.40	1,561.87	53,624.27	NCMEA		53,624.27	10,992.98	2,175.91	5,050.24	777.55	18,996.68		72,620.95
15/1	EFF 7/1/07		OPEN-GEOSCIENTIST 1I		25.03	26	52,062.40	1,561.87	53,624.27	NCMEA		53,624.27	10,992.98	2,175.91	5,050.24	777.55	18,996.68		72,620.95
15/2	9/25/2002		GEOSCIENTIST II		26.51	13	27,570.40	827.11	58,423.25	NCMEA		58,423.25	11,976.77	2,370.64	2,525.12	847.14	17,719.66		76,142.91
15/3		12/27/2007			28.03	13	29,151.20	874.54											
9/1	EFF 7/1/07		OPEN-DATABASE SPECIALIST		16.87	26	35,089.60	1,052.69	36,142.29	21.00	547.35	36,689.64	7,521.36	1,488.76	5,050.24	532.00	14,592.37		51,282.01
10/4	3/1/2006		GEOSCIENCE TECHNICIAN		19.85	17	28,996.00	869.88	43,105.09	60.00	1,840.10	55,463.39	11,369.99	2,250.54	3,302.08	804.22	17,726.83		73,190.22
10/5		3/1/2008			20.63	9	14,853.60	445.61		330.00	10,518.21								
4/1	EFF 7/1/07		OPEN-SECRETARY 1		13.53	26	28,142.40	844.27	28,986.67	21.00	438.98	29,425.65	6,032.26	1,194.00	5,050.24	426.67	12,703.18		42,128.83
12/2	8/15/2000	7/1/2007	ADMIN TECH COORDINATOR		20.04	26	41,683.20	1,250.50	42,933.70	21.00	650.20	43,583.89	8,934.70	1,766.50	5,050.24	631.97	16,385.41		59,969.30
																recruitment	3,000.00		3,000.00
							463,486.00	13,904.58	477,390.58		13,994.83	491,385.41					172,365.40		663,750.81
			R. 2/1/07						477,390.58		13,994.83		100,734.01	19,938.95	41,567.36	7,125.09	172,365.40		
																	491,385.41		
																	663,750.81		
										453.00									

NYE COUNTY EMPLOYEES ASSOCIATION

REPRESENTED / NON REPRESENTED CLASSIFICATIONS

Grade	Classification
1	Custodian
2	Clerk/ Typist
	Custodian/Groundskeeper ~ Beatty
	Grounds Keeper
	Deputy Justice Court Assistant
	Kennel Assistant
	Warehouse & Stock Handler
3	Detention Technician
4	Account Clerk I
	Buyer
	Financial Assistant I
	Recorder Clerk
	Secretary I
5	Assistant Curator
	Museum Director
	Maintenance Worker II
6	Account Clerk II
	Animal Control
	Apprentice Mechanic
	Collections Clerk ~ Assessor
	Collections Clerk ~ EMS
	Eligibility / Clerical Worker
	Finanical Assistant II
	Deputy Justice Court Data Entry Clerk
	Imaging / Data Clerk II
	Secretary II
Fire 7	Firefighter / Maintenance
7	Assistant Director ~ H&HS
	Clerk / Receptionist / Secretary ~ SO
	Deputy Assessor
	Deputy Auditor
	Data Collector
	Deputy Clerk
	Deputy Clerk/Recorder
	Deputy Recorder
	Deputy Treasurer
	Judicial Legal Secretary
	Personnel Technician I
	Program Assistant
8	Automotive Mechanic
	Court Clerk II
	Deputy Justice Court Clerk I
	Heavy Equipment Mechanic
	Heavy Equipment Operator
	Maintenance Worker III
	Payroll Specialist
	Planning Counter Technician
	Property Appriaser I
	Secretary III
	Sign Maker
9	Database Specialist
	Dispatcher
	Executive Legal Secretary
	Property Appraiser II
	UIFSA Caseworker
Fire 10	Probation Officer
10	Administrative Assistant
	Administrative Assistant - Road
	Administrative Technician - SO
	Buyer/Administrative Assistant
	Computer Support/Administrative Assistant
	Deputy Justice Court Clerk II
	Deputy Justice Court Collections Specialist
	Deputy Justice Court Executive Assistant
	Evidence & Property Control Technician
	Geoscience Technician
	Lead Automotive Mechanic
	Lead Maintenance Worker III
	Personnel Technician II
	Planning Technician I
	Senior Property Appraiser
	Veterans Services' Representative
	Water Distribution Tech / Airport Maint. Worker
11	Multi-Function Office Manager
	Office Manager
	Radio Communications Technician
12	Administrative Technical Coordinator
	Animal Control Supervisor
	Animal Shelter Supervisor
	Chief Deputy Assessor
	Chief Deputy Auditor
	Chief Deputy Recorder
	Chief Deputy Treasurer
	Code Compliance / Enforcement Officer
	DataBase Administrator
	Firefighter / Mechanic
	Foreman
	Deputy Justice Court Clerk III
	Planning Technician II
	Purchasing Agent
	Senior Financial Analyst
	Training Officer / EMS Coordinator
13	Engineering Technician II
	Supervising Dispatcher
14	Fire & Emergency Training Officer
	Network Admin / Computer Support
	Supervising Equipment Operator
	Workplace Safety / Training Officer
15	Administrative Assistant to County Manager
	Administrative Technician / Grant Administrator ~ SO
	District Court Supervisor / Admin. Legal Secretary
	Deputy Justice Court Administrator
	Supervising Legal Secretary
	UISFA Coordinator
16	Planner 1
17	Programmer / Analyst
	District Supervisor, Roads
	Equipment Service Manager
	Purchasing & Contracts Administrator
18	GIS Coordinator
	Engineering Technican III
	Principal Planner
23	Engineering Technician IV
	Manager of Network Operations

