----------INTERNATIONAL STATION METEOROLOGICAL CLIMATE SUMMARY----------

:STA 690110 | DPG | DUGWAY PROVING GROUND , ,US
:LAT 40 12N :LONG 112 56W :ELEV 4349(ft) 1326(m) :TYPE AWS SCT V2.0 11051992
AIR WEATHER SERVICE - CLIMATIC BRIEF

HOURLY OBS POR: 6005-7012, 7301-7606, 8401-9004

PARAMETER	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YOR
@ EXTRM MAX TEMP (F)	66	70	80	95	97	107	109	105	101	89	78	64	109	44
MEAN MAX TEMP (F)	38	44	52	62	73	83	94	91	80	67	50	39	65	36
MEAN TEMP (F)	27	34	40	50	60	69	78	76	65	53	39	29	52	36
MEAN MIN TEMP (F)	17	24	28	36	46	54	63	60	49	38	27	19	38	36
@ EXTRM MIN TEMP (F)	-25	-27	-6	13	21	31	27	39	27	17	-8	-17	-27	44
D/W TEMP GE 100 (F)	0	0	0	0	0	1	4	1	#	0	0	0	6	36
D/W TEMP GE 90 (F)	0	0	0	#	1	10	25	21	5	0	0	0	62	36
D/W TEMP LT 33 (F)	28	23	22	10	2	#	#	0	1	8	22	28	144	36
D/W TEMP LT 0 (F)	3	1	#	0	0	0	0	0	0	0	1	1	6	36
@@ HEATING DEGREE DAYS	1131	864	764	433	186	39	#	3	74	352	775	1082	5703	16
@@ COOLING DEGREE DAYS	0	0	0	2	46	192	449	376	123	8	0	0	1196	16
MEAN DEWPOINT TEMP (F)	16	22	22	26	31	37	40	41	34	29	26	20	29	20
MEAN WET BULB TEMP (F)	23	30	33	40	47	53	59	57	50	42	34	25	41	20
99.95% WCPA (FT)	4950	4900	4950	4950	4800	4750	4550	4550	4700	4750	4800	4900	4850	20
MEAN REL HUM 07 LST(%)	74.7	75.3	68.3	60.1	51.2	45.4	39.1	44.0	50.3	60.2	71.9	78.4	59.4	20
MEAN REL HUM 13 LST(%)	57.9	52.8	40.9	33.4	27.5	25.0	19.8	21.8	26.7	34.3	47.2	62.4	37.3	20
@ MAX 24HR PRECIP (IN)	.79	.84	2.84	.95	.96	1.15	1.11	1.01	1.17	1.02	.95	.71	2.84	44
@ MAX PRECIP (IN)	1.54	1.58	4.86	1.95	2.96	2.46	1.89	1.89	3.16	2.00	1.48	2.33	15.07	44
MEAN PRECIP (IN)	.48	.55	.73	.80	.70	.76	.35	.51	.44	.50	.51	.60	6.86	36
@ MIN PRECIP (IN)	#	.01	#	.08	.04	.00	#	#	.00	.00	#	#	3.27	44
D/W PRECIP GE .01 (IN)	5	5	5	6	5	4	4	4	3	4	4	6	55	36
D/W PRECIP GT .50 (IN)	#	1	1	1	1	1	1	#	1	1	#	#	8	36
MAX 24HR SNFL (IN)	5.7	5.1	4.8	4.0	3.7	#	0	0	#	1.0	6.0	4.4	6.0	36
@ MAX SNFL (IN)	10.0	11.8	15.6	7.8	6.4	#	0	0	#	7.0	8.2	15.6	28.4	44
MEAN SNFL (IN)	3.9	3.3	3.5	1.3	.5	#	0	0	0	.1	2.0	3.7	18.9	36
D/W SNFL GE .1 (IN)	4	3	2	1	1	0	0	0	0	1	2	3	17	36
D/W SNFL GE 1.5 (IN)	1	1	1	1	#	0	0	0	0	0	1	1	6	36
@ MAX DLY SNO DEPTH (IN)	8	10	9	3	2	0	0	0	0	1	7	12	12	44
PRVLNG WND DIR (DEG)	$14-16	$14-16	$17-19	17-19	$17-19	$17-19	17-19	$17-19	$14-16	$14-16	$14-16	$14-16	$17-19	20
MEAN WND SPD (KTS)	4	4	6	6	6	5	5	5	5	4	4	3	5	20
MAX WND SPD (KTS)	64	50	59	81	62	58	62	56	52	54	68	45	81	27
SKY COVER GT 5/10 (%)	59.5	58.7	56.6	57.9	50.4	36.9	29.5	29.5	28.3	35.0	54.4	61.5	46.3	20

State's Exhibit 59

D/W THUNDERSTORMS	#	#	1	1	2	2	4	4	2	1	1	1	19	33
D/W FOG (VSBY LT 7 MI)	6	4	2	2	1	1	0	#	1	1	2	7	27	33

& = BASED ON LESS THAN FULL MONTH
! = INSTANTANEOUS PEAK WINDS
* = DATA NOT AVAILABLE
# = LESS THAN 0.5 DAYS OR TRACE AS APPLICABLE
$ = PERCENT OF CALM WINDS GREATER OR EQUAL TO MEAN WIND DIRECTION
@ = SUMMARY OF DAY SUPPLEMENTED BY LOCAL CLIMATOLOGICAL DATA (NOAA)

----------FEDERAL CLIMATE COMPLEX ASHEVILLE----------

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AF Instruction 51-503

Aircraft, Missile, Nuclear, and Space Accident Investigations

5 April 2000

Certified by: AFLSA/JAC (Col. Charles H. Wilcox II) **Supersedes** AFI 51-503, 1 December 1998.

OPR: AFLSA/JACT (Maj Brett L. Coakley) **Distribution:** F

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This instruction implements guidance from AFPD 51-5, Section B, *Military Legal Affairs;* DoD Instruction 6055.7, *Accident Investigation, Reporting, and Recordkeeping,* and Title 10, United States Code, Sections 2254 and 2255. It applies to all Air Force, Air Force Reserve (USAFR), and Air National Guard (ANG) military and civilian personnel. It provides guidance and procedures for conducting accident investigations of military aircraft, missile, nuclear, and space accidents. It describes when and how to conduct an accident investigation, how to prepare and distribute accident reports, and how to store and dispose of accident wreckage, related documents and materials. It also addresses interactions with the next-of-kin, Congress, media, and other interested parties. It prescribes command, board president, legal and technical advisor responsibilities and duties. It prohibits unauthorized disclosure of accident investigation information by personnel subject to this instruction. Failure to observe the prohibitions and mandatory provisions of this instruction under paragraph 7.1.2 by active duty Air Force members, USAFR members on active duty or inactive duty for training, and ANG members in federal service, is a violation of Article 92, Uniform Code of Military Justice (UCMJ). Violations by civilian employees may result in administrative disciplinary actions without regard to otherwise applicable criminal or civil sanctions for violations of related laws. Only MAJCOMs may supplement this instruction. MAJCOMs will send one copy of each supplement to AFLSA/JACT, 1501 Wilson Blvd, Rm 835, Arlington, VA 22209-2403. See Attachment 1 for a glossary of references and supporting information.

Summary of Revisions

This revision incorporates Interim Change (IC) 2000-1 and implements direction from the Chief of

Staff of the Air Force on the grade of AIB presidents in fatality cases and the report approval process. The direction on board president grade requirements is in paragraph 4.2. The direction on the report approval process is in paragraph 9.3.

Chapter -- 1

Accident Investigation Boards (AIBS) and Safety Investigation Boards (SIBS)

1.1. ***Generally.*** DoDI 6055.7, *Accident Investigation, Reporting, and Recordkeeping,* requires each service to conduct safety mishap investigations and legal mishap investigations for specified accidents. The Services use different terminology to refer to legal mishap investigations. The Air Force uses the term "accident investigation" in lieu of "legal mishap investigation." The Army uses the term "collateral investigation" and the Navy uses the term "JAGMAN investigation." Accident investigations are separate from and independent of safety investigations. Air Force accident investigations are conducted through Accident Investigation Boards (AIBs). An AIB is composed of a board president and advisory members. The AIB is a non-voting board; the president is solely responsible for the contents of the AIB Report.

1.2. ***Purpose of Accident Investigations.*** The purpose of accident investigations is to provide a publicly releasable report of the facts and circumstances surrounding the accident, to include a statement of opinion on the cause of the accident; to gather and preserve evidence for claims, litigation, disciplinary, and adverse administrative actions; and for all other purposes. AIB Reports are:

1.2.1. Provided and personally briefed to the next-of-kin (NOK) of crewmembers and other military personnel and civilians killed, and to individuals seriously injured in the accident.

1.2.2. Released to members of the public and media, upon request.

1.2.3. Released to members of Congress, upon request.

1.2.4. Released to other interested government agencies, upon request.

1.2.5. Used by the Air Force for the adjudication of wrongful death, personal injury, and property damage claims resulting from the accident.

1.2.6. Used by the Air Force to determine if any punitive or administrative action should be taken against persons whose negligence or misconduct contributed to the accident.

1.3. ***Purpose of Safety Investigations.*** Safety investigations are conducted solely for mishap prevention under AFI 91-204, *Safety Investigations and Reports.* Safety investigations determine the causes of accidents to prevent future accidents. Because the overriding purpose of safety investigations is accident prevention, no impediment to the gathering of timely and accurate information should occur. During certain types of safety investigations, promises of confidentiality may be granted to witnesses and contractors in order to promote full and timely disclosure of information. Statements and documents given under a promise of confidentiality are privileged and

cannot be disclosed outside of Air Force safety channels. The Air Force does not use privileged safety information for line-of-duty determinations, claims adjudication, flying evaluation board proceedings, pecuniary liability determinations, or any other civil, criminal, or adverse actions. Access to privileged safety documents is limited to those with a genuine need to know. The AIB is not authorized access to privileged safety documents.

1.3.1. The SIB produces a two-part report. Part I contains non-privileged, factual information. Part II contains confidential witness and contractor statements and documents, as well as the SIB deliberations, findings, and recommendations. Part II of the SIB Report is privileged and only used for accident prevention and safety purposes. For questions regarding the safety privilege, consult AFI 91-204 or contact AFSC/JA at DSN 246-0626.

1.4. ***Relationship Between Safety Investigations and Accident Investigations.*** Safety investigations normally take precedence over accident investigations. Usually the two investigations will overlap in time. In the event of conflicts between the two investigations regarding access to the scene, acquiring and examining evidence, and interviewing witnesses, safety investigations have priority. Table **1.1** illustrates the relationship between safety investigations and accident investigations.

Table 1.1. -- Distinctions Between Safety Investigations and Accident Investigations.

	Safety Investigation	**Accident Investigation**
Regulation	AFI 91-204	AFI 51-503
Purpose	Accident prevention	All purposes
Status	Part I not privileged. Part II privileged. Part I provided to the AIB	Not privileged; entire report is publicly disclosed
Format	Two part report	Single report
Contents	Facts, findings, causes, and recommendations	Facts and statement of opinion as to the cause(s) of the accident and/or factors that substantially contributed to the accident. No recommendations
Published Minority Opinion Allowed?	Yes	No

Chapter -- 2

Convening an Accident Investigation Board (AIB)

2.1. ***Convening Authority***. The same commander who convened or would convene a corresponding safety investigation under AFI 91-204 convenes the accident investigation.

2.1.1. For Class A accidents, the convening authority will be the MAJCOM commander. This responsibility may be delegated to the vice-commander; it may not be delegated to a subordinate commander or staff member.

2.1.2. When an accident involves aircraft or personnel from more than one MAJCOM, the convening authority for the AIB will be the same as the SIB.

2.1.3. When an Air Force accident involves aircraft or personnel from other branches of the armed forces, the convening authority for the AIB will typically be the same as the SIB. See AFI 91-204 for additional guidance.

2.1.4. The investigation of Air Force accidents that occur in foreign territory, or those that involve any civil or foreign military aircraft, may be affected by treaties, statutes, regulations, agreements, and other procedures. For accidents occurring on foreign territory, the SJA of the Air Force MAJCOM or component responsible for air operations in that country or area of responsibility (AOR) should be consulted. For Air Force accidents involving any civil or foreign military aircraft in the United States, consult AFLSA/JACT for guidance regarding the scope and nature of Air Force involvement in the investigation. See AFI 91-204 for additional guidance.

2.2. ***AIB Appointment.*** The commander convenes an AIB by appointing, in writing, the AIB president as well as investigators and advisors to assist in the investigation.

2.2.1. The AIB should be appointed concurrently with the SIB, or as soon as possible thereafter. Under certain circumstances (e. g., crashes involving deaths or serious personal injuries), the AIB president is required to report to the location where the SIB convenes within 48 hours after appointment. See AFI 90-701, *Assistance to Families of Persons Involved in Air Force Aviation Mishaps, for additional guidance.*

2.2.2. Following accidents involving a fatality, the AIB president will proceed to the accident site no later than 48 hours after arrival of the SIB. With the approval of the convening authority, the AIB president may thereafter depart the accident site, pending receipt of Part I of the SIB Report.

2.2.3. A sample appointment letter is at Attachment 2.

2.3. ***When Accident Investigations are Required.*** In accordance with DoDI 6055.7, commanders must investigate Air Force aircraft, missile, nuclear, or space accidents in the following instances:

2.3.1. All Class A accidents, as defined in AFI 91-204.

2.3.2. There is probable high public interest.

2.3.3. All suspected cases of Friendly Fire.

2.4. ***Discretionary AIBs***. Consider convening an AIB following an Air Force aircraft, missile, nuclear, or space accident when:

2.4.1. There is anticipated litigation for or against the Government or a Government contractor; or

2.4.2. There is anticipated disciplinary action under the UCMJ against any individual; or

2.4.3. There are damages to third parties that likely will exceed $250,000.

> ***(Note: DoDI 6055.7 requires a legal investigation report under the circumstances described in paragraphs 2.4.1 and 2.4.2 above. However, the required report under the DoDI may be satisfied by any non-safety report; e.g., an AIB Report, a line of duty determination, a report of survey, a law enforcement investigation, a commander's investigation, or an administrative claim investigation.)***

2.4.4. Other aircraft, missile, nuclear, or space accidents may be investigated under this instruction at the discretion of the convening authority.

2.5. ***Accidents not requiring AIBs.*** There is no requirement to investigate the following accidents under this instruction:

2.5.1. Death, injury, or property damage by action of an enemy or hostile force.

2.5.2. Intentional or expected damage to Air Force equipment or property incurred during authorized testing or combat training, including missile and ordnance firing.

2.5.3. Accidents investigated by another federal agency resulting in a publicly releasable report.

2.6. ***Accidents Involving Air Force Reserve (AFRC) and Air National Guard (ANG) Aircraft.*** The gaining MAJCOM convenes AIBs for aircraft accidents involving AFRC and ANG units. AFRC and the ANG have the inherent authority to conduct accident investigations, using AFI 51-503 as a framework, for any accidents not investigated by the Air Force under this instruction.

2.6.1. When investigating an ANG aircraft accident, the convening authority will appoint an ANG technical advisor to the AIB, with the concurrence of the State Adjutant General concerned. Contact NGB-CF, at Andrews AFB, MD, for assistance, at DSN 223-4750.

2.7. ***Accidents Involving Air Force Members Assigned to Another Service.*** Should a Class A accident involve an Air Force member assigned to another military service, follow the inter-service participation guidance in DoDI 6055.7.

2.8. ***Funding Issues.***

2.8.1. ***TDY Travel.*** Each command funds TDY travel of its assigned personnel who are Air Force AIB members. See AFI 65-601, Vol. I, *Budget Guidance and Procedures,* para 7.14. The convening authority funds travel costs of members from another service appointed to an Air Force AIB. However, for joint service boards, each service funds its own members' TDY.

2.8.2. The convening authority provides additional funding for AIBs, including:

2.8.2.1. Leasing of vehicles or special equipment, leased communications, transportation, and other contractual services.

2.8.2.2. Costs associated with removal and storage of wreckage.

2.8.3. The host base funds all in-house support (except billeting) even if the host base is not assigned to the convening authority's MAJCOM. In-house support includes administrative support and equipment, work areas, reproduction, and graphics.

2.8.4. The MAJCOM or ANG command that possesses the mishap aircraft is responsible for all costs associated with the crash site clean up and restoration. (The term "possession" is defined in AFI 21-103, *Equipment Inventory, Status, and Utilization Reporting,* Attachment 1, as, "the actual acceptance, operational use (utilization), or designation of responsibility for the aircraft.")

Chapter -- 3

Responsibilities

3.1. ***Responsibilities of the Convening Authority:***

3.1.1. Convenes the investigation and issues the appointment orders of the Accident Investigation Board (AIB). See sample at Attachment 2, Figure A2.1.

3.1.2. Ensures appropriate condolence letters are sent to NOK IAW AFI 35-102, *Crisis Planning, Management and Response;* AFI 36-3002, *Casualty Services;* AFI 36-809, *Survivor Assistance;* and AFI 90-701.

3.1.3. Directs NAF commanders or MAJCOM functional staff directors to nominate qualified personnel to serve on AIBs.

3.1.4. Funds costs associated with conducting accident investigations IAW Chapter 2

3.1.5. Determines whether factual information or documents concerning the accident will be released to the public prior to completion of the investigation, under the criteria contained in Chapter 7 of this instruction.

3.1.6. Sends a letter to the NOK of deceased personnel and to seriously injured personnel explaining the status of the AIB investigation and of any planned NOK briefings. See sample at Attachment 2, Figure A2.6.

3.1.7. ***Approves the AIB Report.*** (Approval means the AIB Report meets statutory and regulatory requirements. Approval does not indicate whether the convening authority agrees or disagrees with the Statement of Opinion of the AIB president.) See sample at Attachment 2, Figure A2.7.

3.1.8. ***Approves the PA Release Plan.***

3.2. ***Responsibilities of the Convening Authority's Staff Judge Advocate (SJA):***

3.2.1. Identifies the AIB legal advisor.

3.2.2. Provides oversight, guidance, and assistance as necessary to the AIB throughout the accident investigation process.

3.2.3. Reviews the AIB Report for legal sufficiency and for compliance with this Instruction.

3.2.4. Prepares the Convening Authority Action and the NOK letters transmitting the AIB Report.

3.2.5. Seeks review and comments on the AIB Report from the convening authority's staff.

3.2.6. Submits the AIB Report to the convening authority for final action, with staff comments and the legal review under separate cover.

3.2.7. Coordinates with Public Affairs any NOK briefings and the public release of the AIB Report.

3.2.8. Distributes the AIB Report IAW Chapter 9.

3.2.9. Advises on environmental clean-up legal issues.

3.2.10. Serves as release authority for the AIB Report after approval by the convening authority.

3.2.11. Serves as MAJCOM POC IAW AFI 90-701.

3.3. ***Responsibilities of the AIB President:***

3.3.1. Ensures the investigation and resulting AIB Report are thorough and that they comply with this Instruction.

3.3.2. Interviews all AIB members to ensure that they have not had access to privileged safety information from the antecedent safety investigation.

3.3.3. Requests, as necessary, the appointment of additional AIB members with technical expertise in areas, such as: medical, maintenance, air traffic control, propulsion, airframe, life support, operations, metallurgy, forensics, weather, security, and public affairs.

3.3.4. Coordinates all NOK, public, and media requests for investigation information with the convening authority's SJA and Public Affairs Officer.

> ***(Note: The AIB president is responsible for channeling information to the NOK and those seriously injured regarding search and rescue, recovery of remains, salvage operations, and the status and progress of the investigation. This information flow does not typically require prior approval from the convening authority. For further details, see Chapter 7 of this Instruction and AFI 90-701.)***

3.3.5. Coordinates with the on-scene-commander and the convening authority's SJA all family requests to visit the mishap site IAW AFI 90-701, *Assistance to Families of Persons Involved in air Force Aviation Mishaps.*

3.3.6. Writes the AIB Report and is solely responsible for the contents of the Report, to include the Statement of Opinion.

3.3.7. Completes the AIB Report within 30 calendar days of receipt of the complete Part I of the SIB Report, unless the convening authority authorizes an extension.

3.3.8. Briefs the convening authority and other officials regarding the investigation results, as required.

3.3.9. Serves as one of the NOK briefing officers, as necessary.

3.3.10. Responds to post-investigation inquiries and issues through the convening authority's SJA.

3.3.11. Prepares the Post Investigation Memorandum.

3.3.12. Performs additional duties as listed in AFI 90-701.

3.4. ***Responsibilities of the Legal Advisor:***

3.4.1. Provides legal advice and assistance to the AIB president throughout the investigation.

3.4.2. Ensures AIB members do not have a conflict of interest that would prevent their impartial investigation of the accident.

3.4.3. Examines Part I of the SIB Report prior to review by the AIB president and members to ensure it does not contain privileged safety information. If AFI 91-204 privilege markings appear on any document, contacts the SIB president for guidance.

3.4.4. Serves as liaison between the AIB and the SJAs of the convening authority and the host base.

3.4.5. Coordinates on the early release of information.

3.4.6. Oversees collection, preservation, and disposition of evidence.

3.4.7. Participates in witness interviews to ensure the advisements and questions to the witnesses are proper.

3.4.8. Ensures no privileged, protected, or otherwise non-releasable documents or information (e.g., autopsy reports, Privacy Act information, SSNs, FOUO markings, etc.) are contained in the AIB Report.

3.4.9. Ensures the Statement of Opinion meets legal standards.

3.4.10. Reviews the AIB Report for legal sufficiency and for compliance with this Instruction.

3.5. ***Responsibilities of the Host Base Commander:***

3.5.1. Appoints a host base liaison officer to assist the AIB in obtaining logistical and administrative support, as well as arranging witness interviews.

3.5.2. Provides in-house logistical and administrative support for the AIB, including office space, computer support, communications, transcription personnel and equipment, reproduction, datafax, and other administrative support.

3.5.3. Funds all in-house logistical support (even if the host base is not assigned to the investigating MAJCOM).

3.5.4. Removes, stores, and secures wreckage from the mishap site, until a release is obtained from AFLSA/JACT. See Chapter 10 of this Instruction.

3.5.5. Provides initial clean up of the mishap site.

3.6. ***Responsibilities of the Host Base SJA:***

3.6.1. Assists host base liaison officer and AIB legal advisor, as necessary.

3.6.2. Assists the AIB with the appearance of civilian employees for witness interviews and coordinates their appearance with their labor union, if required.

3.6.3. Assists the AIB with the appearance of foreign nationals for witness interviews and ensures compliance with applicable international agreements.

3.6.4. Forwards requests for wreckage disposal through the convening authority's SJA to AFLSA/JACT.

3.6.5. Prepares a summary of potential claims against the Air Force if the mishap occurred within his/her claims jurisdiction.

3.7. ***Responsibilities of AFLSA/JACT:***

3.7.1. Develops and coordinates policy for conducting accident investigations of aircraft, missile, nuclear, and space accidents.

3.7.2. Adjudicates tort claims and provides support to the Department of Justice in litigation involving aircraft, missile, nuclear, and space accidents, IAW AFI 51-501, *Tort Claims.*

3.7.3. Approves wreckage release on Class A accidents and oversees access to investigation evidence, after approval of the AIB Report.

Chapter -- 4

Qualifications of Accident Investigation Board (AIB) Members

4.1. ***General Qualifications.*** AIB members should not be from the wing (or equivalent organization) to which the aircraft or crewmembers were assigned. If any AIB member is from the mishap wing, then the majority of the AIB members must come from outside the mishap wing.

4.1.1. SIB members may not serve as AIB members to the same accident.

4.1.2. AIB members must not have had access to privileged safety information from the antecedent safety investigation.

4.1.3. AFRC and ANG members may be appointed by the convening authority to serve on AIBs.

4.2. ***AIB President.*** AIB presidents should be field grade officers, senior in rank to persons involved in the accident, and must come from outside the mishap wing. For Class A accidents, AIB presidents must be 0-5 or above and should, if possible, be the same grade as the corresponding SIB president. For any accident involving a fatality, the AIB president must be a General Officer or Brigadier General (Select).

4.2.1. For aircraft accidents, AIB presidents should be experienced, rated officers, who are qualified and current in the aircraft involved.

4.2.1.1. If there are no officers available outside the mishap wing who meet these criteria, then the convening authority should appoint an experienced, rated officer who has previously been qualified in the accident aircraft, or who is qualified and current in a similar type of aircraft with a similar mission to that of the accident aircraft. Depending on the qualifications of the AIB president, the convening authority may appoint a rated officer, who is qualified and current in the accident aircraft, as a technical advisor. This advisor may be from the mishap wing if no other qualified and current officer is reasonably available.

4.2.2. For missile, nuclear, or space accidents, AIB presidents must have expertise and experience in the system involved.

4.2.3. AIB presidents must attend the AFSC Board President's Course prior to conducting an accident investigation.

4.2.4. Upon receipt of Part I of the SIB Report, the AIB president will be relieved of all other duties until the AIB Report is completed.

4.3. ***Legal Advisors.*** The convening authority will appoint an experienced judge advocate, normally a field grade officer. It is recommended that the legal advisor be a graduate of The Judge Advocate General Legal Advisor Course.

4.3.1. Legal advisors should come from outside the mishap wing. The legal advisor may be from the same wing as the AIB president.

4.3.2. Upon the AIB's receipt of Part I of the SIB Report, the legal advisor will be relieved of all

other duties until the AIB Report is completed.

4.4. ***Advisors.*** The convening authority appoints advisors from a variety of specialties (such as maintenance, metallurgy, personnel, medical, air traffic control, operations, and security), as necessary.

4.4.1. Technical advisors should come from outside the mishap wing.

4.5. ***Public Affairs Officers.*** Depending on the circumstances, one or more public affairs officers may be appointed to the AIB.

4.6. ***Safety Center Representatives.*** If there is no preceding safety investigation, then the convening authority may request AFSC appoint a safety center representative to the AIB.

4.7. ***Other Service Representatives***. If an accident involves personnel or assets from another service, then the convening authority may appoint representatives from the other service.

4.8. ***Foreign Country Representatives.*** If an accident involves foreign military personnel, or if a foreign country representative serves on the preceding SIB, then the convening authority may appoint a foreign country representative to the AIB. Consult with AF/JAI at DSN 225-9631, if questions arise regarding the appropriate procedure for appointing foreign country representatives.

Chapter -- 5

Conducting Accident Investigations

5.1. ***Preparing for the Investigation***. The AIB president should contact the convening authority's SJA for an initial briefing.

5.1.1. Review the following instructions:

5.1.1.1. AFI 51-503. *Aircraft, Missile, Nuclear, and Space Accident Investigations,* and review any MAJCOM supplement.

5.1.1.2. AFI 90-301. *Inspector General Complaints.* This provides detailed guidance for administrative investigations. Attachments 4 and 5 of AFI 90-301 contain useful information about examining witnesses, rights advisements, and handling evidence. (AFI 51-503 controls in cases where the two instructions are in conflict).

5.1.1.3. AFI 90-701. *Assistance to Families of Persons Involved in Air Force Aviation Mishaps.* This provides guidance on rendering assistance to family members of those killed in aviation accidents and defines how the AIB president forwards information to be released to the NOK.

5.1.1.4. AFI 91-204. *Safety Investigations and Reports.* This governs the safety investigation. Review this instruction as it applies to Part I of the SIB Report, which will form Tabs A -- S of the AIB Report.

5.1.1.5. AFI 37-132. *Air Force Privacy Act Program.* This implements the Privacy Act within the Air Force. Prior to publication of the AIB Report, some material gathered during the accident investigation must be redacted to protect the privacy of the individuals concerned.

5.1.1.6. AFI 31-401. *Managing the Information Security Program,* which implements AFPD 31-4, *Information Security Program,* and supplements DoDR 5200.1-R, *Information Security Program.* This describes how to protect and handle classified information and unclassified controlled nuclear information.

5.1.2. The AIB president should contact the host base liaison officer or host base installation commander to obtain work areas, equipment, and administrative support. The work area should be as convenient as possible for both the AIB and witnesses. Avoid using the base courtroom for interviews since a judicial atmosphere may intimidate witnesses.

5.1.3. The AIB president should contact the SIB president. Through the SIB president, the AIB president may:

5.1.3.1. Determine the status of search and rescue, recovery of remains, and salvage operations.

5.1.3.2. Coordinate a visit to the mishap site prior to removal of the wreckage.

5.1.3.3. Determine the status of the safety investigation and decide how to proceed with the AIB. Although the SIB president may not discuss privileged safety information, he or she may relay the facts of the accident and describe the technical reports that will be in Part I of the Safety Report.

5.1.3.4. Obtain Part I of the Safety Report. After reviewing Part I of the SIB Report, determine (with the assistance of advisors) which additional tests should be conducted (metallurgy, hydraulics, simulator, forensics, control surfaces, et cetera).

5.1.3.5. Obtain all other non-privileged materials gathered by the SIB but not included in Part I of the SIB Report. However, before the documents from the SIB are reviewed by AIB members, the legal advisor should review the documents to ensure that no privileged safety documents are contained therein. All privileged safety documents should be returned to the SIB president. Consult with the convening authority's SJA if issues arise regarding the reliability of evidence from the SIB.

5.1.3.6. Obtain a list of the SIB witnesses (with telephone numbers). Determine if the SIB has released any witnesses. Ask for notification each time the SIB releases a witness so that the witness may be promptly interviewed. Contact witnesses as soon as possible in case they are planning to depart the local area. Request the SIB President to designate which witnesses are NOK or family members of those involved in the accident.

5.1.3.7. Obtain written release of the wreckage from the SIB president for use by the AIB.

5.2. ***Additional AIB Members.*** The AIB president may request the convening authority to detail additional AIB members to assist with the investigation at any time. Contact the convening authority's SJA for assistance.

5.3. ***Travel Orders.*** The local MPF of each AIB member issues his/her orders. Orders should

authorize 60 days of travel, provide for travel to more than one location, and authorize a rental car.

5.4. ***Passport and Visa.*** If the investigation will be conducted in a foreign country, a passport and visa may be required. If so, obtain them before traveling.

5.5. ***Suggested Schedule.*** Plan to complete the accident investigation and AIB Report within 30 calendar days from receipt of the complete Part I of the SIB Report.

Figure 5.1 -- Suggested Schedule.

Week, Day	Activity
Week One	
Day 1	Receipt of Part I of the SIB Report. (Prior to receipt of Part I of the SIB Report, the AIB president will perform duties IAW AFI 90-701.
Day 2	Review Part I of the SIB; visit the mishap site; obtain witness list from the SIB president; begin interviews.
Day 3-7	Continue interviews; conduct testing; task AIB advisors; contact the NOK or family liaison officers (FLOs) as required.
Week Two	
Day 8-11	Begin write-up; plan last interviews; ensure necessary testing has been ordered; follow up on testing reports; send AIB Report Tabs to reproduction.
Day 12-14	Complete interviews and review equipment tear down reports.
Week Three	
Day 15	Assemble Report; monitor progress of testing; schedule reproduction of documents for inclusion in AIB Report. Prepare one original record and at least ten copies.
Day 16-20	Finalize Summary of Facts; draft Statement of Opinion.
Week Four	
Day 21-27	Finalize Statement of Opinion; obtain informal legal review from convening authority's SJA.
Day 27-30	Draft Executive Summary; send Summary of Facts and Statement of Opinion to reproduction. Mail original AIB Report to the convening authority's SJA by express or registered mail. Mail 10 copies of AIB Report to convening authority's SJA.

5.6. ***Advisors.*** Advisors should review Part I of the SIB Report and provide feedback to the AIB president. Advisors may provide assistance in producing the Report, including drafting and reviewing the Summary of Facts.

5.6.1. The maintenance advisor should review maintenance documentation, personnel, and supervision.

5.6.2. The medical advisor should review:

5.6.2.1. Medical qualifications of personnel involved.

5.6.2.2. Postmortem and toxicology reports. Obtain postmortem and toxicology reports from the SIB flight surgeon.

5.6.2.3. Post-accident medical examination records of survivors. If the results appear to be related to the accident, then draft a statement for Tab X, under Statements of Injury or Death.

5.6.2.4. Autopsy protocols and medical records. After the AIB Report has been approved, return the autopsy protocols to the proper custodians. Medical records should be returned to the proper custodians unless the convening authority's SJA determines they are required for adverse personnel actions.

5.6.3. The aerodynamics advisor should examine the evidence on the airframe and analyze the flight parameters.

5.6.4. The life support advisor should examine the egress system and personal and survival gear.

5.6.5. The pilot advisor should comment on what a pilot's action or reaction may or should have been under the circumstances. Also interview crewmembers who previously flew with the pilot or gave him checkrides. The pilot advisor is also charged with gathering the mishap pilot's flying paperwork history. This would include his checkride evaluation history (Form 8), flight records, and other associated paperwork.

5.7. ***Air Force Reserve and Air National Guard Accidents***. Determine what type of duty orders applied to the crewmembers at the time of the accident. Include this information and a copy of the orders in the AIB Report at Tab T. Questions regarding the impact of the crewmember's status should be referred to the legal advisor or convening authority's SJA.

5.8. ***Gathering Documents.*** Do not gather privileged safety documents. However, the AIB may review other documents that are restricted from public release. For instance, the AIB may review information protected by the Privacy Act, the Arms Export Control Act, and the Export Administration Act of 1979. The AIB may also review classified information. While the AIB may review this protected information, do not include it in the AIB Report.

5.8.1. The AIB Report will contain factual information about the accident, including documentary and testimonial evidence, as well as photographs. Review all documents from Part I of the SIB Report to ensure they only address facts and do not draw ultimate conclusions about causation.

5.8.2. Tabs A through S of the AIB Report and Tabs A through S of the SIB Report (Part I) will be identical, except that FOUO and Limited-Use markings, SSNs, home addresses, home telephone numbers, and other protected information will be removed from the publicly releasable AIB Report. Additional information gathered by the AIB that would logically fit under Tabs A through S should be placed under a separate tab to keep Part I of the SIB Report and Tabs A through S of the AIB Report identical.

5.8.3. Gather maintenance logs, FAA bookings, flight-planning documents, and charts relating to the mishap aircraft and the mishap flight.

5.8.4. Gather the front two or three pages and relevant portions of Technical Orders (TOs) and Time Compliance Technical Orders (TCTOs). Information regarding the releasability of TOs and TCTOs is often included on the inside cover page. Review this page to determine whether the publication may be included in the Report. Note: Maintenance documents, including Flight Manuals, Maintenance Manuals, TOs, and TCTOs may be subject to the Arms Export Control Act or the Export Administration Act of 1979. Obtain approval from the Technical Content Manager before including extracts of these publications in the AIB Report. Include the approval from the Technical Content Manager in the AIB Report.

5.8.5. Gather relevant portions of regulations, including Air Force and FAA regulations. Also copy the front page of these documents for inclusion in the Report.

5.8.6. Obtain and review all relevant medical evidence, including medical records, autopsy protocols, X-rays, and toxicology reports. Because of privacy concerns, some of these documents may not be included in the AIB Report. Nonetheless, they should be reviewed.

5.8.7. ***Original Documents.*** The original AIB Report should contain original documents if possible. However, some documents, such as medical and personnel records, must be returned to their custodians after the AIB Report is approved. If originals are not included in the Report, then annotate the location of the originals in the Post Investigation Memorandum.

5.8.8. ***Redactions and Explanatory Remarks.*** Do not make redactions or add explanatory remarks to original documents. Rather, make alterations on photocopies. Return the original to the proper custodian or forward the original to the convening authority's SJA with the Post Investigation Memorandum. Use "white-out" to make redactions.

5.8.9. Retain videocassette recordings, audio recordings of witness interviews, photographs, and negatives for forwarding to the convening authority's SJA with the Post Investigation Memorandum. Original Air Traffic Control (ATC) tapes are retained for two years by the Airfield Operations Flight (AOF) commander IAW AFI 13-203, *Air Traffic Control,* Chapter 11. Obtain a certified copy (IAW AFI 51-301, *Civil Litigation*, Chapter 8) on cassette tape of relevant portions of the ATC tapes.

5.9. ***Cockpit Voice Recordings (CVR) and Heads-Up Display (HUD) Tapes.*** CVR and HUD tapes are reviewed by the AIB but the tapes are not releasable to the public. However, CVR and HUD transcripts are publicly releasable and may be included in the AIB Report.

5.9.1. Requests from family members to listen to the tapes will be forwarded through the convening authority's SJA to AFLSA/JACT, to be considered under Privacy Act criteria in coordination with

AF/JAG.

5.9.2. The CVR and HUD transcripts may be redacted to remove non-relevant conversations and to protect privacy interests or otherwise privileged information.

5.9.3. Upon completion of the investigation, CVR and HUD tapes are forwarded to Tinker AFB IAW Chapter 10.

5.10. ***Classified Information.*** The AIB may review classified information as needed in order to determine the cause of the accident. However, the AIB Report should contain no classified information.

5.10.1. If classified documents are absolutely essential to support the statement of opinion, then include the classified testimony, documents, and information in a separate classified addendum. This allows the unclassified portion of the Report to be publicly released without redacting text.

5.10.2. Even though portions of an individual's testimony may be classified, it is not necessary to include the entire testimony in the classified addendum. Rather, include as much unclassified testimony as possible in the unclassified portion of the Report.

Chapter -- 6

Interviewing Witnesses

6.1. ***General Considerations.***

6.1.1. The SIB will provide a witness list. The AIB is not restricted to interviewing only those witnesses interviewed by the SIB.

6.1.2. Consider the most appropriate order to interview witnesses. You may wish to save key witnesses for last. Alternatively, you may consider interviewing key witnesses twice, at the outset, and then after other witnesses have developed the background of the case.

6.1.3. Do not offer promises of confidentiality to witnesses.

6.1.4. Air Force military and civilian members must appear when called and must testify under oath or affirmation. They may not refuse to answer questions simply because their answers may adversely affect another person. However, they may refuse to answer questions to prevent self-incrimination.

6.1.5. Swear in or affirm witnesses prior to initiating questioning.

6.1.6. Do not permit witnesses to talk with their hands, since this cannot be transcribed. Similarly, ask the witnesses to answer "yes" or "no" rather than nodding their heads or responding "uh-huh." If witnesses testify using a diagram, ask them to mark or place numbers where events or actions occurred. Attach the document to the witness' statement in the Report. If witnesses describe distances with their hands, translate the distance for the record, e. g., "for the record, the witness is holding his hands approximately three feet apart."

6.1.7. Avoid acronyms or technical jargon since they may not be understood by the public reading the Report. If acronyms and technical jargon are unavoidable, then define them for the record.

6.2. ***Administrative Matters.***

6.2.1. The host base liaison officer will arrange for witnesses to appear at the designated times and location.

6.2.2. If a witness is suspected of a crime and is already represented by an attorney, contact the attorney prior to interviewing the witness about the suspected misconduct.

6.2.3. You may ask witnesses to bring documents or other items to the interview.

6.2.4. Record witness testimony and, if the testimony is valuable, have it transcribed in its entirety. However, if only a small portion is valuable, or if exact words are not important, then consider summarizing the testimony. After summarizing the testimony, the witness should sign it as soon as possible. A recommended format for summarizing testimony is presented at the end of this chapter, Figure 6.1.

6.2.5. While "on the record," do not ask for social security numbers, home addresses, home telephone numbers, or other protected information.

6.2.6. Ask the individual who will transcribe the interviews to ensure the suitability and quality of the recording equipment.

6.2.7. Package and label all audiotapes, stenographer notes, and any items used to record witness testimony. Send these items to the convening authority's SJA for storage after the AIB Report is approved.

6.3. ***Classified Information.*** Witnesses, advisors, and reporters or stenographers must be properly cleared before they are given access to classified information. Remind these individuals that AFPD 31-4 applies regarding the safeguarding of classified information. Conduct two interviews with witnesses who will discuss classified information; an unclassified interview and a classified interview. The unclassified interview can be included in the publicly releasable Report. The classified interview should be included in a separate, classified addendum to the Report. If a classified interview does not yield relevant information, then do not transcribe the interview.

6.4. ***Persons Attending Interviews.***

6.4.1. The Legal Advisor should be present during all witness interviews to ensure that proper procedures are followed in questioning witnesses and advising them of their rights.

6.4.2. Consider seeking the attendance of technical advisors when technical matters will be discussed. Technical advisors may assist in formulating questions. Additionally, advisors may ask questions, provided they are identified on the tape or transcript.

6.4.3. Attorneys may be present if their clients are suspected of crimes.

6.5. ***Speculation.*** Do not ask witnesses to speculate or guess. If experts provide opinions within their area of expertise, ask for the basis of their opinions. Do not ask witnesses for their opinions on the ultimate cause(s) of the crash.

6.6. ***SIB Considerations.***

6.6.1. Witnesses shall not testify before an AIB until the SIB president releases them.

6.6.2. Prior to beginning the recorded interview, explain to the witness the differences between safety investigations and accident investigations.

6.6.3. Do not let a witnesses disclose what they told the SIB. For instance, witnesses should not preface their answers with comments such as: "like I told the safety board. "Do not permit such witnesses to complete their response. AIB members should not know what information is contained in the privileged portion (Part II) of the SIB Report.

6.6.4. Witnesses may provide the same factual information to both safety and accident investigators, but the accident investigators must obtain their information through independent questioning.

6.7. ***Testimony of Absent Witnesses.*** If you are unable to interview a witness in person, then a telephone interview may be conducted. If the interview will be recorded, inform all parties of this fact. They must consent to being recorded. Witnesses may be sworn by a judge advocate present with the witness during the interview. The judge advocate can also provide positive identification of the witness.

6.8. ***Air Force Civilian Witnesses.*** Consult with the local SJA and a labor relations officer for guidance prior to interviewing bargaining unit members.

6.8.1. You may ask employees whether they are represented by a local bargaining unit. However, do not ask employees whether they are union members as this question violates their rights.

6.8.2. ***Union Participation.*** If a civilian employee is a member of a certified bargaining unit represented by a labor organization, a union official or steward may be present during the interview if the interview constitutes a disciplinary examination or a formal discussion. During a disciplinary examination, the employee may have a right to have a union representative present. During a formal discussion, the union may have a right to have a union representative present.

6.8.2.1. ***Disciplinary Examinations.*** If a civilian employee who is a member of a certified bargaining unit represented by a labor organization (1) reasonably believes that he or she might be disciplined as a result of an interview; and (2) he or she requests union representation, then the employee is entitled to have a union official or steward present during the interview. This right is found in Title 5, United States Code, Section 7114(a)(2)(B) and is frequently referred to as an employee's "Weingarten" rights, after the Supreme Court decision in National Labor Relations Board v. Weingarten, Inc., 420 U.S. 251 (1975). If a bargaining unit member requests union representation, the individual conducting the interview should consult with the local SJA. The interviewer's options are: (1) grant the request; (2) discontinue the interview; or (3) offer the employee the choice between continuing the interview unaccompanied by a union representative or having no interview at all.

6.8.2.1.1. The right to the presence of a union representative at a disciplinary examination is the employee's right, not the union's right. If the employee does not ask for a union representative, then the union has no right to demand that a representative be present. The right exists for all federal civilian employees who are members of a bargaining unit, whether they are members of the union or not.

6.8.2.1.2. The Civil Service Reform Act does not require an employee to be notified of the right to representation prior to each interview. Rather, the Act requires management to annually inform its employees of this right. However, some local union contracts stipulate that management officials of an installation have agreed to provide notice before each interview. Exercise caution when interviewing federal employees to ensure there are no violations of the terms of a local contract.

6.8.2.2. ***Formal Discussions.*** Union officials have an independent right to be present at formal discussions between agency representatives and one or more members of a certified bargaining unit. This right is found at Title 5, United States Code, Section 7114 (a)(2)(A). Unions have a right to be given notice of the formal discussions and an opportunity to be present. Investigatory interviews are, in most circumstances, formal discussions.

6.8.2.3. The basic rules that apply to the union representative in an interview are the same as those for legal counsel; namely, they may advise the employee but generally may not ask or answer questions. An individual may have both a union representative and legal counsel present during an interview.

6.9. ***Interviewing Contractor Witnesses.*** When interviewing employees of DoD contractors, you may choose to have a contract management representative present. The management representative may be able to help obtain company records and determine company policies. This representative may also help if the employee contends that rights under a labor management agreement have been abridged. When interviewing non-DoD employees, the witness may be accompanied by representatives as he/she chooses.

6.10. ***Witness Introduction:*** The following witness introduction shall be used for all interviews: My name is _____. I am/We are investigating the aircraft/missile, nuclear device/space vehicle accident that occurred on _____, near _____. This investigation is separate and apart from the safety investigation conducted under AFI 91-204. The purpose of this investigation is to gather and preserve evidence for use in claims, litigation, disciplinary actions, adverse administrative proceedings, and for all other purposes. A safety investigation is also being conducted on the accident. Any testimony you gave before the safety investigation board will be kept confidential, if you were so advised, and can be used only for accident prevention purposes. However, your testimony to me/us may be used for any proper purpose. Additionally, your testimony can be released to the public. Do you understand the difference between the safety investigation and this accident investigation?

6.11. ***Oath.*** The following oath shall be administered before questioning a witness: Do you solemnly swear/affirm that the testimony you are about to give in the matter now under investigation shall be the truth, the whole truth, and nothing but the truth, (so help you God)? Note: If a witness chooses to affirm, delete the phrase "so help you God" when administering the oath.

6.12. ***Recorded Preamble.*** The witness introduction and oath/affirmation shall be recorded. After swearing the witness, the interviewer will identify the date, time, place of interview, persons present,

and state that the witness has been sworn. Then the witness will be asked for their full name, rank, job title, DSN phone number, and present duty assignment and location. Do not solicit Social Security numbers, home addresses, or home telephone numbers.

6.13. ***Advisement of Rights, Generally.***

6.13.1. UCMJ, Articles 31(a) and (c) provide that no persons subject to the UCMJ may be compelled to incriminate themselves. The Fifth Amendment to the Constitution provides similar rights to civilians.

6.13.2. Determine the duty status of ANG or Air Force Reserve personnel prior to the interviews to determine whether UCMJ or Fifth Amendment rights apply.

6.13.3. Witnesses may seek to have their attorneys present during interviews. A suspect is entitled to have an attorney present during the interview. However, the attorney is generally not permitted to ask or answer questions. He or she may only advise their client.

6.13.4. Witnesses who have invoked their rights against self-incrimination may request to respond to written questions rather than to interviews. There is no prohibition against written questions; however, it is not necessarily recommended since it will delay the investigation process if such requests are granted.

6.13.5. Witnesses should be interviewed even if you expect they will invoke their right not to testify against themselves. It is important to initiate the interview so that their claim of privilege under Article 31 of the UCMJ or the Fifth Amendment will be a matter of record.

6.13.6. If you believe an Air Force military or civilian member has improperly invoked Article 31 or their Fifth Amendment rights, and the witness refuses to answer questions, refer the matter to the commander or appropriate supervisor. The witness may be directed to answer if the invocation of Article 31 or Fifth Amendment rights is not valid. (Note: in order to prevent the possibility of inadvertently immunizing the witness, consult with the legal advisor or the local SJA before such a witness is directed to testify.)

6.14. ***Advisement of Rights of Civilians.*** If prior to questioning, or during questioning, you come to suspect a civilian witness of a criminal offense, halt the interview and contact the local SJA. The OSI or the FBI may be called in to assist with the criminal investigation.

6.14.1. If, after consulting the local SJA, you decide to interview a civilian suspect, then it is recommended that the following rights advisement precede any questioning: I/We have reason to suspect you of the alleged offense or offenses of _____. I advise you that under the Fifth Amendment to the Constitution, you have the right to remain silent, that is, to say nothing at all. Any statement you make, oral or written, may be used as evidence against you in a trial or in other judicial or administrative proceedings. You have the right to consult with a lawyer, if you desire, and to have a lawyer present during this interview. You may obtain a civilian lawyer of your own choosing at your own expense. If you cannot afford a lawyer, the military will give you reasonable assistance in finding one. However, the military will not provide you with a lawyer. You may request a lawyer at any time during this interview, and if you decide to answer questions without a lawyer present, you may stop the questioning at any time. Do you understand your rights? Do you wish to remain silent or will you answer my questions? Do you want a lawyer?

6.14.2. If a civilian suspect testifies under oath, then the following statement should appear immediately before the individual's testimony: Having been duly sworn and advised of the allegations, of his (or her) rights under the Fifth Amendment to the Constitution of the United States, of his (or her) rights to counsel, and having acknowledged his (or her) understanding of those rights, and having affirmatively waived those rights, the witness testified as follows:

6.15. ***Advisement of Rights of Military Members.*** If prior to questioning you suspect a military witness of a criminal offense, then a rights advisement must precede any questioning. If, at any time during an interview, you come to suspect a military witness of a criminal offense, then a rights advisement must precede any further questioning.

6.15.1. Whenever a military witness requests a lawyer, stop questioning and refer the request to the local Area Defense Counsel (ADC), or, if no local ADC exists, to the supporting SJA. After the witness has consulted with his attorney, contact the attorney to determine if the witness is willing to testify. Prior to resuming the interview, reaccomplish the rights advisement.

6.15.2. If at any time, you suspect a military member of a criminal offense, provide the following rights advisement: I/We have reason to suspect you of the alleged offense or offenses of _____. I advise you that under the provisions of Article 31 of the Uniform Code of Military Justice, you have the right to remain silent, that is, to say nothing at all. Any statement you make, oral or written, may be used as evidence against you in a trial by court-martial, or in other judicial or administrative proceedings. You have the right to consult with a lawyer, if you desire, and to have a lawyer present during this interview. You have the right to military legal counsel free of charge. In addition to military counsel, you are entitled to civilian counsel of your own choosing, at your own expense. You may request a lawyer at any time during this interview. If you decide to answer questions without a lawyer present, you may stop the questioning at any time. Do you understand your rights? Do you wish to remain silent or will you answer my questions? Do you want a lawyer?

6.15.3. If a military member is suspected of an offense and testifies under oath, the following statement should appear immediately before the individual's testimony: Having been duly sworn and advised of the allegations, of his (or her) rights under Article 31, Uniform Code of Military Justice, of his (or her) rights to counsel, and having acknowledged his (or her) understanding of those rights, and having affirmatively waived those rights, the witness testified as follows:

6.16. ***Completion of the Interview.***

6.16.1. When finished, remind the witnesses of the official nature of the interview and direct them not to discuss their testimony with anyone without your permission, or until the AIB Report has been officially released to the public.

6.16.2. Expect to recall some witnesses. Subsequent testimony from other witnesses may cause you to seek clarification of previous testimony. For this reason, consider retaining witnesses in the local area until they are no longer needed for further interviews.

6.17. ***Verbatim or Summarized Testimony.*** Preserve testimony of all the witnesses. Testimony can be transcribed verbatim or included in the Report in the form of summarized statements signed by the witnesses. If you elect to summarize statements, then thorough notes must be taken to write a coherent, accurate summary. After the statement is summarized, the witness must sign their statement

(in person or by mail).

6.17.1. If a witness declines to sign a summarized statement on the grounds that it doesn't accurately reflect his or her testimony, review any tape recordings and notes with the witness and reach an agreement on what the witness said or intended. It is important the witness concurs with the summarized statement of his or her testimony, especially if it concerns a material fact. The Report will be seriously flawed if it contains purported testimony that is later denied or contradicted by the witness. All notes, disks, and tapes of interviews will be forwarded to the convening authority's SJA with the Post Investigation Memorandum.

6.18. ***Format for Witness Statements.*** Witness statements are included in Tab V of the AIB Report. Double space between questions. Number all questions and answers (Q1/A1, Q2/A2, etc.) Paginate all testimony (V-1 for first witness, V-2 for second witness, V-3 for third witness, etc.). Internally paginate the testimony of each witness (V-1.1, V-1.2, V-1.3, V-2.1, V-2.2, etc.)

	Summarized Statement of Captain Joe Witness
I, Captain Joe Witness, 12th Operational Support Squadron, after being place under oath, hereby state that: (summary of important points, what was seen or known or heard by this witness that is important to determining the cause of the accident, or bears on the qualifications, training, skills, etc., of the aircrew, maintenance, controllers, etc.)	
Signature block of witness	
Signed and sworn before me this _____ day of _____ 19__	
Interviewing Officer's Name	
Accident Investigation Board Member	

Figure 6.1. -- Recommended Format for Preserving Summarized Testimony.

Chapter -- 7

Releasing Information

7.1. ***Generally.*** Conducting a complete, timely, and thorough investigation is a high priority for the Air Force, NOK families, and the public. Procedures and policy for releasing information will be IAW 10 U.S.C.2254 and AFI 90-701.

7.1.1. ***Unauthorized Disclosure of Mishap Information.*** Unauthorized disclosure of information or documents during the investigation compromises the integrity of the AIB process.

7.1.2. ***Specific Prohibition.*** Prior to the official public release of the AIB Report, AIB members, witnesses, and other personnel who have been given or have obtained access to accident information are prohibited from disclosing that information or the contents of the Report for other than official

purposes.

7.1.2.1. Failure to observe the prohibition in paragraph 7.1.2 by active duty Air Force members, USAFR members on active duty or inactive duty for training, and ANG members in Federal service, is a violation of Article 92, Uniform Code of Military Justice (UCMJ). Violations by civilian employees may result in administrative disciplinary actions without regard to otherwise applicable criminal or civil sanctions for violations of related laws.

7.2. ***Early Release of Factual Information.*** Under limited circumstances, prior to completion of the AIB Report, the convening authority shall, IAW 10 U.S.C.2254, authorize the public disclosure of unclassified tapes, scientific reports, and other factual information regarding the accident.

7.2.1. The convening authority may delegate this responsibility to the vice-commander.

7.2.2. IAW 10 U.S.C.2254, early release of factual information shall occur if:

7.2.2.1. The information is requested; and

7.2.2.2. The information will be included in the releasable AIB Report; and

7.2.2.3. The release of such information will not undermine the ability of safety or accident investigators to continue to conduct the investigation; and

7.2.2.4. The release of such information will not compromise national security.

7.2.3. The limitations of 10 U.S.C.2254 do not apply to information regarding the status of search and rescue, recovery of remains, salvage operations, or the progress of the investigation. If there is any question regarding whether the approval requirements of 10 U.S.C.2254 apply, then seek guidance from the convening authority's SJA.

7.2.4. Coordinate early release of information with Public Affairs and the convening authority's SJA. In high-interest mishaps, as defined in paragraph 9.4.1, also comply with paragraph 7.4.

7.2.5. Early release of information may require prior notification to the NOK, IAW AFI 90-701, to keep them apprised of accident information before it is disclosed to the public.

7.3. ***Status Information:*** Search and Rescue, Recovery of Remains, Salvage, and Progress of the Investigation. Depending upon the circumstances, it may be important to keep NOK, seriously injured personnel, and the public apprised of the status of search and rescue, recovery of remains, salvage operations, and the progress of the investigation.

7.3.1. The AIB president is responsible for the release of status information from the investigations.

7.3.2. Releasing status information does not require prior approval from the convening authority. However, in high-interest mishaps, as defined in paragraph 9.4.1, comply with paragraph 7.4 prior to releasing the information to the NOK, seriously injured personnel, or the public. This requirement does not apply to initial reports concerning either progress of search and rescue efforts or recovery of remains.

7.3.3. Releasing status information to the NOK often results in public release of the information. Therefore, coordinate release of status information with the convening authority's Public Affairs and SJA.

7.3.4. In order to relay status information, a number of approaches may be taken. For instance:

7.3.4.1. The AIB president may make direct contact with the NOK by letter, phone, fax, or e-mail.

7.3.4.2. Family Liaison Officers (FLOs), from the mishap unit may be appointed to channel status information from the AIB president to the NOK.

7.3.4.3. Conference phone calls with the NOK may be made on a regular basis.

7.3.4.4. A web site may be created.

7.3.4.5. A press conference or press release may by made.

7.4. ***High-Interest Mishaps.*** The convening authority must directly inform AF/CV by telephone, e-mail, or datafax at least two working days prior to the public release of factual information or status reports involving high-interest mishaps, as defined in paragraph 9.4.1 of this investigation. The convening authority's SJA will forward the same information by e-mail or datafax to AFLSA/JACT for immediate distribution to the Air Staff and Secretariat.

Chapter -- 8

AIB Report

8.1. ***"For Official Use Only" Markings.*** Redact "For Official Use Only" markings from all documents that are included in the AIB Report. Before redacting the markings, ensure the document is publicly releasable. The SIB president can authorize removal of such markings that were generated pursuant to the safety investigation. For guidance concerning removal of FOUO markings see AFI 37-131, *Air Force Freedom of Information Act Program.*

8.2. ***Assembling the Report.*** Assemble the completed report on 8 ¾" x 11" paper, secured at the top. Do not use three ring binders. The Executive Summary, Summary of Facts, and the Statement of Opinion shall be printed on one side. The remainder of the Report may be double sided. Since the Report is secured at the top, ensure that all double-sided copies are printed head to foot.

8.3. ***Publicly Releasable Report.*** Only publicly releasable information should be included in the AIB Report. If questions arise regarding releasability, contact the convening authority's SJA, AFLSA/JACT, or HQ AFSC/JA. Do not include the following items in the Report:

8.3.1. Recommendations or suggested corrective actions.

8.3.2. Original personnel, training, medical, or flight records of mishap personnel.

8.3.3. Original tape recordings of radio communications with Air Force or FAA air traffic control.

8.3.4. Privileged safety information.

8.3.5. Contractor proprietary data.

8.3.6. Any document that includes graphic description of injuries, including autopsy protocols, medical records, human remains scatter diagrams, and photographs portraying any portion of human remains.

8.3.7. Information protected by the Privacy Act (5 U.S.C.552(a)). Redact social security numbers, birth dates, ages, home addresses, and home telephone numbers that appear on documents. See AFI 37-132.

8.3.8. Information protected by the Arms Export Control Act (22 U.S.C.2751, et seq.) and Export Administration Act of 1979, as amended (50 U.S.C., app. 2401, et seq.) Note: the Arms Export Control Act and the Export Administration Act of 1979 apply to many technical orders (TOs), time compliance technical orders (TCTOs) and flight manuals. Seek clearance from the release authority (annotated near the front page of the document) before including these documents in the AIB Report.

8.3.9. Any document that estimates or gives monetary damage amounts of potential or actual third-party claims against the government.

8.4. ***Organization.*** Assemble the AIB Report as follows:

8.4.1. Cover Sheet.

8.4.2. Executive Summary.

8.4.3. Summary of Facts.

8.4.4. Statement of Opinion.

8.4.5. Index of Tabs.

8.4.6. Tabs (supporting documentation and witness interviews).

8.5. ***Executive Summary.***

8.5.1. The Executive Summary should be one page (single spaced). It should provide the following items:

8.5.1.1. Date, time, and location of the accident.

8.5.1.2. Identification of the aircraft by type and tail number, unit and location.

8.5.1.3. Brief summary of the events leading up to the accident.

8.5.1.4. Number of injuries/deaths, both military and civilian.

8.5.1.5. General description of damage to aircraft and other property damage.

8.5.1.6. Abbreviated Statement of Opinion on the cause of the accident or factors that substantially contributed to the accident.

8.5.2. Include the following statement, verbatim, at the end of the Executive Summary: "Under 10 U.S.C.2254(d), any opinion of the accident investigators as to the cause of, or the factors contributing to, the accident set forth in the accident investigation report may not be considered as evidence in any civil or criminal proceeding arising from an aircraft accident, nor may such information be considered an admission of liability by the United States or by any person referred to in those conclusions or statements."

8.6. ***Summary of Facts.***

8.6.1. ***General Considerations.***

8.6.1.1. The Summary of Facts presents a thorough discussion of the facts relevant to the accident in a narrative style. Define all terms and try to avoid acronyms -- anticipate the audience will not have a technical background.

8.6.1.2. The proper length of the Summary varies with each accident. Given the different types of possible accidents and the varying amounts of information available, there is no standard length for the Summary.

8.6.1.3. Copy the Summary of Facts onto single-sided pages.

8.6.1.4. Of paramount importance is the requirement that the Summary is fully supported by documentary evidence in the Report and that any opinions regarding the cause of the accident are only placed in the Statement of Opinion.

8.6.1.5. The Summary should be self-contained. A reader should not need to refer to any other documents to understand the complete story of the accident. Include the date of the accident, precise location, type and serial number of the aircraft, unit and location, names of crewmembers and passengers. Do not use acronyms without explanation, no matter how well known they are within the Air Force. Members of the public must understand the Summary, standing alone.

8.6.1.6. Follow each fact stated in the Summary by a parenthetical reference to source documents within the Report. For example: Several witnesses observed lightning strikes just before the accident (Tabs V-1.6, V-4.9, V-5.16). Air Weather Service reports indicated severe thunderstorms in the area at the time (Tab W-3).

8.6.2. ***Summary of Facts Outline.*** The following outline will be used in constructing the Summary of Facts. Each paragraph should be addressed, even if simply to state, "not applicable." Paragraphs may be added to address additional issues.

8.6.2.1. ***Item #1. Authority, Purpose, and Circumstances***

8.6.2.1.1. ***Authority.*** Reference authority for conducting the investigation including: AFI 51-503, the convening authority, and letters/orders appointing the AIB members. List all the members of the AIB.

8.6.2.1.2. ***Purpose.*** The purpose will typically be to determine the relevant facts and circumstances of the accident and to determine the cause or causes. The AIB will gather and preserve evidence for claims, litigation, disciplinary and administrative action, and for all other purposes deemed appropriate by competent authority.

8.6.2.1.3. ***Circumstances.*** Briefly describe the overall nature of the mission.

8.6.2.2. ***Item # 2. Accident Summary***

8.6.2.2.1. A brief summary similar to the Executive Summary is appropriate. List fatalities and provide numbers of casualties. Generally describe both military and civilian property damage. Identify which command fielded questions about the accident. Describe media interest, if any. Do not describe the causes of the crash (save this for the Statement of Opinion).

8.6.2.3. ***Item #3. Background***

8.6.2.3.1. Describe the various units, agencies, programs, resources, procedures, and mission tasking that are important to understanding the accident.

8.6.2.4. ***Item #4. Sequence Of Events***

8.6.2.4.1. ***Mission.*** Describe the mission or purpose of the accident aircraft or missile. Identify the authority that authorized the mission.

8.6.2.4.2. ***Planning.*** Discuss adequacy of mission planning and whether standard procedures were utilized. Identify the briefing officer and the briefing guide that was used. Note whether squadron supervisory personnel attended the briefing. Comment on the thoroughness of the briefing and whether the mission was fully understood by the crew.

8.6.2.4.3. ***Preflight.*** Describe crew assembly, NOTAMs, flight plans, and step and engine start procedures.

8.6.2.4.4. ***Summary of Accident.*** Describe the accident flight, including taxi, takeoff, departure time, any relevant weather that was encountered, flight parameters and route, Air Traffic Control assistance, communications, terrain encountered, and navigation.

8.6.2.4.5. ***Impact.*** Describe the impact location, time, effects, and aircraft configuration and flight parameters.

8.6.2.4.6. ***Life Support Equipment, Egress and Survival.*** Describe the ejection sequence and whether it was accomplished within the performance envelope of the system. Note any deficiency found or suspected in the egress system and the survival equipment. Describe the inspection currency and effectiveness of survival equipment. Describe the operation of the crash position indicator.

8.6.2.4.7. ***Search and Rescue (SAR).*** Describe SAR assets and the rescue operations. Indicate the

time of crash and the time and origin of the first rescue call. Identify the unit responding to the call and the time it found the injured, fatalities, and wreckage. Describe the sequence of events from the time the initial rescue call was received. List equipment sent to the crash site. Explain any delays between the time the accident was discovered, the rescue call, and the time the rescue team left for the crash site. Identify difficulties experienced in the rescue effort, such as: weather, time of day, topography, or civilians at the crash scene.

8.6.2.4.8. ***Recovery of Remains.*** Describe the recovery operation and the processing of personal effects. Identify the unit that handled mortuary affairs.

8.6.2.5. ***Item #5. Maintenance***

> ***Note: Maintenance documents, including Flight Manuals, Maintenance Manuals, TOs, and TCTOs may be subject to the Arms Export Control Act or the Export Administration Act of* 1979. *Obtain approval from the Technical Content Manager before including extracts of these publications in the AIB Report. Include the approval from the Technical Content Manager in the AIB Report.***

8.6.2.5.1. ***Forms Documentation.*** Describe relevant form annotations, including Aircraft AFTO Form 781 and missile maintenance logs that may relate to the accident. Indicate discrepancies, if any. Note the status of all Time Compliance Technical Orders (TCTO) which may relate to the accident. Report whether historical records reveal any recurring maintenance problems.

8.6.2.5.2. ***Inspections.*** Indicate the status of all scheduled inspections, including whether satisfactorily completed. Note discrepancies and assess responsibility for any discrepancies.

8.6.2.5.3. ***Maintenance Procedures.*** Report any maintenance procedure, practice, or performance that appears related to the accident, including work completed by civilian contractors.

8.6.2.5.4. ***Maintenance Personnel and Supervision.*** Identify all personnel, units, and commercial entities that serviced or maintained any of the systems that may have been a factor in the accident. Review preflight servicing of aircraft, paying attention to the quality of supervision provided to aircraft maintenance personnel, as well as to their performance. Determine if maintenance personnel had adequate training and experience to complete assigned tasks by reviewing:

8.6.2.5.4.1. AF Form 623, **Individual Training Record.**

8.6.2.5.4.2. AF Form 797, **Job Qualification Standard Continuation/Command JQS.**

8.6.2.5.4.3. Staff progress records.

8.6.2.5.4.4. Staff certifications.

8.6.2.5.5. ***Fuel, Hydraulic, and Oil Inspection Analyses.*** Report status of fluid analysis records. Determine if pre-and post-accident fluid analyses were taken and note discrepancies. Review fluid test report data for normalcy.

8.6.2.5.6. ***Unscheduled Maintenance.*** Report unscheduled maintenance performed since completion of the last scheduled inspection. Describe the work performed, noting any relationship between the unscheduled maintenance and the accident. Note any expendables or other items replaced, repaired, tested, or overhauled. List agencies, dates and places where removal, installation, benchcheck/testing, repair, and overhaul were completed.

8.6.2.6. Item # **6.** ***Aircraft and Airframe, Missile, or Space Vehicle Systems***

8.6.2.6.1. Describe the condition of the various structures and systems as they were found after the accident. Relevant structures and systems may include: control surfaces, engines, navigational systems, instruments, warning systems, fuel, lubrication, electrical, hydraulic, pneumatic, avionics, communications, and environmental control. Review the maintenance history of the components and the results of any teardown analyses that were conducted. Identify manufacturers or vendors of all components, accessory systems, or products that may be linked to the cause of the accident.

8.6.2.6.2. Identify any repair station involved in overhauling, repairing, bench checking, or testing any components, accessory systems, or units suspected of failure. Determine whether the Federal Aviation Administration approved or certified that station, if applicable.

8.6.2.6.3. Discuss whether required aircraft equipment was functioning adequately.

8.6.2.6.4. ***Testing.*** Review the reports of the components and accessories of systems that were tested or submitted for teardown analysis. State the nature of teardown analyses. State the organization that provided each analysis.

8.6.2.7. ***Item #7. Weather***

8.6.2.7.1. ***Forecast Weather.*** Describe the forecast weather for the date of the accident, including precipitation, cloud cover at various altitudes, and visibility.

8.6.2.7.2. ***Observed Weather.*** Describe the observed weather and any inflight weather reports that the crew passed or received. Describe the post-accident weather.

8.6.2.7.3. ***Space Environment.*** For space systems, discuss relevant observed and forecast space environmental conditions, including radiation environment and geomagnetic field.

8.6.2.7.4. ***Conclusions.*** Discuss whether operations were being conducted and/or systems being operated within their prescribed operational weather limitations.

8.6.2.8. ***Item #8. Crew Qualifications***

8.6.2.8.1. Describe the training each crewmember completed, noting any deficiencies. Present this information chronologically. Assess crewmembers' training currency, performance, experience level, and overall qualifications.

8.6.2.8.2. Summarize the experience of each flying officer involved in the accident by hours of flying time and include a 30-60-90 day breakdown.

8.6.2.9. ***Item #9. Medical***

8.6.2.9.1. ***Qualifications.*** State whether crewmembers were medically qualified for flight or missile alert duty at the time of accident.

8.6.2.9.2. ***Health.*** Review post-accident medical examination records of survivors and state whether any results appear related to the accident.

8.6.2.9.3. ***Pathology.*** Review autopsy reports and generally state the causes of death. Do not include the autopsies in the AIB report. In describing deceased individuals, remain acutely aware of the sensitivities of surviving family members. Review and discuss postmortem toxicology reports.

8.6.2.9.4. ***Lifestyle.*** Discuss whether there were any indications of unusual habits, behavior, or stress of the crew or maintainers that can be linked to the accident.

8.6.2.9.5. ***Crew Rest and Crew Duty Time.*** Discuss crew rest and crew duty time requirements and whether those requirements were met.

8.6.2.10. ***Item #10. Operations and Supervision***

8.6.2.10.1. ***Operations.*** Discuss the operations tempo and the experience level of relevant units.

8.6.2.10.2. ***Supervision.*** Discuss the oversight of the mission.

8.6.2.11. ***Item #11. Human Factors Analysis***

8.6.2.11.1. Discuss any perceived crew or maintainer complacency, overconfidence, undermotivation, overmotivation to succeed, distraction, disruption, pressure, channelized attention, uncharacteristic mistake, or other degradation that may have led to the accident.

8.6.2.12. ***Item #12. Governing Directives and Publications***

8.6.2.12.1. List all directives and publications that apply to the mission.

8.6.2.12.2. State any known or suspected deviations from directives or publications by crew members or others involved in the mission, giving specific paragraph references in each directive or publication.

8.6.2.13. ***Item # 13. News Media Involvement***

8.6.2.13.1. Describe initial queries and reports, press conferences, releases of information, and media visits to the crash site.

8.6.2.14. ***Item # 14. Additional Areas of Concern***

8.6.2.14.1. Additional areas of concern that may need to be considered include: NAVAIDs and facilities, VFR and IFR procedures, and electromagnetic environmental effects (E3). E3 analysis

focuses on geophysical, weather, and radio frequency (RF) transmitter characteristics to determine possible contributions due to:

8.6.2.14.1.1. RF propagation anomalies (NAVAIDs, SAR, communications).

8.6.2.14.1.2. External electromagnetic Interference (EMI).

8.6.2.14.1.2.1. Uprange/Downrange radionavigation signals other than the desired signal.

8.6.2.14.1.2.2. Electromagnetic effects from nearby lightning discharges.

8.6.2.14.1.2.3. Military electronic warfare (EW) operations.

8.6.2.14.1.2.4. Environmental transmitter spurious emissions.

8.6.2.14.1.2.5. Alias radionavigation signals or meaconing.

8.6.2.14.1.3. Internal EMI.

8.6.2.14.1.3.1. Personal portable electronic devices used on board.

8.6.2.14.1.3.2. Untested avionics upgrades.

8.6.2.15. ***Item # 15. Signature and Date***

8.6.2.15.1. Date and sign the Summary of Facts as "President, Accident Investigation Board."

8.7. ***Statement of Opinion.*** One of the primary objectives of the accident investigation is to formulate a Statement of Opinion as required by 10 U.S.C.2254. The Opinion will be publicly released along with the rest of the AIB Report. The Opinion must be clear, complete, and concise; it should reference specific facts supporting its conclusions.

8.7.1. The Statement of Opinion presents the AIB president's personal opinion regarding the cause or causes of the accident; or if the evidence surrounding the accident is not sufficient to come to an opinion as to the cause or causes of the accident, it provides a description of those factors, if any, that substantially contributed to or caused the accident.

8.7.2. ***Liability and Litigation.*** The Opinion cannot be considered an admission of liability by the United States or of any person referred to therein. The Opinion may not be considered as evidence in any civil or criminal proceeding arising from the aircraft accident.

8.7.3. ***Standard of Proof.*** Only provide an opinion regarding the cause or causes of the accident if clear and convincing evidence supports the opinion. Clear and convincing evidence enables the accident investigator to reach a conclusion without serious or substantial doubt. In other words, the opinion must be supported by evidence that shows it is highly probable that the conclusion is correct. Consult with the legal advisor to determine if the available evidence meets the clear and convincing standard.

8.7.3.1. ***Factor or Factors.*** In addition to a statement on cause (or, if there is insufficient evidence to meet the clear and convincing standard for stating a cause), the president describes the factor or factors, if any, that he or she believes substantially contributed to or caused the aircraft accident. A substantially contributing or causal factor is a factor that played an important role, either directly or indirectly, in the sequence of events that led to the accident. Any conclusion about such substantially contributing or causal factors must be based on substantial evidence. Substantial evidence is more than a trace of evidence and is that which a reasonable person would accept as adequate to support a conclusion.

8.7.4. ***Format, Signature, and Date.***

8.7.4.1. Begin the Statement of Opinion on a new page and copy it onto single-sided pages.

8.7.4.2. Include the following statement, verbatim, at the beginning of the Statement of Opinion: "Under 10 U.S.C.2254(d), any opinion of the accident investigators as to the cause of, or the factors contributing to, the accident set forth in the accident investigation report may not be considered as evidence in any civil or criminal proceeding arising from an aircraft accident, nor may such information be considered an admission of liability by the United States or by any person referred to in those conclusions or statements."

8.7.4.3. Date and sign the Statement of Opinion as "President, Accident Investigation Board."

8.8. ***Index of Tabs.*** The Index of Tabs follows the Statement of Opinion. In the Index of Tabs, include a listing of all "sub-tabs." For example, Tab V might appear in the index as follows:

Witness Testimony and Statements	**Tab V**
Lt. Col. Malcolm Harris	V-1
Capt. Jack Aubrey	V-6
Lt. Col. Jane Austen	V-12
Dr. Stephen Maturin	V-15

8.9. ***Tabs (supporting documentation and witness interviews).***

8.9.1. Incorporate verbatim Tabs A-S from Part I of the Safety Report (with privacy information redacted) into the AIB Report as Tabs A-S. Do not add any new material to these tabs, even if related to the subject matter; rather, create new tabs for any new material.

8.9.2. Any information or material developed by the AIB which is not included under Tabs T-BB may be placed under additional tabs beginning with Tab CC.

8.9.3. The sub-tabs will reflect the length of the witness statements. You do not need to attach a tab to each sub-tabbed item. However, list sub-tabs again in a mini index beneath each primary tab. Insert only the primary tabs in the report itself (normally in the form of a printed separator sheet).

8.9.4. The Post Investigation Memorandum will state the location and custodial office of the original documents and other evidence if they are not included in the Report.

8.9.5. Include the following tabs in the Report:

8.9.5.1. ***Tab A -- AF Form 711,*** **USAF Mishap Report.** The legal advisor should carefully review this tab with the SIB president to ensure it doesn't contain privileged information.

8.9.5.2. ***Tab B -- Preliminary Message Report.***

8.9.5.3. ***Tab C -- AF Form 711B,*** **Aircraft Flight Mishap Report.** The legal advisor should carefully review this tab with the SIB president to ensure it doesn't contain privileged information.

8.9.5.4. ***Tab D -- AF Form 711C,*** **Aircraft Maintenance and Materiel Report.** The legal advisor should carefully review this tab with the SIB president to ensure it doesn't contain privileged information.

8.9.5.5. ***Tab E -- Blank.***

8.9.5.6. ***Tab F -- Blank.***

8.9.5.7. ***Tab G -- Flight and Personnel Records.*** Include a copy of the flight record page showing the most recent flight time. (Do not include accident flight time.) The record should be closed out as of the date of the accident. Include the flight time in each aircraft flown. Break down information according to aircraft designation, inclusive dates flown, FP or IP time, and total time. Include sorties and hours in the last 30, 60, and 90 days.

8.9.5.8. ***Tab H -- AFTO Form 781 Series.*** Include a copy of the AFTO 781, AFORM **Aircrew/Mission Flight Data Document** (or proper missile maintenance form), if it adds to the Report.

8.9.5.9. ***Tab I -- Product Quality Deficiency Reports (DR).*** Include DRs with remarkable (other than normal) teardown deficiency report (TDR) results. However, provide a complete list of all other DRs not included. Identify each DR by originator, date-time group, report control number (RCN), name of part (NOM), and manufacturer's part number (MFR PN).

8.9.5.10. ***Tab J -- Technical and Engineering Evaluations of Materiel.*** If DoD personnel or if contractors (without a promise of confidentiality) provided TDRs or engineering evaluations, include them here.

8.9.5.11. ***Tab K -- DD Form 175,*** **Military Flight Plan** (or appropriate forms). Include a copy of the clearance form and a weather summary. Include flight orders of the pilot or crew if prepared. Include a passenger manifest if the accident aircraft was carrying passengers during the accident flight. If there was no manifest, use any document, paper, or list giving the complete name and grade of all crew and passengers. Carefully review this tab to ensure that SSNs are redacted.

8.9.5.12. ***Tab L -- DD Form 365-4,*** **Form F-Weight and Balance Clearance Transport/Tactical.** Include a copy of the weight and balance computations on file for the flight involved.

8.9.5.13. ***Tab M -- Certificate of Damage.*** This lists the total damage to all government property, materiel, and equipment. Include the maintenance officer's detailed evaluation, statement of damage, and the cost of parts replaced and man-hours required for repair. See AFI 91-204, Chapter 2, for information regarding damage estimates.

8.9.5.14. ***Tab N -- Transcripts of Recorded Air-to-Ground and Aircraft-to-Aircraft Communications.*** These are written transcripts of recorded voice communications. Begin the transcript early in the accident sequence as is practical and end the transcript when all damage and injury has occurred. Long term rescue/SAR transmissions need not be included. Transcripts of intracockpit communication (such as cockpit voice recordings) are placed in Tab O.

8.9.5.15. ***Tab O -- Any Additional Substantiating Data or Reports.*** This is supporting data not otherwise defined. It can include local operating instructions (OIs), directives, approach and landing charts, training records, flight data recorder information, transcripts from cockpit voice recorders, non-privileged witness statements from the preceding Safety Report, and other forms. If applicable, redact CVR and HUD transcripts to protect privacy interests or otherwise privileged information.

8.9.5.16. ***Tab P -- Statement of Damage to Private Property.*** The Claims Officer normally prepares this document. It briefly describes the type and extent of damages to civilian personnel and property. This Tab should not contain attorney work product or monetary valuation of the property damage. If improper information is included, the legal advisor will prepare a new document. The legal advisor will forward a copy of the new Tab P to the SIB president for inclusion in the SIB Report.

8.9.5.17. ***Tab Q -- Orders Appointing the SIB Members.*** Ensure that SSNs are redacted.

8.9.5.18. ***Tab R -- Diagrams (Fallout, Impact, etc.).*** Ensure the diagrams are self-explanatory, indicating wreckage patterns, impact areas, or association with structures, facilities, etc. Remove any scatter diagrams of human remains.

8.9.5.19. ***Tab S -- Photographs.*** Well-defined 8 by 10-inch glossy photographs help in accident analysis. Use them to show damage, impact areas, metal fractures, flight path, vehicle travel, etc. Use of scanned color images for reproduction in the formal report is preferred over pasting actual photographs. Do not include photographs of deceased personnel in the Report. Ensure that no captions, overlays, or markings are on any photographs provided by the SIB that indicate conclusions regarding cause or that reveal the deliberative process of the SIB. Number the pages containing the photographs (S-1, S-2, etc.), but do not mark the photographs themselves. Place an index of photographs at Tab S.

8.9.5.20. ***Tab T -- Individual Flight Records and Orders, not included in Tab G.***

8.9.5.21. ***Tab U -- Aircraft Maintenance Records.*** Include in Tab U significant maintenance documents not included in Part I, Tabs H or O, of the Safety Report.

8.9.5.22. ***Tab V -- Witness Testimony and Statements.*** Include all sworn witness testimony taken by the Board. The first page of this tab is a table of contents of the witness statements that are included under this tab.

8.9.5.23. ***Tab W -- Weather Observations.***

8.9.5.24. ***Tab X -- Statements of Injury or Death.*** Include in Tab X only information that, if released, does not violate the privacy provisions of AFI 37-132, or constitute an unwarranted invasion of personal privacy under AFI 37-131. Avoid graphic descriptions that may upset the next-of-kin. Do not include the autopsy protocol. The medical advisor may draft a general statement indicating the cause of death or injury and describe any abnormal laboratory test results or other medical factors affecting crew performance.

8.9.5.25. ***Tab Y -- Documents Appointing the AIB Members and Technical Advisors.*** Ensure that SSNs are redacted.

8.9.5.26. ***Tab Z -- Photographs Not Included in Part I of the Safety Report.*** Include in Tab Z significant photographs not included in Tab S.

8.9.5.27. ***Tab AA -- Flight Documents.*** Include copies of low-level route books, flying charts, and departure and approach plates that the pilot used during the mishap flight. Also include flight planning documents and FAA bookings.

8.9.5.28. ***Tab BB -- Government Documents and Regulations.*** Include applicable documents and regulations under this tab. For instance, if the accident occurred on a low-level route, include the applicable FAA document that designates the waypoints and parameters of the route. If a regulation was violated, include a copy of the front cover and the applicable portions of the regulation. Ensure that the documents included in this tab were current at the time of the accident. Do not include documents that are protected by the Export Control Act, Export Administration Act of 1979, or otherwise privileged.

8.10. ***Completing the AIB Report.***

8.10.1. ***Informal Legal Review.*** It is recommended that you forward a draft copy of the Summary of Facts and the Statement of Opinion to the convening authority's SJA for an informal legal review to ensure the Report meets the requirements of AFI 51-503.

8.10.2. Send the original and ten copies of the AIB Report directly to the convening authority's SJA. Do not forward it through nor provide copies of the Report to any intermediate commands

***(Note: This policy mirrors SIB procedures in AFI* 91-204, *Chapter* 5).**

8.10.3. The Board president and other AIB members will not discuss the contents of the AIB Report with anyone other than Board members, and the convening authority and his or her staff, until the Report is officially released to the public. This prohibition does not preclude AIB members from seeking information from any source during the investigation process; nor does it preclude briefing officers from providing briefings to the NOK.

8.11. ***Licensing.*** The AIB Report is exempt from licensing with a report control symbol (RCS) under AFI 37-124, *The Information Collections and Reports Management Program; Controlling Internal, Public, and Interagency Air Force Information Collections.*

Chapter -- 9

Approval and Distribution of the AIB Report and NOK Briefings

9.1. ***Staffing the AIB Report.*** Prior to approval of the AIB Report, the convening authority's SJA coordinates the Report among appropriate members of the convening authority's staff. Prior to approval, the Report is not circulated among or provided to intermediate commands. All substantive comments from the staff concerning investigative deficiencies in the Report or relating to the Statement of Opinion are forwarded to the AIB president for review and evaluation. Based upon these comments, the AIB president may elect to continue the investigation, modify the Report, or make no changes. The AIB president will advise the convening authority's SJA of the intended course of action. Staff comments are not publicly releasable; do not incorporate them in the AIB Report.

9.2. ***Legal Review.*** The SJA's legal review is forwarded with the AIB Report to the convening authority. The legal review assesses whether the AIB Report meets the requirements of AFI 51-503 and addresses any legal issues, including potential or pending claims and litigation. The legal review is not publicly releasable; do not incorporate it into the AIB Report.

9.3. ***Approval of the AIB Report.*** The convening authority reviews the AIB Report, determines if the Report shall be approved as written, approved with appended comments, or returned to the AIB president for further action.

> ***Note: If the convening authority requests a formal briefing on the AIB Report, the AIB president will provide an informational briefing to the NAF commander prior to briefing the convening authority. The NAF commander may forward any written comments on the report to the convening authority***

9.3.1. Approval of the AIB Report does not suggest nor denote agreement by the convening authority with the Statement of Opinion of the AIB president. Rather, it is an indication that the Report complies with applicable laws and regulations.

9.3.2. Place the Convening Authority Action under the front cover of the AIB Report and distribute it with the AIB Report.

9.4. ***Distributing the AIB Report.*** After the convening authority approves the AIB Report, the convening authority's SJA distributes it under a time-phased plan coordinated with their Public Affairs Office. High-interest AIB Reports, as defined below, have more distribution requirements than those that are not considered high-interest. Reports are generally distributed in the following sequence: (1) designated Air Force offices for internal review; (2) then to the NOK; (3) then to members of Congress, if requested; and (4) then to the public and the media.

9.4.1. ***High-Interest Mishaps.*** High-interest mishaps include those that result in death or serious personal injury, significant civilian property damage, or are likely to generate high public, press, or congressional interest. If the AIB Report concerns a high-interest mishap, certain documents must be

faxed to AFLSA/JACT immediately following approval of the Report. In order to allow sufficient time for Air Staff and Secretariat review, delay NOK briefings and public release of high-interest AIB reports for at least two duty days after the documents have been faxed to AFLSA/JACT. The documents that are faxed to AFLSA/JACT will be considered "close hold" until the public release date. The documents to be faxed to AFLSA/JACT are:

9.4.1.1. A fax cover sheet that prominently displays: "***Close Hold Until Public Release.***"

9.4.1.2. Convening Authority Action.

9.4.1.3. Executive Summary.

9.4.1.4. Summary of Facts.

9.4.1.5. Statement of Opinion.

9.4.1.6. PA Release Plan including:

9.4.1.6.1. Proposed timeline for the release of the Report, including next-of-kin notifications and public release.

9.4.1.6.2. Description of public, press, and congressional interest.

9.4.1.6.3. Proposed press releases and anticipated questions and answers.

9.4.2. ***All Mishaps.*** This paragraph applies to all AIB Reports, including high-interest mishaps.

9.4.2.1. Prior to any release of the Report outside the Air Force (other than releases under paragraph 9.4.1.), provide the Executive Summary, Summary of Facts, and the Statement of Opinion to the following offices: (Annotate on each copy that the Report is "***Close Hold Until Public Release.")***

9.4.2.1.1. Mishap wing commander and intermediate commanders.

9.4.2.1.2. Any MAJCOM commander involved in the accident.

9.4.2.1.3. Air Force Legal Services Agency, Tort Claims and Litigation Division (AFLSA/JACT), 1501 Wilson Boulevard, Room 835, Arlington VA 22209-2403.

9.4.3. ***Briefings to NOK and Seriously Injured.*** Prior to public release of the AIB Report, brief the results of the investigation to the NOK of deceased persons and to seriously injured personnel IAW AFI 90-701, Chapter 5 and Attachment 9. Usually the AIB president serves as a NOK briefing officer. If multiple briefings are required, then the convening authority selects additional briefing officers to ensure the NOK are simultaneously briefed.

9.4.3.1. ***Multiple NOK Briefings.*** It is important that each NOK receives substantially the same briefing. Therefore, each briefing officer must fully understand the results of the AIB and clearly brief those results. Briefing officers serve three purposes:

9.4.3.1.1. To personally express the condolences of the Department of the Air Force for the death or injury resulting from the crash;

9.4.3.1.2. To personally deliver a copy of the AIB Report; and

9.4.3.1.3. To provide a basic briefing on the investigation results, including the cause or the factors contributing to the accident, and to answer questions of the NOK or family members, based upon the facts contained in the Report.

9.4.3.2. For further guidance regarding NOK briefings, contact the convening authority's SJA, and see AFI 90-701.

9.4.4. ***Congressional Briefings.*** Following the NOK briefings, but before public release, provide a copy of the Report and a briefing to congressional members, if requested. Contact SAF/LLP for further guidance.

9.4.5. Public Affairs prepares a release plan and coordinates public release of the AIB Report.

9.4.6. Following public release of the AIB Report, ensure the following offices are provided a complete copy of the AIB Report:

9.4.6.1. Mishap wing and intermediate commands.

9.4.6.2. Any MAJCOM involved in the accident.

9.4.6.3. Air Force Legal Services Agency, Tort Claims and Litigation Division (AFLSA/JACT), 1501 Wilson Boulevard, Room 835, Arlington VA 22209-2403.

9.4.6.4. Responsible claims officer, if claims are anticipated.

9.4.6.5. Headquarters, Air Force Safety Center, Legal Office (HQ AFSC/JA), 9700 Avenue G SE, Kirtland AFB NM 87117-5670.

9.4.6.6. Staff Judge Advocate, Headquarters, Air Force Materiel Command Office (HQ AFMC/JA), 4255 Logistics Avenue, Suite 23, Wright-Patterson AFB OH 45433-5762, for cases involving contractors subject to potential contractual liability as a result of the accident.

9.4.6.7. Chief, National Guard Bureau (Attn: NGB-JA), 2500 Army Pentagon, Washington DC 20310-2500, for cases involving ANG aircraft or personnel, and one copy to the State Adjutant General concerned.

9.4.7. ***Additional Distribution of the AIB Report:***

9.4.7.1. Provide the Executive Summary, Summary of Facts, and Statement of Opinion to Headquarters Air Force Office of Special Investigations, Fraud Investigations Divisions (HQ AFOSI/XOK), 500 Duncan Avenue, Suite 1009, Bolling AFB DC 20332-6000, for cases involving suspected defective or non-conforming products.

9.4.7.2. On request, provide one free copy to anyone who suffered personal injury or substantial property damage as a result of the mishap.

9.5. ***Requests for Copies of the Report.*** The convening authority's SJA responds to requests for the AIB Report and is the release authority for the Report.

9.5.1. Charge the fees specified in AFI 37-131.

Chapter -- 10

Post Investigation Matters

10.1. ***Reopening the AIB.*** If additional evidence is discovered following approval of the AIB Report, then the convening authority will determine whether to reopen the AIB. Contact the convening authority's SJA for guidance.

10.2. ***Personal Notes and Drafts.*** After the convening authority approves the completed AIB Report, destroy all investigator notes and drafts of the Report. Upon completion, the only documents that should exist are the AIB Report and the ancillary documents and evidence forwarded to the convening authority's SJA with the Post Investigation Memorandum.

10.3. ***Post Investigation Memorandum.*** Within 15 calendar days of forwarding the completed AIB Report, the AIB president will forward a Post Investigation Memorandum to the convening authority's SJA. The Memorandum will accompany the ancillary evidence, photographs, negatives of photographs, and other information that were not included in the Report. The Memorandum is fully releasable; however, documents attached to the Memorandum may be restricted from public release, if appropriate.

10.3.1. ***Purpose of the Memorandum.*** The primary purpose of the Memorandum is to serve as a formal record of transmittal of all evidence and other documents to the convening authority's SJA. It is not a legal review or after-action report (if an after-action report is desirable, forward it separately). The Memorandum will consist primarily of a list of attachments.