11/13/2006 ds

ATTACHMENT 2

NYE COUNTY MANAGEMENT

REPRESENTED / NON REPRESENTED CLASSIFICATIONS

NCMEA Represented Positions

Grade	Classification
11	Director Senior Services Geoscientist I Veterans Services' Officer
13	Chief Juvenile Probation Officer
15	Director Health & Human Services Geoscientist II
16	Assistant Project Administrator
17	Engineer
18	Director General Services
19	Director, Management Information Systems Geoscience Manager Road Superintendent
20	Legislative / Admin Service Director
21	Assistant Planning Director Building Official Director Emergency Management Services Director, NRO Geotechnical Representative Manager, Facility Operations Principal Engineer
23	Assistant Public Works Director
24	Director, NWRPO Director of Planning
26	Public Works Director

Management Non Represented Positions

Grade	Classification
11	Personnel Administrator Specialty Court Coordinator
12	Law Clerk
14	Budget/Fiscal Analyst I
16	Budget/Fiscal Analyst II Court Reporter
18	Director HR / Risk Management
19	Budget/Fiscal Director
21	Deputy District Attorney
22	Comptroller
24	Chief Deputy District Attorney Senior Deputy District Attorney
25	Assistant County Manager
	County Manager

11/13/06 ds

b. **FRINGE BENEFITS**

1. Indicate the basis for computation of rates, including the types of benefits to be provided, the rate(s) used, and the cost base for each rate.

Rates are calculated based on the Nye County Salary Classification and allowable fringe benefits paid to Nye County Exempt and Non-exempt Employees. The amount of compensation is based on the current actual hourly base rate of the above referenced FTEs plus fringe benefits. Fringes include Retirement @ 20.50%, Workers Comp @ 3.84%, Group Insurance @ $2.43/hr. and Medicare @ 1.45%. Paid vacations are accrued at 10 hours a month and paid holidays are 11 per year.

2. Are the fringe cost rates approved by a Federal Agency? If so, identify the agency, period of applicability, and date of latest rate agreement or audit and provide the approval letter.

The Nye County Board of County Commissioners approves the fringe cost rates. Labor contracts are negotiated. The latest contracts are from July 1, 2003 thru June 30, 2007. The County uses the agreed upon rates until new contracts are negotiated.

c. **TRAVEL**

Identify total Foreign and Domestic Travel as separate items.

1. Indicate the estimated number of trips, number of travelers, names/positions of travelers, number of days per trip, point of origin, destination, and purpose of travel.

   See Attachment 3

2. For each trip, itemize the estimate of transportation and/or subsistence costs, including airfare, mileage, rental car expenses, lodging costs, and per diem.

   See Attachment 3

3. Specify the basis for computation of each type of travel expense (e.g., current airline ticket quotes, past trips of a similar nature, federal government or organization travel policy, etc.) and supply supporting information (e.g., quotes, previous invoices, historical data, etc.).

   Estimates are based on Nye County travel policy and historical data.

d. **EQUIPMENT** – As defined at 10 CFR 600.101 and 10 CFR 600.202. "Equipment".

1. Itemize the equipment and briefly justify the need for the items of equipment to be purchased as they apply to the Statement of Work.

   See Attachment 4 - table summarizes general equipment categories and the estimated budget required.

NYE COUNTY TRAVEL

Staff Travel

In-State:

Meetings, coordination, field trips, etc. 955 miles x12 x.485	$5,558
Travel costs associated with ongoing field operations $50/day for 240 days (20 days/month x 12 months)	$12,000

Out-of-State:

Program coordination with OCRWM	
Pahrump, Nv. - Washington, D.C. Two trips @ $1,618 *	$3,236
TOTAL TRAVEL COSTS	**$20,794**

*** Itemized basis for out-of-state travel costs**

Two trips of four (4) days each:		Total
Airfare (Las Vegas - Washington, D.C.)	$750	$750
Lodging	$150/day	$600
Meals	$45/day	$180
Parking, Taxis and Misc. expenses	$22/day	$88
		$1,618