10.3.2. ***Documents.*** Attach the following documents to the Memorandum:

10.3.2.1. A consolidated list of witnesses, including full names, DSN and commercial work telephone numbers, and duty addresses. A sample witness list is at Attachment 2.

10.3.2.2. A consolidated list of Board Members, including full names, positions on the AIB, DSN and commercial work telephone numbers, e-mail and duty addresses.

10.3.2.3. An inventory of all documents, cassettes, etc., forwarded to the convening authority's SJA. If some items are not normally releasable under the Freedom of Information Act (such as autopsy photos, Privacy Act information, and Arms Export Control Act information), clearly identify and segregate those items and identify them on the inventory. The documents and photos should be filed in standard, litigation-size boxes. Each document or item should be in a labeled or numbered file

folder, so it is easily identifiable and retrievable. Label boxes with date of accident, location of accident, convening authority, aircraft tail number, and item numbers contained therein (example: Box 2 of 3, containing Items #42 -- #86. A sample inventory is at Attachment 2. Include a full copy of the inventory in each box.

10.3.2.4. ***Photo Inventory.*** Indicate the number of negatives and photos and generally identify contents. This can be included as part of the basic inventory above or as a separate document (example: 102 negatives; 34 black and white 8 X 10 glossies; 48 color 8 X 10s).

10.3.2.5. Location of all ancillary evidence and wreckage, including those items that have been forwarded for laboratory testing.

10.3.2.6. ***Wreckage Disposition Transmittal Letters.*** Include copies of letters to the SJA and other organizations regarding transfer of wreckage. Include copies of memos documenting transfer of any parts for laboratory testing or repairs. Include any AFLSA/JACT memos approving disposal of the wreckage.

10.3.2.7. ***Record Transmittal Letters.*** Include copies of letters reflecting return of medical, dental, personnel, flight, or other records to the original custodian. Ensure the "TO" line in the letters includes the full address of unit or person to whom records were returned. A sample record transmittal letter is at Attachment 2.

10.4. ***Disposition of the AFB Report, Evidence, and Other Documentary Materials.***

10.4.1. The convening authority's SJA:

10.4.1.1. Secures the original AIB Report.

10.4.1.2. Stores all ancillary documents and other evidence (including photographs) gathered by the AIB.

10.4.1.3. Holds the AIB Report for three years, then retires it to the National Records Center. After 25 years the AIB Report is destroyed, per AFMAN 37-139, *Records Disposition Schedule,* Table 51-4, Rule 11.

10.4.1.4. Forwards the Cockpit Voice Recorder (CVR) and Heads-up display (HUD) tapes to the Mishap Analysis and Animation Facility, HQ AFSC/SEFE-OL, 7851 Arnold St, Rm 125, Bldg 3, Tinker AFB, OK 73145-9145, for storage.

10.4.1.5. Responds to requests for the AIB Report.

10.4.2. Unless there are pending claims or litigation, the ancillary documents and evidence gathered by the AIB should be returned to the source agency or disposed of IAW applicable regulations upon retirement of the original AIB Report.

10.5. ***Wreckage Custody.*** Typically, custody of the wreckage will vest first in the On-Scene Commander. At the On-Scene Commander's discretion, custody of the wreckage passes to the SIB president. The SIB president then transfers custody of the wreckage, in writing, to the AIB president.

10.5.1. After the wreckage is no longer required for the AIB investigation, the host base liaison officer coordinates the transportation of the wreckage to its storage location and the AIB president transfers custody of the wreckage, in writing, to the host base commander or designee.

10.6. ***Removing and Storing Wreckage.*** The host base commander is responsible for removing and storing the wreckage. If the host base does not have the capability for removing and storing the wreckage, then the convening authority's MAJCOM will assist in removing and storing the wreckage.

10.6.1. All costs associated with the removal and storage of the wreckage will be paid by the convening authority's MAJCOM.

10.7. ***Requests for Wreckage Release.*** Wreckage from Class A mishaps must be retained until specifically released by AFLSA/JACT. Requests for release of wreckage are submitted by the Claims Officer of the host base, through the convening authority's SJA, to AFLSA/JACT.

10.7.1. If the request for release of wreckage is initiated prior to the approval of the AIB Report, then the convening authority or designee must personally approve the wreckage release request before it is forwarded to AFLSA/JACT.

10.7.2. Provide the following information in wreckage release requests:

10.7.2.1. Date of accident.

10.7.2.2. Type and serial number of aircraft, missile or space vehicle involved.

10.7.2.3. Location of accident.

10.7.2.4. Persons killed and status of injured personnel.

10.7.2.5. Estimate of the number, types, and dollar amount of claims anticipated.

10.7.2.6. Whether there is a mission requirement for immediate release of the wreckage.

10.8. ***Accident Site Restoration.*** For information concerning environmental restoration, see AFI 32-7020, *The Environmental Restoration Program,* or overseas, see AFI 32-7006, *Environmental Program in Foreign Countries.* Questions regarding accident site restoration as well as access and easements to the accident site may be directed to AFLSA/JACE, DSN 426-9166.

Chapter -- 11

Abbreviated Accident Investigations

11.1. ***Generally.*** At the convening authority's discretion, AIB procedures may be modified and the format of the AIB Report abbreviated, as necessary, to save time and resources. This discretion may be exercised only under the following circumstances:

11.1.1. When a Class A mishap has been characterized as such solely because damage to government property is expected to exceed $1 million. There should be no reasonable likelihood that claims, litigation, disciplinary or adverse administrative action, serious personal injury or death, or high public interest will arise from the mishap.

11.1.2. When convening an AIB is discretionary, such as after a Class B mishap. There should be no reasonable likelihood that claims, litigation, disciplinary or adverse administrative action, serious personal injury or death, or high public interest will arise from the mishap.

11.2. ***Collection of Evidence.*** Generally, the investigation of a mishap under this Chapter will proceed along the same lines as any mishap investigation under this instruction. Physical evidence may be viewed and tested, witnesses interviewed, and technical advisors used to analyze the facts and data available. However, the documentation required, the number of witnesses interviewed, and depth of technical analysis may vary, depending on the circumstances.

11.2.1. When a SIB has produced the two part report required for Class A mishaps, the AIB will use Part I of that Report and incorporate it into the AIB Report. The remaining Tabs, normally Tabs T-Z, may be deleted in whole or in part. Information that would normally have been included in those tabs may be summarized in the AIB Report's Summary of Facts.

11.2.2. Witnesses need not be personally interviewed, nor must their testimony be transcribed or otherwise reduced to writing. Witnesses may be telephonically interviewed, and the content of their testimony incorporated into the Summary of Facts, as necessary. Witnesses shall testify under oath. If it becomes apparent that a rights advisement is necessary, then suspend the abbreviated accident investigation and seek further guidance from the convening authority's SJA.

11.3. ***Assembling the Abbreviated Report.*** All Reports must have an Executive Summary, Summary of Facts, and Statement of Opinion. However, the content and amount of supporting documentation and other evidence may vary as necessary.

11.3.1. When a SIB has not been conducted, the AIB may use any format appropriate to the circumstances.

11.3.2. The Abbreviated AIB Report will be assembled in the same manner as other AIB Reports, IAW with Chapter 7

11.4. ***Approval, Distribution, and Release of the Abbreviated AIB Report.***

11.4.1. The convening authority's SJA must review, and the convening authority must approve, Abbreviated AIB Reports.

11.4.2. Distribution of the approved AIB Report may be modified as necessary to meet the circumstances. However, at a minimum, the convening authority's MAJCOM (if the AIB is not convened by the MAJCOM), AFLSA/JACT, and the mishap wing must receive a copy.

11.4.3. An Abbreviated AIB Report will be releasable in its entirety. The convening authority's SJA is the release authority once the Report is approved.

11.4.4. A Post Investigation Memorandum will be prepared.

11.5. ***Disposition of Evidence and Wreckage.***

11.5.1. Use of this Chapter to conduct an AIB investigation implies there is no need to retain evidence or wreckage beyond approval of the Report. The convening authority's SJA may dispose of evidence not included in the Report, including wreckage, at his or her discretion.

11.5.2. AFLSA/JACT will be notified in writing of the disposition of wreckage by the convening authority's SJA. If there is any doubt as to the appropriateness of disposing of wreckage, consult AFLSA/JACT prior to disposal.

11.5.3. Once the AIB has completed its examination of the mishap aircraft, and assuming such action is not otherwise restricted or prohibited, the convening authority may approve the aircraft's repair and return to operational service.

William A. Moorman,
Maj General, USAF
The Judge Advocate General

Attachment -- 1

Glossary of References and Supporting Information

References

5 U.S.C.552(a), *Privacy Act*

5 U.S.C.552, *Freedom of Information Act*

10 U.S.C.2254, *Use of Aircraft Accident Reports*

10 U.S.C.2255, *Aircraft Investigation Boards: Composition Requirements*

22 U.S.C.2751, et seq, *Arms Export Control Act*

50 U.S.C., App. 2401, et seq, *Export Administration Act of 1979*

40 CFR 300, *National Oil and Hazardous Substances Pollution Contingency Plan*

DoDI 6055.7, *Accident Investigation, Reporting, and Recordkeeping*

DoDR 5200.1-R, *Information Security Program*

AFPD 31-4, *Information Security Program*

AFPD 90-7, *Service to Survivors*

AFPD 91-2, *Safety Programs*

AFPD 31-4, *Information Security*

AFI 13-203, *Air Traffic Control*

AFI 21-103, *Equipment Inventory, Status, and Utilization Reporting*

AFI 31-401, *Managing the Information Security Program*

AFI 32-7006, *Environmental Program in Foreign Countries*

AFI 32-7020, *The Environmental Restoration Program*

AFI 35-102, *Crisis Planning, Management and Response*

AFI 36-809, *Survivor Assistance*

AFI 36-3002, Casualty Services

AFI 37-124, *The Information Collections and Reports Management Program; Controlling Internal, Public, and Interagency Air Force Information Collections*

AFI 37-131, *Air Force Freedom of Information Act Program*

AFI 37-132, *Air Force Privacy Act Program*

AFI 51-301, *Civil Litigation*

AFI 51-501, *Tort Claims*

AFI 65-601, Volume I, *Budget Guidance and Procedures*

AFI 90-301, *Inspector General Complaints*

AFI 90-701, *Assistance to Families of Persons Involved in Air Force Aviation Mishaps*

AFI 91-202, *The US Air Force Mishap Prevention Program*

AFI 91-204, *Safety Investigations and Reports*

AFMAN 37-139, *Records Disposition Schedule*

AFPAM 37-145, *Schedule of Fees for Copying, Certifying and Searching Records and Other Documentary Material*

Abbreviations and Acronyms

AIB	Accident Investigation Board
AFI	Air Force Instruction
AFLSA/JACT	Air Force Legal Services Agency, Tort Claims and Litigation Division
AFPD	Air Force Policy Directive
AFRC	Air Force Reserve Command (formerly AFRES)
AFRES	Air Force Reserves
AFSC	Air Force Safety Center, Kirtland AFB, New Mexico
ANG	Air National Guard
ATC	Air Traffic Control
CVR	Cockpit Voice Recorder
DAFC	Department of Air Force Civilian
DoDI	Department of Defense Instruction
DSN	Defense Switched Network
FLO	Family Liaison Officer
FOIA	Freedom of Information Act
HUD	Heads Up Display
IAW	In Accordance With
JQS	Job Quality Standard
MAJCOM	Major Command
NAF	Numbered Air Force
NOK	Next of Kin
PA	Public Affairs
SAR	Search and Rescue
SIB	Safety Investigation Board

SJA	Staff Judge Advocate
SOFA	Status of Forces Agreement
TCTO	Time Compliance Technical Order
TO	Technical Order
UCMJ	Uniform Code of Military Justice

Terms

AIB Members -- All individuals appointed to the Accident Investigation Board, including the president, legal advisor, and technical advisors.

Cause -- A cause is an act, omission, condition, or circumstance that either starts or sustains a mishap sequence. It may be an element of human or mechanical performance. A given act, omission, condition, or circumstance is a "cause" if correcting, eliminating, or avoiding it would prevent the mishap or mitigate damage or injuries.

Friendly Fire -- A circumstance in which members of a US or friendly military force are mistakenly or accidentally killed or wounded in action by US or friendly forces actively engaged with an enemy or who are directing fire at a hostile force or what is thought to be a hostile force.

Gaining Major Command -- The active-duty Air Force Major Command to which an ANG or AFRC unit is assigned upon mobilization.

Host Base -- The installation from which the investigation is being conducted.

MAJCOM Commander -- Commanders of Major Commands, including field operating agency (FOA) and direct reporting unit (DRU) commanders, system program directors (SPD) or equivalent, Air Force Program Executive Officers (AFPEO), etc. In addition, this term includes the air component commander of unified commands during contingency operations.

Missile Mishap -- Mishaps involving missiles that are propelled through air or water that are unmanned, guided by internal or external systems, self-propelled, and designed to deliver ordnance to a target or act as a target. This term includes missile support equipment.

Next of Kin -- The person most closely related to the casualty, normally the spouse of married persons or the parents of single persons without children (Casualty Services). The person most closely related to the deceased individual who is entitled to direct disposition of the remains and/or disposition of personal property (Mortuary Affairs).

Nuclear Mishap -- A generic term used to denote a nuclear reactor system, nuclear weapon system, or radiological mishap.

Space Mishap -- A mishap involving space systems or unique space support equipment.

US Air Force Aircraft -- All manned vehicles, to include remotely piloted vehicles (RPVs),

supported in flight by buoyancy or dynamic action. The term includes those vehicles owned or leased by the Air Force, AFRC, or ANG. Generally, Air Force aircraft are:

• Operated and exclusively controlled or directed by the Air Force.

• Furnished or leased by the Air Force to a non-Air Force organization when the US Government has assumed ground and flight risk.

• Any aircraft under test by the Air Force, including aircraft furnished by a contractor when operated by an Air Force aircrew.

• The term "US Air Force Aircraft" does not include:

• Aircraft leased to contractors, commercial airlines, or foreign governments when the lessee has assumed risk of loss.

• Aircraft loaned to other US government agencies or transferred to other governments.

• Civil air carrier aircraft owned by civil operators and flying contractor air missions for the Air Force under civil operating rules or regulations.

• Factory-new production aircraft not formally accepted by the Air Force.

• Aircraft assigned to, owned by, or leased by the Civil Air Patrol (CAP).

• Aircraft of another military service, even when they are taking part in a joint air operation controlled by the Air Force.

• Air Force AERO Club aircraft.

US Air Force Guided Missile. US Air Force guided missiles are:

• Owned in part or in whole by the Air Force, or

• Operationally controlled by the Air Force, or

• Furnished by the Air Force (Government Furnished Property [GFP] or Government Furnished Equipment [GFE] or leased to a non-Air Force organization for modifications, tests, or experimental projects for the Air Force, except when the lessee has assumed risk of loss), or Under test by Air Force commands or agencies.

US Air Force Mishap. An unplanned event, or series of events, resulting in:

• Injury or death to Air Force military personnel.
• Injury or death to on-duty DAF civilian personnel.
• Injury or death to non-Air Force personnel resulting from Air Force operations.
• Occupational illness of Air Force military or DAF civilian personnel.
• Illness of non-Air Force personnel caused by Air Force operations.
• Damage to Air Force property.

- Damage to non-Air Force property resulting from Air Force operations.
- Degradation of nuclear or radiological safety.

US Air Force Space Systems and Space Support Systems. Include systems that are:

- Owned in whole or in part or leased by the Air Force.

- Operated and controlled or directed by the Air Force.

- Furnished by the Air Force or leased to a non-Air Force organization when the Air Force has retained the risk of loss.

- Systems for which the Air Force has contractual development, contractual launch, or procurement responsibility.

- Under test by the Air Force.

See AFI 91-204 and DODI 6055.7 for Other Definitions.

Attachment -- 2

Sample Letters

Memorandum For (AIB President)
From: (Convening Authority)
Subject: *Convening of AFI 51-503 Accident Investigation Board (AIB) Class A, P-51 Mishap, 23 Dec 44, Tail # 43-1001, 77 FS, Elmendorf AFB, AK.*

An accident investigation board is hereby convened under the provisions of AFI 51-503 to investigate subject mishap. This appointment letter is your authority to interview witnesses, take sworn testimony, and review all documents, files, and wreckage relevant to your investigation. Upon receipt of Part I of the Safety Investigation Board (SIB) Report, you and other detailed members are relieved of all other duties until the AIB Report is completed. The following personnel are detailed to serve on the AIB:
(Name, Organization) President
(Name, Organization) Pilot Advisor
(Name, Organization) Maintenance Advisor
(Name, Organization) Legal Advisor
(Name, Organization) Administrator

Your investigation will be conducted IAW the provisions of AFI 51-503. **(The Convening Authority's SJA)** *will advise you on preliminary administrative matters, as required. Your legal advisor is required to be present during all witness interviews, and must review all evidence, documents, transcripts, and statements prior to inclusion in your report. Your report will include an Executive Summary, Summary of Facts and Statement of Opinion as required by AFI 51-503. All witnesses, documents, records, and other evidence within the control of the Air Force will be made available to you, other than privileged safety*

information. All witnesses who testify must do so under oath or affirmation. Your report shall be releasable to the public and may not contain any privileged safety or Privacy Act-protected information.

Your Statement of Opinion must be supported by clear and convincing evidence contained in your report. Your legal advisor will assist you in evaluating evidence. Do not include recommendations for corrective or disciplinary action in your report.

You and the other AIB members are not authorized to disclose board findings or opinions, except to members of my staff, prior to my approval of the AIB Report.

Travel and billeting will be funded by (_____). Travel orders should be issued locally and authorize variations in travel for all members of the AIB. A fund cite will be provided by MSgt XXX, ***(Unit, Phone, Fax, E-Mail)****. All travel costs needed for witness interviews outside the (HOST BASE) area should be coordinated With* **(The Convening Authority's SJA)** *in advance.*

IAW AFI 51-503, **(The Host Base)** *will assist you with logistical and administrative support. A Host Base Liaison Officer will be appointed by (HOST BASE/CC) to assist with arranging billeting, vehicles (if available), facilities, administrative support, reproduction services, and access to witnesses. Make contact with the Host Base Liaison Officer through the office of the (Host Base/CC)*

Your investigation should begin as soon as possible and be completed within 30 days from receipt of the completed Part I of the Safety Investigation Board (SIB) Report. Submit any requests for extensions, additional advisors, or other matters to me through **(Convening Authority's SJA).** *Submit your final report to* **(Convening Authority's SJA),** *and they will forward it to me for approval.*

(Insert This Paragraph if the Accident Involved is A High-Interest Mishap)

In addition to your duties as AIB Board president, you will serve as the conduit for accident information to the next of kin (NOK) and family members of the deceased, to seriously injured personnel, and to the public. In order to provide timely information to these individuals, you should proceed to the scene of the accident no later than 48 hours after the arrival of the SIB. After assessing the situation, you may choose to seek **(Convening Authority's)** *approval to depart the accident site, pending receipt of the Part I of the SIB Report.*

The **(Convening Authority's SJA)** *point of contact for any questions is* **(Name),** *phone, fax, e-mail.*

cc: Each AIB member
Intermediate commands
Host Base/CC

Figure A2.1. -- Sample Convening Order.

Memorandum for (Host Base Commander)
From: (Convening Authority)
Subject Accident Investigation Board (AIB)
Class A, P-51 Mishap, 23 Dec 44, Tail # 43-1001, 77 FS, Elmendorf AFB, AK.

The attached Memorandum convenes an AIB to investigate the above referenced mishap. IAW AFI 51-503, the Host Base provides logistical and administrative support for the AIB, including office space, computer support, communications, transcription personnel and equipment, reproduction, and other administrative support. In addition, the Host Base Commander appoints a Host Base Liaison Officer to orient and assist the AIB, as well as make arrangements for the appearance of local witnesses before the Board.

The AIB President, (NAME), has been directed to contact your office to make arrangements for the investigation.

Attachment: Convening Order

Figure A2.2. -- Sample Memorandum to Host Base Commander

Crest or Graphics (optional)

U.S. Air Force

AFI 51-503

Aircraft Accident Investigation Board Report

B-17, Tail # 1945, 99 WG

Date of Accident: 17 Feb 1951

Location of Accident: Beaver Dam, Wisconsin

Board President: Colonel X-ray

Volume One of Two

Figure A2.3. -- Sample Report Cover Sheet.

.For Official Use Only
Sensitive Data
No Reproduction or Access Without
Express Approval Of
(Convening Authority or Convening Authority's SJI)
All Individuals Authorized to Review This Document Must Sign Below. All Copies Must be Accounted for and Handcarried to (Convening Authority's SJA) for

Destruction

I understand that I have been requested to review this draft AIB Report prior to official approval and release to the NOK of the deceased. This review is being done as part of my official duties with the Department of the Air Force.

I hereby certify that I will not release any information obtained during my review of this report, nor discuss the contents with any person, whether military or civilian, who has not been duly authorized access to this report and who has not signed a certification of nondisclosure, until such time as this report has been approved for release to the general public by the (***The Convening Authority).***

I further understand that Violation of this may result in disciplinary action under the Uniform Code of Military Justice or federal law

Printed Name/Rank Date Signature Unit

Figure A2.4. -- Sample Routing Cover Sheet for Convening Authority's Staff.

Memorandum for (Convening Authority's Staff)
From: (Convening Authority's SJA)
Subject: Review Of Accident Investigation Board (AIB) Report Under AFI 51-503 b-17, 77 FS, Elmendorf AFB, AK, suspense: 15 mar 00

Review the attached AIB Report. Your evaluation will become a permanent record reviewed by (***The Convening Authority***) but will not be released to the public as part of the Report. Until the Report is approved and publicly released, neither the Report nor its contents may be disclosed to anyone without an official need to know. It should only be disseminated to those personnel on your staff who need to review it in the course of their official duties. No portion of the Report may be reproduced or copied, except pages used for mark-up comments submitted to JA.

Provide written comments and your recommendation for action on the Report for ***(The Convening Authority's)*** review. Limit comments to deficiencies or inaccuracies, or to any follow-up investigation actions that may be warranted. Do not make any comments or recommendations concerning disciplinary action. Remember that the AIB President was not provided privileged safety information from the AFI 91-204 SIB. Base your comments on the facts contained in the AIB Report, not on information that is only found in the SIB Report. Although testimony may discuss matters similar to that which may have been gathered in the previous safety investigation, SE and DO should also review the Report to ensure no improper or privileged safety information is included in the Report.

Provide supporting rationale or explanations for any comments. If you disagree with the opinion of the AIB president, state your reasons. Do not write on the Report; comments should be on a separate memo or annotated on a page photocopied specifically for this purpose.

Comments with two-letter endorsement are requested by _____. POC for this

matter is (Name, Rank Telephone No.) After completing your review, hand carry the Report back to ***(Convening Authority's SJA).*** Do not place the Report in distribution.

Attachment

AIB Report

Figure A2.5. -- Sample Tasker to Convening Authority's Staff.

(Name & Address Of NOK)
Dear **(Mr And Mrs)**
On behalf of the Air Force, **(Condolences As Appropriate).**

I am writing to let you know that the Air Force is nearly finished with the investigation into the (date of accident) aircraft accident. Once it has been completed and reviewed, you will be provided a personal copy. (Name of Investigating Officer or Briefing Officer), the Investigating/Briefing Officer, will be personally delivering this report to you. (He/She) will explain the report and be available to answer questions you or your family may have on the mishap and the resulting investigation.

Other family members involved in this mishap will also be receiving the report. To ensure you and the other family members receive the report prior to any media or public release, and to protect everyone's privacy, all of the families will be briefed on the same day, if possible. Although the exact date has not yet been firmly set, a member of my staff will soon call you to confirm the date.

Please contact (POC) if you have any questions. He/she may be reached at (897) 987-6783. Again, **(Condolences)**.

Figure A2.6. Sample Letter from Convening Authority to NOK.

Memorandum For (Convening Authority's SJA)

From: (Convening Authority)

Subject: Accident Investigation Board (AIB) Report Class A Mishap, 15 Aug 54, B-17, Tail #44-007, 77 FS, Elmendorf AFB, AK

Signature of Convening Authority

_____

Figure A2.7. -- Convening Authority's Action.

Memoraindum For (Post-Public Release Distribution)
From: (Convening Authority's SJA)
Subject: Accident Investigation Board (AIB) Report Class A Mishap, 21 Apr 56, B-24, Tail #44-0100, 77 FS, Elmendorf AFB, AK

Subject Accident Investigation Board (AIB) Report has been approved by (Convening Authority) and has been released to the public. Attached is a copy for your use.

You are authorized to reproduce and use the AIB Report for official purposes. Requests for copies for private use and from unofficial sources should be processed under the Freedom of Information Act and forwarded to ***(The Convening Authority's SJA). (The Convening Authority's SJA)*** is the release authority for the Report.

Attachment:

Aircraft Accident Board Report

Figure A2.8. -- Sample Distribution Memorandum.

Collateral Evidence Inventory
1. Nine microcassette tapes of testimony:
-- 2 Feb 88 statement of LTC Rexwell;
-- 3 Feb 88 statement of Mr. Swivelnose;
-- 4 Feb 88 statement of Mr. Scrubdub;
-- 5 Feb 88 statement of Mr. Hollie;
-- 6 Feb 88 statement of Mr. Wizgoof;
-- 7 Feb 88 statement of Mr. Squirmwind;
-- 8 Mar 88 statement of Mr. Fizwiffle
-- 8 Mar 88 statement of Mr. Swagmore;
-- 8 Mar 88 statement of LTC Hinterdimple.

2. One regular size Maxell cassette tape of the 5 Feb 99 statement of Capt Bewelder.
3. CAMS Computer Generated Aircraft Maintenance History Report for tail #0077; from 1 Aug 87 to 17 Jan 98 (44 computer printout size pages).
4. CAMS Computer Generated Aircraft Maintenance History Report for tail #132; from 2 Jun 87 to 23 Jul 88 (34 computer printout size pages).
5. Warner-Robins Air Logistic Center Acceptance Inspection Report for P-38, tail #8909, undated (9 pages).
6. Hand receipt and aircraft system check at Elmendorf AFB, Alaska prior to cross-country PDM delivery sortie; P-38, dated 14 Jun 87. Includes AFTO 345 and AF Form 2692 (8 pages total).
7. Oil Analysis Request, dated 4 Jul 87 (one page), and Aircraft tail # 007700 Mission Debrief report, dated 13 Jul 87 (one page).
8. Worksheet to calculate total aircraft weight after refueling to determine maximum G force limit, dated 7 Aug 88 (6 pages).
9. FAA Certification Requirement for a Fixed Base Operator (FBO), dated 3 Feb 88 (20 pages).

10. Telephone records of calls made to/from Elmendorf AFB, Alaska between 1 and 12 Jul 97 (71 pages).
11. Four 5x7 photographs and negatives for nine photographs (5 of which were used in final report).

Figure A2.9. -- Sample Evidence Inventory for Post Investigation Memorandum.

Witness List
Captain Dee Wevil (Mishap Pilot) Currently at Fighter Weapons School Nellis AFB, NV DSN: 900-1989 Supervisor: LTC Jeff Dohickey DSN: 900-1900
Mr. Jay Hood (General manager) CME Aviation Inc. Acme Flight Services 2 Dude Road Crooked Foot Airport Jennifer, Ohio 89832 (900) 437-1905
Mr. Fred Nerdly (Electronics Specialist) Warner-Robins AFB, GA DSN: 777-0000 Colonel Wilbur Muchmore (Commander) 3rd Wing Operations Group Elmendorf AFB, Alaska DSN: 677-8983

Figure A2.10. -- Sample Witness List (attached to the Post Investigation Memorandum).

Memorandum For (Records Custodian)
From: (Convening Authority's SJA)
Subject: (Medical, Personnel, Training Records, Etc

The attached (medical, personnel, training) records are no longer needed by the Accident Investigation Board (AIB) convened under AFI 51-503. The AIB Report was approved by (***The Convening Authority)*** on 3 Dec 97.

The records for the following individuals who were killed in the crash are returned to you for disposition.

If you ship these records elsewhere, then please provide our office with a copy of your transmittal letter for each of these records to ensure they can be retrieved in the event of

litigation.

The following records are enclosed:

Name, rank, duty assignment, location of records.

Please contact (POC) at DSN 777-0000 if you have any questions.

(Signature Block, Convening Authority's SJA)

Receipt of above records acknowledged this _____ day of December, 1999.

Figure A2.11. -- Sample Records Transmittal Memorandum.

Attachment -- 3

Text of IC 2000-1

IC 2000-1 To AFI 51-503, *Aircraft, Missile, Nuclear, And Space Accident Investigations*

5 April 2000

Summary of Revisions

This interim change (IC) 2000-1 implements direction from the Chief of Staff of the Air Force on the grade of AIB presidents in fatality cases and the report approval process. The direction on board president grade requirements is in paragraph 4.2. The direction on the report approval process is in paragraph 9.3.

4.2. ***AIB President.*** AIB presidents should be field grade officers, senior in rank to persons involved in the accident, and must come from outside the mishap wing. For Class A accidents, AIB presidents must be 0-5 or above and should, if possible, be the same grade as the corresponding SIB president. For any accident involving a fatality, the AIB president must be a General Officer or Brigadier General (Select).

9.3. ***Approval of the AIB Report.*** The convening authority reviews the AIB Report, determines if the Report shall be approved as written, approved with appended comments, or returned to the AIB president for further action. Note: If the convening authority requests a formal briefing on the AIB Report, the AIB president will provide an informational briefing to the NAF commander prior to briefing the convening authority. The NAF commander may forward any written comments on the report to the convening authority.

Open this portion of the document in Word (312 KB)

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 388TH FIGHTER WING (ACC)
HILL AIR FORCE BASE, UTAH

26 Oct 1999

MEMORANDUM FOR 75 CS/SCSRF (FOIA)

FROM: 388 FW/CV

SUBJECT: Reply to FOIA request by James Cole

1. The wing flew 678 sorties with live and full scale inert ordnance during FY 1998. The number of sorties flown with only training ordnance is not available. Also we do not keep records of the routing where the aircraft actually flew. The details of determining the number of aircraft carrying live ordnance flying specifically though Skull Valley during FY 1998 therefore is not available and the 388 FW would only be speculating in determining this number.

2. The break-down of ordnance by type flown on 388 FW aircraft during FY 1998 is as follows:

- 156 Live Mk-84 (2000#), normally two per aircraft and includes laser guided bombs of this weight class. 111 sorties.
- 89 Inert Mk-84 (2000#), normally two per aircraft and includes laser guided bombs of this weight class. 38 sorties.
- 544 Live Mk-82 (500#), normally four or six per aircraft and includes laser guided bombs of this weight class. 166 sorties.
- 1029 Inert Mk-82 (500#), normally four or six per aircraft and includes laser guided bombs of this weight class. 355 sorties.
- 4 AGM-65, normally one per aircraft. 4 sorties.
- 16 CBU-87 (approx. 1000# cluster bomb), normally 4 per aircraft. 4 sorties.
- The aircraft flew with no (zero) live air-to-air munitions during FY 1998
- 7205 BDU-33 (25# training munitions) were expended by the 388 FY during 1998 (normally 9 per aircraft). The wing flies numerous sorties in which the training ordnance is not expended or only partially expended.
- All 388 FW aircraft carry 510 rounds of 20mm ball ammunition on every sortie

3. The 388 FW does not have records setting forth the likelihood and consequences of ordnance detonation aboard an aircraft which crashes. However, the 388 FW is sensitive to the ramifications of having an aircraft crash while flying with live ordnance and mitigates these consequences by avoiding over-flight of populated areas to the maximum extent possible.

Ronald G. Oholendt

RONALD G. OHOLENDT, Colonel, USAF
Vice Commander

Global Power for America

State's Exhibit 61

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS UNITED STATES AIR FORCE

WASHINGTON, DC

Utah Department of Environmental Quality
Attn: Connie Nakahara
168 North 1950 West
P.O. Box 144810
Salt Lake City, Utah 84114

28 Dec 00

This letter is in response to several written and verbal requests for information regarding jettisoned weapons and the proposed nuclear waste storage facility in Utah. This is not a response to the Freedom of Information Act (FOIA) Request from the Utah Department of Environmental Quality. The Air Force's response to the FOIA Request will be forwarded under separate cover.

The PC effects model in the Joint Munitions Effectiveness Manual Air to Surface Weaponeering System (JAWS) and other JAWS data were used to estimate penetration of the materials listed below. This PC-based, mission planning tool provides an operational estimate, as opposed to an engineering analysis, on the likelihood that a weapon would destroy a target consisting of a certain thickness of material or combination of materials. The Air Force confirmed with Mr. Steve Rush on 27 Dec 00 that calculations only on the storage container will be sufficient at this time.

Thickness from the outside wall toward basket

1.	Steel overpack outer shell (SA516, Gr 70)	0.75 in
2.	Concrete shield (4000 PSI @ 28 days)	26.75 in
3.	Steel shield shell (SA516, Gr 70)	0.75 in
4.	Steel overpack inner shell (SA516, Gr 70)	1.25 in
5.	Steel canister shell (304 or 316 SS)	0.50 in
	Total:	30.00 in

Thickness from outside lid toward basket

1.	Steel top plate (SA516, Gr 70)	4.00 in
2.	Concrete lid shield (4000 PSI @ 28 days)	10.50 in
3.	Steel lid bottom plate (SA 516, Gr 70)	1.25 in
4.	Steel canister lid (304 or 316 SS)	9.50 in
	Total:	25.25 in

State's
Exhibit 62

The following weapons were used in the model:

BSU-49
BSU-50
CBU-87 (intact)
GBU-10
GBU-12
GBU-24A
GBU-24B
MK-82
MK-84

Assumptions / Caveats:

Only inert weapons data was used.
No consideration was given to buckling or cracking of the container or detonation of a weapon.
The concrete description in the original written request showing 400 PSI was assumed to be 4000 PSI concrete.
Because impact speed and angle are classified, they cannot be addressed in this letter.

Results from JAWS showed that none of the weapons would penetrate through the lid of the structure. The GBU-24/B, GBU-24 A/B, GBU-10, MK-84, and BSU-50 can penetrate the outside wall. None of the other weapons can penetrate the wall.

I hope you find the above information helpful. Please do not hesitate to call me at (703) 601-0213 with questions.

//SIGNED//

LEE C. BAUER, Colonel, USAF
Deputy Associate Director
for Ranges and Airspace

DEPARTMENT OF THE AIR FORCE
96TH COMMUNICATIONS SQUADRON (AFMC)
EGLIN AIR FORCE BASE, FLORIDA

18 January 2001

96 CS/SCSSIF
207 W. D Ave, Suite 214
Eglin AFB FL 32542-6852

Ms. Connie S. Nakahara
Department of Environmental Quality
Office of the Executive Director
168 North 1950 West
PO Box 144810
Salt Lake City UT 84411-4810

Dear Ms. Nakahara

This is in response to your 14 September 2000 Freedom of Information Act request, for the damage effect of weapons routinely carried by military aircraft on the Utah Test and Training Range, addressed to Hill Air Force Base, Utah, received on 19 December 2000, our case 01-062.

A search was conducted on your behalf buy Mr. Daniel McInnis, Chief, Modeling Simulation and Analysis Division Engineering Directorate, Eglin AFB, Air Armament Center. Mr. McInnis, advises that the information requested is not releasable in it's present form due to classifications issues. However, we are providing a brief and non-specific list of information that is responsive to your request.

An analysis was performed using the PV-Effects model. The PC-Effects model is from the Joint Technical Coordinating Group for Munitions Effectiveness (JTCG-ME) approved JMEM Air-to-surface Weaponeering System (JAWS). Only weapon penetration was considered no analysis was done on damage or breach, which would require an engineering-level study. The results of penetration analysis is as follows:

State's
Exhibit 63

No listed weapon would penetrate the lid of the structure.

The GBU-24 A/B and the GBU-10 with the BLU-109 warhead can penetrate the outside wall. The MK-84 warhead has a maximum of a 0-50 probability of penetrating the wall whether configured as a GBU-10, GBU-24 or a free-fall unguided MK-84. None of the other weapons can penetrate the wall.

The fee for processing your request is below the established fee wavier threshold; therefore, all fees are waived.

Sincerely

Denise L. King

DENISE L. KING
Freedom of Information Act Manager

Attachment:
Request Ltr, 15 Mar 00

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS UNITED STATES AIR FORCE

WASHINGTON, DC

18 July 2001

MEMORANDUM FOR HQ FAA/AGC-1/AVR-1

FROM: HQ AFFSA/CC
1535 Command Drive, Suite D309
Andrews AFB, MD 20762-7002

SUBJECT: Title 14 Code of Federal Regulations Part 91.209 Exemption Request

Due to evolving operational demands, the United States Air Force requests an exemption from Title 14 Code of Federal Regulations (14 CFR) Part 91 Section 209, *Aircraft Lights*, (a) (1) and (b) to conduct lights-out operations in specific Military Operations Areas (MOA). This request is made to support a vital training requirement to increase current levels of lights-out Night Vision Goggle (NVG) training in low and medium altitude airspace. Experience validates this requirement. Our success in Kosovo must be tempered with the challenges our pilots were forced to overcome. Across the mission spectrum, inexperience in lights-out operations was common. Many pilots flew their first lights-out NVG sortie during their initial combat missions. With advances in foreign technologies and increased proliferation trends, we anticipate greater resistance during night air missions and must be prepared to meet these threats. By conducting lights-out training prior to actual combat, pilots have an opportunity to achieve the confidence, proficiency and situational awareness needed to be successful in combat. We need a solution that permits this vital training to occur within accessible airspace so AF pilots can "train as they fight." As a military service and a nation, we must ensure our forces train safely and wisely, but in an operationally relevant environment.

Why must our combat air forces train lights-out? One issue is lighting itself. Due to incompatibility between external aircraft lighting and NVG technology, a vast majority of NVG training must be conducted with reduced or extinguished external lighting. Current Federal and USAF regulations permit reduced, or lights-out training in restricted and warning areas. However, restricted airspace for this is either inaccessible to most units or limited due to competing demands. There are a number of factors that limit access to designated special use airspace (SUA): flying units' geographic separation from SUA; flying time to and from SUA that exceeds aircraft fuel capacity; airspace conflicts; and weather. The relatively small size of many restricted areas makes them unusable for significant NVG training. Coastal warning areas, while larger in size, provide limited returns due to a lack of terrain relief and horizon. The limited lack of return from these coastal warning areas is related to NVGs requirement for reflected energy in order to function. Terrain is of great importance when employing with NVGs, in that terrain reflects energy. That reflected energy creates what is called "albedo" when it interacts with terrain. Albedo is the comparison of reflective properties of different objects within a particular scene. The different reflective properties of various objects create contrast and detail within the scene. Therefore, the more varied the terrain, the more albedo differences within a scene, thus creating a more accurate image for the NVGs. The lack of albedo in many of these overwater SUA areas, especially warning areas, seriously impacts the overall effectiveness of NVG operations. Similarly, a lack of terrain also lends itself to a lack of horizon, which in any flying environment is always more challenging and potentially hazardous. Lastly, our experience has shown that we can expect the air battle to take

State's
Exhibit 64

place over varied terrain, whether mountainous or desert, and our crews must train in these types of realistic environments.

With the above in mind, the USAF is requesting relief from 14 CFR Part 91 Section 209 to conduct NVG lights-out training in the Alaskan military operating areas, and selected MOAs within the lower-48 contiguous United States and Puerto Rico (Attachment 1). This request applies to USAF active duty, Air National Guard and AF Reserve aircrew. Application of the proposed exemption to lights-out NVG training in selected MOAs, within the lower-48 contiguous United States, Alaska and Puerto Rico will adhere to the following restrictions:

a) Operations under this exemption will be conducted within MOAs published in DoD FLIP, AP/1A, FAA Order 7400.8 and in accordance with "times of use" criteria.

b) All operations will be conducted under the procedural requirements of a Letter of Agreement (LOA) between the USAF (flying unit) and the Air Traffic Controlling Agency having jurisdiction over the MOA. The LOA must include the following provisions:

   1) The geographical boundaries, altitude restrictions, and name of the MOA in which operations under this exemption are authorized.

   2) Reasons and procedures to immediately terminate lights-out/covert lighting configurations and return aircraft external lighting to normal configuration IAW 14 CFR Part 91 Section 209 and USAF instructions.

   3) Lost communication procedures.

   4) Loss of radar contact procedures (when applicable).

   5) Establish non-radar procedures when not in a radar environment.

   6) The type aircraft and USAF units authorized to conduct NVG operations under this exemption.

   7) Notification procedures to advise the controlling Air Traffic Facility on activation and termination of lights-out activities.

c) As part of a unit's midair collision avoidance (MACA) program, unit safety offices, with coordination from unit tactics and training offices, will ensure all airfields and other flying operations within a 50-mile radius of a selected MOA used for lights-out training are thoroughly briefed on all aspects of the operation. Units sharing the use of selected MOAs for lights-out training may combine their efforts.

d) A NOTAM will be issued 24 hours prior to any operations under this exemption. Additionally, a message will be placed on the unit's local automatic terminal information service (ATIS), advising listeners of the time and place of lights-out operations.

e) Aircraft equipped with onboard sensors will clear training airspace prior to initiating lights-out operations. MRU/ RAPCON controllers, when available, will monitor the MOA boundaries and immediately advise all participants when a non-participating aircraft has

entered. In either case, if a non-participating aircraft enters the airspace all participants will immediately restrict their operations as necessary to ensure the safety of the non-participant.

f) Units will ensure the airspace manager of a particular MOA to be used for lights-out training submits a publication change to VFR sectional charts posting an advisory to non-participating aircraft which states the potential for lights-out operations in the MOA. Additionally, the advisory will recommend checking NOTAMS and contacting local FSS to determine whether or not the MOA is scheduled or active with lights-out training.

IAW (14 CFR) Part 11, the following justifications are also submitted for FAA consideration:

a) *Why is this exemption in the public interest?* The AF mission is to defend the United States through the control and exploitation of air and space. Relevant, agile technologies that preserve a clear military advantage are the keys to deterrence, readiness, and USAF mission accomplishment. NVGs are an example of these technologies and, to be used effectively in conflict, they must be used realistically in training. Advances in night vision technology will likely migrate into civilian aviation and lead to safer night, VFR operations for both the general and commercial aviation community.

b) What is the equivalent level of safety? In designated MOAs, the equivalent level of safety is provided through a variety of conditions that when executed in concert will increase the level of safety for all NAS users.

1) The following measures will ensure that non-participating aircraft are provided with preflight and en route notification of lights out activities:

- A NOTAM will be issued 24 hours prior to all lights-out operations ensuring that during the course of flight planning all NAS users will be provided information on the time and place of lights-out operations in selected MOAs.
- Advisories posted on VFR Sectional Charts with lights-out operations information and reminders to check with the appropriate FSS for NOTAMs should enhance the awareness of non-participants with regards to where and when lights-out operations may be expected.
- Providing informational briefs to local flying organizations will increase lights-out operations awareness and facilitate effective communications between AF units and local airfields or flying operations.
- Local ATIS advisories will provide additional notification of lights-out activities to transient aircraft .

2) The following provisions will ensure that non-participating aircraft are afforded the opportunity to see and avoid participating aircraft at distances greater than those currently required by Federal Aviation Regulations:

- For those aircraft equipped with onboard radar, sweeping the area with these radar systems will ensure that no non-participating aircraft are within the MOA boundaries prior to commencement of NVG operations and will provide warning of any aircraft approaching the MOA. On detection of a non-participating aircraft, participants will immediately restrict NVG operations.

- The use of ground radars (MRU/RAPCON) will provide an additional measure of detecting non-participating aircraft. Again, lights-out operations will be immediately restricted when a non-participating aircraft enters the MOA.
- Notifying Air Traffic Control facilities on activation and termination of lights-out operations will ensure that ATC is aware of the activities in the MOA and enables the controller to de-conflict the surrounding airspace.

In addition to ensuring that the rights of non-participating aircraft are protected, the inherent advantages of NVG technology (as outlined below) will exponentially increase the distances at which a pilot equipped with NVGs can detect a conventionally lit aircraft. This increase in visual detection range combined with the resultant effect of the above measures will ensure that lights-out activities are halted well before non-participating aircraft would normally visually acquire a conventionally lit aircraft.

NVG technology affords an unequivocal visual advantage versus normal night sight, so much so that aircraft with conventional external lighting will be visible at extended ranges depending upon conditions. Night vision goggle capabilities, coupled with on-board systems, optimize situational awareness provided to today's combat pilots. This far exceeds the visual assumptions under which 14 CFR Part 91 Section 113, *See and Avoid*, is currently structured. Moreover, the use of NVGs greatly enhances not only the situational awareness of the individual using the devices, but increases the overall safety of all aircraft (to include non-participating aircraft) in the area of NVG usage. This is due to the nature of the human eye. Night VFR flights without NVGs forces the pilot of an aircraft to use Scotopic (night) Vision. Typical unaided Scotopic vision ranges from 20/200 to 20/400. When comparing unaided Scotopic vision with the minimum Air Force NVG standard of 20/40 (20/25 is normal resolution), the individual using NVGs can see 5-10 times more clearly than an individual who is flying an aircraft using unaided vision at night. Putting Scotopic vision into perspective means that an individual would have difficulty visually identifying the largest block letter on an eye chart (20/200) from a distance of even 20 feet. Unaided night vision also causes a lack of color discrimination and there is a night blind spot created by the lack of rod cells in the fovea that is in addition to the blind spot created by the optic nerve. Summarizing these facts, NVGs significantly increase (5-10 fold) the level of night VFR safety associated with not only the individual users of the devices, but to all participants and non-participants within the view of anyone equipped with NVGs. Additionally, NVGs increase a pilot's "outside the cockpit" visual scan rate. The increased visual cues associated with NVG usage maximize situational awareness while enhancing navigation, maneuverability, multi-ship operations, and the ability to detect aircraft with non-compatible Night Vision Imaging System (NVIS) exterior lighting. Of significance here is detection. The sensitivity of NVGs allows detection of aircraft with non-compatible exterior lighting at vastly greater distances than during day VFR flight. This sensitivity is due in part to the inherent characteristics of NVGs responding to a greater range of available energy, harnessing that available energy, and then intensifying it.

c) *Will MOA access be lost?* This exemption will not in any way change the overall usage of MOAs by the Air Force or limit access to these MOAs. The Air Force wants to ensure that any question regarding access to MOAs is addressed using accurate information. The average total number of sorties flown per 24 hour period is projected to remain the same. Of that total number, approximately one third will be night sorties and only a proportion of that amount are projected to be lights-out. What this bears out is that night sortie occurrence is limited in scope to the overall usage of MOAs in general and will not limit any constituency access to MOAs.

now, or in the foreseeable future. Additionally, per the reasons stated above, we believe that access to MOAs will be with a greater margin of safety than we now currently have.

All users, FAA, DoD, and General Aviation, share the responsibility of safety in the NAS. The Air Force shares this concern and remains confident through cooperation and risk management a successful resolution for all can be reached. This exemption has a far-reaching impact on our ability to train effectively in our nation's defense and will enhance our capabilities, ensuring the Air Force remains on the leading edge of combat aerospace power. Thank you for consideration of this petition based on the merits of safety, standards, and precedent. Please direct comments to Capt Mark Wuennenberg, HQ AFFSA/XOF, (204) 857-5416.

//signed//
RICHARD P. PACKARD, Colonel, USAF
Commander

ATTACHMENT 1

MOA

Airburst A, B, & C
Avon E, N, S
Bagdad
Basinger
Beaver
Birch
Bison
Brownwood (All)
Bronco 1/2/3/4
Bruneau1/2
Brush Creek
Buckeye
Buffalo
Bulldog A, B, D
Camden Ridge
Cato
Chippewa
Cheyenne
Condor 1 & 2
Crypt N, Cen & S
Desert
DeSoto 1 & 2
Devils Lake E/W
Duke
Eielson
Eureka Hi & Lo
Falcon 1 & 3
Falls 1 & 2
Farmville
Fox 1,2, 3
Galena
Gamecock A, C, D, I
Gandy
Gladden
Goose
Hart N/S
Hays
Hill Top
Hog N/S Hi & Lo
Howard East/West
Jackal
Jackal Low

MOA

*Jarbidge (Proposed)
Juniper Lo & N/S
Kingsville 1,2,3,4, & 5
Kiowa
Lake Andes
Lake Placid
Lindbergh
Lucin A/B/C
Marian
Moody - 1, 2, N&S, 3
Morenci
Naknek
Olympic
O'Neill
Outlaw
Owyhee
Palatka 1 & 2
Paradise
Pecos
Pike E & W
Pine Hill
Powder River A & B
Red Hills
Reserve
Reveille
Rose Hill
Saddle A & B
Salem
Saylor
Sells 1 & Low
Sevier A/B/C/D
Seymour Johnson (Echo)
Sheep Creek 1/2/3
Smoky
Smoky High
Snoopy - West
Steelhead

Stony A & B
Sustina
Syracuse 1, 2, 3, 4
Taiban
Talon
Tiger N/S
Tombstone A, B, C
Truman A, B, C
Twelve Mile East/West
Volk - East, West, South
Warrior 1, 2, 3 (Hi/Low)
Yankee 1 & 2
Yukon

*Jarbidge will combine all of Bruneau, Sheep Creek and Saylor MOAs.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	Docket No. 72-22-ISFSI
PRIVATE FUEL STORAGE, LLC (Independent Spent Fuel Storage Installation)	)	ASLBP No. 97-732-02-ISFSI
	)	January 30, 2001

DECLARATION OF LT. COLONEL HUGH L. HORSTMAN, AIR FORCE (RETIRED) IN SUPPORT OF THE STATE OF UTAH'S RESPONSE TO PFS'S MOTION FOR SUMMARY DISPOSITION OF CONTENTION UTAH K AND CONFEDERATED TRIBES B.

I, LT. COLONEL HUGH L. HORSTMAN, U.S. AIR FORCE (RETIRED), hereby declare under penalty of perjury and pursuant to 28 U.S.C. § 1746, that:

1. I am currently a Boeing 737 pilot for Southwest Airlines as well as an Adjunct Professor at Embry Riddle Aeronautical University where I instruct master's degree candidate students in aviation. I also taught masters level aeronautical courses to Air Force officers for Embry Riddle Aeronautical University while I was in the Air Force.

2. I have over 20 years experience as a pilot in the U.S. Air Force. I have extensive experience flying F-16 fighters and F-111s. I was an instructor pilot for both the F-16 and F-111. Additionally, I have over 1,000 hours flying as a navigator and instructor navigator for the U.S. Air Force.

3. From October 1997 through June 1999, I served as Deputy Commander, 388th Operations Groups, Hill Air Force Base, Utah. In this position, I commanded the F-16 Operations Group and 1,500 personnel. The Operations Group was responsible for the administration of all 388th Fighter Wing flying activity, managing the Utah Test and Training Range air space, and three fighter squadrons. In addition, I was responsible for all flying and maintenance of 60 F-16C aircraft.

4. From June 1993 through September 1997, I was stationed at Spangdahlem AB, Germany. I served as Deputy Commander of the 52nd Support Group, Chief of the

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52nd Fighter Wing Readiness, and Assistant Operations Officer of the 52nd Fighter Wing. As Assistant Operations Officer I was, in part, responsible for ensuring all F-16 pilots in my fighter wing were combat ready and fully trained. As Chief of Fighter Wing Readiness part of my responsibility included preparing training scenarios for 100 F-16s and serving as a flight instructor. As Deputy Commander of the Support Group I also served as a flight instructor in addition to my other duties.

5. I am intimately familiar with Utah Test and Training Range ("UTTR"), including its various military operating areas because I flew numerous training missions in the UTTR while I was stationed at Hill Air Force Base. I flew an average of two training missions per week while stationed at Hill. In addition, while stationed at Hill Air Force Base I was responsible for planning training missions and instructing F-16 pilots. I often flew training missions as an instructor pilot, a flight lead, and a mission commander. As an instructor pilot, flight lead, and mission commander I was responsible for assessing individual pilot's abilities to perform various tasks, including performing emergency procedures. I was qualified to fly all missions out of Hill Air Force Base, including air-to-air combat missions, air-to-ground combat missions (*e.g.*, precision ordinance bombing), low level training missions, block targeting pod, and night vision goggle missions.

6. Throughout my Air Force career, often my responsibilities have related to cruise missiles in some manner. I specifically worked on two classified cruise missile projects while stationed at Langley Air Force Base. As part of my responsibilities at Hill Air Force Base, I oversaw UTTR airspace management during cruise missile tests. My additional professional and educational experience is summarized in the resume attached hereto as Exhibit A.

7. I am the State of Utah's expert witness on Utah Contention K, regarding credible accidents involving risks related to impacts to the proposed ISFSI. I participated in drafting the State of Utah's Supplemental Response to Applicant's First Set of Discovery Requests for Contention K and in the development of the State's position regarding the contention, including the preparation of discovery against the Applicant.

8. I am familiar with Private Fuel Storage, L.L.C.'s ("PFS's") license application and pertinent sections of the *Safety Analysis Report* in this proceeding. I am aware of the proposed location of the PFS storage facility. I am generally familiar with NRC regulations and guidance documents relating to the calculation of aircraft hazards, including NUREG-800.

9. I have reviewed the Applicant's Motion for Summary Disposition of Utah Contention K and Confederated Tribes Contention B–Inadequate Consideration of Credible Accidents ("Utah K") as well as the Statement of Material Facts Not in Dispute and materials submitted in support of the motion, including declarations of James Cole, Wayne Jefferson, Ronald Fly, and deposition transcripts of State expert witnesses and PFS witnesses James Cole and Ronald Fly. Moreover, I was present at the deposition of PFS witness, Ronald Fly. I have also reviewed Revision 2 dated June 6, 2000, Revision 3 dated June 17, 2000, and Revision 4 dated August 10, 2000, of the Applicant's report entitled *Aircraft Crash Impact Hazard at the Private Fuel Storage Facility* ("Aircraft Crash Hazard Report"), and the NRC Staff's *Safety Evaluation Report* ("SER") dated September 29, 2000. I provide this declaration in support of the State of Utah's Response to PFS's Motion for Summary Disposition of Utah Contention K and the State's Statement of Disputed and Relevant Material Facts.

Utah Test and Training Range

10. The Utah Test and Training Range is the largest overland special use airspace in the continental United States and the largest overland safety footprint available to the U.S. Department of Defense *See* UTTR Capabilities Guide at 3, excerpts attached hereto as Exhibit B. The UTTR is a unique and valuable asset to the U.S military, and its continued use as a military training and testing area is vital to military training and the national security of the United States. *See* Statement by Utah First District Congressman, Representative James V. Hansen, Limited Appearance Session, Salt Lake City, June 23, 2000, Tr. 13-19, attached hereto as Exhibit C.

11. The Sevier B Military Operating Area ("MOA") is part of the UTTR airspace, and is where the conduct of low altitude training, air-to-air combat training, major exercises, and cruise missile testing is authorized. *See* Exhibit D, attached hereto.

12. The Sevier B MOA begins at an elevation of 100 feet above ground level to 9,500 feet above mean sea level (approximately 5,000 feet above ground level.) *See* Exhibit D.

F-16s Transiting Skull Valley En Route to the Utah Test and Training Range

13. F-16s originating from Hill Air Force Base ("AFB"), Utah, transit Skull Valley en route to the Utah Test and Training Range South Area. Flight characteristics through Skull Valley are dependent upon the tactics of the Air Force, the specific training mission (both while transiting Skull Valley and while within the UTTR

land boundaries), the number of aircraft in a formation, weather, the timing of each flight member with respect to the pre-planned training times, and the flight leader.

14. F-16s fly in two to four aircraft formations. Each formation is led by a flight leader. The positions of the aircraft vary depending upon the selected formations. In a four ship formation, a wingman would fly 1.5 to 2 miles line abreast from the flight lead. The two aircraft comprise the "lead element." Two additional aircraft with similar line abreast spacing will follow 2 to 15 miles behind the lead element. One of the aircraft in the back element will be located within the horizontal spacing of the lead element (2 to 15 miles back). The back element will be offset from the lead element to the left or right wing. Thus, a four ship formation may vary from just over 1.5 to just under 4 miles in horizontal width and over 2 to 15 miles long.

15. Over Skull Valley, F-16s may conduct low altitude training by flying from 1,000 to 2,000 feet above ground level. While practicing low altitude night training (LANTIRN), I have flown at 500 to 600 feet above ground through Skull Valley. Also, F-16s flying over Skull Valley may practice terrain masking[1] using either the Stansbury Mountains to the east or the Cedar Mountains to the west. *See also*, Ronald Fly Tr. 69-70 (Ronald Fly's complete deposition transcript attached hereto as Exhibit E). The position of F-16s in Skull Valley during terrain masking is dependent upon the hypothetical location of the radar. The hypothetical location of the radar varies from flight to flight. I have conducted terrain masking exercises throughout Skull Valley, including the eastern, middle, and western portions of the valley. F-16s may also perform G awareness turns[2], clearing turns, tactical turning maneuvers, aircraft orientation, fence checks, systems calibrations checks, visual navigation radar updates, or turning points while transiting Skull Valley.

16. F-16s may fly through the Sevier B MOA or above the Sevier B MOA up to 18,000 feet above ground level. I often flew above the Sevier B MOA through Skull Valley. The altitude of F-16s transiting through Skull Valley is dependent

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[1]A geological structure, such as mountains, is used to prevent radar detection of the aircraft. Thus, a pilot will stay below the ridge line of mountain.

[2]In performing a G awareness turn, a pilot would perform a 90 degree turn at approximately a four G force, roll out, then perform another 90 degree turn back to the original heading. This is performed to test the pilot's anti-G force suit.

upon the decision of the flight leader and the specific training mission. Based on my personal experience, F-16s flew over Skull Valley at altitudes ranging between 500 to 18,000 feet above ground level. Depending upon the weather pilots may fly above the Sevier B MOA under either visual flight rules or instrument flight rules. The altitude selected flown is dependent upon the training mission, flight leader, fuel, amount of for a pilot /flight to be over the UTTR land, and weather.

17. Because of the additional distance that an aircraft could travel from the incident to the point of the impact, the likelihood of striking the proposed PFS facility is increased for F-16s flying at higher altitudes on the east side of Skull Valley. *See* Aircraft Crash Impact Hazard at the PFS Facility, Rev. 4, August 2000 at 6. This would occur because aircraft flying at higher altitudes would be able to travel further distances after an accident.

18. Typically F-16s fly at "tactical speed" or 400 to 425 knots through Skull Valley. Again the speed of a pilot is dependent upon a number of factors. If a pilot or the flight is late, then he/she may fly above "tactical speed." When performing a G awareness warm up, a pilot will fly at 400 to 450 knots. The lowest speed flown by a pilot would be 350 knots not an average.

19. I disagree that PFS's calculations assuming a random flight path are conservative. Cole, et al Dec. at ¶74. I have flown throughout Skull Valley, including in the middle and western edges.[3] The actual flight path of F-16s path through Skull Valley is not restricted and is dependent upon the flight training mission and flight leader. Because of the flight path from Hill AFB and the layout of the valley, a flight will enter Skull Valley heading in a southwest to south direction. Thus, the natural and typical flight path of a four ship formation flight is to essentially fly down the middle of Skull Valley over or near the proposed site of the PFS facility.[4] Moreover, the flight leader will select the flight path to allow the furthest east aircraft in the formation to retain a sufficient distance (generally two miles) from the Stansbury Mountains. The flight will alter its direction towards the south then southeast at the southern end of Skull Valley.

20. F-16 pilots use "turning or navigation points" to update, refine, and cross check

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[3]PFS witness Ronald Fly also acknowledged that while stationed at Hill AFB, he had flown throughout Skull Valley (east, west, and middle). Fly Tr. 102-03.

[4]Note the middle of Skull Valley is not equivalent to the middle of the Sevier B MOA.

the aircraft's internal navigation system (*e.g.*, global positioning network, radar, LANTIRN targeting pod, infrared pod, head-up display ("HUD")). A good turning point requires manmade features, vertical and horizontal development, color, straight lines, lead in points, finite aim points for sensors, sufficient size to visually acquire the points from 10 miles away with radar (no zoom) but specific enough to allow sensor updates. Each pilot must update and check his/her navigation equipment during each training mission prior to entering over the UTTR land. Pilots are trained to initiate update of the internal navigation system as early in the mission as possible. I typically started updating my internal navigation system as soon as I entered Skull Valley.

21. There are currently four marginal pre-planned turning points throughout the in Skull Valley. PFS claims there are many visible features in Skull Valley which could be used as turning points. PFS Summary Disposition Motion at 25. This is incorrect. As PFS states, there are many identifiable features in Skull Valley such as mountains. Id.; Cole et. al Dec. ¶ 76. However, none of the identifiable points in Skull Valley would qualify as specific navigation points because they have vague features, no lead in points, no finite aim points for the sensors, are either not large enough to locate from 10 miles or not specific enough for sensor updates. For example, pilots may currently use a knoll to update their radar but because it lacks finite aim points a pilot could not update the lantern targeting pod. Thus, the radar and lantern targeting pod could not be cross checked.

22. Based on the design description and the schematics of the proposed PFS facility, it will have all the ideal elements of a turning point, *e.g.*, vertical height, lead in points, finite aim points for sensors, large enough on a clear day to visually acquire the PFS facility from 10 miles away with radar but specific enough to allow sensor updates. Thus, the proposed PFS facility would make the only good turning point available en route from Hill AFB to the UTTR South Area. In the absence of a good alternative, pilots will use the proposed PFS facility. For example, imagine looking through a telescope at a mountain ridge and trying to determine your location solely with respect that ridge. It would be much easier to use the proposed PFS facility. PFS agrees that the proposed facility will be a "prominent feature" in Skull Valley and that pilots will use the facility as a reference point and/or sensor alignment. Cole, et al Dec. ¶ 78.

23. Based on my professional judgment and experience flying in Skull Valley, I believe that if the PFS facility is built, aircraft will essentially concentrate their flight path around the site if the flight path is consistent with the assigned flight mission. As I stated above, pilots will essentially use the facility as a turning point. Thus, formations will essentially be aimed at the facility. In addition,

PFS's flight path width of ten miles is not conservative. As a practical matter, pilots essentially will not fly within one mile of restricted airspace to the west. Pilots would be prevented from flying farther than four to five miles east of the western boundary of the PFS site due to the Stansbury Mountains, including remaining a safe distance from the mountain range. *See* Aircraft Crash Hazard Report (Exh. 4 to Cole, et al Dec.), Figure 1 for an illustration. Notwithstanding the use of the facility as a turning point, the flight path width should be six not ten miles. When pilots use the facility as a turning point, the farthest east a pilot would fly in formation would be approximately four miles. A pilot could still fly one mile west of the facility. Thus, the width of the flight path assumed by PFS should be reduced from approximately one half to one third.

24. An additional twelve F-16 fighters have been assigned to the 388th Fighter Wing at Hill AFB. *See* Exhibit F. The total number of F-16s assigned to the 388th Fighter Wing will be 66. The total number of F-16s assigned to the 388th Fighter Wing and the 419th Reserve Fighter Wing will be 81. The additional F-16 fighters will increase the number of training sorties proportionally.

25. In FY2000, 5,757 sorties were flown in the Sevier B MOA. Cole, et al Dec. ¶ 24. Thus, the annual expected number of F-16 sorties in the future should be estimated at a minimum of 5,757 sorties.[5] PFS claims that the higher number of sorties in FY2000 is due to normal fluctuation within the Air Force. *See*, Cole, et al Dec. ¶ 25. This is a false assumption because the concept of the Air Expeditionary Force ("AEF") is to have deployable units deploy less often. There are no assurances that the FY2000 number of sorties will not be exceeded during the proposed life of the PFS facility (40 plus years); let alone the lower average used by PFS. The number of sorties used by PFS to calculate the risk of an aircraft crash is unlikely to be the upper bound and is clearly not conservative.

26. F-16 pilots are highly trained and qualified. However, pilots fly F-16s at 400 to 450 knots through Skull Valley. Additionally F-16 formations may fly at low altitudes, conduct terrain masking (changing altitude with the adjacent mountain range to mask the location of the aircraft from a theoretical radar), and conduct G awareness which apply G forces to the pilot's body. Therefore, activities flown in Skull Valley may be of lower risk and require less skill than combat activities, but still are still considered "high risk" by nature.

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[5]It should be noted that significantly more sorties were flown annually in the past than FY2000.

27. A F-16 pilot may retain control of his aircraft in the event of an engine failure. A pilot's control is dependent upon adequate time and circumstance. For example, if the weather is clear and the pilot is at 14,000 feet mean sea level (approximately 9,500 feet above ground level), then he/she would have at least 90 seconds to attempt to restart the engine or land at Michaels Army Air Field, Dugway Proving Ground, before ejecting from the aircraft. Conversely, if a pilot is 1000 feet beneath a cloud ceiling at 7,000 feet mean sea level (approximately 2,500 feet above ground level), then the pilot would only have seconds to attempt to restart before he/she had to eject. In this case, the cloud ceiling would not allow the pilot to zoom the aircraft (trade speed for altitude) for additional time. A pilot should eject at least 2,000 feet above the ground. Moreover, each pilot will perform differently given the same time and circumstance.

28. Crash rates are higher when a fighter aircraft is initially put into service. During the middle of the aircraft's service life the crash rates become lower and stabilize. However, it is commonly known by the Air Force operation and maintenance personnel that near the end of a fighter aircraft's life the crash rates begin to rise again. This is known as the "bathtub" effect. When I was stationed in Langley, Virginia, I became familiar with a number of Air Force studies which showed the bathtub effect.

29. The rise in crash rates are due to fewer new replacement parts, the age of the aircraft fleet, and the aircraft becoming progressively more difficult to maintain. I also saw the bathtub effect during my tenure as deputy commander for the 388th and 52nd operation and maintenance wings. The F-16A has essentially been retired from service and replaced with later models. The F-16A crash rate shows the bathtub effect in that the crash rates increased towards the last few years of service (1991, 1992, and 1993). *See* F-16A History (Jan. 10, 2000) attached hereto as Exhibit G. I agree that Air Force crash rates "overall" have lowered due to new technology and better design, training, and maintenance. However, crash data show the bathtub phenomena for each type of combat aircraft. In fact, PFS's own Aircraft Crash Hazard Report shows the crash rate increases at the end of the life of the aircraft in each of the five single-engine fighter mishap rates shown. Aircraft Crash Hazard Report, Figure 2, after p. 9a.

30. I believe the F-16 crash rates are beginning to show the bathtub effect. For example, crash rates in FY98 and 99 have increased over the previous ten and five years. Although, the crash rate for FY2000 has decreased, I do not believe the FY2000 crash rate is an indicator of the future crash rate for F-16s. My opinion is based on my knowledge of historical Air Force crash data which show crash rates rising at the end of life of an aircraft, and my experience with maintaining aging

aircraft.[6] PFS's crash rate estimate over the last ten years underestimates a conservative crash rate for the F-16 because it does not account for either an increase in the crash rate at the end of the F-16 service life or the higher crash rate during the initial years of an F-16 replacement aircraft. Based on my professional judgement, I believe the F-16 crash rate is trending upward at end of its life cycle.

31. F-16s have been in service since 1975 -- over 25 years.[7] *See* Cole et al Dec., Exh. 7. It is reasonable to expect the U.S. Air Force to replace F-16s with another fighter during the proposed lifetime of the PFS facility (40 plus years). *See also,* news article citing Jacques Gansler, Pentagon acquisition chief, stating that the F-16 will reach the end of its life span around 2009-2010, attached hereto as Exhibit H. In my opinion PFS's crash rate estimate over the last ten years underestimates a conservative crash rate for a single engine replacement fighter aircraft, such as the Joint Strike Fighter.

32. I believe that a conservative crash rate should consider that the F-16 is likely to be replaced by another single engine fighter, that the replacement single engine fighter will experience higher crash rates in the initial years of service and towards the end of service; that the F-16C/D is nearing the end of its service life where crash rates are increasing; and both Class A and B Mishaps are relevant to determining the applicable crash rate. I believe the FY99 crash rate reflects the bathtub effect for the F-16C/D and hence, is a reasonable crash rate to use. The FY99 crash rate is not overly conservative because it may not account for the continued crash rate rise until the F16 is retired or the initial crash rate for a F-16 replacement aircraft.[8]

33. PFS's estimated crash rate is not conservative simply because it uses both Class A and B Mishaps.[9] *See* Aircraft Crash, Tab H, at 3-4. Aircraft that suffer a Class B accident may be required to "jettison all stores" or release any weapons or fuel tanks. *See also*, Fly Tr. 126. Although, the Class B accident aircraft did not crash

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[6]Although the Air Force is improving maintenance procedures it will only improve the ability to fix a failure but not necessarily prevent a failure.

[7]The first test flight of the F-16 occurred in 1974.

[8]Note the F-16 crash rate at the beginning of its service life is much higher than the Fy99 crash rate.

[9]A Class A Mishap is defined as an accident involving a fatality or the aircraft incurs more than $1 million in damages. Cole et al. at n.1.

the released ordnance or fuel tanks may still impact the proposed PFS facility.

Type of Accidents that Could Occur in Skull Valley

34. PFS evaluated destroyed Class A accident reports from 1989 to 1998 provided by the Air Force with the intent to lower probability that an aircraft would crash into the facility. A statistical evaluation of the past ten years of accident reports only provides a frequency distribution or description of past accidents; it does not provide a probability distribution for the next 40 plus years. *See* Resnikoff Dec. at ¶ 83.

35. PFS categorized the accidents by a) accident type (*e.g.*, engine failure), b) whether it could occur in Skull Valley regardless of the phase of flight ("Skull Valley Type Event"), c) phase of flight (*e.g.*, normal flight, special flight, take, or landing), and d) whether it could occur in the Sevier B MOA ("Sevier B MOA Conditions"). Aircraft Crash Hazard Report, Tab H (hereinafter "Tab H") at 9-13. PFS then used the types of accidents in each category to estimate the probability that a pilot would be capable of avoiding the proposed PFS facility. I disagree with portions of PFS's assessment of the Air Force's F-16 accident reports. In particular, I disagree with how PFS categorized some of the accident reports. Also, I disagree with some of PFS's assessments in which it determined that the pilot would be capable of steering the aircraft away from the proposed PFS facility.

36. The Air Force accident investigation reports only provide information relevant to the actual accident. In many reports, the cause of the accident is not specified. Additionally, the reports do not speculate whether the pilot would be capable of avoiding a structure similar to the PFS facility under specific accident conditions. In many cases, it is impossible to speculate whether the pilot would be capable of avoiding the PFS facility. *See also*, Fly Tr. 156. For example, an F-16 crashed on a golf course on January 13, 1995. The report does not indicate whether the pilot failed to see the golf course due to clouds or rolling hills or if he aimed the aircraft at the golf course to minimize damage to the village.[10]

37. PFS reviewed 126 out of 142 Class A mishaps from 1989 to 1998.[11] Tab H at 3.

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[10]Ronald Fly agreed that the accident report did not specify if the pilot attempted to avoid the golf course. Fly Tr. 171.

[11]PFS notes that Air Force was unable to locate the other reports. *See* Tab H, n.5 at 3.

Although 16 Class A Mishap reports were not reviewed because the Air Force told PFS that they could not be located, PFS did not adjust its calculated probability to account for these missing accident reports. Thus, PFS's evaluation does not provide a true frequency distribution of past accidents nor a probability distribution. To obtain conservatism in the frequency distribution of past F-16 accidents, the lost 16 Class A accidents should be categorized as Skull Valley Type Events, normal flight, and Sevier B MOA events, and that the pilots were not able to avoid the facility.

38. PFS first categorized the accidents by type, such as engine failure. Sixteen engine failures occurred during normal flight, 32 accidents occurred during special flight or high stress combat maneuvers, and 16 engines failed during take off or landing. Although engine failures are random in nature as stated by PFS (Tab H at 11-12), high stress maneuver engine failures should not be included to estimate a pilot's ability to avoid the proposed PFS facility due to an engine failure during normal flight. Engine failures are more frequent during special flight maneuvers because of the high stress on the engines. *See also,* Fly Tr. at 153. PFS's inclusion of all engine failure accidents regardless of how they occurred is not representative of what occurred during normal flight over the past ten years, and is not a conservative predictor of what will occur over Skull Valley in the next 40 plus years. Contrary to PFS's argument, engine failures during special operations should not be considered in estimating the probability of an engine failure during normal flight.

39. Moreover, based on PFS's calculations and assumptions, using a factor of 90 percent to estimate the probability that a pilot would be able to avoid the facility is not conservative. PFS itself calculated 89 percent, not 90 percent, of the engine failures during normal flight would be capable of avoiding the proposed PFS facility. Tab H at 26.

40. PFS incorrectly excluded accidents while flying under instrument flight rules from Skull Valley Type Events. Tab H at 9. Pilots may fly under instrument flight rules when transiting through Skull Valley. *See* supra ¶16 and infra ¶ 67. PFS also incorrectly excluded mid-air collisions and G induced loss of consciousness from Skull Valley Type Events. *See* Tab H at 8. The September 16, 1997 accident, discussed below is an example of mid-air collision that could occur in Skull Valley. *See* ¶ 50 infra. The Air Force defines a "hard turn" as an energy sustaining turn. This turn is typically done with military power, not afterburner. Depending upon airspeed and altitude, a hard turn could impose between 3.5 to 6 Gs on a pilot. As noted above, when conducting a G awareness warmup turn, the pilot experiences approximately a 4 G force. A G awareness warmup is

considered a "hard turn." Consequently, a pilot may lose consciousness when performing G awareness exercises. To support this, the accident reports show a few instances where the pilot experienced G induced loss of consciousness while performing extremely high G maneuvers. A pilot who incurs a G induced loss of consciousness would not be able to avoid anything.

41. PFS did not consider any F-16 accidents which it determined could not occur under what it determined as "Sevier B MOA Flight Conditions" (*e.g.*, altitudes between 1,000 and 5,000 feet above ground level, speeds between 300 to 480 knots[12], visual meterological conditions, etc.). *See* Tab H at 12. PFS's statistical analysis excludes all F-16 accidents which could not occur in the Sevier B MOA. PFS's assessment is meaningless because F-16s transit Skull Valley both through and above the Sevier B MOA. *See* supra ¶ 16. Thus, PFS should not have eliminated accidents which occurred at altitudes below 1,000 feet and above 5,000 feet above ground level because F-16 pilots are not restricted to flying in the Sevier B MOA when transmitting through Skull Valley.[13] *See* supra ¶ 16. Additionally, PFS incorrectly excluded accidents that occurred while flying under instrument flight rules.[14] Pilots can and do fly under instrument fly rules in the Sevier B MOA and above the Sevier B MOA. *See also*, Fly Tr. 84. This category should be modified to consider accidents which could occur under Skull Valley "conditions" (Skull Valley Conditions) such as at altitudes between 500 and 18,000 feet above ground level, flights under instrument flight rules, flights with cloud cover above or below the pilot, etc.

42. PFS excluded low level, night flying accident but argued that pilots would avoid the facility because they could see the PFS facility because the facility will be lit at night. Tab H at 16, n.15. PFS fails to specify which accident it assessed would not occur because the PFS facility is illuminated. However, as discussed below, the accident report makes no conclusion on the cause of the accident. *See* ¶ 45

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[12]Fly Tr. 161.

[13]In his deposition, Colonel Ronald Fly (retired) suggested that PFS accounted for aircraft flying above the Sevier B MOA in its Skull Valley Type Conditions category. Fly Tr. 162. The Skull Valley Type Event category is also meaningless because it over estimates the number of engine failures that could reasonably occur in Skull Valley. *See* supra ¶ 38.

[14]The category Sevier B MOA Conditions is a subset of the category Skull Valley Type Conditions. Tab H at 8-9. Thus, accidents involving instrument flight rules were eliminated from Sevier B MOA Conditions. *See* ¶ 40 supra.

infra. Thus, PFS cannot conclude that this accident would not have occurred over the PFS facility.

43. I disagree with PFS's assessment that the May 25, 1990 accident assessment is unlikely to occur in Skull Valley because pilots usually transit Skull Valley at 3,000 to 4,000 feet AGL. *See* Tab H at 18. Aircraft may fly anywhere from 500 to 18,000 feet above ground level when flying through Skull Valley. *See* supra ¶ 16. It is not unlikely for an aircraft to fly at 6,000 feet above ground level and descend to a low altitude while transiting Skull Valley.

44. PFS's assessment that the April 4, 1991 accident is unlikely to occur in Skull Valley is also wrong. *See* Tab H at 18-19. When flying through Skull Valley F-16 pilots can and do fly above the Sevier B MOA, including at 7,000 to 8,000 feet AGL *See* ¶¶ 16, 42 supra. Thus, the April 4, 1991 accident could occur in Skull Valley. Moreover, this accident should also be considered in the last statistical assessment ("Skull Valley Conditions") because pilots are not restricted to flying only within the Sevier B MOA when transiting through Skull Valley. *See* ¶¶ 41, 42 supra.

45. I disagree with PFS's assessment of the September 19, 1990 accident report. PFS did not include the accident in either the Skull Valley Type Event or Sevier B MOA categories. *See* Tab H, Table 1. PFS also incorrectly determined that the pilot could avoid the proposed PFS facility. The pilot was conducting a night, low level radar flight at 2,000 feet mean sea level (essentially above ground level in Allendale, South Carolina) when he apparently lost situational awareness while making a non-demanding turn and crashed into the ground. The accident report does not speculate to the cause of the accident. This accident could happen in Skull Valley because pilots often fly low level, night training missions in Skull Valley. Although PFS plans to light the facility at night, it may or may not prevent a similar accident. It is not a conservative assumption to ignore this accident.

46. I disagree with PFS's assessment of the February 2, 1991 accident report. I do agree that in this accident the pilot would be capable of avoiding the proposed PFS site. In this case, the pilot's engine failed while waiting for his flight members to finish refueling. PFS incorrectly categorized this accident as landing activity and non-Sevier B MOA Conditions. Tab H, Table 1. Although, the pilot attempted to land his aircraft, the flight activity when the engine failed was clearly normal flight. Also, because the engine failed during normal flight I believe it should be included in the Skull Valley Conditions (modified Sevier B MOA Conditions per ¶ 41 supra). I included this accident in my calculation..

47. I disagree with PFS's assessment of the March 19, 1991 accident report. PFS incorrectly categorized this accident as able to avoid. Tab H, Table 1. The pilot ejected at 9,800 feet above ground level. The pilot would not have been able to see the proposed PFS facility due to scattered clouds at 4,000 and 8,000 feet above the ground. However, I did not include this accident in my calculation because I account for weather separately. *See* ¶ 77 infra.

48. I disagree with PFS's assessment of the June 8, 1991 accident report. PFS incorrectly categorized this as a landing activity and able to avoid. Tab H, Table 1. In this accident, the engine failed while the pilot was performing S turns while descending from 10,000 to 4,000 feet to extend the time before he made his approach for landing. Although the pilot was essentially on approach, the pilot was not landing. Additionally, the pilot would not have been able to avoid the proposed PFS facility due to broken clouds at 3,500 feet. However, I did not include the fact that the pilot would not avoid the facility in my calculations because I account for weather factors later in my declaration. *See* ¶ 77 infra.

49. I disagree with PFS's assessment of the July 31, 1992 accident report. Following takeoff, seven out of eight aircraft in the flight were all above 4,500 feet above ground level when lightning struck the 4th aircraft at an altitude of 5,719 feet. PFS incorrectly categorized this accident as not a Skull Valley Type Event or Sevier B MOA Conditions. *See*, Tab H, Table 1. The accident aircraft was no longer in take off, thus was under normal flight. Additionally, although pilots typically do not fly training missions during predicted lightning storms it is possible for a pilot to be in Skull Valley when an unexpected lightning strike occurs. I included this accident in my calculation.

50. I disagree with PFS's assessment of the September 16, 1997 accident report. In this case, while preparing for night vision goggle training, there was a mid-air collision when the back element (2nd) pilot in the formation lost situational awareness and hit the lead element aircraft. PFS incorrectly categorized this accident as take off and able to avoid. *See*, Tab H, Table 1. The accident occurred after take off and while the pilots were preparing for their night goggle training mission at 13,760 feet above ground level. Although one aircraft successfully landed, the other aircraft was out of control. Thus, the pilot would not be capable of avoiding the facility. Pilots conduct night vision goggle training in Skull Valley. Thus, I included this accident in my calculations.

51. I disagree with PFS's assessment of the February 2, 1993 accident report. In this accident after completing a 4th bombing run and experiencing a mechanical

failure, the pilot zoomed (traded airspeed for altitude) the aircraft into a cloud base at 2,000 above ground level. PFS incorrectly categorized this accident as able to avoid. *See*, Tab H, Table 1. The pilot clearly would not be able to see the proposed PFS site after he/she zoomed into the clouds. However, I did not include the fact that the pilot would not avoid the facility in my calculations because I account for weather factors later in my declaration. *See* ¶ 77 infra.

52. I disagree with PFS's assessment of the January 29, 1997 accident report. In this accident, as the pilot was "egressing" the target area he hit a bird and the engine failed. The pilot then attempted to glide to the Air Force base but eventually had to eject. I agree that the pilot would be able to avoid the a facility like the PFS facility. PFS incorrectly categorized this as landing. *See*, Tab H, Table 1. However, the accident occurred during normal flight (leaving the bombing area). I included this accident in my Normal category calculation.

53. I disagree that the May 13, 1998 accident could not occur in Skull Valley. *See* Aircraft Crash, Tab H at 24. Bird strikes are possible in Skull Valley. I have seen birds flying above 1,000 feet when flying through Skull Valley. AFI 51-503 Aircraft Accident Investigation Report states the F-16 canopy is designed to withstand a bird strike of 4 pounds at 350 knots. *See* Exhibit I, attached hereto, at 8 (PFS bates number 58811, Utah bates number PFS-41116). Pilots typically fly 400 to 450 knots through Skull Valley. *See* ¶ 18 supra. Thus, birds weighing more than 4 pounds could penetrate the canopy of a F-16 flying at a speed between 450 to 350 knots. While flying in Skull Valley, I have encountered a number of birds. Although, I cannot identify the types of birds I saw by species, numerous birds frequent the Skull Valley area that exceed 4 pounds in weight. For example, American White Pelicans, Canada Geese, Great Blue Herons, Bald Eagles, Golden Eagles ranging from 5 to 30 pounds. These species can fly at altitudes exceeding 1,000 feet above ground. *See* documentation of species known to frequent the area collected by the Utah Division of Wildlife Services attached hereto as Exhibit J. *See also*, documentation of species' weight and altitude range, attached hereto as Exhibit K. Moreover, PFS inconsistently treats bird strikes by including the April 18, 1991 bird strike accident as a Skull Valley Type Event. Tab H, Table 1. For purposes of determining the probability that a pilot could avoid the PFS facility, PFS should have considered the May 13, 1998 accident in the Skull Valley Type Event and the Skull Valley conditions (a modified Sevier B MOA Condition) categories. I included this accident in my calculations.

54. Contrary to PFS's assessment, it is reasonable that the events of September 19, 1990, July 31, 1992, September 16, 1997, and May 13, 1998 could occur under

Skull Valley Type Events. Thus, F-16 accidents caused by events that occur in Skull Valley in which a pilot could avoid the proposed PFS facility do not range between 97 and 100 percent as PFS claims. *See* Tab H at 20. Based on the accident reports I reviewed, approximately 86 percent of accidents during the last ten years which could occur as a Skull Valley Type Event may have left the pilot in control of his/her aircraft to avoid a built up area. However, to eliminate over-accounting for weather because I account for weather in paragraph 77 below, when the accidents where clouds would not allow the pilot to see the facility are excluded, the estimate is 91 percent. [15]

55. Contrary to PFS's assessment, the reports dated September 19, 1990, February 20, 1991, June 8, 1991, July 31, 1992, September 16, 1997, and January 29, 1997 should be classified as normal flight. The frequency distribution for the combined normal flight and Skull Valley Type Events over the last ten years which may have left the pilot in control of his/her aircraft to avoid a built up area is 73 percent. However, to eliminate over-accounting for weather because I account for weather in paragraph 77 below, the estimate is 77 percent. [16]

56. Contrary to PFS's assessment, reports dated September 19, 1990, February 20, 1991, June 8, 1991, July 31, 1992, September 16, 1997, and May 13, 1998 should be classified as Skull Valley Conditions. The frequency distribution for the combined Skull Valley Conditions[17], Normal Flight, and Skull Valley Type Events over the last ten years which may have left the pilot in control of his/her aircraft to avoid a built up area is 56%. However, to eliminate over-accounting for weather because I account for weather in paragraph 77 below, the estimate is 62.5 percent. [18,19]

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[15]This estimate is not conservative because it does not account for 16 lost Class A accident reports that occurred in the last ten years.

[16]This estimate is not conservative because it does not account for 16 lost Class A accident reports that occurred in the last ten years.

[17]Modified Sevier B MOA Conditions to account for actual flight conditions above and in the Sevier B MOA.

[18]This estimate is not conservative because it does not account for 16 lost Class A accident reports that occurred in the last ten years.

[19]Due to an earlier calculation error, Dr. Resnikoff used a less conservative percent of 64.7 percent in his calculations.

57. The Skull Valley Conditions category, as modified to reflect actual conditions that F-16 pilots encounter in Skull Valley and not merely Sevier B MOA conditions, is the category most applicable to accidents that could occur in Skull Valley. Thus, at a maximum, PFS could only assume that 62.5% of pilots could avoid the proposed PFS facility. Although, I disagreed with PFS's assessment of the June 8, 1991 accident, I did not include that and several other accidents in my calculations because later I address the likelihood that pilots will not be able to avoid the proposed PFS facility due to cloud cover.[20] Thus, weather factors were not double counted. Moreover, as discussed throughout my declaration, an estimate based solely on past accidents does not project the future probability and is not conservative.

58. Additionally, the Skull Valley Type Event category incorrectly included engine failures which occurred during special flight or high stress, aggressive maneuvers. Tab H at 15 and n.14. As I discussed above, because engine failures are more frequent during special flight, the Skull Valley Type Event accidents do not reflect what has occurred under conditions similar to those encountered in Skull Valley. *See* ¶ 38 supra. Thus, the frequency distribution for Skull Valley Type Events are not applicable.

59. The use of F-16 Class A and B crash rate is not conservative. *See* ¶ 33 supra. Again, even if only Class A Mishaps with destroyed aircraft are considered, PFS did not account for the 16 Class A missing accident reports. *See* ¶ 37 supra. Aircraft Crash, Tab H at 4.

Ability to Avoid the Proposed PFS Facility

60. Most importantly, whether a pilot can control an aircraft and guide it away from a built up area is dependent upon adequate time and circumstances. *See also*, Aircraft Crash Hazard Report at 17. I agree that any pilot, given adequate time and circumstances would steer his/her aircraft away from a built-up or population area. However, in order to steer his/her aircraft away from the proposed PFS facility, the pilot must have adequate time and be able to see the proposed facility.

61. When a pilot experiences an incident, the pilot first determines whether he/she has control of the aircraft. The pilot may be forced to immediately eject even if he/she

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[20]I also excluded the February 19, 1993 and March 19, 1991 accidents from the Skull Valley Type Event calculation due to weather.

has control of the aircraft (*e.g.*, in the case of an engine fire). Considering weather conditions, the pilot will then "zoom" the aircraft trading altitude for airspeed. Zooming the aircraft provides the pilot with additional time. Then, without regard to location, the pilot will jettison all stores, such as weapons and fuel tanks. The pilots main goal is to control the aircraft and buy time, pilots are not trained to consider where the weapons or fuel tanks will land. Meanwhile, the pilot will communicate the emergency. Next, the pilot ejects at a minimum altitude of 2,000 feet above ground. Given adequate time prior to ejection, the pilot will then perform various procedures, such as restarting the engine. If the pilot must eject, time permitting, the pilot will assess his/her ejection scenario (*e.g.*, I need to eject a minimum of 2,000 feet above ground level, I don't want to eject into the mountain or lake, is there a flat spot, etc.). Only then, will the pilot be able to assess whether there are any built up structures or populated areas to avoid.

62. During an emergency, factors such as weather, altitude, or severity of the emergency determine the procedures performed by the pilot. Additionally, performing emergency procedures also involves many human factors, including emotional, intellectual, and physical stress. I have performed emergency procedures while flying both F-16s and F-111s because of engine, hydraulic, and electrical failure. Thus, I am intimately familiar with performing emergency procedures.

63. Whether there is adequate time to control an aircraft during an emergency is dependent in part upon the pilot's experience. Although every pilot is trained to react to an emergency situation, each individual pilot will react to the same emergency situation differently. PFS claims that engine failures, the majority of accidents that would occur under a Skull Valley Type Event, are independent of pilot experience. Cole et. al Dec. ¶ 93. PFS is clearly wrong. How each pilot responds to an emergency is different from every other pilot. A pilot's experience factors into how he/she responds during an emergency.[21] The probability that a pilot can avoid a built up area increases with experience and overall capability. In particular, an emergency during a low altitude flight may require more ability and experience. Each Fighter Wing is comprised of experienced and inexperienced pilots. During an emergency situation an inexperienced pilot may take longer to perform tasks or not be capable of performing them at all. For example, an

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[21]In his deposition, Ron Fly agreed that an individual and his/her experience become a factor in performing emergency procedures. Fly Tr. 133-134. He added "[i]n a broad sense I think it's reasonable to say that up to a point if you are more experienced your're more likely to respond in a cool, calm collected manner." Id.

inexperienced pilot may be focused on a particular aspect of the emergency procedures, such as restarting an engine or ejecting, and may not be capable of identifying the proposed PFS site and steering the aircraft away. Moreover, as evidenced in the accident reports, more experienced pilots are able to recreate the accident situation much more clearly than an inexperienced pilot. Some of the accident reports show that other accompanying flight members often recommend the accident pilot eject due to circumstances such as fire. However, the pilots continued to try and control the aircraft and thus these accidents were classified as being able to avoid. An inexperienced pilot may well follow the recommendation of flight members to immediately eject. As a qualified flight instructor, I have flown with a number of young pilots who, in my opinion, would not have the situational awareness to select where they were going to eject and particularly to avoid a facility similar to the proposed PFS site.[22] PFS's assumptions do not account for pilot inexperience. Based on my professional judgment, I believe that assuming 95 percent of pilots who had sufficient time to avoid the facility could successfully avoid the facility is too high. Thus, PFS's calculations are not conservative.