ATTACHMENT 3

Equipment Summary Budget **ATTACHMENT 4**

Item Description	Model Number	Cost (3.5% per year escalation not included in detail) 2008	2009	2010	2011	2012	Comments
40-kilowatt and 60-kilowatt Ingersoll-Rand generator sets, trailer mounted	G40 /G60			$57,000			
5-kilowatt Honda generator, portable w/wheels	EB5000		$4,968				2 units
Bennett sample pumps	1800-8 / 1400-6		$11,124				2-1.8" and 2-1.4"
3-inch Grundfos submersible pumps	15 SQ15-290 / 5 SQ10-360				$2,644		
Laval Underground Surveys Downhole video surveying system (1.7-inch)	Cam-211				$29,950		
Trimble GeoXH GPS receiver with associated software (TerraSync field GPS software, Pathfinder Office software upgrade)	61000-00, 45955-03, 34191-90				$6,605		
6x12 ft enclosed cargo trailer with workbench and drawers (field trailer)	GC6X12DT2					$4,738	
6x14 ft dual axle car hauler (10400 lb GVWR) to replace Bennett trailer						$2,695	
Miller Millermatic MIG welder with meters	MIL951009					$3,582	
In-Situ Level Troll 700 (pumping well)	700		$1,500				
In-Situ vented cable (800 ft long)			$16,100				
In-Situ Level Troll 500 (monitoring wells)	500		$6,000				
Aqua Troll downhole water quality probe with 1500 ft cable and data logger PDA	200					$7,874	
Lab-Line Ambo-Hi-Low BOD Incubator, 19 cu. Ft						$4,940	
Distributed Temperature Sensor (Agilent), solar powered remote	N4386A	$46,000					
One Day Shade, 20x30, 9' tall at shoulder + privacy fence doors	20x30				$7,400		
Fiber Optic cabling for Distributed Temperature Sensor	Brugg	$2,400					
YSI water quality monitoring equipment	6820v2					$5,000	
Trailer, open with side rails for ATV transport						$1,800	
750 foot cable for downhole YSI deployment	YSICABLE					$2,000	
GE Druck DPI 605 precision pressure calibrator	DPI 605					$7,920	
6 cfs flume for stream gaging	AF6				$7,050		10 units
Waterline groundwater level sounders			$1,480	$2,694			2 500 ft sounders and 2 1000 ft sounders
Westbay casing and packers		$62,770	$62,770	$62,770	$62,770	$62,770	(assuming installation of one 1500 ft Westbay well a year)
Totals (with 3.5% escalation each year)		**$115,061**	**$107,580**	**$126,750**	**$120,494**	**$106,935**	

2. Indicate the estimated unit cost and number for each item to be purchased.
N/A

3. Provide the basis for the equipment cost estimates (e.g., vendor quotes, published price lists, prior purchases of similar or like items, etc.) and supply supporting information (e.g., vendor quotes, previous invoices, historical data, published price lists, etc.).
All ISIP costs for equipment are based on vendor quotes or from historical costs from previous years of operation (FY03-07).

e. **SUPPLIES** – As defined at 10 CFR 600.101 and 10 CFR 600.202, "Supplies".

1. Identify the materials and supplies and briefly justify the need for each item as they apply to the Statement of Work.
See Attachment 5 - table summarizes general categories of field supplies and budgeted costs.

2. Indicate the estimated unit cost and number of units for each item to be purchased.

N/A

3. Provide the basis for the material cost estimates (e.g., vendor quotes, prior purchases of similar or like items, published price lists, etc.) and supply supporting information (e.g., quotes, previous invoices, historical data, published price lists, etc.).
All ISIP costs for supplies are based on vendor quotes or from costs from the five previous years of operation (FY03-07).

f. **CONTRACTUAL**

1. Provide a Statement of Work and cost proposal for each selected contractors/subgrantee and supply the following:

Competitively Selected:

Contractor/Subgrantee	Cost	Work Description

ISIP field supplies by general categories FY2008 - 2012

ATTACHMENT 5

(2009-2012 @ .035 inflation rate)

	2008	2009	2010	2011	2012
Vehicle fuel	$6,000.00	$6,210.00	$6,427.35	$6,652.31	$6,885.14
Phone usage - field personnel	$8,400.00	$8,694.00	$8,998.29	$9,313.23	$9,639.19
Sanitation rentals - multiple locations	$15,000.00	$15,525.00	$16,068.38	$16,630.77	$17,212.85
Office and Storage Trailers rental	$12,000.00	$12,420.00	$12,854.70	$13,304.61	$13,770.28
Laydown Yard rental	$14,400.00	$14,904.00	$15,425.64	$15,965.54	$16,524.33
Miscellaneous: Sampling Supplies, water level monitoring supplies and services, tracer and sampling accessories, repairs and calibrations, generator overhauls and service, PVC pipe and fittings, etc.	$28,000.00	$28,980.00	$29,994.30	$31,044.10	$32,130.64
	$83,800.00	$86,733.00	$89,768.66	$92,910.56	$96,162.43

See Summary of Professional Service Contractor Experience and Expertise. All professional contractors selected are specialists in their fields of study; are currently under contract to the Nye County ISIP program, and have been involved with all phases of the County's technical program. The non-professional contractors, i.e., the surface geophysics contractor(s) and the drilling contractor(s) will be selected from proposals submitted during a competitive bid solicitation process.