64. In order to avoid the proposed PFS facility, an F-16 pilot must be able to see the facility. Cloud cover or lack of visibility may prevent the pilot from avoiding the facility. A pilot may still not be able to see the proposed facility if flying under visual flight rules. In order to fly under visual flight rules in the Sevier B MOA, a pilot must have at least 5 miles of visibility in front of the aircraft. In addition, the aircraft must be clear of clouds which means 1,000 feet above clouds and 500 feet below clouds. However, a pilot may fly under visual flight rules but fly either above or below clouds. I have flown many times above cloud cover through Skull Valley.

65. If accident circumstances do not require an immediate ejection, a pilot will lift the nose of the aircraft during an emergency procedure which limits the pilot's visibility to approximately two miles. This would allow a maximum of two miles of visibility and the pilot is unlikely to be able to locate the proposed PFS facility when the distance the aircraft could glide is considered. Thus, the pilot could not

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[22]It should be noted that performing emergency procedures in a single seat, single engine fighter plane is different and dramatically more demanding than in a multi-seat or multi-engine aircraft. In a single seat, single engine there is only one engine and no one to assist the pilot. For example, during an emergency in weather, a single seat, single engine pilot must concentrate on flying the aircraft and hardly has time to implement emergency procedures or analyze the problem, nor to respond to the problem.

avoid the facility. Or the pilot may be flying above the cloud cover and not be able to see the PFS facility.

66. PFS also fails to account for the possibility of ground fog. Utah often experiences severe ground fog in the winter. Although flying conditions may be clear, a pilot may not be able to see the facility if the valley is concealed by fog.

67. In addition, pilots may fly absent visual flight rule conditions, under instrument flight rule, if weather permits some training exercises at the UTTR. For example, pilots may be forced to train in less than optimum weather due to need for actual flight training hours. Thus, pilots may fly through clouds in Skull Valley and not be capable of seeing the PFS facility.

68. There are a number of reasons that a pilot may be flying in weather under either visual meterological conditions or instrument flight rule. For example, the weather over the UTTR may be adequate to perform some or all of the specific planned training mission. A pilot may need to fly a minimum number of hours to remain qualified and may not be able to postpone flying. The 419th is an Air Force Reserve Fighter Wing. The 419th pilots only have the opportunity to fly approximately five days a month. Reserve pilots who must fly to stay qualified may not have the luxury to reschedule and may have to fly on cloudy days.

69. Contrary to PFS's claims, a pilot cannot rely on his instruments to locate the PFS facility during an emergency. If the engine fails, all the precision in the navigation system is lost. The instruments work on and off for short periods of time but a pilot cannot rely on them. In addition, a pilot would not call Clover Control to locate the proposed PFS facility when time is critical in an emergency. Moreover, during an emergency, Clover Control may be able to direct a pilot away from a large area such as Salt Lake City but would not be able to direct a pilot away from the proposed PFS facility. Regardless of whether a pilot uses the PFS facility as a turning point and has a general knowledge of its location, a pilot would not be able to locate the facility if he cannot see it.

70. If an F-16 is flying below the cloud cover, the pilot would not zoom into the clouds and may have to eject immediately. Thus, a pilot may not have time for any emergency procedures, including steering the aircraft away from the proposed PFS facility.

71. Michael Army Airfield is located approximately 17.25 miles southwest from the proposed PFS facility. Aircraft Crash Hazard Report at 56. Because of the close proximity, Michael Army Air Field weather data is representative of what occurs

in Skull Valley. *See also*, Fly Tr. 85. Annual data from Michael Army Airfield show there is cloud cover (greater than 50 percent) 46 percent of the time at or below 12,000 feet above ground level. *See* International Station Meteorological Climate Summary, dated 12/9/00 hereto attached as Exhibit L.

72. A cloud ceiling will obstruct the pilot's ability to see the proposed PFS facility. A cloud ceiling is defined as 50 percent cloud cover. A pilot cannot penetrate cloud cover without an instrument flight rules clearance provided by Clover Control. If cloud cover is "scattered," this means 25 percent of the sky is covered. However, in many cases a scattered cloud cover may still obstruct a pilot's view of a structure preventing him from seeing the facility. PFS cites a UTTR brochure that 96 percent of the time the UTTR has weather of at least a 3,000 foot ceiling and three miles of visibility. Cole, et al Dec. ¶ 104. First, although I disagree, PFS maintains that pilots "typically" fly between 3,000 and 4,000 feet above ground level. If cloud cover is located at 3,000 feet, the pilot could not see the proposed site. Next, if the pilot flew at 2,000 feet above ground level as PFS poses, then the pilot would not be able to zoom the aircraft to gain additional time and must eject immediately. It is unlikely that the pilot would have time to steer the aircraft.

73. PFS uses data obtained from the National Weather Service. PFS failed to use weather data specific for pilots or certified by the Federal Aviation Administration. The National Weather Services defines a cloud ceiling at 60 percent cloud cover. Cole, et al Dec. at 43, n.33. Thus, the terminology for all three of PFS's charts is meaningless. For example, without instrument flight rules a pilot could not penetrate clouds described as free of cloud cover by the National Weather Service if there were still 50 percent cloud cover. Moreover, 60 percent cloud cover does not mean pilots could see the proposed PFS site.

74. PFS incorrectly assumes that pilots will always attempt to fly beneath the weather. The opposite is true in many cases. I intentionally flew above the weather if there was weather in the area. If there is a solid cloud ceiling at say 9,000 feet mean sea level (approximately 4,500 feet AGL) and I flew below the weather, at some point I would have to climb above the weather to continue my mission because just south of Skull Valley, Clover Control can not see aircraft below 10,000 feet above ground level on their radar due to line of sight limitations. Thus, in order to penetrate the cloud deck (or fly through) the pilot must have clearance from a radar control agency, Clover. Because Clover could not locate the aircraft, they unable to provide the required clearance. Then I would be prohibited from climbing above the weather without instrument flight rule clearance in the Sevier B MOA. Additionally Clover Control cannot provide assistance because it cannot

identify low level aircraft flying in Skull Valley.

75. PFS claims that my assertion that a significant number of pilots will use the proposed facility as a turning or navigation point acknowledges that pilots will know the location of the facility. Cole, et al Dec. ¶ 83. In general, this is true. However, PFS's conclusion that if pilots know where the facility is, they will be able to avoid it during an emergency is severely flawed. In simple terms, if a pilot cannot see the facility, the pilot cannot steer the aircraft to avoid it. Even though a pilot may know the facility is located generally in the middle of Skull Valley, if he/she cannot see it, the pilot does not know how much to turn the aircraft. Additionally, using the Stansbury or Cedar Mountains as reference points may or may not provide assistance. Further, depending upon the weather, a pilot may not be able to see the mountains or other reference points. During this period, the pilot is also performing emergency procedures and under stress. For example, a pilot who just lost an engine begins to perform emergency procedures (*e.g.*, zoom, jettison all stores, restart engine). The pilot's primary focus is to save the aircraft or ensure that the pilot can safely eject (*e.g.*, not into a mountain). The pilot may know the facility is located in the general vicinity but he/she cannot see it. So while the pilot is performing other procedures, he/she is wondering if the navigation system is accurate. The pilot was approximately so many miles from the site but how far has he/she traveled since losing the engine. How fast was the aircraft flying, how fast is it flying now.

76. Weather may have prohibited the pilot from avoiding a structure such as the proposed PFS facility in a number of accidents during the past ten years. *See* supra ¶ 47 (3/19/91 accident), ¶ 48 (6/8/91 accident), and ¶ 51 (2/2/93 accident).

77. PFS's calculations do not account for any of the lack of experience or the ability of a pilot to see the facility. To ensure a conservative estimate, PFS should assume a pilot would not be able to see the PFS facility 46 percent of the time while flying in Skull Valley. In addition, PFS should account for the inability of pilots to avoid the facility due to inexperience or ground fog.

78. As I discussed above, there are numerous factors associated with an emergency (*e.g.*, severity of the emergency, experience, inability to rely on instruments, etc.) which impact the available time and circumstance needed to avoid the proposed PFS facility. *See* supra ¶¶ 62, 63, 69. When these factors are combined with the fact that the pilot cannot visually see the facility, whether due to cloud cover or ground fog, a pilot cannot avoid the facility.

Direction of the Aircraft

79. PFS claims its calculations are conservative because aircraft do not fly in the direction of the proposed PFS site, thus are unlikely to hit it. I disagree. Depending upon the flight path selected by the flight leader, F-16s directly fly over the proposed location of the facility. Additionally, F-16s typically fly in either four or two ship formations in which at least part of the formation will fly directly over or near the proposed location. Moreover, flights enter Skull Valley in a south, southwest direction before turning south, southeast. An aircraft will fly in the direction of the proposed site during its course. *See also* supra ¶ 19.

80. As I discussed above, a pilot may perform G awareness or clearing turns while flying through Skull Valley. The pilot will turn the aircraft up to 90 degrees during which at which some period the aircraft will be pointed directly towards the proposed facility. *See also* supra ¶ 15.

81. Moreover, if the PFS facility is built, pilots will select the PFS facility as a turning or navigation point and directly aim at it. *See* ¶¶ 22, 23 supra. The PFS facility will be the only good turning point in Skull Valley. Thus, I believe at least fifty percent of F-16s flying in Skull Valley will aim directly at the proposed facility for some period of time. In addition, as a result of using the facility as a turning point, many F-16s will fly directly over the facility.

82. In disputing that aircraft will aim at the facility, PFS incorrectly asserts that the navigation system's heads up display (HUD) can be used for up to twenty degrees off center. Cole, et al. Dec. at ¶ 82. PFS is wrong. HUD can only be used for a <u>total</u> of twenty degrees, ten degrees on either side of the aircraft. Because the HUD can be used for a maximum total of twenty degrees, the pilot essentially points the aircraft at the target (the proposed PFS facility) while updating the HUD.

83. During an emergency, to the extent possible, a pilot will attempt to find a location where he/she can safely eject. If near the Stansbury Mountains, a pilot may turn the aircraft towards the west while performing emergency procedures to ensure the pilot does not eject into the mountain. Or similarly, a pilot would likely not turn to the north because of the Great Salt Lake. Given sufficient time a pilot would aim for a flat spot such as the center of Skull Valley.

Potential Ordnance Impacts

84. F-16s transiting Skull Valley may carry between zero and six ordnance per flight.

An F-16 may carry two MK-84s per flight. *See also*[23] Memorandum from Colonel Ronald G. Oholendt, U.S. Air Force (October 26, 1999), hereto attached as Exhibit O.

85. Live and inert ordnance may potentially strike and penetrate the proposed PFS storage casks and canisters. Using PC effects model[24], the U.S. Air Force determined that the GBU-24 A/B and the GBU-10 with the BLU-109 warhead could penetrate the proposed PFS storage cask and canister (HI-STORM 100). *See* USAF letter from Colonel Lee C. Bauer, attached hereto as Exhibit M; *see also* USAF letter from Denise L. King ,attached hereto as Exhibit N. The Air Force also estimated the maximum probability that the MK-84 warhead configured as a GBU-10, GBU-24, or free-fall unguided ordnance would penetrate the cask and canister at 0 to 50 percent. *See* King letter. It should be noted that the Air Force estimate did not consider any buckling or cracking of the cask or canister. In addition, the Air Force assumed only inert weapons in its estimates and did not account for any potential weakening of steel due to an explosion.

86. The damage of the ordnance depends on the circumstance of release and the impact angle. Once a pilot jettisons the ordnance, the bombs will fly a predetermined parabola and impact the earth exactly according to that parabola. The parameters for the parabola are speed at jettison, altitude at jettison, pitch of aircraft at jettison with respect to the horizon, and aerodynamic drag of the bombs

87. PFS maintains that only 13 percent of the aircraft carry 2,000 pound bombs. Cole, et al Dec. ¶ 121. This estimate is not conservative and could change based on tactics of the Air Force.

Training Over the Utah Test and Training Range South Range Land

88. Air-to-air combat training over the Utah Test and Training Range South Area Land pose a potential hazard to the proposed PFS facility.

89. In my opinion, the total number of hours flown per year by fighter aircraft in air-

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[23]Note: Colonel Ronald G. Oholendt provides the number or ordnance "normally" carried on a 388th Fighter Wing aircraft during FY98. However, the number of ordnance identified does not bound number per aircraft.

[24]In the Joint Munitions Effective Manual Air to Surface Weaponeering Systems. *See* Oholendt letter, Exh. O.

to-air training on the UTTR South Area should be calculated using the FY2000 flight data, which showed an increase in flights. *See* ¶ 25 supra.

90. In my opinion, the crash rate for F-16s conducting air-to-air combat training should rely on the FY99 crash rate. *See* ¶ 32 supra.

Moser Recovery

91. The Moser Recover is flown during inclement weather conditions or during night training missions. Since 1999, the 388th Fighter Wing and the 419th Fighter Wing fly night vision goggle training missions. I believe that PFS's estimate that fewer than five percent of the sorties use the Moser Recovery route underestimates its use. Aircraft Crash Hazard Report at 48-49. PFS estimate relies on a conversation with "local" air traffic controllers. *Id.* Although, PFS did not document the communication, I assume the data was obtained some time prior to August 2000 when PFS submitted its crash report. I suspect that the estimate was not obtained from Hill AFB because PFS referred to the air traffic controllers as "local." It is unknown whether the estimate was made after night vision goggle training was implemented for all pilots. It is also unknown if the estimate was for a summer month or fiscal or calendar year. The Moser Recovery is flown on a regular basis and has a higher use during winter months due to weather. Moreover, although PFS claims the local air traffic controller's estimate is consistent with Colonel Ron Oholendt, former Vice Wing Commander of the 388th Fighter Wing, Colonel Oholendt's estimate was in November 1999 in the initial stages of implementing the night vision goggle training. In calendar year 1999, when I was stationed at Hill AFB, I flew at least four night missions in 6 months.[25] Thus, I believe PFS's estimate is not conservative.

92. The facts presented above are true and correct to the best of my knowledge, and the conclusions drawn from those facts are based on my best professional judgment.

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Lt. Col. Hugh L. Horstman (USAF ret.)
Dated: January 30, 2001

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[25]PFS mischaracterizes my deposition statement as total flights, not personal night flights. *See* Cole, et al Dec. ¶ 46 and PFS Summary Disposition Motion, Exhibit F, Horstman Tr. 189.

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AFI 51-503 AIRCRAFT ACCIDENT INVESTIGATION REPORT
STATEMENT OF FACTS

1. AUTHORITY:

Under the provisions of Air Force Instruction (AFI) 51-503, on 6 July 1998, the Twelfth Air Force Commander, Lieutenant General Lansford E. Trapp, Jr., appointed Lt Col James E. Rowland to conduct an aircraft accident investigation after an F-16C aircraft, SN 85-1550 collided with the ground near Ainsworth, Nebraska. The investigation was conducted at Sioux City Air National Guard Base (ANGB), Iowa from 10 July through 26 July 98. The technical advisors were Mister Victor F. LaPuma (Legal), Major Daniel L. Vandivort (Medical) and Captain Lee J. Mitchell (Maintenance) (Tab Y-1 through Y-6).

2. PURPOSE:

An aircraft accident investigation is convened under AFI 51-503. The investigation is intended primarily to gather and preserve evidence for claims, litigation, disciplinary and adverse administrative actions, and for all other purposes other than mishap prevention. In addition to setting forth factual information concerning the accident, the board president is also required to state his opinion concerning the accident (if there is clear and convincing evidence to support that opinion), or to describe those factors, if any, that in the opinion of the board president, substantially contributed to the accident. This investigation is separate and apart from the safety investigation conducted under AFI 91-204. The report is available for public dissemination under the Freedom of Information Act (5 U.S.C. 552) and AFI 37-131. Accident board members were convened to investigate the Class A aircraft accident involving an F-16C aircraft, SN 85-1550, which impacted the ground near Ainsworth, Nebraska on 13 May 1998. The pilot of the aircraft safely ejected from the aircraft, however, he did sustain injuries (Tab X-1). There was minimal damage to private and public property (Tab P-2, Tab BB-1 through BB-5). Total loss of government property was $16,298,357.00 (Tab M-2).

3. SUMMARY OF FACTS:

a. History of Flight Activity:

The mission began with the flight briefing at approximately 0800 Local (L) at the 174th Fighter Squadron (FS)/185th Fighter Wing (FW) Sioux City ANGB, Iowa on 13 May 1998. The flight was briefed as a two ship Surface Attack Tactics sortie to IR-508 (low level route) and the O'Neill Military Operating Area (MOA). The call signs were Bat 41 and Bat 42. The flight took off from Sioux City ANGB at 0935L (Tab V-3, Tab V-16, Tab DD-1). At approximately 1002L, while in the IR-508 low level route structure, Bat 42, the mishap aircraft (MA), collided with a minimum of 5 American White Pelicans (AWP) (Tab J-14). A minimum of one AWP possibly penetrated the windscreen. A minimum of one AWP, or a substantial proportion of one, was ingested into the MA engine (Tab J-15). Immediately following the bird strike, Lt Col Lundquist, the mishap pilot (MP), ejected from aircraft SN 85-1550 (Tab J-20, Tab O-30, Tab R-2). Approximately 8.5 seconds later, the MA impacted the terrain (Tab J-13). The aircraft was completely destroyed (Tab M-2). Bat 41 remained in the mishap area for approximately 30 minutes to facilitate the crash and rescue effort by emergency response personnel. Bat

minutes until clear of the river. For the next four to five minutes, Bat 41 flight began a gradual "step down" to approximately 500 feet AGL. In the area of Ainsworth, Nebraska (Tab V-8, Tab EE-2), Bat 41 noticed Bat 42 descending and rolling. Bat 41 radioed Bat 42 to "pull up". After the radio call, Bat 41 saw an inflated parachute behind the aircraft and realized Lt Col Lundquist had ejected from the aircraft. Bat 41 then turned the aircraft to establish an orbit over where the parachute had landed on the ground (Tab V-8, Tab V-17, Tab EE-2).

e. Impact:

The mishap aircraft (MA) collided with a minimum of 5 American White Pelicans while flying IR-508 at approximate coordinates N 42-27.559 W 99-51.160 at approximately 830 feet AGL and an airspeed of 520 knots. Aircraft components with significant bird remains were: MP helmet, parachute container assembly, aircraft canopy, ejection seat, and engine (Tab J-12, Tab J-14, Tab S-3 through Tab S-6). The canopy was designed to withstand a 4 pound bird strike at 350 knots (Tab J-21). The MA received multiple 12.5-15.5 pound bird strikes at 520 knots (Tab J-14 and O-49) resulting in the canopy's structural failure either as result of the birds striking the fuselage (Tab J-21 through Tab J-24) or impacting the canopy directly. There was no evidence of fire prior to impact. Evidence of two concentrated areas of bird debris in the exhaust duct of the engine indicates that at least two large portions of bird were likely ingested into the engine (Tab J-12).

The MP's testimony relates that he was looking out the left side (maintaining position off of lead) and just beginning to turn his head to look forward when he was immediately "pinned to the left...and back against the seat." He describes it felt like "someone had put a big fan on my face...and someone was beating me with a ball bat." He remembers a loud fluttering noise and a loss of vision. The MP then ejected even though he does not recall doing so (Tab V-9, Tab V-13).

The engine operated normally for the approximate 8.5 seconds of flight after the bird strike and prior to ground impact (Tab J-13). The mishap aircraft impacted the ground with an Angle of Attack (AOA) of 1.2, an 11 degree nose down pitch angle, and in a 79 degree left bank (Tab O-49). A scar in the ground approximately 100 feet long, in front of the impact crater, appeared to be caused by the left wing tip. Beyond the impact site, the debris was primarily scattered over a distance of approximately one mile in the general direction of the scar (Tab J-9 and R-2).

Aircraft SN 85-1550 impacted the terrain at approximately 1003L on 13 May 1998 at N 42-26.214 and W 99-52.022 (Tab O-30), or approximately 7 miles south of Ainsworth, Nebraska, (Tab V-24) at a terrain elevation less than 2650 feet Mean Sea Level (MSL) (Tab J-20).

f. Egress System:

The evidence indicates the ejection control handle (D-ring) was pulled initiating the ejection sequence. However, the mishap pilot does not recall pulling the D-ring or initiating the ejection sequence. The ejection was performed within the performance envelope of the system. All indications are the system performed as designed (Tab J-2 through Tab J-8, Tab V-13).

g. Personal and Survival Equipment:

According to the aircraft forms and sworn testimony, all personal and survival equipment inspections were up to date and performed correctly (Tab U-14 through Tab U-29, Tab U-37,

HANDBOOK OF NORTH AMERICAN BIRDS

VOLUME 1

Loons through Flamingos

EDITED BY RALPH S. PALMER

New Haven and London, Yale University Press, 1962

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State's
Exhibit 67

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White Pelican

Pelecanus erythrorhynchos Gmelin

American White, or Rough-billed, Pelican. Massive bird; the usual pelican pouch and bill; feathering on side of lower jaw projects forward, separating naked loral skin from that of pouch; 24 tail feathers. Juv. is grayish; in later stages, feathering white or mostly so, with black wing tips. Fibrous plate toward distal end of upper mandible, also various plumes including sparse "mane" on upper nape, worn seasonally at least after Def. Alt. stage attained. Sexes similar in appearance, ♂ av. slightly larger. L. 50–65 in., wingspread 8–9½ ft., wt. usually 10–17 but reportedly to 30 lb. No subspecies.

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Weight 15–20 lb. (Bent 1922); 10–17 lb. but some may weigh as much as 30 (Behle 1958); about 17 lb. (W. Dawson 1923); from specimen labels: a ♀ 11¾ lb., ♂ 13¼ lb.

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HABITS Sociable and gregarious, found in flocks at all times; young and adults remain together, except some separation in postbreeding period. A few nonbreeders may remain on wintering grounds in summer, majority return n. with breeding birds and roost with breeding colonies.

Feed actively in early morning and late evening, and in breeding season during much of the night (Low et al. 1950). In winter feed usually on rising tide, do not feed at night (Audubon 1838). Rest between feedings along beaches, sandbars or on old driftwood; never perch on trees. Often indulge in high-soaring flights. When roosting in hot sun will open beaks and pulsate pouch for cooling effect (Bartholomew et al. 1953). Roost at night along water's edge.

Are awkward on land, throwing body from side to side as they walk. Fine swimmers; have great buoyancy and float high in water. Young just able to fly swim at 3 mph. (Hall 1925). Usually fly in long lines or V's, following a leader; proceed by alternately flapping and gliding, usually low over water, higher over land. When flying in line, flap and glide in unison, usually a beat or two behind leader. Follow exactly in track of leader; when he rises suddenly and then drops back near surface, each bird in turn will rise and fall at same spot. Normal flight speed about 30 mph. (Ross 1933). Take-off from water assisted by powerful kicking with both feet in unison; when flying, head is tucked back with bill resting on breast. Spend much time soaring at great heights; flock will circle in rising air current until out of sight; soaring may precede foraging or migration flights; sometimes seemingly for pleasure. While soaring in stormy weather may indulge in aerial acrobatics with much swooping and diving (Bent 1922).

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Great Blue Heron

Ardea herodias

Great Blue and Great White (see p. 383), of similar size, are our largest herons —in erect stance about 4 ft. tall (see color plate facing p. 278). Definitive stages of Great Blue characterized by: occipital plumes (usually 2) to about 9 in. long; elongated tapered feathers on lower sides of neck; scapulars pointed and considerably elongated; primaries and secondaries blackish; more or less rusty on underparts in all feathered stages. Color phases include "normal" and (almost entirely restricted to extreme s. Fla.) paler birds. (Status of Great White—whether conspecific with Great Blue, a color phase of it, or what—still a moot point. It fits the diagnosis just given except, of course, no colored feathers.) Sexes similar in appearance (♂ av. slightly larger, occipital plumes av. longer) and all feathered stages rather similar; in larger subspecies l. to about 54 in., wingspread to 7 ft., wt. to 8 lb. About 8 subspecies—probably more recognized than warranted—5 or 6 in our area.

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HABITS of the species. Usual hunting method is to stand motionless in shallow water, waiting till prey comes within striking distance. Occasionally fishes on the wing, a perched or low-flying bird sighting prey, dropping momentarily on deep water and simultaneously striking at prey. Singles, even small groups, known to alight on deep water (fresh or salt) and evidently rest comfortably there, though they soon take flight again. This bird often feeds ashore, along watercourses, in meadows and fields, even far from water. Sometimes walks overland a short distance from pool to pool.

Sometimes known to swallow larger prey than it can comfortably manage—even so large as to choke the captor. One was seen holding, shaking, trying to swallow, then flying off with live Clapper Rail that may have been wounded before the heron captured it (Arnett 1951). One captured and killed a Wilson's Phalarope, pulled off the wings, and immersed the body in water before swallowing it (F. Packard 1943). Audubon (1835) claimed to have seen this bird flying after a fish-carrying Osprey, which released the fish and the heron presumably located the fallen prey.

Recorded air speed of cruising birds is in the range 19–29 mph., and 30 when pressed; wingbeats/sec. reported as 2.1, while numerous data of C. H. Blake in Fla. yield 2.3 ± .03. Sometimes soars in circles to immense heights—perhaps more often than generally realized. Various aerial evolutions, the bird sometimes calling, reported mainly during and soon after breeding cycle.

HANDBOOK OF

NORTH AMERICAN BIRDS

VOLUME 2

Waterfowl (first part)

WHISTLING DUCKS
SWANS
GEESE
SHELD-DUCKS
DABBLING DUCKS

EDITED BY RALPH S. PALMER

New Haven and London, Yale University Press, 1976

Page 183

Canada Goose

Branta canadensis

Head and neck black with large white area on cheeks, usually continuous across chin, but sometimes partly or entirely interrupted by a black chin stripe; body coloration gray-brown to variably brown, the light feather borders arranged to form bars on dorsum in all Basic Plumages. Neck feathering smooth (not furrowed); white "crescent" on lower rump; usually all white from vent to tail and extending up on flanks; tail blackish. Iris dark brownish; bill, legs, and feet black. Overall coloring varies, depending on population and individual, from medium or lighter to a very dark shade. Size varies from largest of true geese (length 34–43 in., rarely longer; wingspread to 6 ft., rarely longer; wt. rarely to over 20 lbs.) through intermediate sizes down to smallest (length 23–25 in., wingspread to 43, wt. of mature ♀ occasionally only 2 lb.). For discussion of tracheal anatomy, see Humphrey (1958a) and Würdinger (1970). Sexes similar or nearly so in appearance (♂ said to av. more uniformly colored and with paler underparts in some of the largest Canadas); ♂ av. larger. The species is treated below under 8 trinomials, 4 less than in Delacour (1951, 1954).

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For intermountain birds there is no adequately documented series of any size. For "Western Canada Goose" Kortright (1942) gave: ♂ 7 lb. 5 oz. to 12 lb. 8 oz., av. (of 8) 10 lb. 4 oz.; and ♀ 6 lb. 10 oz. to 9 lb. 8 oz., av. (of 5) 7 lb. 13 oz. These are very close to the data on 9 ♂ and 6 ♀ given by A. L. Nelson and Martin (1953). Two birds taken in Cal. weighed 19 lb. each (J. Aldrich). Moffitt (1931), who listed no specific records, stated many trustworthy hunters had reported birds weighing 16 and 18 lb., even a claim of up to 21 lb. H. C. Hanson (1965) mentioned reports of geese taken in Cal. (local birds or migrants?) that weighed 19, 22, and 24 lb., thus matching even the very exceptional records from the prairies.

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MIGRATION As a result of rapid adaptation to newly created refuges and feeding grounds the Canada Goose, more than any other waterfowl species, has "radically altered" its migration routes. Because of the narrowness of routes traveled (and by some other waterfowl also), they are more aptly designated "corridors" than routes. The Canada Goose is in the process of evolving new ones, so that any summation of existing ones probably would be outmoded in a few years. (From Bellrose 1968, which see for many details.) Particular routes (or corridors) and schedules have been mentioned under some subspecific headings earlier in this account, also under activities of prebreeders, etc. The following is general information.

Canadas fly silently or in loud-calling flocks, these being an aggregate of families, in diagonal lines or chevrons containing up to several score birds, seldom hundreds. Usually they fly at a few hundred ft. altitude, much lower in severe weather. Also above range of unaided human vision in fine weather (Trautman 1940). Various mt. ranges are no barrier. For example, the Wasatch Mts. in Utah reach nearly 10,000 ft. and the geese readily migrate over them. (C.S. Williams). Migrants fly at any hour and may arrive on a tail wind. When caught in storm or fog, they have been known to circle many times over city lights or to land on rooftops and wet pavements (F. L. B. 1891, Mershon 1928), and have been struck down in flight by lightning (Cartwright and Lloyd 1933). Reverse migration may occur when migrants overtake a storm (L. Jones 1906).

State of Utah
DEPARTMENT OF NATURAL RESOURCES
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26 January 2001

Ms. Laura Lockhart
Assistant Attorney General
Office of the Attorney General
P.O. Box 140873
Salt Lake City, Utah 84114-0973

Dear Ms. Lockhart,

I am writing in response to your request for recent Waterbird Survey data in the vicinity of Timpie Springs Waterfowl Management Area. The attached disk contains the information you requested. Please contact Mr. Don Paul, Great Salt Lake wildlife biologist, at 801-721-9780 if you have any questions or need any additional information.

Sincerely,

John Kimball
Director

JK/mfc

State's
Exhibit 68

Bird names, codes, and AOU numbers from Patuxent. Col. A permits sorts by "checklist" order.

No.	Common Name	Code	AOU
308	American Golden-Plover	AGPL	2720
170	Green-winged Teal	AGWT	1390
322	American Avocet	AMAV	2250
300	American Coot	AMCO	2210
153	American Wigeon	AMWI	1370
73	American White Pelican	AWPE	1250
191	Barrow's Goldeneye	BAGO	1520
361	Baird's Sandpiper	BASA	2410
307	Black-bellied Plover	BBPL	2700
107	Black-crowned Night-Heron	BCNH	2020
429	Black Tern	BLTE	770
321	Black-necked Stilt	BNST	2260
389	Bonaparte's Gull	BOGU	600
74	Brown Pelican	BRPE	1260
189	Bufflehead	BUFF	1530
163	Blue-winged Teal	BWTE	1400
105	Cattle Egret	CAEG	2001
137	Canada Goose	CAGO	1720
394	California Gull	CAGU	530
171	Canvasback	CANV	1470
413	Caspian Tern	CATE	640
164	Cinnamon Teal	CITE	1410
14	Clark's Grebe	CLGR	11
190	Common Goldeneye	COGO	1510
195	Common Merganser	COME	1290
296	Common Moorhen	COMO	2190
374	Common Snipe	COSN	2300
78	Double-crested Cormorant	DCCO	1200
	unid. Duck	DUCK	
12	Eared Grebe	EAGR	40
422	Forster's Tern	FOTE	690
386	Franklin's Gull	FRGU	590
150	Gadwall	GADW	1350
192	unid. Goldeneye	GOLD	1512
	unid. Grebe	GREB	
95	Great Egret	GREG	1960
176	Greater Scaup	GRSC	1480
325	Greater Yellowlegs	GRYE	2540
93	Great Blue Heron	GTBH	1940
131	Greater White-fronted Goose	GWFG	1710
94	Great White Heron	GWHE	1920
395	Herring Gull	HRGG	510
390	Heermann's Gull	HRMG	570
344	Hudsonian Godwit	HUGO	2510
316	Killdeer	KILL	2730
342	Long-billed Curlew	LBCU	2640
372	Long-billed Dowitcher	LBDO	2320

359	Least Sandpiper	LESA	2420
177	Lesser Scaup	LESC	1490
326	Lesser Yellowlegs	LEYE	2550
346	Marbled Godwit	MAGO	2490
155	Mallard	MALL	1320
	unid. Merganser	MERG	
167	Northern Pintail	NOPI	1430
165	Northern Shoveler	NSHO	1420
9	Pied-billed Grebe	PBGR	60
	unid. Peep Sandpiper	PEEP	
362	Pectoral Sandpiper	PESA	2390
	unid. Phalarope	PHAL	
393	Ring-billed Gull	RBGU	540
196	Red-breasted Merganser	RBME	1300
172	Redhead	REDH	1460
351	Red Knot	REKN	2340
174	Ring-necked Duck	RNDU	1500
377	Red-necked Phalarope	RPHA	2230
198	Ruddy Duck	RUDU	1670
303	Sandhill Crane	SACR	2060
352	Sanderling	SAND	2480
371	Short-billed Dowitcher	SBDO	2310
	unid. Scaup	SCAU	
	unid. Scoter	SCOT	
314	Semipalmated Plover	SEPL	2740
353	Semipalmated Sandpiper	SESA	2460
100	Snowy Egret	SNEG	1970
134	Snow Goose	SNGO	1690
311	Snowy Plover	SNPL	2780
291	Sora	SORA	2140
330	Solitary Sandpiper	SOSA	2560
335	Spotted Sandpiper	SPSA	2630
368	Stilt Sandpiper	STLS	2330
	unid. Teal	TEAL	
143	Trumpeter Swan	TRUS	1810
144	Tundra Swan	TUSW	1800
373	unid. Dowitcher	UNDO	2327
411	unid. Gull	UNGU	534
117	unid. Plegadis	UNPL	1861
435	unid. Tern	UNTE	634
327	unid. Yellowlegs	UNYE	2555
281	Virginia Rail	VIRA	2120
	WesternXClark's Grebe	WCGR	
13	Western Grebe	WEGR	10
354	Western Sandpiper	WESA	2470
116	White-faced Ibis	WFIB	1870
338	Whimbrel	WHIM	2650
331	Willet	WILL	2580
376	Wilson's Phalarope	WIPH	2240
148	Wood Duck	WODU	1440

185	White-winged Scoter	WWSC	1650
276	Yellow Rail	YERA	2150
	Avocets/Stilts	AVOSTI	
	Dowitchers	DOWITC	
	Ducks	DUCKSX	
	Gulls	GULLSX	
	Herons/Egrets	HEREGR	
	Peeps	PEEPSX	
	Phalaropes	PHALAR	
	Western/Clark's Grebes	WECLGR	
	Yellowlegs	YELLOW	
373	unid. Dowitcher	UNDO	2327
	unid. Duck	DUCK	
192	unid. Goldeneye	GOLD	1512
	unid. Grebe	GREB	
411	unid. Gull	UNGU	534
	unid. Merganser	MERG	
	unid. Peep Sandpiper	PEEP	
	unid. Phalarope	PHAL	
117	unid. Plegadis (Ibis)	UNPL	1861
	unid. Scaup	SCAU	
	unid. Scoter	SCOT	
	unid. Teal	TEAL	
435	unid. Tern	UNTE	634
327	unid. Yellowlegs	UNYE	2555

AREA	DATE	NAME	OBSERVER1	OBSERVER2	OBSERVER3	START	END	SURVEY	TTEMP	WIND SPE	WIND DIR	CLOUD C	PERIOD
1	04/25	TIMPIE SPRINGS WMA	LEBLANC			07:19:00 AM	09:45:00 AM	TC	35	10	S	98	
1	05/10	TIMPIE SPRINGS WMA	LEBLANC			07:48:00 AM		TC	40	10	S	60	
1	05/13	TIMPIE SPRINGS WMA	LEBLANC			07:04:00 AM	10:15:00 AM	TC	45	5	S	20	
1	05/28	TIMPIE SPRINGS WMA	LEBLANC			06:10:00 AM	09:15:00 AM	TC	45	5	S	10	
1	06/06	TIMPIE SPRINGS WMA	LEBLANC			06:17:00 AM	09:17:00 AM	TC	50	5	S	95	
1	06/14	TIMPIE SPRINGS WMA	LEBLANC			06:14:00 AM	08:48:00 AM	TC	45	5	S	70	
1	06/27	TIMPIE SPRINGS WMA	LEBLANC			06:15:00 AM	08:41:00 AM	TC	50	5	S	0	
1	07/03	TIMPIE SPRINGS WMA	LEBLANC			06:07:00 AM	08:12:00 AM	TC	60	5	S	0	
1	07/18	TIMPIE SPRINGS WMA	LEBLANC			06:10:00 AM	08:15:00 AM	TC	65	5	S	0	
1	07/24	TIMPIE SPRINGS WMA	LEBLANC			06:15:00 AM	09:00:00 AM	TC	65	5	S	99	
1	07/31	TIMPIE SPRINGS WMA	DOUGLASS			07:05:00 AM	10:15:00 AM	TC	78	25	S	10	
1	08/15	TIMPIE SPRINGS WMA	MELCHER			09:00:00 AM	10:45:00 AM	TC					
1	08/26	TIMPIE SPRINGS WMA	MELCHER			09:00:00 AM	10:30:00 AM	TC	85	5	W	80	
1	09/04	TIMPIE SPRINGS WMA	MELCHER			09:00:00 AM	10:45:00 AM	TC	85	0		50	
1	09/11	TIMPIE SPRINGS WMA	MELCHER			09:30:00 AM	11:00:00 AM	TC	70	10	SW	25	
1	09/20	TIMPIE SPRINGS WMA	MELCHER			09:15:00 AM	11:00:00 AM	TC	55	0		99	
1	04/16	TIMPIE SPRINGS WMA	WYSS	ANDERSON	CHRISTIANSEN	07:30:00 AM	09:00:00 AM	TC				0	1
1	04/23	TIMPIE SPRINGS WMA	WYSS	ANDERSON	CHRISTIANSEN	06:45:00 AM	08:15:00 AM	TC				60	2
1	05/07	TIMPIE SPRINGS WMA	WYSS	CHRISTIANSEN	ANDERSON	06:45:00 AM	08:15:00 AM	TC	44			20	3
1	05/16	TIMPIE SPRINGS WMA	CHRISTIANSEN	STROUP		07:15:00 AM	09:40:00 AM	TC	50	5	SW	10	4
1	05/21	TIMPIE SPRINGS WMA	WYSS	CHRISTIANSEN	ANDERSON	06:45:00 AM	08:15:00 AM	TC	50			95	5
1	06/04	TIMPIE SPRINGS WMA	MELCHER			06:45:00 AM	09:15:00 AM	TC	45	15	N	99	6
1	06/11	TIMPIE SPRINGS WMA	CHRISTIANSON	WYSS	ANDERSON	06:30:00 AM	08:15:00 AM	TC	50			4	7
1	07/03	TIMPIE SPRINGS WMA	CHRISTIANSEN	ANDERSON		07:45:00 AM	10:00:00 AM	TC	80	0		0	9
1	07/18	TIMPIE SPRINGS WMA	WYSS	STROUP		06:45:00 AM	08:15:00 AM	TC	75	5		10	10
1	07/24	TIMPIE SPRINGS WMA	CHRISTIANSEN	ANDERSON				TC	75			0	11
1	07/29	TIMPIE SPRINGS WMA	WYSS	ANDERSON	CHRISTIANSEN	06:30:00 AM	08:15:00 AM	TC	75			90	12
1	08/13	TIMPIE SPRINGS WMA	MELCHER			07:00:00 AM	09:00:00 AM	TC	65	5	SW	15	13
1	08/20	TIMPIE SPRINGS WMA	ANDERSON	CHRISTIANSEN		07:00:00 AM	08:30:00 AM	TC	73			75	14
1	09/04	TIMPIE SPRINGS WMA	ANDERSON	CHRISTIANSENN		06:30:00 AM	08:00:00 AM	TC				5	15
1	09/11	TIMPIE SPRINGS WMA	WYSS	CHRISTIANSEN	ANDERSEN	07:15:00 AM	09:00:00 AM	TC	65	5		0	16
1	09/25	TIMPIE SPRINGS WMA	WYSS	CHRISTIANSEN		07:15:00 AM	08:15:00 AM	TC	60	5		0	17
1	04/16	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		08:30:00 AM	09:40:00 AM	TC	50	10	SW	50	1
1	04/23	TIMPIE SPRINGS WMA	HALLIDAY			08:45:00 AM	10:10:00 AM	TC	45	10	W	95	2
1	04/27	TIMPIE SPRINGS WMA	DEWEY	ELLISON		09:00:00 AM	10:50:00 AM	TC	65	0		0	3
1	05/14	TIMPIE SPRINGS WMA	HALLIDAY	STROUP		07:40:00 AM	09:30:00 AM	TC	55	5	S	0	4
1	05/21	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:50:00 AM	09:00:00 AM	TC	60	10	S	45	5
1	06/03	TIMPIE SPRINGS WMA	HALLIDAY	STROUP		07:40:00 AM	08:50:00 AM	TC	75	20	SW	0	6
1	06/11	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:30:00 AM	08:25:00 AM	TC	60	15	SW	0	7
1	06/25	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:35:00 AM	08:30:00 AM	TC	65	10	SW	50	8
1	07/02	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:25:00 AM	08:05:00 AM	TC	73	8	S	5	9
1	07/09	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:30:00 AM	08:15:00 AM	TC	75	10	SW	20	10
1	07/16	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:35:00 AM	08:28:00 AM	TC	75	15	SW	30	11
1	07/30	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:40:00 AM	09:19:00 AM	TC	72	5	SW	5	12
1	08/06	TIMPIE SPRINGS WMA	STROUP	REID		07:35:00 AM	09:00:00 AM	TC	65	2	SW	5	13
1	08/20	TIMPIE SPRINGS WMA	STROUP	REID		07:35:00 AM	09:20:00 AM	TC	68	3	W	0	14
1	09/03	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		08:40:00 AM	10:40:00 AM	PS	55	8	SE	5	15
1	09/10	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		08:30:00 AM	11:06:00 AM	TC	54	5	S	4	16
1	09/19	TIMPIE SPRINGS WMA	DEWEY			09:00:00 AM	10:51:00 AM	TC	68	10	SW	15	17

40	06/30	MAGCORP	TRIPP	08:30:00 AM	10:00:00 AM	AC	75	3	NE	0	
40	07/11	MAGCORP	TRIPP	08:30:00 AM	10:00:00 AM	AC	75	5	NW	5	
40	07/23	MAGCORP	TRIPP	09:01:00 AM	10:13:00 AM	AC	75	5	S	90	
40	08/14	MAGCORP	TRIPP	09:34:00 AM	11:01:00 AM	AC	85	3	S	0	
40	08/20	MAGCORP	TRIPP	08:10:00 AM	09:05:00 AM	AC	72	3	S	75	
40	09/04	MAGCORP	TRIPP	07:30:00 AM	08:30:00 AM	AC	80	8	S	20	
40	09/16	MAGCORP	TRIPP	03:30:00 PM	04:13:00 PM	AC	90	3	N	35	
40	04/16	MAGCORP	TRIPP	05:01:00 PM	06:13:00 PM	AC	55	5	N	10	1
40	04/23	MAGCORP	TRIPP	09:30:00 AM	10:20:00 AM	AC	50	15	N	20	2
40	05/12	MAGCORP	TRIPP	11:03:00 AM	12:18:00 PM	AC	55	0		80	4
40	05/28	MAGCORP	TRIPP	07:58:00 AM	08:51:00 AM	AC	65	0		20	5
40	06/17	MAGCORP	TRIPP	06:23:00 AM	07:00:00 AM	AC	65	0		50	7
40	07/02	MAGCORP	TRIPP	04:30:00 AM	05:17:00 AM	AC	95	5		0	9
40	07/09	MAGCORP	TRIPP	06:22:00 AM	07:00:00 AM	AC	75	0		20	10
40	08/02	MAGCORP	TRIPP	08:56:00 AM	10:03:00 AM	AC	80	5	N	50	12
40	08/11	MAGCORP	TRIPP	04:46:00 PM	05:36:00 PM	AC	80	5	S	75	13
40	09/04	MAGCORP	TRIPP	01:15:00 PM	01:56:00 PM	AC	80	10	S	10	15
40	09/21	MAGCORP	TRIPP	03:45:00 PM	04:32:00 PM	AC	72	5	S	15	17
40	04/12	MAGCORP	TRIPP	03:55:00 PM	05:18:00 PM	PS	60	5	S	10	1
40	04/24	MAGCORP	TRIPP	03:45:00 PM	05:05:00 PM	PS	60	5	NW	15	2
40	04/27	MAGCORP	TRIPP	08:50:00 AM	09:55:00 AM	PS	60	0		5	3
40	05/15	MAGCORP	TRIPP	04:42:00 PM	05:54:00 PM	PS	75	15	NE	50	4
40	05/26	MAGCORP	TRIPP	04:18:00 PM	05:15:00 PM	PS	70	15	W	99	5
40	06/02	MAGCORP	TRIPP	04:18:00 PM	05:15:00 PM	PS	72	5	N	10	6
40	06/15	MAGCORP	TRIPP	04:22:00 PM	05:07:00 PM	PS	80	15	NW	10	7
40	06/23	MAGCORP	TRIPP	04:35:00 PM	05:22:00 PM	AC	90	5	N	10	8
40	06/30	MAGCORP	TRIPP	04:20:00 PM	04:52:00 PM	AC	88	20	SW	70	9
40	07/14	MAGCORP	TRIPP	04:10:00 PM	04:52:00 PM	AC	95	5	N	20	10
40	07/21	MAGCORP	TRIPP	04:32:00 PM	05:17:00 PM	AC	95	5	NE	5	11
40	07/26	MAGCORP	TRIPP	08:50:00 PM	10:12:00 PM	PS	85	5	N	25	12
40	08/11	MAGCORP	TRIPP	04:30:00 PM	05:13:00 PM	AC	95	5	N	0	13
40	08/18	MAGCORP	TRIPP	04:15:00 PM	05:13:00 PM	AC	85	5	N	20	14
40	08/28	MAGCORP	TRIPP	02:45:00 PM	03:12:00 PM	PS	85	5	S	50	15
40	09/08	MAGCORP	TRIPP	03:45:00 PM	04:20:00 PM	PS	85	5	N	50	16
40	09/22	MAGCORP	TRIPP	03:45:00 PM	04:18:00 PM	PS	60	5	NW	80	17

AREA	DATE	POINT_NU	SPECIES	COUNT
1	04/16		AGWT	25
1	04/16		AMAV	482
1	04/16		AMCO	211
1	04/16		AWPE	1
1	04/16		BNST	62
1	04/16		BUFF	3
1	04/16		CAGO	5
1	04/16		CAGU	50
1	04/16		CITE	40
1	04/16		EAGR	2
1	04/16		FOTE	2
1	04/16		GOLD	1
1	04/16		GRYE	2
1	04/16		LBDO	3
1	04/16		MALL	30
1	04/16		NOPI	14
1	04/16		RBME	4
1	04/16		REDH	20
1	04/16		RUDU	2
1	04/16		WILL	2
1	04/23		AGWT	72
1	04/23		AMAV	253
1	04/23		AMCO	205
1	04/23		AWPE	4
1	04/23		BCNH	3
1	04/23		BNST	88
1	04/23		CAGO	7
1	04/23		CITE	88
1	04/23		FOTE	4
1	04/23		GADW	5
1	04/23		GOLD	3
1	04/23		GTBH	4
1	04/23		LESC	2
1	04/23		MALL	8
1	04/23		NSHO	7
1	04/23		RBGU	237
1	04/23		RBME	6
1	04/23		REDH	16
1	04/23		RUDU	3
1	04/23		WFIB	7
1	04/23		WILL	1
1	04/27		AGWT	24
1	04/27		AMAV	254
1	04/27		AMCO	44
1	04/27		AWPE	12
1	04/27		BCNH	24
1	04/27		BNST	162
1	04/27		CAGO	10
1	04/27		CAGU	185
1	04/27		CITE	52
1	04/27		DUCK	2
1	04/27		EAGR	1
1	04/27		FOTE	11
1	04/27		FRGU	5
1	04/27		GADW	2
1	04/27		GTBH	4
1	04/27		KILL	1

1	04/27	LESC	2
1	04/27	MAGO	4
1	04/27	MALL	13
1	04/27	PBGR	1
1	04/27	RBME	5
1	04/27	REDH	6
1	04/27	SNEG	1
1	04/27	TEAL	75
1	04/27	WILL	3
1	05/14	AGWT	10
1	05/14	AMAV	49
1	05/14	AMCO	6
1	05/14	AWPE	1
1	05/14	BCNH	6
1	05/14	BNST	56
1	05/14	BWTE	1
1	05/14	CAGO	5
1	05/14	CAGU	7
1	05/14	CITE	28
1	05/14	EAGR	1
1	05/14	FOTE	9
1	05/14	GADW	7
1	05/14	GTBH	1
1	05/14	KILL	1
1	05/14	MALL	6
1	05/14	NSHO	2
1	05/14	REDH	21
1	05/14	SNEG	3
1	05/14	WFIB	14
1	05/14	WILL	10
1	05/14	WIPH	27
1	05/21	AGWT	1
1	05/21	AMAV	48
1	05/21	AMCO	4
1	05/21	AWPE	8
1	05/21	BCNH	10
1	05/21	BNST	66
1	05/21	BWTE	3
1	05/21	CAGO	5
1	05/21	CAGU	119
1	05/21	CITE	19
1	05/21	EAGR	1
1	05/21	FOTE	18
1	05/21	GADW	2
1	05/21	GTBH	1
1	05/21	MALL	8
1	05/21	REDH	14
1	05/21	SNEG	2
1	05/21	SPSA	3
1	05/21	WEGR	1
1	05/21	WFIB	20
1	05/21	WILL	8
1	05/21	WIPH	58
1	06/03	AGWT	2
1	06/03	AMAV	73
1	06/03	AWPE	13
1	06/03	BCNH	21
1	06/03	BNST	38

1	06/03	CAGU	460
1	06/03	CATE	1
1	06/03	CITE	12
1	06/03	FOTE	11
1	06/03	GADW	3
1	06/03	GTBH	14
1	06/03	LESC	1
1	06/03	MALL	9
1	06/03	NOPI	3
1	06/03	NSHO	1
1	06/03	REDH	14
1	06/03	SNEG	2
1	06/03	WFIB	2
1	06/03	WILL	9
1	06/03	WIPH	25
1	06/11	AGWT	4
1	06/11	AMAV	57
1	06/11	AWPE	14
1	06/11	BCNH	12
1	06/11	BNST	51
1	06/11	CAGU	110
1	06/11	CATE	4
1	06/11	CITE	17
1	06/11	FOTE	11
1	06/11	GADW	2
1	06/11	GTBH	10
1	06/11	MALL	6
1	06/11	NOPI	7
1	06/11	REDH	38
1	06/11	WFIB	7
1	06/11	WILL	15
1	06/11	WIPH	18
1	06/25	AGWT	2
1	06/25	AMAV	5
1	06/25	AWPE	3
1	06/25	BCNH	7
1	06/25	BNST	7
1	06/25	BWTE	1
1	06/25	CATE	28
1	06/25	CITE	8
1	06/25	EAGR	1
1	06/25	GADW	2
1	06/25	GTBH	12
1	06/25	MALL	9
1	06/25	NOPI	6
1	06/25	REDH	29
1	06/25	WILL	3
1	07/02	AGWT	2
1	07/02	AMAV	8
1	07/02	BCNH	10
1	07/02	BNST	6
1	07/02	CITE	8
1	07/02	GTBH	10
1	07/02	KILL	2
1	07/02	MALL	32
1	07/02	RBGU	2
1	07/02	REDH	39
1	07/02	WFIB	1

1	07/02	WILL	7
1	07/02	WIPH	1
1	07/09	AMAV	7
1	07/09	BCNH	9
1	07/09	CAGO	4
1	07/09	CAGU	3
1	07/09	CATE	1
1	07/09	GTBH	9
1	07/09	MALL	36
1	07/09	PEEP	5
1	07/09	REDH	61
1	07/09	WILL	1
1	07/16	AMAV	5
1	07/16	BCNH	8
1	07/16	BNST	4
1	07/16	CAGO	5
1	07/16	CAGU	5
1	07/16	CATE	1
1	07/16	CITE	8
1	07/16	EAGR	3
1	07/16	GTBH	7
1	07/16	KILL	1
1	07/16	MALL	31
1	07/16	RBGU	2
1	07/16	REDH	66
1	07/16	SACR	2
1	07/16	SNEG	1
1	07/16	WFIB	5
1	07/16	WIPH	1
1	07/30	AMAV	11
1	07/30	AWPE	20
1	07/30	BCNH	4
1	07/30	BNST	3
1	07/30	CAGO	20
1	07/30	CAGU	14
1	07/30	CATE	1
1	07/30	CITE	16
1	07/30	GTBH	4
1	07/30	LESA	1
1	07/30	MAGO	4
1	07/30	MALL	25
1	07/30	NOPI	2
1	07/30	REDH	41
1	07/30	SACR	2
1	07/30	SNEG	1
1	07/30	SPSA	1
1	07/30	WFIB	18
1	08/06	AWPE	17
1	08/06	BNST	1
1	08/06	CAGO	25
1	08/06	CAGU	1
1	08/06	CITE	18
1	08/06	COSN	1
1	08/06	DCCO	1
1	08/06	GTBH	5
1	08/06	LESC	10
1	08/06	NOPI	90
1	08/06	REDH	23

1	08/06	SACR	2
1	08/06	SPSA	1
1	08/06	WILL	1
1	08/20	AMCO	4
1	08/20	AWPE	17
1	08/20	DUCK	118
1	08/20	EAGR	1
1	08/20	GTBH	4
1	08/20	MALL	117
1	08/20	RBGU	3
1	08/20	SNEG	4
1	08/20	SPSA	2
1	09/03	AMCO	370
1	09/03	AWPE	11
1	09/03	BWTE	30
1	09/03	CAGO	96
1	09/03	CATE	1
1	09/03	DCCO	2
1	09/03	DUCK	400
1	09/03	GTBH	4
1	09/03	HOGR	1
1	09/03	MALL	16
1	09/03	NOPI	70
1	09/03	PBGR	4
1	09/03	REDH	5
1	09/03	SNEG	11
1	09/10	AMCO	550
1	09/10	AMWI	150
1	09/10	AWPE	18
1	09/10	CAGO	183
1	09/10	DCCO	2
1	09/10	DUCK	363
1	09/10	GRYE	7
1	09/10	GTBH	6
1	09/10	KILL	1
1	09/10	LBDO	3
1	09/10	MALL	123
1	09/10	NOPI	615
1	09/10	NSHO	150
1	09/10	RBGU	4
1	09/10	REDH	16
1	09/10	SNEG	13
1	09/10	SPSA	1
1	09/10	WFIB	1
1	09/19	AMCO	1271
1	09/19	AWPE	18
1	09/19	BNST	1
1	09/19	BWTE	5
1	09/19	CAGO	109
1	09/19	CAGU	3
1	09/19	CITE	6
1	09/19	DUCK	83
1	09/19	GADW	2
1	09/19	GTBH	3
1	09/19	KILL	2
1	09/19	NOPI	1046
1	09/19	NSHO	3
1	09/19	PBGR	2

1	09/19		RBGU	1
1	09/19		REDH	1
1	09/19		RUDU	1
1	09/19		TEAL	652
40	04/12	1	AMAV	61
40	04/12	1	CAGU	247
40	04/12	1	EAGR	11
40	04/12	1	LBCU	3
40	04/12	2	AMAV	158
40	04/12	2	CAGU	546
40	04/12	2	EAGR	22
40	04/12	2	WESA	27
40	04/24	1	AMAV	185
40	04/24	1	BNST	1
40	04/24	1	CAGU	348
40	04/24	1	EAGR	46
40	04/24	1	LBCU	1
40	04/24	1	WESA	60
40	04/24	2	AMAV	95
40	04/24	2	CAGU	1736
40	04/24	2	EAGR	1
40	04/24	2	GOLD	2
40	04/24	2	WESA	190
40	04/27	1	AMAV	103
40	04/27	1	BWTE	8
40	04/27	1	CAGO	3
40	04/27	1	CAGU	353
40	04/27	1	EAGR	593
40	04/27	1	GOLD	1
40	04/27	1	GTBH	2
40	04/27	1	MALL	2
40	04/27	1	RUDU	3
40	04/27	1	WESA	97
40	04/27	1	WIPH	15
40	04/27	2	AMAV	85
40	04/27	2	CAGU	1106
40	04/27	2	EAGR	517
40	04/27	2	WESA	300
40	04/27	2	WIPH	17
40	05/15	1	AMAV	20
40	05/15	1	CAGU	679
40	05/15	1	EAGR	78
40	05/15	1	LBCU	2
40	05/15	1	MALL	2
40	05/15	1	RPHA	1473
40	05/15	1	WESA	268
40	05/15	1	WIPH	20
40	05/15	2	AMAV	42
40	05/15	2	CAGU	1310
40	05/15	2	EAGR	18
40	05/15	2	LESA	20
40	05/15	2	SNPL	2
40	05/15	2	WESA	995
40	05/26	1	AMAV	28
40	05/26	1	CAGU	144
40	05/26	1	EAGR	25
40	05/26	1	GTBH	1
40	05/26	1	LBCU	1

40	05/26	1	RPHA	6839
40	05/26	1	WESA	15
40	05/26	1	WFIB	1
40	05/26	2	AMAV	43
40	05/26	2	CAGU	420
40	05/26	2	RPHA	85
40	05/26	2	WESA	215
40	06/02	1	AMAV	85
40	06/02	1	CAGU	915
40	06/02	1	EAGR	22
40	06/02	1	LBCU	3
40	06/02	2	AMAV	68
40	06/02	2	CAGU	1801
40	06/02	2	LBCU	1
40	06/15	1	AMAV	9
40	06/15	1	BNST	18
40	06/15	1	CAGU	1065
40	06/15	1	LBCU	1
40	06/15	1	WFIB	2
40	06/15	2	AMAV	51
40	06/15	2	CAGU	1954
40	06/15	2	EAGR	7
40	06/23	1	AMAV	9
40	06/23	1	BNST	1
40	06/23	1	CAGU	1324
40	06/23	1	MALL	7
40	06/23	2	AMAV	12
40	06/23	2	CAGU	756
40	06/23	2	EAGR	14
40	06/23	2	LBCU	4
40	06/30	1	AMAV	6
40	06/30	1	CAGU	306
40	06/30	1	EAGR	5
40	06/30	1	MALL	7
40	06/30	2	AMAV	14
40	06/30	2	CAGU	419
40	06/30	2	EAGR	15
40	07/14	1	AMAV	114
40	07/14	1	CAGU	249
40	07/14	1	EAGR	9
40	07/14	1	GRYE	2
40	07/14	1	KILL	1
40	07/14	1	LESA	2722
40	07/14	1	MALL	5
40	07/14	1	WESA	1341
40	07/14	1	WFIB	2
40	07/14	2	AMAV	181
40	07/14	2	CAGU	300
40	07/14	2	LESA	2001
40	07/14	2	WESA	984
40	07/14	2	WFIB	18
40	07/21	1	CAGU	198
40	07/21	1	CITE	3
40	07/21	1	MALL	6
40	07/21	2	AMAV	635
40	07/21	2	CAGU	1382
40	07/21	2	EAGR	1
40	07/21	2	WESA	6

40	07/21	2	WIPH	3
40	07/26	1	CAGU	259
40	07/26	2	AMAV	229
40	07/26	2	CAGU	1927
40	07/26	2	EAGR	6
40	07/26	2	WIPH	112
40	08/11	1	WIPH	17
40	08/11	2	CAGU	10
40	08/11	2	WIPH	147
40	08/18	1	CAGU	9
40	08/18	1	GTBH	1
40	08/18	2	CAGU	9
40	08/18	2	WESA	11
40	08/28	2	CAGU	1
40	08/28	2	WESA	1
40	09/08	1	GTBH	3
40	09/08	2	AMAV	9232
40	09/08	2	CAGU	5284
40	09/08	2	EAGR	1
40	09/08	2	LBCU	1
40	09/08	2	WESA	12
40	09/22	1	CAGU	4
40	09/22	2	AMAV	2404
40	09/22	2	CAGU	240

Species	Yr	Area	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
AGWT	0	1	112	60.5	10	17	22.5	10	7.5	0	5.33	0	0	0	0	37.67	8.33	7	0	
AMAV	0	1	105	185	269	283	299	230	215	118	303	267	344	178	77.67	45.33	9	37.33	26.5	
AMCO	0	1	105	80.5	61.5	27.5	11.5	16	3	0	2.33	3.33	4.67	0.67	6	4	186	467	1750	
AMWI	0	1	2.5	11	0	2.5	0	0	0	1	0	1.67	1	1	0	0	0	0	0	
AVOSTI	0	1	150	293	455	470	486	428	363	228	420	359	437	231	95	50.67	9	38.33	26.5	
AWPE	0	1	3	3	3	8	5	1	1.5	1	1.33	0	0	0	0	0	0	0	0	
BAGO	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BASA	0	1	0	0	0	0	0	0	0	0	0	0	0	2.67	0	0	0	0	0	
BBPL	0	1	0	0	0	0	0	0	0	0	0	0	0.67	0	0	0	0	0	0	
BCNH	0	1	0	0.5	1	5.5	6.5	5.5	10	1	1.67	0.33	0	0	0.67	1.67	0	0	0	
BLTE	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BNST	0	1	45.5	108	186	187	187	198	148	110	116	91.67	93.67	53	17.33	5.33	0	1	0	
BOGU	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BUFF	0	1	1	1.5	0.5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
BWTE	0	1	0	0	0	0	0	0	3.5	4.5	0.67	0	0	0	0	0	0	0	0	
CAEG	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CAGO	0	1	14	4.5	11	9	13	6.5	0	10	9.67	12	19	9.67	0.33	5	36.33	27.67	12.5	
CAGU	0	1	17.5	2.5	35	39	111	270	1166	48.5	540	367	111	20.33	3	0	0	157	2.5	
CANV	0	1	0	0.5	0	0	0	8	0	0	0	0	0	0	0	0.33	0	0	0	
CATE	0	1	0	0	1	1	4.5	0	1	3	1.67	0.67	0.33	0	0.33	0.33	0.67	0	0.5	
CITE	0	1	49.5	24.5	23	22	13.5	7	14.5	7	6	0.33	0.33	1.33	0	3.33	0	0.67	0	
CLGR	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
COGO	0	1	0.5	0	1.5	1	0.5	0	1	0	1.33	1	1	1.33	0	1	0	0.67	1	
COME	0	1	10.5	9.5	9	2	0	0.5	0	0	0.33	0	0	0.67	0	0.67	0	0	0	
COSN	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DCCO	0	1	0	0	0	0	0	0	0	0	0	2.33	0.33	0	0	0	0	0	0	
DOWI	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DOWITC	0	1	2	0	2.5	2	0	0	0	0	0	0	3.33	2	0	0.33	0	0	0	
DUCK	0	1	97	50	37.5	10	8.5	17	17	28.5	123	41	102	110	413	1369	3697	3732	2157	
DUCKSX	0	1	363	247	131	137	114	153	221	145	185	67.33	123	152	417	1555	3830	3751	2161	
EAGR	0	1	5	11.5	23	49	29.5	6.5	2	2.5	1.67	0.67	0.33	0	0	0	0	0.33	1	
FOTE	0	1	0	4.5	15.5	9	12.5	8.5	14.5	8.5	5	4.67	5.67	4.33	1	0.33	0	0	0	
FRGU	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GADW	0	1	2.5	1	6	23.5	3.5	11	2.5	9.5	7.33	4.33	3	2.67	0	0.33	101	0	0	
GOLD	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GREB	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GREG	0	1	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GRSC	0	1	1	0	0	1	1	0.5	2	0	0	0.33	0.33	0	0	0	0	0	0	
GRYE	0	1	0.5	0	0.5	0	0	0	0	0	0	0	0	1.67	3	8.67	4.33	2.33	0	
GTBH	0	1	0	1	0.5	2	5	5	4.5	1	1.67	4.33	2	6.33	2	1.33	2	2	1.5	
GULLSX	0	1	17.5	3	35	39.5	111	270	1166	48.5	540	367	113	167	3	0.67	0.33	157	3	
HEREGR	0	1	1.5	9.5	2	7.5	12	10.5	14.5	2	3.33	5	2	6.33	3.33	4.67	2	4.33	3.5	
KILL	0	1	0	0.5	0.5	1	1	1	8	1	1.33	1.67	4	1.67	6.33	2.67	10.67	6.33	5	
LBCU	0	1	0	0	0	0	0	0	0	0	0	0.33	0	1.33	0	0.33	0	0	0	
LBDO	0	1	2	0	2.5	2	0	0	0	0	0	0	1.33	2	0	0.33	0	0	0	
LESA	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	10	1	0	
LESC	0	1	22	9.5	15	0	0	0	0	0	0	0	0	0	0	0	0.33	0	0	
LEYE	0	1	0	0	0	0	0	0	0	0	0	0	0	0.33	0	6.33	13.67	4	0	
MAGO	0	1	0	0	0	1.5	0	0	0	0	0	1.67	0.67	0.33	0	0	0	0.33	0.5	
MALL	0	1	3	0	2	7	11.5	9	7	4	3.67	4.33	5.33	14.67	0	1	15.67	0	2.5	
MERG	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
NOPI	0	1	14	10	9	10	14	71.5	153	77.5	12.67	5.33	2	9.67	0	135	2.33	0.33	0	
NSHO	0	1	38	47.5	11.5	11.5	6	4.5	0.5	0	2	0	0	0	0	6.33	0	0	0	
PBGR	0	1	0	0	0	0	0	0	0	0	0.33	0	0.33	0.67	0.67	0	0	1	0	
PEEP	0	1	0	0	1000	2.5	8.5	5	1.5	10	0.67	5	95.33	6.67	6.33	1.33	1	10.33	0	
PEEPSX	0	1	0	0	1001	2.5	8.5	5	1.5	10	0.67	5.67	95.33	11	6.33	2.33	11	11.33	0	
PHAL	0	1	0	0	0	10	100	0	0	0	0	0	0	0	0	0	0	0	0	

PHALAR	0	1	0	0	44.5	153	117	21	56	12	2.33	9	7.67	6.67	17	0	0	0	0
RBGU	0	1	0	0.5	0	0.5	0	0	0	0	0	0	1.67	21.33	0	0.67	0	0	0.5
RBME	0	1	1	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REDH	0	1	18	28	12.5	25	30	12.5	12	12.5	22.33	8.67	8	10.67	2.67	0	4	2	0
REKN	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNDU	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNPH	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RPHA	0	1	0	0	0	82	3	0	0	0	0	0	0	0	0	0	0	0	0
RUDU	0	1	1.5	3	2.5	5.5	2.5	1.5	0.5	0	0	0.33	0	0.33	1	0	1	0	0
SACR	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0.33	0.33	0	0
SAND	0	1	0	0	0	20	100	0	0	0	0	0	0	0	0	0	0	0	0
SCAU	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEPL	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
SESA	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNEG	0	1	1.5	7.5	0.5	0	0.5	0	0	0	0	0.33	0	0	0.67	1.67	0	2.33	2
SNGO	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNPL	0	1	0	0	2	7	1	0	0	1	0	0	2	0.33	0	0	2.33	0	0
SORA	0	1	0	0	0	1	0	0	0	0	0	0	0	0.67	0	0	0	0	0
SPSA	0	1	0	0	1.5	6	0	1	0	0	0	0.67	1.67	2.67	2.67	0.33	0.33	0.67	0
STLS	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEAL	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUSW	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNGU	0	1	0	0	0	0	0	0	0	0	0	0.33	0	125	0	0	0.33	0	0
UNSC	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNTE	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNYE	0	1	0	0	0	0	0	0	0	1	0	0.67	0	0	0	3.67	0	0	0
VIRA	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WCGR	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WECLGR	0	1	0	0	0	0	0	0	0.5	1	0	0	0	0	0.33	0	0.67	0	0
WEGR	0	1	0	0	0	0	0	0	0.5	1	0	0	0	0	0.33	0	0.67	0	0
WESA	0	1	0	0	0	0	0	0	0	0	0	0.67	0	1.67	0	0	0	0	0
WFIB	0	1	1	11.5	4	24.5	8	12.5	15.5	0	0	3.33	22	22.33	35.33	36	8.67	11	10.5
WHIM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WILL	0	1	1	6	2	7.5	10	3.5	9	5	7	21.67	20.67	22.67	2	0.33	0.33	0	2
WIPH	0	1	0	0	44.5	61	14	21	56	12	2.33	9	7.67	6.67	17	0	0	0	0
WODU	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YELLOW	0	1	0.5	0	0.5	0	0	0	0	1	0	0.67	0	2	3	18.67	18	6.33	0
AGWT	97	1								0	0	0	0	0	0	113	0	0	
AMAV	97	1								37	54	22	55	30	71	42	2	37	
AMCO	97	1								0	1	1	0	0	0	1	0	0	
AMWI	97	1								2	0	5	3	3	0	0	0	0	
AVOSTI	97	1								119	133	82	117	76	73	43	2	37	
AWPE	97	1								0	2	0	0	0	0	0	0	0	
BAGO	97	1								0	0	0	0	0	0	0	0	0	
BASA	97	1								0	0	0	0	0	0	0	0	0	
BBPL	97	1								0	0	0	2	0	0	0	0	0	
BCNH	97	1								1	0	0	0	0	2	4	0	0	
BLTE	97	1								0	0	0	0	0	0	0	0	0	
BNST	97	1								82	79	60	62	46	2	1	0	0	
BOGU	97	1								0	0	0	0	0	0	0	0	0	
BUFF	97	1								0	0	0	0	0	0	0	0	0	
BWTE	97	1								0	2	0	0	0	0	0	0	0	
CAEG	97	1								0	0	0	0	0	0	0	0	0	
CAGO	97	1								0	0	8	0	0	1	0	0	59	
CAGU	97	1								77	12	1	1	4	0	0	0	0	
CANV	97	1								0	0	0	0	0	0	1	0	0	
CATE	97	1								3	0	0	0	0	1	1	2	0	
CITE	97	1								13	9	0	0	0	0	0	0	0	

CLGR	97	1	0	0	0	0	0	0	0	0	0
COGO	97	1	0	0	0	0	0	0	0	0	0
COME	97	1	0	0	0	0	1	0	0	0	0
COSN	97	1	0	0	0	0	0	0	0	0	0
DCCO	97	1	0	0	6	0	0	0	0	0	0
DOWI	97	1	0	0	0	0	0	0	0	0	0
DOWITC	97	1	0	0	0	4	1	0	1	0	0
DUCK	97	1	23	3	0	24	21	540	220	2050	2250
DUCKSX	97	1	58	31	27	37	32	540	737	2052	2250
EAGR	97	1	0	0	0	0	0	0	0	0	0
FOTE	97	1	2	2	1	0	0	0	0	0	0
FRGU	97	1	0	0	0	0	0	0	0	0	0
GADW	97	1	12	12	13	9	8	0	1	0	0
GOLD	97	1	0	0	0	0	0	0	0	0	0
GREB	97	1	0	0	0	0	0	0	0	0	0
GREG	97	1	0	0	0	0	0	0	0	0	0
GRSC	97	1	0	0	0	0	0	0	0	0	0
GRYE	97	1	0	0	0	0	1	4	2	4	0
GTBH	97	1	1	2	1	1	3	1	2	2	1
GULLSX	97	1	77	12	1	1	4	0	2	0	0
HEREGR	97	1	2	2	1	1	3	3	6	2	3
KILL	97	1	2	4	1	2	2	0	0	22	0
LBCU	97	1	0	0	0	0	0	0	1	0	0
LBDO	97	1	0	0	0	4	1	0	1	0	0
LESA	97	1	0	0	0	0	0	0	0	30	0
LESC	97	1	0	0	0	0	0	0	0	0	0
LEYE	97	1	0	0	0	0	0	0	12	34	8
MAGO	97	1	0	0	1	0	0	0	0	0	0
MALL	97	1	8	0	3	1	0	0	0	1	0
MERG	97	1	0	0	0	0	0	0	0	0	0
NOPI	97	1	0	0	0	0	0	0	395	0	0
NSHO	97	1	0	0	0	0	0	0	7	0	0
PBGR	97	1	0	0	0	1	2	2	0	0	1
PEEP	97	1	0	0	15	0	0	0	1	0	0
PEEPSX	97	1	0	0	15	0	0	0	1	30	0
PHAL	97	1	0	0	0	0	0	0	0	0	0
PHALAR	97	1	16	0	0	1	5	51	0	0	0
RBGU	97	1	0	0	0	0	0	0	2	0	0
RBME	97	1	0	0	0	0	0	0	0	0	0
REDH	97	1	0	5	5	0	0	0	0	1	0
REKN	97	1	0	0	0	0	0	0	0	0	0
RNDU	97	1	0	0	0	0	0	0	0	0	0
RNPH	97	1	0	0	0	0	0	0	0	0	0
RPHA	97	1	0	0	0	0	0	0	0	0	0
RUDU	97	1	0	0	0	0	0	0	0	0	0
SACR	97	1	0	0	1	0	0	0	0	0	0
SAND	97	1	0	0	0	0	0	0	0	0	0
SCAU	97	1	0	0	0	0	0	0	0	0	0
SEPL	97	1	0	0	0	0	0	0	0	0	0
SESA	97	1	0	0	0	0	0	0	0	0	0
SNEG	97	1	0	0	0	0	0	0	0	0	0
SNGO	97	1	0	0	0	0	0	0	0	0	2
SNPL	97	1	0	0	0	0	0	0	0	0	0
SORA	97	1	2	0	0	0	1	0	0	0	0
SPSA	97	1	0	0	0	0	0	0	0	0	0
STLS	97	1	0	0	1	1	4	8	1	1	1
TEAL	97	1	0	0	0	0	0	0	0	0	0
TUSW	97	1	0	0	0	0	0	0	0	0	0

UNGU	97	1								0	0	0	0	0	0	0	0	0		
UNSC	97	1								0	0	0	0	0	0	0	0	0		
UNTE	97	1								0	0	0	0	0	0	0	0	0		
UNYE	97	1								0	0	0	0	0	0	11	0	0		
VIRA	97	1								0	0	0	0	0	0	0	0	0		
WCGR	97	1								0	0	0	0	0	0	0	0	0		
WECLGR	97	1								1	0	0	0	0	1	0	2	0		
WEGR	97	1								1	0	0	0	0	1	0	2	0		
WESA	97	1								0	0	0	0	0	0	0	0	0		
WFIB	97	1								0	0	3	1	2	16	45	14	8		
WHIM	97	1								0	0	0	0	0	0	0	0	0		
WILL	97	1								2	13	1	12	2	0	0	0	0		
WIPH	97	1								16	0	0	1	5	51	0	0	0		
WODU	97	1								0	0	0	0	0	0	0	0	0		
YELLOW	97	1								0	0	0	0	1	4	25	38	8		
AGWT	98	1	0	63	0	27	18	10	15	0	0	0	0	0	0	0	0	0	0	
AMAV	98	1	159	299	392	352	371	297	270	198	405	502	537	173	36	11	0	49	31	
AMCO	98	1	0	8	2	10	1	0	2	0	2	2	1	0	0	11	49	600	500	
AMWI	98	1	0	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	
AVOSTI	98	1	230	460	605	601	614	566	437	336	613	626	689	238	80	11	0	52	31	
AWPE	98	1	2	2	0	5	5	2	0	2	0	0	0	0	0	0	0	0	0	
BAGO	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BASA	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BBPL	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BCNH	98	1	0	0	1	0	1	3	6	1	1	1	0	0	0	0	0	0	0	
BLTE	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BNST	98	1	71	161	213	249	243	269	167	138	208	124	152	65	44	0	0	3	0	
BOGU	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BUFF	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BWTE	98	1	0	0	0	0	0	0	7	9	0	0	0	0	0	0	0	0	0	
CAEG	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CAGO	98	1	8	5	12	8	12	13	0	20	20	19	7	6	0	0	47	24	25	
CAGU	98	1	0	4	0	4	18	160	53	20	400	900	125	42	0	0	0	1	3	
CANV	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CATE	98	1	0	0	0	0	0	0	2	3	1	0	0	0	0	0	0	0	0	
CITE	98	1	21	6	14	25	12	12	9	1	0	1	0	3	0	0	0	0	0	
CLGR	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
COGO	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
COME	98	1	19	12	18	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
COSN	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DCCO	98	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
DOWI	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DOWITC	98	1	0	0	5	0	0	0	0	0	0	0	6	0	0	0	0	0	0	
DUCK	98	1	192	40	75	20	17	34	20	34	67	64	124	45	550	1300	3000	2500	2000	
DUCKSX	98	1	253	163	124	205	153	261	376	231	143	103	160	139	550	1300	3000	2500	2000	
EAGR	98	1	1	2	6	21	13	12	4	5	5	2	1	0	0	0	0	1	1	
FOTE	98	1	0	7	17	15	16	15	19	15	9	10	5	2	2	1	0	0	0	
FRGU	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GADW	98	1	2	2	6	45	6	20	1	7	4	0	0	0	0	0	0	0	0	
GOLD	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GREB	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GREG	98	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GRSC	98	1	0	0	0	2	2	1	4	0	0	1	1	0	0	0	0	0	0	
GRYE	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	
GTBH	98	1	0	1	0	1	1	5	1	1	1	3	2	1	1	1	1	3	2	
GULLSX	98	1	0	4	0	4	18	160	53	20	400	900	125	481	0	0	0	1	3	
HEREGR	98	1	3	16	1	1	2	8	7	2	2	5	2	1	2	3	1	6	4	
KILL	98	1	0	0	0	2	2	2	3	0	0	0	5	0	0	0	0	10	5	

LBCU	98	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
LBDO	98	1	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LESA	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LESC	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEYE	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAGO	98	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
MALL	98	1	4	0	2	11	18	18	4	0	2	0	5	30	0	0	0	0	0
MERG	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOPI	98	1	7	14	10	16	26	133	299	155	36	16	6	29	0	0	0	0	0
NSHO	98	1	17	18	8	22	10	7	1	0	0	0	0	0	0	0	0	0	0
PBGR	98	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
PEEP	98	1	0	0	0	2	9	10	3	20	2	0	248	0	0	0	3	20	0
PEEPSX	98	1	0	0	0	2	9	10	3	20	2	0	248	0	0	0	3	20	0
PHAL	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHALAR	98	1	0	0	23	21	11	41	87	8	1	2	3	0	0	0	0	0	0
RBGU	98	1	0	0	0	0	0	0	0	0	0	0	0	64	0	0	0	0	0
RBME	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REDH	98	1	10	16	8	24	39	25	16	25	34	21	24	32	0	0	0	0	0
REKN	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNDU	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNPH	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RPHA	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RUDU	98	1	0	2	1	8	5	1	0	0	0	0	0	0	0	0	0	0	0
SACR	98	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
SAND	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
SCAU	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEPL	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SESA	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNEG	98	1	3	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNGO	98	1	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	3	2
SNPL	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SORA	98	1	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
SPSA	98	1	0	0	1	0	0	2	0	0	0	0	0	2	0	0	0	0	0
STLS	98	1	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0
TEAL	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUSW	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNGU	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNSC	98	1	0	0	0	0	0	0	0	0	0	0	0	375	0	0	0	0	0
UNTE	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNYE	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIRA	98	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
WCGR	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WECLGR	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEGR	98	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
WESA	98	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
WFIB	98	1	2	8	8	0	16	0	31	0	0	7	59	45	53	63	12	25	21
WHIM	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WILL	98	1	2	8	1	9	9	5	7	8	0	7	12	25	0	0	0	0	0
WIPH	98	1	0	0	23	21	11	41	87	8	1	2	3	0	0	0	0	0	0
WODU	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YELLOW	98	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0
AGWT	99	1	224	58	20	7	27	10	0		16	0	0	0	0	0	25	21	0
AMAV	99	1	50	70	145	213	227	163	159		451	278	439	332	126	83	25	26	22
AMCO	99	1	209	153	121	45	22	32	4		4	7	13	2	18	0	508	800	3000
AMWI	99	1	5	20	0	0	0	0	0		0	0	0	0	0	0	0	0	0
AVOSTI	99	1	70	125	304	338	357	290	288		513	369	506	380	132	98	25	26	22
AWPE	99	1	4	4	6	11	5	0	3		2	0	0	0	0	0	0	0	0
BAGO	99	1	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0

BASA	99	1	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0
BBPL	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCNH	99	1	0	1	1	11	12	8	14	4	0	0	0	0	1	0	0	0
BLTE	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BNST	99	1	20	55	159	125	130	127	129	62	91	67	48	6	15	0	0	0
BOGU	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BUFF	99	1	2	3	1	2	0	0	0	0	0	0	0	0	0	0	0	0
BWTE	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAEG	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAGO	99	1	20	4	10	10	14	0	0	9	9	50	23	0	15	62	0	0
CAGU	99	1	35	1	70	74	203	380	2278	1207	200	208	15	9	0	0	470	2
CANV	99	1	0	1	0	0	0	16	0	0	0	0	0	0	0	0	0	0
CATE	99	1	0	0	2	2	9	0	0	4	2	1	0	0	0	0	0	1
CITE	99	1	78	43	32	19	15	2	20	9	0	1	1	0	10	0	2	0
CLGR	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COGO	99	1	1	0	3	2	1	0	2	4	3	3	4	0	3	0	2	2
COME	99	1	2	7	0	4	0	0	0	1	0	0	1	0	2	0	0	0
COSN	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCCO	99	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
DOWI	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOWITC	99	1	4	0	0	4	0	0	0	0	0	0	5	0	0	0	0	0
DUCK	99	1	2	60	0	0	0	0	14	300	59	158	265	150	2588	6041	6445	2314
DUCKSX	99	1	472	331	138	69	74	44	65	380	72	172	285	161	2627	6437	6504	2321
EAGR	99	1	9	21	40	77	46	1	0	0	0	0	0	0	0	0	0	1
FOTE	99	1	0	2	14	3	9	2	10	4	3	12	11	1	0	0	0	0
FRGU	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GADW	99	1	3	0	6	2	1	2	4	6	0	0	0	0	0	303	0	0
GOLD	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GREB	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GREG	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRSC	99	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRYE	99	1	1	0	1	0	0	0	0	0	0	0	4	5	24	9	5	0
GTBH	99	1	0	1	1	3	9	5	8	2	9	3	15	4	1	3	2	1
GULLSX	99	1	35	2	70	75	203	380	2278	1207	201	213	16	9	0	1	470	3
HEREGR	99	1	0	3	3	14	22	13	22	6	9	3	15	5	5	3	4	3
KILL	99	1	0	1	1	0	0	0	13	0	4	5	3	19	8	10	9	5
LBCU	99	1	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
LBDO	99	1	4	0	0	4	0	0	0	0	0	0	5	0	0	0	0	0
LESA	99	1	0	0	2	0	0	0	0	0	0	0	0	0	3	0	3	0
LESC	99	1	44	19	30	0	0	0	0	0	0	0	0	0	0	1	0	0
LEYE	99	1	0	0	0	0	0	0	0	0	0	0	1	0	7	7	4	0
MAGO	99	1	0	0	0	3	0	0	0	0	4	0	1	0	0	0	1	1
MALL	99	1	2	0	2	3	5	0	10	9	10	10	14	0	3	46	0	5
MERG	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOPI	99	1	21	6	8	4	2	10	6	2	0	0	0	0	11	7	28	0
NSHO	99	1	59	77	15	1	2	2	0	6	0	0	0	0	12	0	0	0
PBGR	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
PEEP	99	1	0	0	2000	3	8	0	0	0	0	38	20	19	3	0	11	0
PEEPSX	99	1	0	0	2002	3	8	0	0	0	2	38	33	19	6	0	14	0
PHAL	99	1	0	0	0	20	200	0	0	0	0	0	0	0	0	0	0	0
PHALAR	99	1	0	0	66	285	223	1	25	6	25	19	15	0	0	0	0	0
RBGU	99	1	0	1	0	1	0	0	0	0	0	5	0	0	0	0	0	1
RBME	99	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REDH	99	1	26	40	17	26	21	0	8	28	0	0	0	8	0	11	6	0
REKN	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNDU	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNPH	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RPHA	99	1	0	0	0	164	6	0	0	0	0	0	0	0	0	0	0	0

RUDU	99	1	3	4	4	3	0	2	1	0	0	0	1	3	0	3	0	0
SACR	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAND	99	1	0	0	0	40	200	0	0	0	0	0	0	0	0	0	0	0
SCAU	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEPL	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
SESA	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNEG	99	1	0	1	1	0	1	0	0	0	0	0	0	1	3	0	2	2
SNGO	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNPL	99	1	0	0	4	14	2	0	0	0	0	2	0	0	0	7	0	0
SORA	99	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
SPSA	99	1	0	0	2	12	0	0	0	0	0	4	2	0	0	0	1	0
STLS	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEAL	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUSW	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNGU	99	1	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0
UNSC	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNTE	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNYE	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIRA	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WCGR	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WECLGR	99	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
WEGR	99	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
WESA	99	1	0	0	0	0	0	0	0	0	2	0	5	0	0	0	0	0
WFIB	99	1	0	15	0	49	0	25	0	0	0	6	20	37	0	0	0	0
WHIM	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WILL	99	1	0	4	3	6	11	2	11	8	57	38	41	6	1	1	0	4
WIPH	99	1	0	0	66	101	17	1	25	6	25	19	15	0	0	0	0	0
WODU	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YELLOW	99	1	1	0	1	0	0	0	0	0	0	0	5	5	31	16	9	0
AGWT	0	40	0	0		0	0		0	0	0	0	0	0	0	3.5	0	0
AMAV	0	40	3	48		160	129		244	135	418	847	1758	1429	4262	5450	6154	1664
AMCO	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
AMWI	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
AVOSTI	0	40	3	48		160	131		244	135	418	847	1764	1437	4262	5450	6154	1664
AWPE	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
BAGO	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
BASA	0	40	0	0		0	0		0	0	0	0	0	0	0	0	43	0
BBPL	0	40	0	2		0	0		0	0	0	0	0	0	0	0	0	0
BCNH	0	40	0	0		0	0		2	1.5	0	0	0	0	0	0	0	0
BLTE	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
BNST	0	40	0	0		0	2		0	0	0	0	6	8	0	0	0	0
BOGU	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
BUFF	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
BWTE	0	40	10	18		0	0		0	0	0	0	0	0	0	0	0	0
CAEG	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
CAGO	0	40	0	0		4	0		0	0	0	4	0	0	0	0	0	0
CAGU	0	40	850	1374		892	889		1558	3128	1858	1186	21772	4204	9441	4274	1806	1794
CANV	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
CATE	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
CITE	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
CLGR	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
COGO	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
COME	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
COSN	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
DCCO	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
DOWI	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
DOWITC	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
DUCK	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0

DUCKSX	0	40	21	39	0	0	0	0	0	0	0	0	10	11.5	0	0
EAGR	0	40	11	1840	210	44	4	24.5	8	3	0	22	1	181	0	85
FOTE	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FRGU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	2463
GADW	0	40	5	14	0	0	0	0	0	0	0	0	10	0	0	0
GOLD	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GREB	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GREG	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRSC	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRYE	0	40	0	0	0	0	0	6	0	0	0	0	0	0	0	0
GTBH	0	40	0	0	1	0	0	0	0	0	0	0	0	0	0	0
GULLSX	0	40	850	1374	892	889	1558	3128	1858	1186	21772	4204	9441	4274	1806	4257
HEREGR	0	40	0	0	1	0	2	1.5	0	0	0	0	0	0	0	0
KILL	0	40	0	0	0	1	3	0	3.5	0	0	6	1	0	0	0
LBCU	0	40	12	0	1	0	0	2	0.5	5	22	2.5	4	3	1	0
LBDO	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LESA	0	40	0	0	0	0	0	0	0	1590	0	0	0	0	0	0
LESC	0	40	6	7	0	0	0	0	0	0	0	0	0	0	0	0
LEYE	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAGO	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MALL	0	40	0	0	0	0	0	0	0	0	0	0	0	8	0	0
MERG	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOPI	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NSHO	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBGR	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEEP	0	40	0	0	0	0	0	0	4276	0	0	0	0	0	0	0
PEEPSX	0	40	0	0	0	67	0	86.5	4343	4818	315	45.5	78	0	43	0
PHAL	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHALAR	0	40	0	0	277	278	6155	109299	73462	10965	4539	133	0	0	0	0
RBGU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RBME	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REDH	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REKN	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNDU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNPH	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RPHA	0	40	0	0	277	278	6155	0	0	0	0	0	0	0	0	0
RUDU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SACR	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAND	0	40	0	0	150	44	0	0	0	0	0	0	0	0	0	0
SCAU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEPL	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SESA	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNEG	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNGO	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNPL	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SORA	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SPSA	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STLS	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEAL	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUSW	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNGU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNSC	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNTE	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNYE	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIRA	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WCGR	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WECLGR	0	40	0	7	30	0	0	0	0	0	0	0	0	0	0	0
WEGR	0	40	0	7	30	0	0	0	0	0	0	0	0	0	0	0

WESA	0	40	0	0	0	67	0	86.5	66.5	3228	315	45.5	78	0	0	0
WFIB	0	40	0	0	0	0	0	0	0	0	0	0	2	0	0	0
WHIM	0	40	0	0	0	3	0	0	0	0	0	5.5	0	0	0	0
WILL	0	40	0	0	0	0	0	0	0.5	1	8	4	2	0	0	0
WIPH	0	40	0	0	0	0	0	109209	73462	10965	4539	133	0	0	0	0
WODU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YELLOW	0	40	0	0	0	0	0	6	0	0	0	0	0	0	0	0
AGWT	97	40														
AMAV	97	40														
AMCO	97	40														
AMWI	97	40														
AVOSTI	97	40														
AWPE	97	40														
BAGO	97	40														
BASA	97	40														
BBPL	97	40														
BCNH	97	40														
BLTE	97	40														
BNST	97	40														
BOGU	97	40														
BUFF	97	40														
BWTE	97	40														
CAEG	97	40														
CAGO	97	40														
CAGU	97	40														
CANV	97	40														
CATE	97	40														
CITE	97	40														
CLGR	97	40														
COGO	97	40														
COME	97	40														
COSN	97	40														
DCCO	97	40														
DOWI	97	40														
DOWITC	97	40														
DUCK	97	40														
DUCKSX	97	40														
EAGR	97	40														
FOTE	97	40														
FRGU	97	40														
GADW	97	40														
GOLD	97	40														
GREB	97	40														
GREG	97	40														
GRSC	97	40														
GRYE	97	40														
GTBH	97	40														
GULLSX	97	40														
HEREGR	97	40														
KILL	97	40														
LBCU	97	40														
LBDO	97	40														
LESA	97	40														
LESC	97	40														
LEYE	97	40														
MAGO	97	40														
MALL	97	40														
MERG	97	40														