Non-competitively Selected*:

Contractor/Subgrantee	Cost	Work Description	Sole Source Justification

See Summary of Professional Service Contractor Experience and Expertise. All professional contractors selected are specialists in their fields of study; are currently under contract to the Nye County ISIP program, and have been involved with all phases of the County's technical program. The non-professional contractors, i.e., the surface geophysics contractor(s) and the drilling contractor(s) will be selected from proposals submitted during a competitive bid solicitation process.

- For each non-competitively selected contractor or subgrantee, have the contractor and subgrantee complete a GO-PF20, Budget Information Page for Form DOE F 4600.4 and attach them to this form.

2. For each proposed procurement contract and subgrant for which a contractor/subgrantee selection has not been made, complete the following:

Cost Estimate	Basis for the Cost Estimate*	Work Description
N/A		

* Identify the basis of the cost estimate (e.g., quotes, prior subcontracts, etc.) and supply supporting information (e.g., quotes, previous invoices, historical data, etc.).

g. **CONSTRUCTION**

1. Identify the proposed construction costs and identify the subcontractor/subgrantee to perform the construction.

N/A

Summary of Professional Service Contractor Experience and Expertise

Contractor Name	Years Contracted by ISIP	Expertise/Experience Relevant to ISIP	Major Contributions to ISIP	Major Task(s) for Fiscal Year 2007-2008	Not to Exceed Contract Values for FY07-08
Anderson / Morealli	8	PhD and full professor of geology at the University of Pittsburgh. Recognized expert in structural geology with more than 25 years of related experience throughout the western hemisphere.	Served as the principal investigator for regional geologic characterization activities. Identified a number of potential fast pathways for groundwater flow and contaminant movement from Yucca Mountain and other Nevada Test Site areas to the Amargosa Desert area.	Continue to serve as principal investigator and identify geologic features that control groundwater flowpaths to the Amargosa Desert. Specifically, provide structural geology support in interpreting surface geophysical surveys, refine conceptual hydrogeologic models, and characterize regional geology. In cooperation with Nye staff and contractors, produce 5 year ISIP Summary Report. Supervise new graduate student, Sarah Morealli.	$82,000
Buqo	10	Nearly 20 years of experience in the field of applied hydrogeology. Widely respected as a leading hydrogeologist in southern Nevada, including Pahrump and Amargosa Valley. Specializes in water resources exploration and development, dewatering, and waste disposal problems.	Served as the principal investigator for ISIP water level monitoring and surface geophysical survey activities. Identified major trends in groundwater levels in the Amargosa and Pahrump Valleys and related them to recharge and pump discharge. Managed field drilling operations, and interpreted and published data in the early phases of the EWDP, including descriptions of major hydrogeologic units and potential flowpaths.	Continue to serve as principal investigator for regional groundwater level monitoring and provide technical expertise in the areas of well construction, aquifer testing, and refinement of conceptual hydrogeologic models. Also continue to develop and revise applicable plans and procedures, conduct data analyses, and summarize results in reports and presentations. Finally, continue to analyze and model potential Yucca Mountain impacts on groundwater resources. In cooperation with Nye staff and contractors, produce 5 year ISIP Summary Report, Phase 5 Drilling Report, and 10 year ISIP Hydrogeologic Summary Report.	$150,000
Campanella (Norwest)	12	Nearly 20 years of experience as a reservoir engineer, with special expertise in modeling and analysis of flow through fractured or vuggy rocks and the design, implementation, and analysis/interpretation of tracer tests in a variety of reservoir rock types.	Served as principal investigator for Nye County tracer tests. Developed quality assurance plans for the tracer tests, supervised the very successful single-well and cross-hole tests at Site 22, and initiated the analysis, interpretation, and reporting of test results.	Continue to serve as principal investigator for Nye County tracer test activities. Supervise natural-gradient tests at Sites 22 and 24 and, analyze data generated from these tests, and produce metadata and technical reports. Assume principle investigator responsibilities for drilling and testing a horizontal well spanning a major fault system. Improve and refine conceptual models of the hydrogeologic system downgradient from Yucca Mountain. Assume principal investigaro responsibilities for aquifer testing. Provide oversight of aquifer test plan development, data analysis and interpretation, and generation of metadata and technical reports. In cooperation with Nye staff and contractors, produce 5 year ISIP Summary Report.	$170,000

Summary of Professional Service Contractor Experience and Expertise

Contractor Name	Years Contracted by ISIP	Expertise/Experience Relevant to ISIP	Major Contributions to ISIP	Major Task(s) for Fiscal Year 2007-2008	Not to Exceed Contract Values for FY07-08
Danko (University of Nevada, Reno)	5	PhD and full professor at the University of Nevada, Reno, Mackay School of Mines. More than 25 years of experience modeling and analyzing mine ventilation systems, including 11 years modeling ventilation scenarios at Yucca Mountain. Developed numerical modeling software, MULTIFLUX, that permits simultaneous simulation of heat and moisture transfer in repository rock formations and air-filled tunnels.	Served with John Walton as co-principal investigator for repository ventilation modeling studies. Performed modeling software verification studies and used the software to demonstrate the beneficial cooling and drying effects of natural and active ventilation. Also demonstrated that the DOE high-temperature repository design will result in significant condensation of water on distal waste packages. Finally, modeled the effects of barometric pumping on moisture and temperature in air and rock in the repository.	Continue to serve as co-principal investigator for repository ventilation modeling studies. Use the computer code MULTIFLUX to complete summary findings report regarding pre- and post-closure ventilation effects on the storage environment in a hot emplacement drift, benchmark the MULTIFLUX-based model for the three-drift, monolithic, thermal-hydrologic study published in the Multi-Scale Thermal-Hydrologic Model (MSTHM) report by DOE, study the validity of the model simplification assumptions in the MSTHM report, and analyze the potential significance of natural airflows within the cold and hot emplacement drifts and between the emplacement drifts within the three-drift panel. In cooperation with Nye staff and contractors, produce 5 year ISIP Summary Report.	$90,000
D'Agnese (Earth Knowledge, LLC)	4	Frank D'Agnese, PhD, has 15 years of experience developing and implementing hydrogeologic data management systems. Former principal investigator of the Death Valley Regional Groundwater Flow System (DVRFS), which encompasses southern Nye County.	Evaluated conceptual and numerical groundwater-level-related modeling activities conducted under the direction of Tom Buqo and made recommendations that will be useful for years to come in defining the hydrogeologic framework and water resources in southern Nye County. Developed objectives for Nye County, NWRPO, and the ISIP. Evaluated both existing and desired conditions within the ISIP. Developed an ISIP work plan for meeting objectives and desired conditions. Worked other principal investigators to Identify unresolved technical issues regarding performance of the proposed repository at Yucca Mountain.	Utilizing input from key investigators at the participating laboratories, develop a white paper evaluating the consistency and integration of site and regional saturated zone models and the ability of these models to assess prediction uncertainty and to test alternative conceptual models. The resulting white paper will be a road map describing how these characteristics can be improved through a collaborative effort between the labs and Nye County ISIP. Begin implementation of the improvement plan.	$100,000
Walker (Jamieson Geological, Inc.)	9	More than 11 years experience in minerals exploration, including managing numerous drilling, logging, and mapping projects. Since 1998, has played a key role in designing and supervising the implementation of five major Nye County drilling, logging, and sampling programs. Served as the managing geologist since 2001.	As managing geologist, provided in-depth training of contract geologists and technicians in applicable NWRPO quality assurance documents, and ensured that these documents were followed in field operations. Served as support geologist in drilling, sampling, logging, and well completion activities. Assisted in analyzing, interpreting, and reporting geologic and geophysical logging data, and planning and designing specifications for new boreholes and wells.	Continue to manage geologist support in surficial geology logging and testing, borehole geologic logging, well construction, aquifer testing, geological sample analysis, groundwater monitoring, regional water level monitoring, surface geophysical surveys, and Nye County tracer testing. Assist in analyzing, interpreting, and reporting data, and planning and designing specifications for new wells, surface geophysical surveys, and geologic sample analyses. Serve as co-principal investigator on major drilling studies. In cooperation with Nye staff and contractors, produce 5 year ISIP Summary Report and Phase V Drilling Report.	$145,000

Summary of Professional Service Contractor Experience and Expertise

Contractor Name	Years Contracted by ISIP	Expertise/Experience Relevant to ISIP	Major Contributions to ISIP	Major Task(s) for Fiscal Year 2007-2008	Not to Exceed Contract Values for FY07-08
Walton	6	PhD in chemical engineering, full professor and chairman of the Environmental Science and Engineering Program at the University of Texas, El Paso. More than 20 years of experience with nuclear waste disposal issues, including 2.5 years evaluating the engineered barrier system performance related to Yucca Mountain. Special expertise in waste disposal technology, contaminant transport, and environmental remediation.	Served as principal investigator for water chemistry monitoring activities and co-principal investigator with George Danko for repository ventilation studies. Developed a water chemistry evolution model for the repository engineered barrier system that demonstrated the potential for corrosive brine development. Also, analyzed groundwater chemistry by several approaches and identified two statistical model approaches, correspondence and principal component analyses, as having the potential to help to define groundwater flow pathways.	Continue as principal investigator for water chemistry monitoring activities and co-principal investigator with George Danko for repository ventilation studies. Supervise the analysis and interpretation of chemical laboratory test results, identifying trends where possible. Analyze water chemistry data to attempt to identify and model groundwater flow pathways. Incorporate surface water infiltration studies into water sampling plan. Evaluate transient release from the Engineered Barrier System. In cooperation with Nye staff and contractors, produce 5 year ISIP Summary Report.	$55,000
Belke	4	More than 30 years of experience as a quality engineer with the Nuclear Regulatory Commission. Reviewed and evaluated quality assurance programs associated with high-level waste facilities and nuclear reactors.	Assisted in revising NWRPO quality assurance program documents, such as the Quality Assurance Program Plan and 12 quality administrative procedures.	Continue to provide guidance in the implementation and revision of the NWRPO quality assurance program. Plan and implement quality assurance audits and surveillances of field data collection and records management.	$10,000
Foster	4	More than 3 years of experience conducting geotechnical field tests and laboratory analyses in compliance with applicable ASTM standards. More than 5 years of experience supervising construction projects, including commercial and residential developments.	As laboratory technician, assisted in setting up the NWRPO testing laboratory, conducted a wide range of hydrologic property tests on sonic core samples, and collecting and processing sonic core samples at the drill site.	Continue to provide technician support for laboratory testing of hydrologic properties of geologic samples and assist in the field as needed in the areas of surface geology sampling and testing, well drilling and construction, well monitoring, surface geophysical surveys, and Nye County tracer testing.	$50,000
Giampaoli	8	MS in geology with nearly 20 years of regulatory compliance experience, supporting numerous government and private clients in National Environmental Policy Act reviews, environmental assessments, and environmental impact statements.	Successfully obtained necessary permits, waivers, and other environmental compliance documentation required for well construction, well testing, and surface excavation activities. Also provided disturbed site reclamation coordination and oversight. Finally, produced and helped to implement a comprehensive ISIP health and safety plan and provided technical support	Continue to provide environmental compliance/restoration and health and safety support for ISIP activities associated with well construction and aquifer testing, surface geophysical surveys, and Nye County tracer tests.	$70,000