NOPI	97	40						
NSHO	97	40						
PBGR	97	40						
PEEP	97	40						
PEEPSX	97	40						
PHAL	97	40						
PHALAR	97	40						
RBGU	97	40						
RBME	97	40						
REDH	97	40						
REKN	97	40						
RNDU	97	40						
RNPH	97	40						
RPHA	97	40						
RUDU	97	40						
SACR	97	40						
SAND	97	40						
SCAU	97	40						
SEPL	97	40						
SESA	97	40						
SNEG	97	40						
SNGO	97	40						
SNPL	97	40						
SORA	97	40						
SPSA	97	40						
STLS	97	40						
TEAL	97	40						
TUSW	97	40						
UNGU	97	40						
UNSC	97	40						
UNTE	97	40						
UNYE	97	40						
VIRA	97	40						
WCGR	97	40						
WECLGR	97	40						
WEGR	97	40						
WESA	97	40						
WFIB	97	40						
WHIM	97	40						
WILL	97	40						
WIPH	97	40						
WODU	97	40						
YELLOW	97	40						
AGWT	98	40	0	0	0	0	0	7	0
AMAV	98	40	90	559	847	2537	4262	10602	6154
AMCO	98	40	0	0	0	0	0	0	0
AMWI	98	40	0	0	0	0	0	0	0
AVOSTI	98	40	90	559	847	2545	4262	10602	6154
AWPE	98	40	0	0	0	0	0	0	0
BAGO	98	40	0	0	0	0	0	0	0
BASA	98	40	0	0	0	0	0	0	43
BBPL	98	40	0	0	0	0	0	0	0
BCNH	98	40	3	0	0	0	0	0	0
BLTE	98	40	0	0	0	0	0	0	0
BNST	98	40	0	0	0	8	0	0	0
BOGU	98	40	0	0	0	0	0	0	0
BUFF	98	40	0	0	0	0	0	0	0
BWTE	98	40	0	0	0	0	0	0	0

CAEG	98	40	0	0	0	0	0	0	0	0
CAGO	98	40	0	0	4	0	0	0	0	0
CAGU	98	40	5098	2470	1186	2028	9441	1973	1806	
CANV	98	40	0	0	0	0	0	0	0	0
CATE	98	40	0	0	0	0	0	0	0	0
CITE	98	40	0	0	0	0	0	0	0	0
CLGR	98	40	0	0	0	0	0	0	0	0
COGO	98	40	0	0	0	0	0	0	0	0
COME	98	40	0	0	0	0	0	0	0	0
COSN	98	40	0	0	0	0	0	0	0	0
DCCO	98	40	0	0	0	0	0	0	0	0
DOWI	98	40	0	0	0	0	0	0	0	0
DOWITC	98	40	0	0	0	0	0	0	0	0
DUCK	98	40	0	0	0	0	0	0	0	0
DUCKSX	98	40	0	0	0	0	0	0	0	0
EAGR	98	40	0	0	0	0	10	22	0	
FOTE	98	40	38	16	3	0	1	0	0	
FRGU	98	40	0	0	0	0	0	0	0	
GADW	98	40	0	0	0	0	0	0	0	
GOLD	98	40	0	0	0	0	10	0	0	
GREB	98	40	0	0	0	0	0	0	0	
GREG	98	40	0	0	0	0	0	0	0	
GRSC	98	40	0	0	0	0	0	0	0	
GRYE	98	40	0	0	0	0	0	0	0	
GTBH	98	40	12	0	0	0	0	0	0	
GULLSX	98	40	0	0	0	0	0	0	0	
HEREGR	98	40	5098	2470	1186	2028	9441	1973	1806	
KILL	98	40	3	0	0	0	0	0	0	
LBCU	98	40	0	4	0	8	1	0	0	
LBDO	98	40	0	0	5	5	4	6	1	
LESA	98	40	0	0	0	0	0	0	0	
LESC	98	40	0	0	1590	0	0	0	0	
LEYE	98	40	0	0	0	0	0	0	0	
MAGO	98	40	0	0	0	0	0	0	0	
MALL	98	40	0	0	0	0	0	0	0	
MERG	98	40	0	0	0	0	0	15	0	
NOPI	98	40	0	0	0	0	0	0	0	
NSHO	98	40	0	0	0	0	0	0	0	
PBGR	98	40	0	0	0	0	0	0	0	
PEEP	98	40	0	0	0	0	0	0	0	
PEEPSX	98	40	0	8552	0	0	0	0	0	
PHAL	98	40	0	8552	4818	21	78	0	43	
PHALAR	98	40	0	0	0	0	0	0	0	
RBGU	98	40	110700	92032	10965	2	0	0	0	
RBME	98	40	0	0	0	0	0	0	0	
REDH	98	40	0	0	0	0	0	0	0	
REKN	98	40	0	0	0	0	0	0	0	
RNDU	98	40	0	0	0	0	0	0	0	
RNPH	98	40	0	0	0	0	0	0	0	
RPHA	98	40	0	0	0	0	0	0	0	
RUDU	98	40	0	0	0	0	0	0	0	
SACR	98	40	0	0	0	0	0	0	0	
SAND	98	40	0	0	0	0	0	0	0	
SCAU	98	40	0	0	0	0	0	0	0	
SEPL	98	40	0	0	0	0	0	0	0	
SESA	98	40	0	0	0	0	0	0	0	
SNEG	98	40	0	0	0	0	0	0	0	
SNGO	98	40	0	0	0	0	0	0	0	

SNPL	98	40						0	0	0		0	0	0	0	
SORA	98	40						0	0	0		0	0	0	0	
SPSA	98	40						0	0	0		0	0	0	0	
STLS	98	40						0	0	0		0	0	0	0	
TEAL	98	40						0	0	0		0	0	0	0	
TUSW	98	40						0	0	0		0	0	0	0	
UNGU	98	40						0	0	0		0	0	0	0	
UNSC	98	40						0	0	0		0	0	0	0	
UNTE	98	40						0	0	0		0	0	0	0	
UNYE	98	40						0	0	0		0	0	0	0	
VIRA	98	40						0	0	0		0	0	0	0	
WCGR	98	40						0	0	0		0	0	0	0	
WECLGR	98	40						0	0	0		0	0	0	0	
WEGR	98	40						0	0	0		0	0	0	0	
WESA	98	40						0	0	0		0	0	0	0	
WFIB	98	40						0	0	3228		21	78	0	0	
WHIM	98	40						0	0	0		0	2	0	0	
WILL	98	40						0	0	0		0	0	0	0	
WIPH	98	40						0	1	1		0	2	0	0	
WODU	98	40						110700	92032	10965		2	0	0	0	
YELLOW	98	40						0	0	0		0	0	0	0	
AGWT	99	40	0	0	0	0	0	12	0	0		0	0	0	0	
AMAV	99	40	3	48	160	129	244	0	0		0	0		0		0
AMCO	99	40	0	0	0	0	0	180	276		1758	321		297		1664
AMWI	99	40	0	0	0	0	0	0	0		0	0		0		0
AVOSTI	99	40	3	48	160	131	244	0	0		0	0		0		0
AWPE	99	40	0	0	0	0	0	180	276		1764	329		297		1664
BAGO	99	40	0	0	0	0	0	0	0		0	0		0		0
BASA	99	40	0	0	0	0	0	0	0		0	0		0		0
BBPL	99	40	0	2	0	0	0	0	0		0	0		0		0
BCNH	99	40	0	0	0	0	2	0	0		0	0		0		0
BLTE	99	40	0	0	0	0	0	0	0		0	0		0		0
BNST	99	40	0	0	0	2	0	0	0		0	0		0		0
BOGU	99	40	0	0	0	0	0	0	0		6	8		0		0
BUFF	99	40	0	0	0	0	0	0	0		0	0		0		0
BWTE	99	40	10	18	0	0	0	0	0		0	0		0		0
CAEG	99	40	0	0	0	0	0	0	0		0	0		0		0
CAGO	99	40	0	0	4	0	0	0	0		0	0		0		0
CAGU	99	40	850	1374	892	889	1558	1158	1246		21772	6379		6575		1794
CANV	99	40	0	0	0	0	0	0	0		0	0		0		0
CATE	99	40	0	0	0	0	0	0	0		0	0		0		0
CITE	99	40	0	0	0	0	0	0	0		0	0		0		0
CLGR	99	40	0	0	0	0	0	0	0		0	0		0		0
COGO	99	40	0	0	0	0	0	0	0		0	0		0		0
COME	99	40	0	0	0	0	0	0	0		0	0		0		0
COSN	99	40	0	0	0	0	0	0	0		0	0		0		0
DCCO	99	40	0	0	0	0	0	0	0		0	0		0		0
DOWI	99	40	0	0	0	0	0	0	0		0	0		0		0
DOWITC	99	40	0	0	0	0	0	0	0		0	0		0		0
DUCK	99	40	0	0	0	0	0	0	0		0	0		0		0
DUCKSX	99	40	21	39	0	0	0	0	0		0	0		0		0
EAGR	99	40	11	1840	210	44	4	11	0		0	44		1		0
FOTE	99	40	0	0	0	0	0	0	0		0	0		362		85
FRGU	99	40	0	0	0	0	0	0	0		0	0		0		0
GADW	99	40	5	14	0	0	0	0	0		0	0		0		2463
GOLD	99	40	0	0	0	0	0	0	0		0	0		0		0
GREB	99	40	0	0	0	0	0	0	0		0	0		0		0
GREG	99	40	0	0	0	0	0	0	0		0	0		0		0

GRSC	99	40	0	0	0	0	0	0	0	0	0	0	0
GRYE	99	40	0	0	0	0	0	0	0	0	0	0	0
GTBH	99	40	0	0	1	0	0	0	0	0	0	0	0
GULLSX	99	40	850	1374	892	889	1558	1158	1246	21772	6379	6575	4257
HEREGR	99	40	0	0	1	0	2	0	0	0	0	0	0
KILL	99	40	0	0	0	1	3	0	3	0	4	0	0
LBCU	99	40	12	0	1	0	0	4	1	22	0	0	0
LBDO	99	40	0	0	0	0	0	0	0	0	0	0	0
LESA	99	40	0	0	0	0	0	0	0	0	0	0	0
LESC	99	40	6	7	0	0	0	0	0	0	0	0	0
LEYE	99	40	0	0	0	0	0	0	0	0	0	0	0
MAGO	99	40	0	0	0	0	0	0	0	0	0	0	0
MALL	99	40	0	0	0	0	0	0	0	0	0	1	0
MERG	99	40	0	0	0	0	0	0	0	0	0	0	0
NOPI	99	40	0	0	0	0	0	0	0	0	0	0	0
NSHO	99	40	0	0	0	0	0	0	0	0	0	0	0
PBGR	99	40	0	0	0	0	0	0	0	0	0	0	0
PEEP	99	40	0	0	0	0	0	0	0	0	0	0	0
PEEPSX	99	40	0	0	0	67	0	173	133	315	70	0	0
PHAL	99	40	0	0	0	0	0	0	0	0	0	0	0
PHALAR	99	40	0	0	277	278	6155	107898	54892	4539	264	0	0
RBGU	99	40	0	0	0	0	0	0	0	0	0	0	0
RBME	99	40	0	0	0	0	0	0	0	0	0	0	0
REDH	99	40	0	0	0	0	0	0	0	0	0	0	0
REKN	99	40	0	0	0	0	0	0	0	0	0	0	0
RNDU	99	40	0	0	0	0	0	0	0	0	0	0	0
RNPH	99	40	0	0	0	0	0	0	0	0	0	0	0
RPHA	99	40	0	0	277	278	6155	0	0	0	0	0	0
RUDU	99	40	0	0	0	0	0	0	0	0	0	0	0
SACR	99	40	0	0	0	0	0	0	0	0	0	0	0
SAND	99	40	0	0	150	44	0	0	0	0	0	0	0
SCAU	99	40	0	0	0	0	0	0	0	0	0	0	0
SEPL	99	40	0	0	0	0	0	0	0	0	0	0	0
SESA	99	40	0	0	0	0	0	0	0	0	0	0	0
SNEG	99	40	0	0	0	0	0	0	0	0	0	0	0
SNGO	99	40	0	0	0	0	0	0	0	0	0	0	0
SNPL	99	40	0	0	0	0	0	0	0	0	0	0	0
SORA	99	40	0	0	0	0	0	0	0	0	0	0	0
SPSA	99	40	0	0	0	0	0	0	0	0	0	0	0
STLS	99	40	0	0	0	0	0	0	0	0	0	0	0
TEAL	99	40	0	0	0	0	0	0	0	0	0	0	0
TUSW	99	40	0	0	0	0	0	0	0	0	0	0	0
UNGU	99	40	0	0	0	0	0	0	0	0	0	0	0
UNSC	99	40	0	0	0	0	0	0	0	0	0	0	0
UNTE	99	40	0	0	0	0	0	0	0	0	0	0	0
UNYE	99	40	0	0	0	0	0	0	0	0	0	0	0
VIRA	99	40	0	0	0	0	0	0	0	0	0	0	0
WCGR	99	40	0	0	0	0	0	0	0	0	0	0	0
WECLGR	99	40	0	7	30	0	0	0	0	0	0	0	0
WEGR	99	40	0	7	30	0	0	0	0	0	0	0	0
WESA	99	40	0	0	0	67	0	173	133	315	70	0	0
WFIB	99	40	0	0	0	0	0	0	0	0	0	0	0
WHIM	99	40	0	0	0	3	0	0	0	0	11	0	0
WILL	99	40	0	0	0	0	0	0	0	8	8	0	0
WIPH	99	40	0	0	0	0	0	107898	54892	4539	264	0	0
WODU	99	40	0	0	0	0	0	0	0	0	0	0	0
YELLOW	99	40	0	0	0	0	0	0	0	0	0	0	0

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE RESOURCES

Michael O. Leavitt
Governor
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26 January 2001

Ms. Laura Lockhart
Assistant Attorney General
Office of the Attorney General
P.O. Box 140873
Salt Lake City, Utah 84114-0973

Dear Ms. Lockhart,

I am writing in response to your request for recent Waterbird Survey data in the vicinity of Timpie Springs Waterfowl Management Area. The attached disk contains the information you requested. Please contact Mr. Don Paul, Great Salt Lake wildlife biologist, at 801-721-9780 if you have any questions or need any additional information.

Sincerely,

John Kimball
Director

JK/mfc

State's
Exhibit 68

Bird names, codes, and AOU numbers from Patuxent. Col. A permits sorts by "checklist" order.

No.	Common Name	Code	AOU
308	American Golden-Plover	AGPL	2720
170	Green-winged Teal	AGWT	1390
322	American Avocet	AMAV	2250
300	American Coot	AMCO	2210
153	American Wigeon	AMWI	1370
73	American White Pelican	AWPE	1250
191	Barrow's Goldeneye	BAGO	1520
361	Baird's Sandpiper	BASA	2410
307	Black-bellied Plover	BBPL	2700
107	Black-crowned Night-Heron	BCNH	2020
429	Black Tern	BLTE	770
321	Black-necked Stilt	BNST	2260
389	Bonaparte's Gull	BOGU	600
74	Brown Pelican	BRPE	1260
189	Bufflehead	BUFF	1530
163	Blue-winged Teal	BWTE	1400
105	Cattle Egret	CAEG	2001
137	Canada Goose	CAGO	1720
394	California Gull	CAGU	530
171	Canvasback	CANV	1470
413	Caspian Tern	CATE	640
164	Cinnamon Teal	CITE	1410
14	Clark's Grebe	CLGR	11
190	Common Goldeneye	COGO	1510
195	Common Merganser	COME	1290
296	Common Moorhen	COMO	2190
374	Common Snipe	COSN	2300
78	Double-crested Cormorant	DCCO	1200
	unid. Duck	DUCK	
12	Eared Grebe	EAGR	40
422	Forster's Tern	FOTE	690
386	Franklin's Gull	FRGU	590
150	Gadwall	GADW	1350
192	unid. Goldeneye	GOLD	1512
	unid. Grebe	GREB	
95	Great Egret	GREG	1960
176	Greater Scaup	GRSC	1480
325	Greater Yellowlegs	GRYE	2540
93	Great Blue Heron	GTBH	1940
131	Greater White-fronted Goose	GWFG	1710
94	Great White Heron	GWHE	1920
395	Herring Gull	HRGG	510
390	Heermann's Gull	HRMG	570
344	Hudsonian Godwit	HUGO	2510
316	Killdeer	KILL	2730
342	Long-billed Curlew	LBCU	2640
372	Long-billed Dowitcher	LBDO	2320

359	Least Sandpiper	LESA	2420
177	Lesser Scaup	LESC	1490
326	Lesser Yellowlegs	LEYE	2550
346	Marbled Godwit	MAGO	2490
155	Mallard	MALL	1320
	unid. Merganser	MERG	
167	Northern Pintail	NOPI	1430
165	Northern Shoveler	NSHO	1420
9	Pied-billed Grebe	PBGR	60
	unid. Peep Sandpiper	PEEP	
362	Pectoral Sandpiper	PESA	2390
	unid. Phalarope	PHAL	
393	Ring-billed Gull	RBGU	540
196	Red-breasted Merganser	RBME	1300
172	Redhead	REDH	1460
351	Red Knot	REKN	2340
174	Ring-necked Duck	RNDU	1500
377	Red-necked Phalarope	RPHA	2230
198	Ruddy Duck	RUDU	1670
303	Sandhill Crane	SACR	2060
352	Sanderling	SAND	2480
371	Short-billed Dowitcher	SBDO	2310
	unid. Scaup	SCAU	
	unid. Scoter	SCOT	
314	Semipalmated Plover	SEPL	2740
353	Semipalmated Sandpiper	SESA	2460
100	Snowy Egret	SNEG	1970
134	Snow Goose	SNGO	1690
311	Snowy Plover	SNPL	2780
291	Sora	SORA	2140
330	Solitary Sandpiper	SOSA	2560
335	Spotted Sandpiper	SPSA	2630
368	Stilt Sandpiper	STLS	2330
	unid. Teal	TEAL	
143	Trumpeter Swan	TRUS	1810
144	Tundra Swan	TUSW	1800
373	unid. Dowitcher	UNDO	2327
411	unid. Gull	UNGU	534
117	unid. Plegadis	UNPL	1861
435	unid. Tern	UNTE	634
327	unid. Yellowlegs	UNYE	2555
281	Virginia Rail	VIRA	2120
	WesternXClark's Grebe	WCGR	
13	Western Grebe	WEGR	10
354	Western Sandpiper	WESA	2470
116	White-faced Ibis	WFIB	1870
338	Whimbrel	WHIM	2650
331	Willet	WILL	2580
376	Wilson's Phalarope	WIPH	2240
148	Wood Duck	WODU	1440

185	White-winged Scoter	WWSC	1650
276	Yellow Rail	YERA	2150
	Avocets/Stilts	AVOSTI	
	Dowitchers	DOWITC	
	Ducks	DUCKSX	
	Gulls	GULLSX	
	Herons/Egrets	HEREGR	
	Peeps	PEEPSX	
	Phalaropes	PHALAR	
	Western/Clark's Grebes	WECLGR	
	Yellowlegs	YELLOW	
373	unid. Dowitcher	UNDO	2327
	unid. Duck	DUCK	
192	unid. Goldeneye	GOLD	1512
	unid. Grebe	GREB	
411	unid. Gull	UNGU	534
	unid. Merganser	MERG	
	unid. Peep Sandpiper	PEEP	
	unid. Phalarope	PHAL	
117	unid. Plegadis (Ibis)	UNPL	1861
	unid. Scaup	SCAU	
	unid. Scoter	SCOT	
	unid. Teal	TEAL	
435	unid. Tern	UNTE	634
327	unid. Yellowlegs	UNYE	2555

AREA	DATE	NAME	OBSERVER1	OBSERVER2	OBSERVER3	START	END	SURVEY T	TEMP	WIND SPE	WIND DIR	CLOUD C	PERIOD
1	04/25	TIMPIE SPRINGS WMA	LEBLANC			07:19:00 AM	09:45:00 AM	TC	35	10	S	98	
1	05/10	TIMPIE SPRINGS WMA	LEBLANC			07:48:00 AM		TC	40	10	S	60	
1	05/13	TIMPIE SPRINGS WMA	LEBLANC			07:04:00 AM	10:15:00 AM	TC	45	5	S	20	
1	05/28	TIMPIE SPRINGS WMA	LEBLANC			06:10:00 AM	09:15:00 AM	TC	45	5	S	10	
1	06/06	TIMPIE SPRINGS WMA	LEBLANC			06:17:00 AM	09:17:00 AM	TC	50	5	S	95	
1	06/14	TIMPIE SPRINGS WMA	LEBLANC			06:14:00 AM	08:48:00 AM	TC	45	5	S	70	
1	06/27	TIMPIE SPRINGS WMA	LEBLANC			06:15:00 AM	08:41:00 AM	TC	50	5	S	0	
1	07/03	TIMPIE SPRINGS WMA	LEBLANC			06:07:00 AM	08:12:00 AM	TC	60	5	S	0	
1	07/18	TIMPIE SPRINGS WMA	LEBLANC			06:10:00 AM	08:15:00 AM	TC	65	5	S	0	
1	07/24	TIMPIE SPRINGS WMA	LEBLANC			06:15:00 AM	09:00:00 AM	TC	65	5	S	99	
1	07/31	TIMPIE SPRINGS WMA	DOUGLASS			07:05:00 AM	10:15:00 AM	TC	78	25	S	10	
1	08/15	TIMPIE SPRINGS WMA	MELCHER			09:00:00 AM	10:45:00 AM	TC					
1	08/26	TIMPIE SPRINGS WMA	MELCHER			09:00:00 AM	10:30:00 AM	TC	85	5	W	80	
1	09/04	TIMPIE SPRINGS WMA	MELCHER			09:00:00 AM	10:45:00 AM	TC	85	0		50	
1	09/11	TIMPIE SPRINGS WMA	MELCHER			09:30:00 AM	11:00:00 AM	TC	70	10	SW	25	
1	09/20	TIMPIE SPRINGS WMA	MELCHER			09:15:00 AM	11:00:00 AM	TC	55	0		99	
1	04/16	TIMPIE SPRINGS WMA	WYSS	ANDERSON	CHRISTIANSEN	07:30:00 AM	09:00:00 AM	TC				0	1
1	04/23	TIMPIE SPRINGS WMA	WYSS	ANDERSON	CHRISTIANSEN	06:45:00 AM	08:15:00 AM	TC				60	2
1	05/07	TIMPIE SPRINGS WMA	WYSS	CHRISTIANSEN	ANDERSON	06:45:00 AM	08:15:00 AM	TC	44			20	3
1	05/16	TIMPIE SPRINGS WMA	CHRISTIANSEN	STROUP		07:15:00 AM	09:40:00 AM	TC	50	5	SW	10	4
1	05/21	TIMPIE SPRINGS WMA	WYSS	CHRISTIANSEN	ANDERSON	06:45:00 AM	08:15:00 AM	TC	50			95	5
1	06/04	TIMPIE SPRINGS WMA	MELCHER			06:45:00 AM	09:15:00 AM	TC	45	15	N	99	6
1	06/11	TIMPIE SPRINGS WMA	CHRISTIANSON	WYSS	ANDERSON	06:30:00 AM	08:15:00 AM	TC	50			4	7
1	07/03	TIMPIE SPRINGS WMA	CHRISTIANSEN	ANDERSON		07:45:00 AM	10:00:00 AM	TC	80	0		0	9
1	07/18	TIMPIE SPRINGS WMA	WYSS	STROUP		06:45:00 AM	08:15:00 AM	TC	75	5		10	10
1	07/24	TIMPIE SPRINGS WMA	CHRISTIANSEN	ANDERSON				TC	75			0	11
1	07/29	TIMPIE SPRINGS WMA	WYSS	ANDERSON	CHRISTIANSEN	06:30:00 AM	08:15:00 AM	TC	75			90	12
1	08/13	TIMPIE SPRINGS WMA	MELCHER			07:00:00 AM	09:00:00 AM	TC	65	5	SW	15	13
1	08/20	TIMPIE SPRINGS WMA	ANDERSON	CHRISTIANSEN		07:00:00 AM	08:30:00 AM	TC	73			75	14
1	09/04	TIMPIE SPRINGS WMA	ANDERSON	CHRISTIANSENN		06:30:00 AM	08:00:00 AM	TC				5	15
1	09/11	TIMPIE SPRINGS WMA	WYSS	CHRISTIANSEN	ANDERSEN	07:15:00 AM	09:00:00 AM	TC	65	5		0	16
1	09/25	TIMPIE SPRINGS WMA	WYSS	CHRISTIANSEN		07:15:00 AM	08:15:00 AM	TC	60	5		0	17
1	04/16	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		08:30:00 AM	09:40:00 AM	TC	50	10	SW	50	1
1	04/23	TIMPIE SPRINGS WMA	HALLIDAY			08:45:00 AM	10:10:00 AM	TC	45	10	W	95	2
1	04/27	TIMPIE SPRINGS WMA	DEWEY	ELLISON		09:00:00 AM	10:50:00 AM	TC	65	0		0	3
1	05/14	TIMPIE SPRINGS WMA	HALLIDAY	STROUP		07:40:00 AM	09:30:00 AM	TC	55	5	S	0	4
1	05/21	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:50:00 AM	09:00:00 AM	TC	60	10	S	45	5
1	06/03	TIMPIE SPRINGS WMA	HALLIDAY	STROUP		07:40:00 AM	08:50:00 AM	TC	75	20	SW	0	6
1	06/11	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:30:00 AM	08:25:00 AM	TC	60	15	SW	0	7
1	06/25	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:35:00 AM	08:30:00 AM	TC	65	10	SW	50	8
1	07/02	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:25:00 AM	08:05:00 AM	TC	73	8	S	5	9
1	07/09	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:30:00 AM	08:15:00 AM	TC	75	10	SW	20	10
1	07/16	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:35:00 AM	08:28:00 AM	TC	75	15	SW	30	11
1	07/30	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		07:40:00 AM	09:19:00 AM	TC	72	5	SW	5	12
1	08/06	TIMPIE SPRINGS WMA	STROUP	REID		07:35:00 AM	09:00:00 AM	TC	65	2	SW	5	13
1	08/20	TIMPIE SPRINGS WMA	STROUP	REID		07:35:00 AM	09:20:00 AM	TC	68	3	W	0	14
1	09/03	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		08:40:00 AM	10:40:00 AM	PS	55	8	SE	5	15
1	09/10	TIMPIE SPRINGS WMA	STROUP	HALLIDAY		08:30:00 AM	11:06:00 AM	TC	54	5	S	4	16
1	09/19	TIMPIE SPRINGS WMA	DEWEY			09:00:00 AM	10:51:00 AM	TC	68	10	SW	15	17

40	06/30	MAGCORP	TRIPP	08:30:00 AM	10:00:00 AM	AC	75	3	NE	0	
40	07/11	MAGCORP	TRIPP	08:30:00 AM	10:00:00 AM	AC	75	5	NW	5	
40	07/23	MAGCORP	TRIPP	09:01:00 AM	10:13:00 AM	AC	75	5	S	90	
40	08/14	MAGCORP	TRIPP	09:34:00 AM	11:01:00 AM	AC	85	3	S	0	
40	08/20	MAGCORP	TRIPP	08:10:00 AM	09:05:00 AM	AC	72	3	S	75	
40	09/04	MAGCORP	TRIPP	07:30:00 AM	08:30:00 AM	AC	80	8	S	20	
40	09/16	MAGCORP	TRIPP	03:30:00 PM	04:13:00 PM	AC	90	3	N	35	
40	04/16	MAGCORP	TRIPP	05:01:00 PM	06:13:00 PM	AC	55	5	N	10	1
40	04/23	MAGCORP	TRIPP	09:30:00 AM	10:20:00 AM	AC	50	15	N	20	2
40	05/12	MAGCORP	TRIPP	11:03:00 AM	12:18:00 PM	AC	55	0		80	4
40	05/28	MAGCORP	TRIPP	07:58:00 AM	08:51:00 AM	AC	65	0		20	5
40	06/17	MAGCORP	TRIPP	06:23:00 AM	07:00:00 AM	AC	65	0		50	7
40	07/02	MAGCORP	TRIPP	04:30:00 AM	05:17:00 AM	AC	95	5		0	9
40	07/09	MAGCORP	TRIPP	06:22:00 AM	07:00:00 AM	AC	75	0		20	10
40	08/02	MAGCORP	TRIPP	08:56:00 AM	10:03:00 AM	AC	80	5	N	50	12
40	08/11	MAGCORP	TRIPP	04:46:00 PM	05:36:00 PM	AC	80	5	S	75	13
40	09/04	MAGCORP	TRIPP	01:15:00 PM	01:56:00 PM	AC	80	10	S	10	15
40	09/21	MAGCORP	TRIPP	03:45:00 PM	04:32:00 PM	AC	72	5	S	15	17
40	04/12	MAGCORP	TRIPP	03:55:00 PM	05:18:00 PM	PS	60	5	S	10	1
40	04/24	MAGCORP	TRIPP	03:45:00 PM	05:05:00 PM	PS	60	5	NW	15	2
40	04/27	MAGCORP	TRIPP	08:50:00 AM	09:55:00 AM	PS	60	0		5	3
40	05/15	MAGCORP	TRIPP	04:42:00 PM	05:54:00 PM	PS	75	15	NE	50	4
40	05/26	MAGCORP	TRIPP	04:18:00 PM	05:15:00 PM	PS	70	15	W	99	5
40	06/02	MAGCORP	TRIPP	04:18:00 PM	05:15:00 PM	PS	72	5	N	10	6
40	06/15	MAGCORP	TRIPP	04:22:00 PM	05:07:00 PM	PS	80	15	NW	10	7
40	06/23	MAGCORP	TRIPP	04:35:00 PM	05:22:00 PM	AC	90	5	N	10	8
40	06/30	MAGCORP	TRIPP	04:20:00 PM	04:52:00 PM	AC	88	20	SW	70	9
40	07/14	MAGCORP	TRIPP	04:10:00 PM	04:52:00 PM	AC	95	5	N	20	10
40	07/21	MAGCORP	TRIPP	04:32:00 PM	05:17:00 PM	AC	95	5	NE	5	11
40	07/26	MAGCORP	TRIPP	08:50:00 PM	10:12:00 PM	PS	85	5	N	25	12
40	08/11	MAGCORP	TRIPP	04:30:00 PM	05:13:00 PM	AC	95	5	N	0	13
40	08/18	MAGCORP	TRIPP	04:15:00 PM	05:13:00 PM	AC	85	5	N	20	14
40	08/28	MAGCORP	TRIPP	02:45:00 PM	03:12:00 PM	PS	85	5	S	50	15
40	09/08	MAGCORP	TRIPP	03:45:00 PM	04:20:00 PM	PS	85	5	N	50	16
40	09/22	MAGCORP	TRIPP	03:45:00 PM	04:18:00 PM	PS	60	5	NW	80	17

AREA	DATE	POINT_NUSPECIES	COUNT
1	04/16	AGWT	25
1	04/16	AMAV	482
1	04/16	AMCO	211
1	04/16	AWPE	1
1	04/16	BNST	62
1	04/16	BUFF	3
1	04/16	CAGO	5
1	04/16	CAGU	50
1	04/16	CITE	40
1	04/16	EAGR	2
1	04/16	FOTE	2
1	04/16	GOLD	1
1	04/16	GRYE	2
1	04/16	LBDO	3
1	04/16	MALL	30
1	04/16	NOPI	14
1	04/16	RBME	4
1	04/16	REDH	20
1	04/16	RUDU.	2
1	04/16	WILL	2
1	04/23	AGWT	72
1	04/23	AMAV	253
1	04/23	AMCO	205
1	04/23	AWPE	4
1	04/23	BCNH	3
1	04/23	BNST	88
1	04/23	CAGO	7
1	04/23	CITE	88
1	04/23	FOTE	4
1	04/23	GADW	5
1	04/23	GOLD	3
1	04/23	GTBH	4
1	04/23	LESC	2
1	04/23	MALL	8
1	04/23	NSHO	7
1	04/23	RBGU	237
1	04/23	RBME	6
1	04/23	REDH	16
1	04/23	RUDU	3
1	04/23	WFIB	7
1	04/23	WILL	1
1	04/27	AGWT	24
1	04/27	AMAV	254
1	04/27	AMCO	44
1	04/27	AWPE	12
1	04/27	BCNH	24
1	04/27	BNST	162
1	04/27	CAGO	10
1	04/27	CAGU	185
1	04/27	CITE	52
1	04/27	DUCK	2
1	04/27	EAGR	1
1	04/27	FOTE	11
1	04/27	FRGU	5
1	04/27	GADW	2
1	04/27	GTBH	4
1	04/27	KILL	1

1	04/27	LESC	2
1	04/27	MAGO	4
1	04/27	MALL	13
1	04/27	PBGR	1
1	04/27	RBME	5
1	04/27	REDH	6
1	04/27	SNEG	1
1	04/27	TEAL	75
1	04/27	WILL	3
1	05/14	AGWT	10
1	05/14	AMAV	49
1	05/14	AMCO	6
1	05/14	AWPE	1
1	05/14	BCNH	6
1	05/14	BNST	56
1	05/14	BWTE	1
1	05/14	CAGO	5
1	05/14	CAGU	7
1	05/14	CITE	28
1	05/14	EAGR	1
1	05/14	FOTE	9
1	05/14	GADW	7
1	05/14	GTBH	1
1	05/14	KILL	1
1	05/14	MALL	6
1	05/14	NSHO	2
1	05/14	REDH	21
1	05/14	SNEG	3
1	05/14	WFIB	14
1	05/14	WILL	10
1	05/14	WIPH	27
1	05/21	AGWT	1
1	05/21	AMAV	48
1	05/21	AMCO	4
1	05/21	AWPE	8
1	05/21	BCNH	10
1	05/21	BNST	66
1	05/21	BWTE	3
1	05/21	CAGO	5
1	05/21	CAGU	119
1	05/21	CITE	19
1	05/21	EAGR	1
1	05/21	FOTE	18
1	05/21	GADW	2
1	05/21	GTBH	1
1	05/21	MALL	8
1	05/21	REDH	14
1	05/21	SNEG	2
1	05/21	SPSA	3
1	05/21	WEGR	1
1	05/21	WFIB	20
1	05/21	WILL	8
1	05/21	WIPH	58
1	06/03	AGWT	2
1	06/03	AMAV	73
1	06/03	AWPE	13
1	06/03	BCNH	21
1	06/03	BNST	38

1	06/03	CAGU	460
1	06/03	CATE	1
1	06/03	CITE	12
1	06/03	FOTE	11
1	06/03	GADW	3
1	06/03	GTBH	14
1	06/03	LESC	1
1	06/03	MALL	9
1	06/03	NOPI	3
1	06/03	NSHO	1
1	06/03	REDH	14
1	06/03	SNEG	2
1	06/03	WFIB	2
1	06/03	WILL	9
1	06/03	WIPH	25
1	06/11	AGWT	4
1	06/11	AMAV	57
1	06/11	AWPE	14
1	06/11	BCNH	12
1	06/11	BNST	51
1	06/11	CAGU	110
1	06/11	CATE	4
1	06/11	CITE	17
1	06/11	FOTE	11
1	06/11	GADW	2
1	06/11	GTBH	10
1	06/11	MALL	6
1	06/11	NOPI	7
1	06/11	REDH	38
1	06/11	WFIB	7
1	06/11	WILL	15
1	06/11	WIPH	18
1	06/25	AGWT	2
1	06/25	AMAV	5
1	06/25	AWPE	3
1	06/25	BCNH	7
1	06/25	BNST	7
1	06/25	BWTE	1
1	06/25	CATE	28
1	06/25	CITE	8
1	06/25	EAGR	1
1	06/25	GADW	2
1	06/25	GTBH	12
1	06/25	MALL	9
1	06/25	NOPI	6
1	06/25	REDH	29
1	06/25	WILL	3
1	07/02	AGWT	2
1	07/02	AMAV	8
1	07/02	BCNH	10
1	07/02	BNST	6
1	07/02	CITE	8
1	07/02	GTBH	10
1	07/02	KILL	2
1	07/02	MALL	32
1	07/02	RBGU	2
1	07/02	REDH	39
1	07/02	WFIB	1

1	07/02	WILL	7
1	07/02	WIPH	1
1	07/09	AMAV	7
1	07/09	BCNH	9
1	07/09	CAGO	4
1	07/09	CAGU	3
1	07/09	CATE	1
1	07/09	GTBH	9
1	07/09	MALL	36
1	07/09	PEEP	5
1	07/09	REDH	61
1	07/09	WILL	1
1	07/16	AMAV	5
1	07/16	BCNH	8
1	07/16	BNST	4
1	07/16	CAGO	5
1	07/16	CAGU	5
1	07/16	CATE	1
1	07/16	CITE	8
1	07/16	EAGR	3
1	07/16	GTBH	7
1	07/16	KILL	1
1	07/16	MALL	31
1	07/16	RBGU	2
1	07/16	REDH	66
1	07/16	SACR	2
1	07/16	SNEG	1
1	07/16	WFIB	5
1	07/16	WIPH	1
1	07/30	AMAV	11
1	07/30	AWPE	20
1	07/30	BCNH	4
1	07/30	BNST	3
1	07/30	CAGO	20
1	07/30	CAGU	14
1	07/30	CATE	1
1	07/30	CITE	16
1	07/30	GTBH	4
1	07/30	LESA	1
1	07/30	MAGO	4
1	07/30	MALL	25
1	07/30	NOPI	2
1	07/30	REDH	41
1	07/30	SACR	2
1	07/30	SNEG	1
1	07/30	SPSA	1
1	07/30	WFIB	18
1	08/06	AWPE	17
1	08/06	BNST	1
1	08/06	CAGO	25
1	08/06	CAGU	1
1	08/06	CITE	18
1	08/06	COSN	1
1	08/06	DCCO	1
1	08/06	GTBH	5
1	08/06	LESC	10
1	08/06	NOPI	90
1	08/06	REDH	23

1	08/06	SACR	2
1	08/06	SPSA	1
1	08/06	WILL	1
1	08/20	AMCO	4
1	08/20	AWPE	17
1	08/20	DUCK	118
1	08/20	EAGR	1
1	08/20	GTBH	4
1	08/20	MALL	117
1	08/20	RBGU	3
1	08/20	SNEG	4
1	08/20	SPSA	2
1	09/03	AMCO	370
1	09/03	AWPE	11
1	09/03	BWTE	30
1	09/03	CAGO	96
1	09/03	CATE	1
1	09/03	DCCO	2
1	09/03	DUCK	400
1	09/03	GTBH	4
1	09/03	HOGR	1
1	09/03	MALL	16
1	09/03	NOPI	70
1	09/03	PBGR	4
1	09/03	REDH	5
1	09/03	SNEG	11
1	09/10	AMCO	550
1	09/10	AMWI	150
1	09/10	AWPE	18
1	09/10	CAGO	183
1	09/10	DCCO	2
1	09/10	DUCK	363
1	09/10	GRYE	7
1	09/10	GTBH	6
1	09/10	KILL	1
1	09/10	LBDO	3
1	09/10	MALL	123
1	09/10	NOPI	615
1	09/10	NSHO	150
1	09/10	RBGU	4
1	09/10	REDH	16
1	09/10	SNEG	13
1	09/10	SPSA	1
1	09/10	WFIB	1
1	09/19	AMCO	1271
1	09/19	AWPE	18
1	09/19	BNST	1
1	09/19	BWTE	5
1	09/19	CAGO	109
1	09/19	CAGU	3
1	09/19	CITE	6
1	09/19	DUCK	83
1	09/19	GADW	2
1	09/19	GTBH	3
1	09/19	KILL	2
1	09/19	NOPI	1046
1	09/19	NSHO	3
1	09/19	PBGR	2

1	09/19		RBGU	1
1	09/19		REDH	1
1	09/19		RUDU	1
1	09/19		TEAL	652
40	04/12	1	AMAV	61
40	04/12	1	CAGU	247
40	04/12	1	EAGR	11
40	04/12	1	LBCU	3
40	04/12	2	AMAV	158
40	04/12	2	CAGU	546
40	04/12	2	EAGR	22
40	04/12	2	WESA	27
40	04/24	1	AMAV	185
40	04/24	1	BNST	1
40	04/24	1	CAGU	348
40	04/24	1	EAGR	46
40	04/24	1	LBCU	1
40	04/24	1	WESA	60
40	04/24	2	AMAV	95
40	04/24	2	CAGU	1736
40	04/24	2	EAGR	1
40	04/24	2	GOLD	2
40	04/24	2	WESA	190
40	04/27	1	AMAV	103
40	04/27	1	BWTE	8
40	04/27	1	CAGO	3
40	04/27	1	CAGU	353
40	04/27	1	EAGR	593
40	04/27	1	GOLD	1
40	04/27	1	GTBH	2
40	04/27	1	MALL	2
40	04/27	1	RUDU	3
40	04/27	1	WESA	97
40	04/27	1	WIPH	15
40	04/27	2	AMAV	85
40	04/27	2	CAGU	1106
40	04/27	2	EAGR	517
40	04/27	2	WESA	300
40	04/27	2	WIPH	17
40	05/15	1	AMAV	20
40	05/15	1	CAGU	679
40	05/15	1	EAGR	78
40	05/15	1	LBCU	2
40	05/15	1	MALL	2
40	05/15	1	RPHA	1473
40	05/15	1	WESA	268
40	05/15	1	WIPH	20
40	05/15	2	AMAV	42
40	05/15	2	CAGU	1310
40	05/15	2	EAGR	18
40	05/15	2	LESA	20
40	05/15	2	SNPL	2
40	05/15	2	WESA	995
40	05/26	1	AMAV	28
40	05/26	1	CAGU	144
40	05/26	1	EAGR	25
40	05/26	1	GTBH	1
40	05/26	1	LBCU	1

40	05/26	1	RPHA	6839
40	05/26	1	WESA	15
40	05/26	1	WFIB	1
40	05/26	2	AMAV	43
40	05/26	2	CAGU	420
40	05/26	2	RPHA	85
40	05/26	2	WESA	215
40	06/02	1	AMAV	85
40	06/02	1	CAGU	915
40	06/02	1	EAGR	22
40	06/02	1	LBCU	3
40	06/02	2	AMAV	68
40	06/02	2	CAGU	1801
40	06/02	2	LBCU	1
40	06/15	1	AMAV	9
40	06/15	1	BNST	18
40	06/15	1	CAGU	1065
40	06/15	1	LBCU	1
40	06/15	1	WFIB	2
40	06/15	2	AMAV	51
40	06/15	2	CAGU	1954
40	06/15	2	EAGR	7
40	06/23	1	AMAV	9
40	06/23	1	BNST	1
40	06/23	1	CAGU	1324
40	06/23	1	MALL	7
40	06/23	2	AMAV	12
40	06/23	2	CAGU	756
40	06/23	2	EAGR	14
40	06/23	2	LBCU	4
40	06/30	1	AMAV	6
40	06/30	1	CAGU	306
40	06/30	1	EAGR	5
40	06/30	1	MALL	7
40	06/30	2	AMAV	14
40	06/30	2	CAGU	419
40	06/30	2	EAGR	15
40	07/14	1	AMAV	114
40	07/14	1	CAGU	249
40	07/14	1	EAGR	9
40	07/14	1	GRYE	2
40	07/14	1	KILL	1
40	07/14	1	LESA	2722
40	07/14	1	MALL	5
40	07/14	1	WESA	1341
40	07/14	1	WFIB	2
40	07/14	2	AMAV	181
40	07/14	2	CAGU	300
40	07/14	2	LESA	2001
40	07/14	2	WESA	984
40	07/14	2	WFIB	18
40	07/21	1	CAGU	198
40	07/21	1	CITE	3
40	07/21	1	MALL	6
40	07/21	2	AMAV	635
40	07/21	2	CAGU	1382
40	07/21	2	EAGR	1
40	07/21	2	WESA	6

40	07/21	2	WIPH	3
40	07/26	1	CAGU	259
40	07/26	2	AMAV	229
40	07/26	2	CAGU	1927
40	07/26	2	EAGR	6
40	07/26	2	WIPH	112
40	08/11	1	WIPH	17
40	08/11	2	CAGU	10
40	08/11	2	WIPH	147
40	08/18	1	CAGU	9
40	08/18	1	GTBH	1
40	08/18	2	CAGU	9
40	08/18	2	WESA	11
40	08/28	2	CAGU	1
40	08/28	2	WESA	1
40	09/08	1	GTBH	3
40	09/08	2	AMAV	9232
40	09/08	2	CAGU	5284
40	09/08	2	EAGR	1
40	09/08	2	LBCU	1
40	09/08	2	WESA	12
40	09/22	1	CAGU	4
40	09/22	2	AMAV	2404
40	09/22	2	CAGU	240