Summary of Professional Service Contractor Experience and Expertise

Contractor Name	Years Contracted by ISIP	Expertise/Experience Relevant to ISIP	Major Contributions to ISIP	Major Task(s) for Fiscal Year 2007-2008	Not to Exceed Contract Values for FY07-08
Hooks (Caruthers & Associates, Inc.)	4	Nearly 40 years of professional experience in the field of nuclear engineering, including nearly 10 years as a quality assurance engineer with the Nuclear Regulatory Commission. As quality assurance engineer, served as the lead on numerous audits and surveillances.	Assisted in revising NWRPO quality assurance program documents, such as the Quality Assurance Program Plan and 12 quality administrative procedures.	Continue to provide guidance in the implementation and revision of NWRPO quality assurance program. Plan and implement quality assurance audits and surveillances of field data collection and records management.	$10,000
Huskinson	6	MS in geology with nearly 30 years of mineral exploration experience. Spent 5 years as drilling coordinator for EXXON and supervised drilling programs for five other minerals companies. Special expertise in geologic logging and mineral identification.	Provided technically defensible geologic logging support for EWDP Phase III and IV drilling operations. Played a key role in mineralogical characterization and identification of volcanic lithostratigraphic unit or variations of units not previously observed.	Continue to provide geological technical support for drill site operations and surface outcrop investigations, including surficial geology logging and testing, borehole geologic logging and well construction, aquifer testing, groundwater chemistry monitoring, regional water level monitoring, and Nye County tracer testing.	$30,000
TerraSpectra Geomatics	9	Elaine Ezra, MA in physical geography, with more than 20 years of experience applying geospatial technologies to a variety of mapping tasks. Served 8 years as project manager in the Spatial Analysis Section on the Yucca Mountain Site Characterization Project prior to opening her own consulting firm in 1997.	Provided map production and webmaster services for the NWRPO website since 1998. From 2001 through 2004 developed the Nye County Licensing Support Network website required by the Nuclear Regulatory Commission.	Continue to provide map production support and to develop, maintain, and load the NWRPO website, as well as the License Support Network website. Develop Quality Assurance procedures for database development and maintenance and LSN development processes; review and evaluate existing databases and develop recommended relational database design; develop Geospatial Database Plan, develop NWRPO "atlas"; and provide recommendations for NWRPO website update and revision.	$150,000
Woocay / James (University of Texas, El Paso, Graduate Students)	3	Arturo Woocay is a PhD candidate in the Environmental Science and Engineering Program at the University of Texas, El Paso. Aline James is a new PhD candidate starting June 2007. Nye County contractor John Walton is the thesis advisor for these students.	Arturo has used several statistical models to analyze major ion water chemistry data in the vicinity of Yucca Mountain and identified several major groundwater flow pathways that impact Amargosa Valley. Used trends in groundwater isotope data to support the pathway findings. Presented these flow pathway findings at several major technical conferences and began drafting several articles for peer reviewed technical journals.	Help plan and participate in groundwater chemistry sampling and analysis activities. Analyze and interpret laboratory chemical analytical data; identify spatial, time, and other trends where possible; and summarize data and analyses in technical reports and/or peer reviewed journal articles. Analyze water chemistry and related data to improve and refine conceptual models of groundwater flowpaths. Incorporate surface water infiltration studies into water sampling plan. Evaluate transient release from the Engineered Barrier System.	$66,000

Summary of Professional Service Contractor Experience and Expertise

Contractor Name	Years Contracted by ISIP	Expertise/Experience Relevant to ISIP	Major Contributions to ISIP	Major Task(s) for Fiscal Year 2007-2008	Not to Exceed Contract Values for FY07-08
Wilcoxon	7	BA in geology, with more than 16 years as a practicing geologist, including 7 years working for DOE contractors on Yucca Mountain geology projects. Special expertise in drilling, geologic logging, well completion and development, and laboratory geotechnical testing of geologic samples.	Provided technically defensible geologic logging support for EWDP Phase II, III, IV, and V drilling operations, technical oversight of laboratory hydrologic property testing on geologic samples, and the development of water level monitoring networks in the Pahrump and Amargosa Valleys	Continue to provide geological technical support for drill site operations and surface outcrop investigations. Tasks will include surficial geology logging and testing, borehole logging and well construction, aquifer testing, groundwater chemistry and water level monitoring, and Nye County tracer testing.	$90,000

$1,268,000

2. Provide a Statement of Work and either a cost proposal or a completed Budget Information Page for Form DOE F 4600.4 for each selected contractors/subgrantee. For proposed procurement contract and subgrant for which a contractor/subgrantee selection has not been made, provide work scope and basis of cost estimate. If non-competitively selected, provide a sole source justification.

   N/A

h. **OTHER**

1. Identify other costs and briefly justify the need for each cost item proposed relative to the work scope.

   N/A

2. Indicate the estimated unit cost and number of units for each item proposed.
   N/A

3. Provide the basis for the cost estimates (e.g., vendor quotes, prior purchases of similar or like items, published price lists, etc.) and supply the supporting information (e.g., quotes, previous invoices, historical data, published price lists, etc.).
   N/A

i. **INDIRECT CHARGES**

1. State the amounts and percentages used for calculation of indirect costs.
   N/A

2. Are the indirect cost rates approved by a Federal Agency? If so, identify the agency and date of latest rate agreement or audit and supply the approved rate agreement.
   N/A

3. If indirect cost rates are not approved by a Federal Agency, state the basis for the proposed indirect cost rates and provide a rate proposal.
   N/A

2. ADDITIONAL INFORMATION

a. COST SHARE

1. Identify the percentage and amount of cost sharing proposed by each project participant. Cost sharing from other Federal sources can not be counted as non-Federal Recipient contributions. Non-Federal sources include private, state or local Government, or any sources that were not originally derived from Federal funds.

   N/A

2. Identify the source of the Applicant's cost share (e.g., corporate equity, loan, etc.).
   N/A

3. Identify the type (e.g., in-kind, cash, etc.) of cost share contributions and supply funding commitment letters from each contributor. Note that "cost sharing" is not limited to cash investment. In-kind contributions (e.g., contribution of services or property; donated equipment, buildings, or land; donated supplies; or unrecovered indirect costs) incurred as part of the project may be considered as all or part of the cost share.
   N/A

b. FINANCIAL CAPABILITY

1. Document applicant's compliance with Financial Management System specifications per 10 CFR 600.121.
   Nye County Audit Report attached

2. Provide current financial statements for the applicant. If the statements are audited, provide the complete audit report with footnotes.

   Nye County Audit Report attached

ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

Note: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant I certify that the applicant:

1. Has the legal authority to apply for Federal assistance, and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of the project described in this application.

2. Will give the awarding agency, the Comptroller General of the United States, and if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standard or agency directives.

3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.

5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the nineteen statutes or regulations specified in Appendix A of OPM's Standard for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).

6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685- 1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §§794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to non- discrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

7. Will comply, or has already complied, with the requirements of Title II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

8. Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327- 333), regarding labor standards for federally assisted construction subagreements.

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U.S. Department of Energy
Assurance of Compliance
Nondiscrimination in Federally Assisted Programs

OMB Control No.
1910-0400

OMB Burden Disclosure Statement

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_____ (Hereinafter called the "Applicant")

HEREBY AGREES to comply with Title VI of the Civil Rights Act of 1964 (Pub. L. 88-352), Section 16 of the Federal Energy Administration Act of 1974 (Pub. L. 93-275), Section 401 of the Energy Reorganization Act of 1974 (Pub. L. 93-438), Title IX of the Education Amendments of 1972, as amended, (Pub. L. 92-318, Pub. L. 93-568, and Pub. L. 94-482), Section 504 of the Rehabilitation Act of 1973 (Pub. L. 93-112), the Age Discrimination Act of 1975 (Pub. L. 94-135), Title VIII of the Civil Rights Act of 1968 (Pub. L. 90-284), the Department of Energy Organization Act of 1977 (Pub. L. 95-91), the Energy Conservation and Production Act of 1976, as amended, (Pub. L. 94-385) and Title 10, Code of Federal Regulations, Part 1040. In accordance with the above laws and regulations issued pursuant thereto, the Applicant agrees to assure that no person in the United States shall, on the ground of race, color, national origin, sex, age, or disability, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity in which the Applicant receives Federal assistance from the Department of Energy.

Applicability and Period of Obligation

In the case of any service, financial aid, covered employment, equipment, property, or structure provided, leased, or improved with Federal assistance extended to the Applicant by the Department of Energy, this assurance obligates the Applicant for the period during which Federal assistance is extended. In the case of any transfer of such service, financial aid, equipment, property, or structure, this assurance obligates the transferee for the period during which Federal assistance is extended. If any personal property is so provided, this assurance obligates the Applicant for the period during which it retains ownership or possession of the property. In all other cases, this assurance obligates the Applicant for the period during which the Federal assistance is extended to the Applicant by the Department of Energy.