Species	Yr	Area	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
AGWT	0	1	112	60.5	10	17	22.5	10	7.5	0	5.33	0	0	0	0	37.67	8.33	7	0	
AMAV	0	1	105	185	269	283	299	230	215	118	303	267	344	178	77.67	45.33	9	37.33	26.5	
AMCO	0	1	105	80.5	61.5	27.5	11.5	16	3	0	2.33	3.33	4.67	0.67	6	4	186	467	1750	
AMWI	0	1	2.5	11	0	2.5	0	0	0	1	0	1.67	1	1	0	0	0	0	0	
AVOSTI	0	1	150	293	455	470	486	428	363	228	420	359	437	231	95	50.67	9	38.33	26.5	
AWPE	0	1	3	3	3	8	5	1	1.5	1	1.33	0	0	0	0	0	0	0	0	
BAGO	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BASA	0	1	0	0	0	0	0	0	0	0	0	0	0	2.67	0	0	0	0	0	
BBPL	0	1	0	0	0	0	0	0	0	0	0	0	0.67	0	0	0	0	0	0	
BCNH	0	1	0	0.5	1	5.5	6.5	5.5	10	1	1.67	0.33	0	0	0.67	1.67	0	0	0	
BLTE	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BNST	0	1	45.5	108	186	187	187	198	148	110	116	91.67	93.67	53	17.33	5.33	0	1	0	
BOGU	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BUFF	0	1	1	1.5	0.5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
BWTE	0	1	0	0	0	0	0	0	3.5	4.5	0.67	0	0	0	0	0	0	0	0	
CAEG	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CAGO	0	1	14	4.5	11	9	13	6.5	0	10	9.67	12	19	9.67	0.33	5	36.33	27.67	12.5	
CAGU	0	1	17.5	2.5	35	39	111	270	1166	48.5	540	367	111	20.33	3	0	0	157	2.5	
CANV	0	1	0	0.5	0	0	0	8	0	0	0	0	0	0	0	0.33	0	0	0	
CATE	0	1	0	0	1	1	4.5	0	1	3	1.67	0.67	0.33	0	0.33	0.33	0.67	0	0.5	
CITE	0	1	49.5	24.5	23	22	13.5	7	14.5	7	6	0.33	0.33	1.33	0	3.33	0	0.67	0	
CLGR	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
COGO	0	1	0.5	0	1.5	1	0.5	0	1	0	1.33	1	1	1.33	0	1	0	0.67	1	
COME	0	1	10.5	9.5	9	2	0	0.5	0	0	0.33	0	0	0.67	0	0.67	0	0	0	
COSN	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DCCO	0	1	0	0	0	0	0	0	0	0	0	2.33	0.33	0	0	0	0	0	0	
DOWI	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DOWITC	0	1	2	0	2.5	2	0	0	0	0	0	0	3.33	2	0	0.33	0	0	0	
DUCK	0	1	97	50	37.5	10	8.5	17	17	28.5	123	41	102	110	413	1369	3697	3732	2157	
DUCKSX	0	1	363	247	131	137	114	153	221	145	185	67.33	123	152	417	1555	3830	3751	2161	
EAGR	0	1	5	11.5	23	49	29.5	6.5	2	2.5	1.67	0.67	0.33	0	0	0	0	0.33	1	
FOTE	0	1	0	4.5	15.5	9	12.5	8.5	14.5	8.5	5	4.67	5.67	4.33	1	0.33	0	0	0	
FRGU	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GADW	0	1	2.5	1	6	23.5	3.5	11	2.5	9.5	7.33	4.33	3	2.67	0	0.33	101	0	0	
GOLD	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GREB	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GREG	0	1	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GRSC	0	1	1	0	0	1	1	0.5	2	0	0	0.33	0.33	0	0	0	0	0	0	
GRYE	0	1	0.5	0	0.5	0	0	0	0	0	0	0	0	1.67	3	8.67	4.33	2.33	0	
GTBH	0	1	0	1	0.5	2	5	5	4.5	1	1.67	4.33	2	6.33	2	1.33	2	2	1.5	
GULLSX	0	1	17.5	3	35	39.5	111	270	1166	48.5	540	367	113	167	3	0.67	0.33	157	3	
HEREGR	0	1	1.5	9.5	2	7.5	12	10.5	14.5	2	3.33	5	2	6.33	3.33	4.67	2	4.33	3.5	
KILL	0	1	0	0.5	0.5	1	1	1	8	1	1.33	1.67	4	1.67	6.33	2.67	10.67	6.33	5	
LBCU	0	1	0	0	0	0	0	0	0	0	0	0.33	0	1.33	0	0.33	0	0	0	
LBDO	0	1	2	0	2.5	2	0	0	0	0	0	0	1.33	2	0	0.33	0	0	0	
LESA	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	10	1	0	
LESC	0	1	22	9.5	15	0	0	0	0	0	0	0	0	0	0	0	0.33	0	0	
LEYE	0	1	0	0	0	0	0	0	0	0	0	0	0	0.33	0	6.33	13.67	4	0	
MAGO	0	1	0	0	0	1.5	0	0	0	0	0	1.67	0.67	0.33	0	0	0	0.33	0.5	
MALL	0	1	3	0	2	7	11.5	9	7	4	3.67	4.33	5.33	14.67	0	1	15.67	0	2.5	
MERG	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
NOPI	0	1	14	10	9	10	14	71.5	153	77.5	12.67	5.33	2	9.67	0	135	2.33	9.33	0	
NSHO	0	1	38	47.5	11.5	11.5	6	4.5	0.5	0	2	0	0	0	0	6.33	0	0	0	
PBGR	0	1	0	0	0	0	0	0	0	0	0.33	0	0.33	0.67	0.67	0	0	1	0	
PEEP	0	1	0	0	1000	2.5	8.5	5	1.5	10	0.67	5	95.33	6.67	6.33	1.33	1	10.33	0	
PEEPSX	0	1	0	0	1001	2.5	8.5	5	1.5	10	0.67	5.67	95.33	11	6.33	2.33	11	11.33	0	
PHAL	0	1	0	0	0	10	100	0	0	0	0	0	0	0	0	0	0	0	0	

PHALAR	0	1	0	0	44.5	153	117	21	56	12	2.33	9	7.67	6.67	17	0	0	0	0
RBGU	0	1	0	0.5	0	0.5	0	0	0	0	0	0	1.67	21.33	0	0.67	0	0	0.5
RBME	0	1	1	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REDH	0	1	18	28	12.5	25	30	12.5	12	12.5	22.33	8.67	8	10.67	2.67	0	4	2	0
REKN	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNDU	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNPH	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RPHA	0	1	0	0	0	82	3	0	0	0	0	0	0	0	0	0	0	0	0
RUDU	0	1	1.5	3	2.5	5.5	2.5	1.5	0.5	0	0	0.33	0	0.33	1	0	1	0	0
SACR	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0.33	0.33	0	0
SAND	0	1	0	0	0	20	100	0	0	0	0	0	0	0	0	0	0	0	0
SCAU	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEPL	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
SESA	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNEG	0	1	1.5	7.5	0.5	0	0.5	0	0	0	0	0.33	0	0	0.67	1.67	0	2.33	2
SNGO	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNPL	0	1	0	0	2	7	1	0	0	1	0	0	2	0.33	0	0	2.33	0	0
SORA	0	1	0	0	0	1	0	0	0	0	0	0	0	0.67	0	0	0	0	0
SPSA	0	1	0	0	1.5	6	0	1	0	0	0	0.67	1.67	2.67	2.67	0.33	0.33	0.67	0
STLS	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEAL	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUSW	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNGU	0	1	0	0	0	0	0	0	0	0	0	0.33	0	125	0	0	0.33	0	0
UNSC	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNTE	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNYE	0	1	0	0	0	0	0	0	0	1	0	0.67	0	0	0	3.67	0	0	0
VIRA	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WCGR	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WECLGR	0	1	0	0	0	0	0	0	0.5	1	0	0	0	0	0.33	0	0.67	0	0
WEGR	0	1	0	0	0	0	0	0	0.5	1	0	0	0	0	0.33	0	0.67	0	0
WESA	0	1	0	0	0	0	0	0	0	0	0	0.67	0	1.67	0	0	0	0	0
WFIB	0	1	1	11.5	4	24.5	8	12.5	15.5	0	0	3.33	22	22.33	35.33	36	8.67	11	10.5
WHIM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WILL	0	1	1	6	2	7.5	10	3.5	9	5	7	21.67	20.67	22.67	2	0.33	0.33	0	2
WIPH	0	1	0	0	44.5	61	14	21	56	12	2.33	9	7.67	6.67	17	0	0	0	0
WODU	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YELLOW	0	1	0.5	0	0.5	0	0	0	0	1	0	0.67	0	2	3	18.67	18	6.33	0
AGWT	97	1								0	0	0	0	0	0	113	0	0	
AMAV	97	1								37	54	22	55	30	71	42	2	37	
AMCO	97	1								0	1	1	0	0	0	1	0	0	
AMWI	97	1								2	0	5	3	3	0	0	0	0	
AVOSTI	97	1								119	133	82	117	76	73	43	2	37	
AWPE	97	1								0	2	0	0	0	0	0	0	0	
BAGO	97	1								0	0	0	0	0	0	0	0	0	
BASA	97	1								0	0	0	0	0	0	0	0	0	
BBPL	97	1								0	0	0	2	0	0	0	0	0	
BCNH	97	1								1	0	0	0	0	2	4	0	0	
BLTE	97	1								0	0	0	0	0	0	0	0	0	
BNST	97	1								82	79	60	62	46	2	1	0	0	
BOGU	97	1								0	0	0	0	0	0	0	0	0	
BUFF	97	1								0	0	0	0	0	0	0	0	0	
BWTE	97	1								0	2	0	0	0	0	0	0	0	
CAEG	97	1								0	0	0	0	0	0	0	0	0	
CAGO	97	1								0	0	8	0	0	1	0	0	59	
CAGU	97	1								77	12	1	1	4	0	0	0	0	
CANV	97	1								0	0	0	0	0	0	1	0	0	
CATE	97	1								3	0	0	0	0	1	1	2	0	
CITE	97	1								13	9	0	0	0	0	0	0	0	

CLGR	97	1	0	0	0	0	0	0	0	0	0
COGO	97	1	0	0	0	0	0	0	0	0	0
COME	97	1	0	0	0	0	1	0	0	0	0
COSN	97	1	0	0	0	0	0	0	0	0	0
DCCO	97	1	0	0	6	0	0	0	0	0	0
DOWI	97	1	0	0	0	0	0	0	0	0	0
DOWITC	97	1	0	0	0	4	1	0	1	0	0
DUCK	97	1	23	3	0	24	21	540	220	2050	2250
DUCKSX	97	1	58	31	27	37	32	540	737	2052	2250
EAGR	97	1	0	0	0	0	0	0	0	0	0
FOTE	97	1	2	2	1	0	0	0	0	0	0
FRGU	97	1	0	0	0	0	0	0	0	0	0
GADW	97	1	12	12	13	9	8	0	1	0	0
GOLD	97	1	0	0	0	0	0	0	0	0	0
GREB	97	1	0	0	0	0	0	0	0	0	0
GREG	97	1	0	0	0	0	0	0	0	0	0
GRSC	97	1	0	0	0	0	0	0	0	0	0
GRYE	97	1	0	0	0	0	1	4	2	4	0
GTBH	97	1	1	2	1	1	3	1	2	2	1
GULLSX	97	1	77	12	1	1	4	0	2	0	0
HEREGR	97	1	2	2	1	1	3	3	6	2	3
KILL	97	1	2	4	1	2	2	0	0	22	0
LBCU	97	1	0	0	0	0	0	0	1	0	0
LBDO	97	1	0	0	0	4	1	0	1	0	0
LESA	97	1	0	0	0	0	0	0	0	30	0
LESC	97	1	0	0	0	0	0	0	0	0	0
LEYE	97	1	0	0	0	0	0	0	12	34	8
MAGO	97	1	0	0	1	0	0	0	0	0	0
MALL	97	1	8	0	3	1	0	0	0	1	0
MERG	97	1	0	0	0	0	0	0	0	0	0
NOPI	97	1	0	0	0	0	0	0	395	0	0
NSHO	97	1	0	0	0	0	0	0	7	0	0
PBGR	97	1	0	0	0	1	2	2	0	0	1
PEEP	97	1	0	0	15	0	0	0	1	0	0
PEEPSX	97	1	0	0	15	0	0	0	1	30	0
PHAL	97	1	0	0	0	0	0	0	0	0	0
PHALAR	97	1	16	0	0	1	5	51	0	0	0
RBGU	97	1	0	0	0	0	0	0	2	0	0
RBME	97	1	0	0	0	0	0	0	0	0	0
REDH	97	1	0	5	5	0	0	0	0	1	0
REKN	97	1	0	0	0	0	0	0	0	0	0
RNDU	97	1	0	0	0	0	0	0	0	0	0
RNPH	97	1	0	0	0	0	0	0	0	0	0
RPHA	97	1	0	0	0	0	0	0	0	0	0
RUDU	97	1	0	0	1	0	0	0	0	0	0
SACR	97	1	0	0	0	0	0	0	0	0	0
SAND	97	1	0	0	0	0	0	0	0	0	0
SCAU	97	1	0	0	0	0	0	0	0	0	0
SEPL	97	1	0	0	0	0	0	0	0	0	0
SESA	97	1	0	0	0	0	0	0	0	0	0
SNEG	97	1	0	0	0	0	0	0	0	0	2
SNGO	97	1	0	0	0	0	0	0	0	0	0
SNPL	97	1	2	0	0	0	1	0	0	0	0
SORA	97	1	0	0	0	0	0	0	0	0	0
SPSA	97	1	0	0	1	1	4	8	1	1	1
STLS	97	1	0	0	0	0	0	0	0	0	0
TEAL	97	1	0	0	0	0	0	0	0	0	0
TUSW	97	1	0	0	0	0	0	0	0	0	0

UNGU	97	1								0	0	0	0	0	0	0	0	0		
UNSC	97	1								0	0	0	0	0	0	0	0	0		
UNTE	97	1								0	0	0	0	0	0	0	0	0		
UNYE	97	1								0	0	0	0	0	0	11	0	0		
VIRA	97	1								0	0	0	0	0	0	0	0	0		
WCGR	97	1								0	0	0	0	0	0	0	0	0		
WECLGR	97	1								1	0	0	0	0	1	0	2	0		
WEGR	97	1								1	0	0	0	0	1	0	2	0		
WESA	97	1								0	0	0	0	0	0	0	0	0		
WFIB	97	1								0	0	3	1	2	16	45	14	8		
WHIM	97	1								0	0	0	0	0	0	0	0	0		
WILL	97	1								2	13	1	12	2	0	0	0	0		
WIPH	97	1								16	0	0	1	5	51	0	0	0		
WODU	97	1								0	0	0	0	0	0	0	0	0		
YELLOW	97	1								0	0	0	0	1	4	25	38	8		
AGWT	98	1	0	63	0	27	18	10	15	0	0	0	0	0	0	0	0	0	0	
AMAV	98	1	159	299	392	352	371	297	270	198	405	502	537	173	36	11	0	49	31	
AMCO	98	1	0	8	2	10	1	0	2	0	2	2	1	0	0	11	49	600	500	
AMWI	98	1	0	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	
AVOSTI	98	1	230	460	605	601	614	566	437	336	613	626	689	238	80	11	0	52	31	
AWPE	98	1	2	2	0	5	5	2	0	2	0	0	0	0	0	0	0	0	0	
BAGO	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BASA	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BBPL	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BCNH	98	1	0	0	1	0	1	3	6	1	1	1	0	0	0	0	0	0	0	
BLTE	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BNST	98	1	71	161	213	249	243	269	167	138	208	124	152	65	44	0	0	3	0	
BOGU	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BUFF	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BWTE	98	1	0	0	0	0	0	0	7	9	0	0	0	0	0	0	0	0	0	
CAEG	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CAGO	98	1	8	5	12	8	12	13	0	20	20	19	7	6	0	0	47	24	25	
CAGU	98	1	0	4	0	4	18	160	53	20	400	900	125	42	0	0	0	1	3	
CANV	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CATE	98	1	0	0	0	0	0	0	2	3	1	0	0	0	0	0	0	0	0	
CITE	98	1	21	6	14	25	12	12	9	1	0	1	0	3	0	0	0	0	0	
CLGR	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
COGO	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
COME	98	1	19	12	18	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
COSN	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DCCO	98	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
DOWI	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DOWITC	98	1	0	0	5	0	0	0	0	0	0	0	6	0	0	0	0	0	0	
DUCK	98	1	192	40	75	20	17	34	20	34	67	64	124	45	550	1300	3000	2500	2000	
DUCKSX	98	1	253	163	124	205	153	261	376	231	143	103	160	139	550	1300	3000	2500	2000	
EAGR	98	1	1	2	6	21	13	12	4	5	5	2	1	0	0	0	0	1	1	
FOTE	98	1	0	7	17	15	16	15	19	15	9	10	5	2	2	1	0	0	0	
FRGU	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GADW	98	1	2	2	6	45	6	20	1	7	4	0	0	0	0	0	0	0	0	
GOLD	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GREB	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GREG	98	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GRSC	98	1	0	0	0	2	2	1	4	0	0	1	1	0	0	0	0	0	0	
GRYE	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	
GTBH	98	1	0	1	0	1	1	5	1	1	1	3	2	1	1	1	1	3	2	
GULLSX	98	1	0	4	0	4	18	160	53	20	400	900	125	481	0	0	0	1	3	
HEREGR	98	1	3	16	1	1	2	8	7	2	2	5	2	1	2	3	1	6	4	
KILL	98	1	0	0	0	2	2	2	3	0	0	0	5	0	0	0	0	10	5	

LBCU	98	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
LBDO	98	1	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LESA	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LESC	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEYE	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAGO	98	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
MALL	98	1	4	0	2	11	18	18	4	0	2	0	5	30	0	0	0	0	0
MERG	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOPI	98	1	7	14	10	16	26	133	299	155	36	16	6	29	0	0	0	0	0
NSHO	98	1	17	18	8	22	10	7	1	0	0	0	0	0	0	0	0	0	0
PBGR	98	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
PEEP	98	1	0	0	0	2	9	10	3	20	2	0	248	0	0	0	3	20	0
PEEPSX	98	1	0	0	0	2	9	10	3	20	2	0	248	0	0	0	3	20	0
PHAL	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHALAR	98	1	0	0	23	21	11	41	87	8	1	2	3	0	0	0	0	0	0
RBGU	98	1	0	0	0	0	0	0	0	0	0	0	0	64	0	0	0	0	0
RBME	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REDH	98	1	10	16	8	24	39	25	16	25	34	21	24	32	0	0	0	0	0
REKN	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNDU	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNPH	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RPHA	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RUDU	98	1	0	2	1	8	5	1	0	0	0	0	0	0	0	0	0	0	0
SACR	98	1	0	0	0	2	0	0	0	0	0	0	0	0	0	1	1	0	0
SAND	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SCAU	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEPL	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SESA	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNEG	98	1	3	14	0	0	0	0	0	0	0	1	0	0	1	2	0	3	2
SNGO	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNPL	98	1	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
SORA	98	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
SPSA	98	1	0	0	1	0	0	2	0	0	0	1	0	2	0	0	0	0	0
STLS	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEAL	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUSW	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNGU	98	1	0	0	0	0	0	0	0	0	0	0	0	375	0	0	0	0	0
UNSC	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNTE	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNYE	98	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
VIRA	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WCGR	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WECLGR	98	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
WEGR	98	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
WESA	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WFIB	98	1	2	8	8	0	16	0	31	0	0	7	59	45	53	63	12	25	21
WHIM	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WILL	98	1	2	8	1	9	9	5	7	8	0	7	12	25	0	0	0	0	0
WIPH	98	1	0	0	23	21	11	41	87	8	1	2	3	0	0	0	0	0	0
WODU	98	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YELLOW	98	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0
AGWT	99	1	224	58	20	7	27	10	0		16	0	0	0	0	0	25	21	0
AMAV	99	1	50	70	145	213	227	163	159		451	278	439	332	126	83	25	26	22
AMCO	99	1	209	153	121	45	22	32	4		4	7	13	2	18	0	508	800	3000
AMWI	99	1	5	20	0	0	0	0	0		0	0	0	0	0	0	0	0	0
AVOSTI	99	1	70	125	304	338	357	290	288		513	369	506	380	132	98	25	26	22
AWPE	99	1	4	4	6	11	5	0	3		2	0	0	0	0	0	0	0	0
BAGO	99	1	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0

BASA	99	1	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0
BBPL	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCNH	99	1	0	1	1	11	12	8	14	4	0	0	0	0	1	0	0	0
BLTE	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BNST	99	1	20	55	159	125	130	127	129	62	91	67	48	6	15	0	0	0
BOGU	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BUFF	99	1	2	3	1	2	0	0	0	0	0	0	0	0	0	0	0	0
BWTE	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAEG	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAGO	99	1	20	4	10	10	14	0	0	9	9	50	23	0	15	62	0	0
CAGU	99	1	35	1	70	74	203	380	2278	1207	200	208	15	9	0	0	470	2
CANV	99	1	0	1	0	0	0	16	0	0	0	0	0	0	0	0	0	0
CATE	99	1	0	0	2	2	9	0	0	4	2	1	0	0	0	0	0	1
CITE	99	1	78	43	32	19	15	2	20	9	0	1	1	0	10	0	2	0
CLGR	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COGO	99	1	1	0	3	2	1	0	2	4	3	3	4	0	3	0	2	2
COME	99	1	2	7	0	4	0	0	0	1	0	0	1	0	2	0	0	0
COSN	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCCO	99	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
DOWI	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOWITC	99	1	4	0	0	4	0	0	0	0	0	0	5	0	0	0	0	0
DUCK	99	1	2	60	0	0	0	0	14	300	59	158	265	150	2588	6041	6445	2314
DUCKSX	99	1	472	331	138	69	74	44	65	380	72	172	285	161	2627	6437	6504	2321
EAGR	99	1	9	21	40	77	46	1	0	0	0	0	0	0	0	0	0	1
FOTE	99	1	0	2	14	3	9	2	10	4	3	12	11	1	0	0	0	0
FRGU	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GADW	99	1	3	0	6	2	1	2	4	6	0	0	0	0	0	303	0	0
GOLD	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GREB	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GREG	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRSC	99	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRYE	99	1	1	0	1	0	0	0	0	0	0	0	4	5	24	9	5	0
GTBH	99	1	0	1	1	3	9	5	8	2	9	3	15	4	1	3	2	1
GULLSX	99	1	35	2	70	75	203	380	2278	1207	201	213	16	9	0	1	470	3
HEREGR	99	1	0	3	3	14	22	13	22	6	9	3	15	5	5	3	4	3
KILL	99	1	0	1	1	0	0	0	13	0	4	5	3	19	8	10	9	5
LBCU	99	1	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
LBDO	99	1	4	0	0	4	0	0	0	0	0	0	5	0	0	0	0	0
LESA	99	1	0	0	2	0	0	0	0	0	0	0	0	0	3	0	3	0
LESC	99	1	44	19	30	0	0	0	0	0	0	0	0	0	0	1	0	0
LEYE	99	1	0	0	0	0	0	0	0	0	0	0	1	0	7	7	4	0
MAGO	99	1	0	0	0	3	0	0	0	0	4	0	1	0	0	0	1	1
MALL	99	1	2	0	2	3	5	0	10	9	10	10	14	0	3	46	0	5
MERG	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOPI	99	1	21	6	8	4	2	10	6	2	0	0	0	0	11	7	28	0
NSHO	99	1	59	77	15	1	2	2	0	6	0	0	0	0	12	0	0	0
PBGR	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
PEEP	99	1	0	0	2000	3	8	0	0	0	0	38	20	19	3	0	11	0
PEEPSX	99	1	0	0	2002	3	8	0	0	0	2	38	33	19	6	0	14	0
PHAL	99	1	0	0	0	20	200	0	0	0	0	0	0	0	0	0	0	0
PHALAR	99	1	0	0	66	285	223	1	25	6	25	19	15	0	0	0	0	0
RBGU	99	1	0	1	0	1	0	0	0	0	0	5	0	0	0	0	0	1
RBME	99	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REDH	99	1	26	40	17	26	21	0	8	28	0	0	0	8	0	11	6	0
REKN	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNDU	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNPH	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RPHA	99	1	0	0	0	164	6	0	0	0	0	0	0	0	0	0	0	0

RUDU	99	1	3	4	4	3	0	2	1	0	0	0	1	3	0	3	0	0
SACR	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAND	99	1	0	0	0	40	200	0	0	0	0	0	0	0	0	0	0	0
SCAU	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEPL	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
SESA	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNEG	99	1	0	1	1	0	1	0	0	0	0	0	0	1	3	0	2	2
SNGO	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNPL	99	1	0	0	4	14	2	0	0	0	0	2	0	0	0	7	0	0
SORA	99	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
SPSA	99	1	0	0	2	12	0	0	0	0	0	4	2	0	0	0	1	0
STLS	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEAL	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUSW	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNGU	99	1	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0
UNSC	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNTE	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNYE	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIRA	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WCGR	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WECLGR	99	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
WEGR	99	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
WESA	99	1	0	0	0	0	0	0	0	0	2	0	5	0	0	0	0	0
WFIB	99	1	0	15	0	49	0	25	0	0	0	6	20	37	0	0	0	0
WHIM	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WILL	99	1	0	4	3	6	11	2	11	8	57	38	41	6	1	1	0	4
WIPH	99	1	0	0	66	101	17	1	25	6	25	19	15	0	0	0	0	0
WODU	99	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YELLOW	99	1	1	0	1	0	0	0	0	0	0	0	5	5	31	16	9	0
AGWT	0	40	0	0		0	0		0	0	0	0	0	0	0	3.5	0	0
AMAV	0	40	3	48		160	129		244	135	418	847	1758	1429	4262	5450	6154	1664
AMCO	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
AMWI	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
AVOSTI	0	40	3	48		160	131		244	135	418	847	1764	1437	4262	5450	6154	1664
AWPE	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
BAGO	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
BASA	0	40	0	0		0	0		0	0	0	0	0	0	0	0	43	0
BBPL	0	40	0	2		0	0		0	0	0	0	0	0	0	0	0	0
BCNH	0	40	0	0		0	0		2	1.5	0	0	0	0	0	0	0	0
BLTE	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
BNST	0	40	0	0		0	2		0	0	0	0	6	8	0	0	0	0
BOGU	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
BUFF	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
BWTE	0	40	10	18		0	0		0	0	0	0	0	0	0	0	0	0
CAEG	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
CAGO	0	40	0	0		4	0		0	0	0	4	0	0	0	0	0	0
CAGU	0	40	850	1374		892	889		1558	3128	1858	1186	21772	4204	9441	4274	1806	1794
CANV	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
CATE	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
CITE	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
CLGR	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
COGO	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
COME	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
COSN	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
DCCO	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
DOWI	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
DOWITC	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0
DUCK	0	40	0	0		0	0		0	0	0	0	0	0	0	0	0	0

DUCKSX	0	40	21	39	0	0	0	0	0	0	0	0	10	11.5	0	0
EAGR	0	40	11	1840	210	44	4	24.5	8	3	0	22	1	181	0	85
FOTE	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FRGU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	2463
GADW	0	40	5	14	0	0	0	0	0	0	0	0	10	0	0	0
GOLD	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GREB	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GREG	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRSC	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRYE	0	40	0	0	0	0	0	6	0	0	0	0	0	0	0	0
GTBH	0	40	0	0	1	0	0	0	0	0	0	0	0	0	0	0
GULLSX	0	40	850	1374	892	889	1558	3128	1858	1186	21772	4204	9441	4274	1806	4257
HEREGR	0	40	0	0	1	0	2	1.5	0	0	0	0	0	0	0	0
KILL	0	40	0	0	0	1	3	0	3.5	0	0	6	1	0	0	0
LBCU	0	40	12	0	1	0	0	2	0.5	5	22	2.5	4	3	1	0
LBDO	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LESA	0	40	0	0	0	0	0	0	0	1590	0	0	0	0	0	0
LESC	0	40	6	7	0	0	0	0	0	0	0	0	0	0	0	0
LEYE	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAGO	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MALL	0	40	0	0	0	0	0	0	0	0	0	0	0	8	0	0
MERG	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOPI	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NSHO	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBGR	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEEP	0	40	0	0	0	0	0	0	4276	0	0	0	0	0	0	0
PEEPSX	0	40	0	0	0	67	0	86.5	4343	4818	315	45.5	78	0	43	0
PHAL	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHALAR	0	40	0	0	277	278	6155	109299	73462	10965	4539	133	0	0	0	0
RBGU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RBME	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REDH	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REKN	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNDU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNPH	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RPHA	0	40	0	0	277	278	6155	0	0	0	0	0	0	0	0	0
RUDU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SACR	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAND	0	40	0	0	150	44	0	0	0	0	0	0	0	0	0	0
SCAU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEPL	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SESA	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNEG	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNGO	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNPL	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SORA	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SPSA	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STLS	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEAL	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUSW	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNGU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNSC	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNTE	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNYE	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIRA	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WCGR	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WECLGR	0	40	0	7	30	0	0	0	0	0	0	0	0	0	0	0
WEGR	0	40	0	7	30	0	0	0	0	0	0	0	0	0	0	0

WESA	0	40	0	0	0	67	0	86.5	66.5	3228	315	45.5	78	0	0	0
WFIB	0	40	0	0	0	0	0	0	0	0	0	0	2	0	0	0
WHIM	0	40	0	0	0	3	0	0	0	0	0	5.5	0	0	0	0
WILL	0	40	0	0	0	0	0	0	0.5	1	8	4	2	0	0	0
WIPH	0	40	0	0	0	0	0	109299	73462	10965	4539	133	0	0	0	0
WODU	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YELLOW	0	40	0	0	0	0	0	6	0	0	0	0	0	0	0	0
AGWT	97	40														
AMAV	97	40														
AMCO	97	40														
AMWI	97	40														
AVOSTI	97	40														
AWPE	97	40														
BAGO	97	40														
BASA	97	40														
BBPL	97	40														
BCNH	97	40														
BLTE	97	40														
BNST	97	40														
BOGU	97	40														
BUFF	97	40														
BWTE	97	40														
CAEG	97	40														
CAGO	97	40														
CAGU	97	40														
CANV	97	40														
CATE	97	40														
CITE	97	40														
CLGR	97	40														
COGO	97	40														
COME	97	40														
COSN	97	40														
DCCO	97	40														
DOWI	97	40														
DOWITC	97	40														
DUCK	97	40														
DUCKSX	97	40														
EAGR	97	40														
FOTE	97	40														
FRGU	97	40														
GADW	97	40														
GOLD	97	40														
GREB	97	40														
GREG	97	40														
GRSC	97	40														
GRYE	97	40														
GTBH	97	40														
GULLSX	97	40														
HEREGR	97	40														
KILL	97	40														
LBCU	97	40														
LBDO	97	40														
LESA	97	40														
LESC	97	40														
LEYE	97	40														
MAGO	97	40														
MALL	97	40														
MERG	97	40														

NOPI	97	40						
NSHO	97	40						
PBGR	97	40						
PEEP	97	40						
PEEPSX	97	40						
PHAL	97	40						
PHALAR	97	40						
RBGU	97	40						
RBME	97	40						
REDH	97	40						
REKN	97	40						
RNDU	97	40						
RNPH	97	40						
RPHA	97	40						
RUDU	97	40						
SACR	97	40						
SAND	97	40						
SCAU	97	40						
SEPL	97	40						
SESA	97	40						
SNEG	97	40						
SNGO	97	40						
SNPL	97	40						
SORA	97	40						
SPSA	97	40						
STLS	97	40						
TEAL	97	40						
TUSW	97	40						
UNGU	97	40						
UNSC	97	40						
UNTE	97	40						
UNYE	97	40						
VIRA	97	40						
WCGR	97	40						
WECLGR	97	40						
WEGR	97	40						
WESA	97	40						
WFIB	97	40						
WHIM	97	40						
WILL	97	40						
WIPH	97	40						
WODU	97	40						
YELLOW	97	40						
AGWT	98	40	0	0	0	0	0	7	0
AMAV	98	40	90	559	847	2537	4262	10602	6154
AMCO	98	40	0	0	0	0	0	0	0
AMWI	98	40	0	0	0	0	0	0	0
AVOSTI	98	40	90	559	847	2545	4262	10602	6154
AWPE	98	40	0	0	0	0	0	0	0
BAGO	98	40	0	0	0	0	0	0	0
BASA	98	40	0	0	0	0	0	0	43
BBPL	98	40	0	0	0	0	0	0	0
BCNH	98	40	3	0	0	0	0	0	0
BLTE	98	40	0	0	0	0	0	0	0
BNST	98	40	0	0	0	8	0	0	0
BOGU	98	40	0	0	0	0	0	0	0
BUFF	98	40	0	0	0	0	0	0	0
BWTE	98	40	0	0	0	0	0	0	0

CAEG	98	40	0	0	0	0	0	0	0
CAGO	98	40	0	0	4	0	0	0	0
CAGU	98	40	5098	2470	1186	2028	9441	1973	1806
CANV	98	40	0	0	0	0	0	0	0
CATE	98	40	0	0	0	0	0	0	0
CITE	98	40	0	0	0	0	0	0	0
CLGR	98	40	0	0	0	0	0	0	0
COGO	98	40	0	0	0	0	0	0	0
COME	98	40	0	0	0	0	0	0	0
COSN	98	40	0	0	0	0	0	0	0
DCCO	98	40	0	0	0	0	0	0	0
DOWI	98	40	0	0	0	0	0	0	0
DOWITC	98	40	0	0	0	0	0	0	0
DUCK	98	40	0	0	0	0	0	0	0
DUCKSX	98	40	0	0	0	0	0	0	0
EAGR	98	40	0	0	0	0	10	22	0
FOTE	98	40	38	16	3	0	1	0	0
FRGU	98	40	0	0	0	0	0	0	0
GADW	98	40	0	0	0	0	0	0	0
GOLD	98	40	0	0	0	0	10	0	0
GREB	98	40	0	0	0	0	0	0	0
GREG	98	40	0	0	0	0	0	0	0
GRSC	98	40	0	0	0	0	0	0	0
GRYE	98	40	0	0	0	0	0	0	0
GTBH	98	40	12	0	0	0	0	0	0
GULLSX	98	40	0	0	0	0	0	0	0
HEREGR	98	40	5098	2470	1186	2028	9441	1973	1806
KILL	98	40	3	0	0	0	0	0	0
LBCU	98	40	0	4	0	8	1	0	0
LBDO	98	40	0	0	5	5	4	6	1
LESA	98	40	0	0	0	0	0	0	0
LESC	98	40	0	0	1590	0	0	0	0
LEYE	98	40	0	0	0	0	0	0	0
MAGO	98	40	0	0	0	0	0	0	0
MALL	98	40	0	0	0	0	0	0	0
MERG	98	40	0	0	0	0	0	15	0
NOPI	98	40	0	0	0	0	0	0	0
NSHO	98	40	0	0	0	0	0	0	0
PBGR	98	40	0	0	0	0	0	0	0
PEEP	98	40	0	0	0	0	0	0	0
PEEPSX	98	40	0	8552	0	0	0	0	0
PHAL	98	40	0	8552	4818	21	78	0	43
PHALAR	98	40	0	0	0	0	0	0	0
RBGU	98	40	110700	92032	10965	2	0	0	0
RBME	98	40	0	0	0	0	0	0	0
REDH	98	40	0	0	0	0	0	0	0
REKN	98	40	0	0	0	0	0	0	0
RNDU	98	40	0	0	0	0	0	0	0
RNPH	98	40	0	0	0	0	0	0	0
RPHA	98	40	0	0	0	0	0	0	0
RUDU	98	40	0	0	0	0	0	0	0
SACR	98	40	0	0	0	0	0	0	0
SAND	98	40	0	0	0	0	0	0	0
SCAU	98	40	0	0	0	0	0	0	0
SEPL	98	40	0	0	0	0	0	0	0
SESA	98	40	0	0	0	0	0	0	0
SNEG	98	40	0	0	0	0	0	0	0
SNGO	98	40	0	0	0	0	0	0	0

SNPL	98	40						0	0	0		0	0	0	0		
SORA	98	40						0	0	0		0	0	0	0		
SPSA	98	40						0	0	0		0	0	0	0		
STLS	98	40						0	0	0		0	0	0	0		
TEAL	98	40						0	0	0		0	0	0	0		
TUSW	98	40						0	0	0		0	0	0	0		
UNGU	98	40						0	0	0		0	0	0	0		
UNSC	98	40						0	0	0		0	0	0	0		
UNTE	98	40						0	0	0		0	0	0	0		
UNYE	98	40						0	0	0		0	0	0	0		
VIRA	98	40						0	0	0		0	0	0	0		
WCGR	98	40						0	0	0		0	0	0	0		
WECLGR	98	40						0	0	0		0	0	0	0		
WEGR	98	40						0	0	0		0	0	0	0		
WESA	98	40						0	0	3228		21	78	0	0		
WFIB	98	40						0	0	0		0	2	0	0		
WHIM	98	40						0	0	0		0	0	0	0		
WILL	98	40						0	1	1		0	2	0	0		
WIPH	98	40						110700	92032	10965		2	0	0	0		
WODU	98	40						0	0	0		0	0	0	0		
YELLOW	98	40						12	0	0		0	0	0	0		
AGWT	99	40	0	0	0	0	0	0	0		0	0		0		0	
AMAV	99	40	3	48	160	129	244	180	276		1758	321		297		1664	
AMCO	99	40	0	0	0	0	0	0	0		0	0		0		0	
AMWI	99	40	0	0	0	0	0	0	0		0	0		0		0	
AVOSTI	99	40	3	48	160	131	244	180	276		1764	329		297		1664	
AWPE	99	40	0	0	0	0	0	0	0		0	0		0		0	
BAGO	99	40	0	0	0	0	0	0	0		0	0		0		0	
BASA	99	40	0	0	0	0	0	0	0		0	0		0		0	
BBPL	99	40	0	2	0	0	0	0	0		0	0		0		0	
BCNH	99	40	0	0	0	0	2	0	0		0	0		0		0	
BLTE	99	40	0	0	0	0	0	0	0		0	0		0		0	
BNST	99	40	0	0	0	2	0	0	0		6	8		0		0	
BOGU	99	40	0	0	0	0	0	0	0		0	0		0		0	
BUFF	99	40	0	0	0	0	0	0	0		0	0		0		0	
BWTE	99	40	10	18	0	0	0	0	0		0	0		0		0	
CAEG	99	40	0	0	0	0	0	0	0		0	0		0		0	
CAGO	99	40	0	0	4	0	0	0	0		0	0		0		0	
CAGU	99	40	850	1374	892	889	1558	1158	1246		21772	6379		6575		1794	
CANV	99	40	0	0	0	0	0	0	0		0	0		0		0	
CATE	99	40	0	0	0	0	0	0	0		0	0		0		0	
CITE	99	40	0	0	0	0	0	0	0		0	0		0		0	
CLGR	99	40	0	0	0	0	0	0	0		0	0		0		0	
COGO	99	40	0	0	0	0	0	0	0		0	0		0		0	
COME	99	40	0	0	0	0	0	0	0		0	0		0		0	
COSN	99	40	0	0	0	0	0	0	0		0	0		0		0	
DCCO	99	40	0	0	0	0	0	0	0		0	0		0		0	
DOWI	99	40	0	0	0	0	0	0	0		0	0		0		0	
DOWITC	99	40	0	0	0	0	0	0	0		0	0		0		0	
DUCK	99	40	0	0	0	0	0	0	0		0	0		0		0	
DUCKSX	99	40	21	39	0	0	0	0	0		0	0		1		0	
EAGR	99	40	11	1840	210	44	4	11	0		0	44		362		85	
FOTE	99	40	0	0	0	0	0	0	0		0	0		0		0	
FRGU	99	40	0	0	0	0	0	0	0		0	0		0		2463	
GADW	99	40	5	14	0	0	0	0	0		0	0		0		0	
GOLD	99	40	0	0	0	0	0	0	0		0	0		0		0	
GREB	99	40	0	0	0	0	0	0	0		0	0		0		0	
GREG	99	40	0	0	0	0	0	0	0		0	0		0		0	

GRSC	99	40	0	0	0	0	0	0	0	0	0	0	0
GRYE	99	40	0	0	0	0	0	0	0	0	0	0	0
GTBH	99	40	0	0	1	0	0	0	0	0	0	0	0
GULLSX	99	40	850	1374	892	889	1558	1158	1246	21772	6379	6575	4257
HEREGR	99	40	0	0	1	0	2	0	0	0	0	0	0
KILL	99	40	0	0	0	1	3	0	3	0	4	0	0
LBCU	99	40	12	0	1	0	0	4	1	22	0	0	0
LBDO	99	40	0	0	0	0	0	0	0	0	0	0	0
LESA	99	40	0	0	0	0	0	0	0	0	0	0	0
LESC	99	40	6	7	0	0	0	0	0	0	0	0	0
LEYE	99	40	0	0	0	0	0	0	0	0	0	0	0
MAGO	99	40	0	0	0	0	0	0	0	0	0	0	0
MALL	99	40	0	0	0	0	0	0	0	0	0	1	0
MERG	99	40	0	0	0	0	0	0	0	0	0	0	0
NOPI	99	40	0	0	0	0	0	0	0	0	0	0	0
NSHO	99	40	0	0	0	0	0	0	0	0	0	0	0
PBGR	99	40	0	0	0	0	0	0	0	0	0	0	0
PEEP	99	40	0	0	0	0	0	0	0	0	0	0	0
PEEPSX	99	40	0	0	0	67	0	173	133	315	70	0	0
PHAL	99	40	0	0	0	0	0	0	0	0	0	0	0
PHALAR	99	40	0	0	277	278	6155	107898	54892	4539	264	0	0
RBGU	99	40	0	0	0	0	0	0	0	0	0	0	0
RBME	99	40	0	0	0	0	0	0	0	0	0	0	0
REDH	99	40	0	0	0	0	0	0	0	0	0	0	0
REKN	99	40	0	0	0	0	0	0	0	0	0	0	0
RNDU	99	40	0	0	0	0	0	0	0	0	0	0	0
RNPH	99	40	0	0	0	0	0	0	0	0	0	0	0
RPHA	99	40	0	0	277	278	6155	0	0	0	0	0	0
RUDU	99	40	0	0	0	0	0	0	0	0	0	0	0
SACR	99	40	0	0	0	0	0	0	0	0	0	0	0
SAND	99	40	0	0	150	44	0	0	0	0	0	0	0
SCAU	99	40	0	0	0	0	0	0	0	0	0	0	0
SEPL	99	40	0	0	0	0	0	0	0	0	0	0	0
SESA	99	40	0	0	0	0	0	0	0	0	0	0	0
SNEG	99	40	0	0	0	0	0	0	0	0	0	0	0
SNGO	99	40	0	0	0	0	0	0	0	0	0	0	0
SNPL	99	40	0	0	0	0	0	0	0	0	0	0	0
SORA	99	40	0	0	0	0	0	0	0	0	0	0	0
SPSA	99	40	0	0	0	0	0	0	0	0	0	0	0
STLS	99	40	0	0	0	0	0	0	0	0	0	0	0
TEAL	99	40	0	0	0	0	0	0	0	0	0	0	0
TUSW	99	40	0	0	0	0	0	0	0	0	0	0	0
UNGU	99	40	0	0	0	0	0	0	0	0	0	0	0
UNSC	99	40	0	0	0	0	0	0	0	0	0	0	0
UNTE	99	40	0	0	0	0	0	0	0	0	0	0	0
UNYE	99	40	0	0	0	0	0	0	0	0	0	0	0
VIRA	99	40	0	0	0	0	0	0	0	0	0	0	0
WCGR	99	40	0	0	0	0	0	0	0	0	0	0	0
WECLGR	99	40	0	7	30	0	0	0	0	0	0	0	0
WEGR	99	40	0	7	30	0	0	0	0	0	0	0	0
WESA	99	40	0	0	0	67	0	173	133	315	70	0	0
WFIB	99	40	0	0	0	0	0	0	0	0	0	0	0
WHIM	99	40	0	0	0	3	0	0	0	0	11	0	0
WILL	99	40	0	0	0	0	0	0	0	8	8	0	0
WIPH	99	40	0	0	0	0	0	107898	54892	4539	264	0	0
WODU	99	40	0	0	0	0	0	0	0	0	0	0	0
YELLOW	99	40	0	0	0	0	0	0	0	0	0	0	0

AirForceNews

First no-notice AEF deployment underway

Released: Jul 8, 1997

LANGLEY AIR FORCE BASE, Va. (AFNS) -- Air Combat Command initiated the first no-notice exercise of its Air Expeditionary Force capabilities July 7.

Thirty aircraft, associated aircrews, support personnel and equipment will deploy to Alaska July 9 in support of exercise Cope Thunder '97, which runs July 10-26.

The AEF's mission during the exercise will be to augment exercise Cope Thunder '97 forces, validate the capability to rapidly reinforce in-place forces and improve interoperability in the conduct of joint training.

Although there have been five previous AEF deployments, this is the first time the Air Force has exercised the AEF concept from a cold start with no notice.

This is also the first time there has been joint service involvement in an AEF deployment. The AEF includes U.S. Navy EA-6Bs, Air Force F-15s from the 33rd Fighter Wing, Eglin Air Force Base, Fla.; F-16s from the 388th Fighter Wing, Hill AFB, Utah; B-1s from the 7th Bomb Wing, Dyess AFB, Texas; B-52s from the 2nd Bomb Wing, Barksdale AFB, La., and F-16s from the 35th Fighter Wing, Misawa Air Base, Japan.

These aircraft will form the 35th Air Expeditionary Wing and will be based at Elmendorf and Eielson Air Force Bases, Alaska.

The AEF evolved as a result of the emerging expeditionary nature of America's military forces. The Air Force developed AEFs to provide a flexible, tailored, quick response to fill theater needs across the spectrum of conflict. (Courtesy of ACC News Service)

State's
Exhibit 69