Employment Practices

Where a primary objective of the Federal assistance is to provide employment or where the Applicant's employment practices affect the delivery of services in programs or activities resulting from Federal assistance extended by the Department, the Applicant agrees not to discriminate on the ground of race, color, national origin, sex, age, or disability, in its employment practices. Such employment practices may include, but are not limited to, recruitment, advertising, hiring, layoff or termination, promotion, demotion, transfer, rates of pay, training and participation in upward mobility programs; or other forms of compensation and use of facilities.

Subrecipient Assurance

The Applicant shall require any individual, organization, or other entity with whom it subcontracts, subgrants, or subleases for the purpose of providing any service, financial aid, equipment, property, or structure to comply with laws and regulations cited above. To this end, the subrecipient shall be required to sign a written assurance form; however, the obligation of both recipient and subrecipient to ensure compliance is not relieved by the collection or submission of written assurance forms.

Data Collection and Access to Records

The Applicant agrees to compile and maintain information pertaining to programs or activities developed as a result of the Applicant's receipt of Federal assistance from the Department of Energy. Such information shall include, but is not limited to the following: (1) the manner in which services are or will be provided and related data necessary for determining whether any persons are or will be denied such services on the basis of prohibited discrimination; (2) the population eligible to be served by race, color, national origin, sex, age and disability; (3) data regarding covered employment including use or planned use of bilingual public contact employees serving beneficiaries of the program where necessary to permit effective participation by beneficiaries unable to speak or understand English; (4) the location of existing or proposed facilities connected with the program and related information adequate for determining whether the location has or will have the effect of unnecessarily denying access to any person on the basis of prohibited discrimination; (5) the present or proposed membership by race, color, national origin, sex, age and disability in any planning or advisory body which is an integral part of the program; and (6) any additional written data determined by the Department of Energy to be relevant to the obligation to assure compliance by recipients with laws cited in the first paragraph of this assurance.

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CERTIFICATIONS REGARDING LOBBYING; DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS; AND DRUG-FREE WORKPLACE REQUIREMENTS

Applicants should refer to the regulations cited below to determine the certification to which they are required to attest. Applicants should also review the instructions for certification included in the regulations before completing this form. Signature of this form provides for compliance with certification requirements under 10 CFR Part 601, "New Restrictions on Lobbying," and 10 CFR Part 1036, "Governmentwide Debarment and Suspension (Nonprocurement) and Governmentwide Requirements for Drug-Free Workplace (Grants)." The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of Energy determines to award the covered transaction, grant, or cooperative agreement.

1. LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

2. DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

(1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery. falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

3. DRUG-FREE WORKPLACE

This certification is required by the Drug-Free Workplace Act of 1988 (Pub.L. 100-690, Title V, Subtitle D) and is implemented through additions to the Debarment and Suspension regulations, published in the Federal Register on January 31, 1989, and May 25, 1990.

ALTERNATE I (GRANTEES OTHER THAN INDIVIDUALS)

(1) The grantee certifies that it will or will continue to provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing an ongoing drug-free awareness program to inform employees about:

(1) The dangers of drug abuse in the workplace;

(2) The grantee's policy of maintaining a drug-free workplace;

(3) Any available drug counseling, rehabilitation, and employee assistance programs; and

(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

NONDISCRIMINATION IN FEDERALLY ASSISTED PROGRAMS AND ACTIVITIES QUESTIONNAIRE

Under Federal law, the U.S. Department of Energy must ensure that recipients use any financial assistance granted by the Department in a non-discriminatory way.

Please complete the following questionnaire.

1. Have any Title VI and/or Title IX (and Section 504/Americans with Disabilities Act) complaints been filed against you, the recipient in the last two years?

   _X_ No.
   ____ Yes. Please describe the compliant(s) and its disposition.

2. Did you, the recipient, sign and understand the Assurance of Compliance Statement?

   _X_ Yes.
   ____ No. Please Explain.

3. Do you, the recipient, have a formal nondiscrimination policy?

   _X_ Yes.
   ____ No. Please explain.

4. Have you, the recipient, informed your beneficiaries of their rights under the applicable civil rights statutes?

   _X_ Yes. Please describe the steps taken to disseminate the information.
   ____ No. Please Explain. SEE ATTACHED

5. Are beneficiaries provided a copy of your nondiscrimination policy?

   _X_ Yes.
   ____ No. Please explain.

6. Are Federal nondiscrimination posters within view of beneficiaries?

   _X_ Yes.
   ____ No. Please explain.

7. Do you have a procedure for processing complaints of discrimination filed by beneficiaries?

   _X_ Yes
   ____ No. Please explain.

NONDISCRIMINATION IN FEDERALLY ASSISTED PROGRAMS
AND ACTIVITIES QUESTIONAIRE

Q. 4 Nye County job applications and Association agreements contain non-discrimination clauses.

Q. 8 Information is posted: Human Resources Department of Nye County oversees.

Q. 12 Some contractors are owned/operated by minorities/women. Many employees are women.

Q. 13 Nye County policies and procedures are non-discriminatory.