

**COMMENTS ON THE JUNE, 1999 DRAFT VERSION OF NUREG-1520
'STANDARD REVIEW PLAN FOR THE REVIEW OF A LICENSE
APPLICATION FOR A FUEL CYCLE FACILITY**

CHAPTER 6: CHEMICAL PROCESS SAFETY

I. General Comments

The latest version of draft SRP Chapter 6 addresses the principal concerns that NEI brought to the attention of the NRC in its letter of March 2, 1999. Many of the revisions, however, require clarification and editing to be consistent with modifications made to 10 CFR 70.

There are confusing and inconsistent references to the ISA and ISA Summary. The scope of the chemical safety review is dependent on what is contained in the ISA Summary. Section 6.3 limits the review to "...*accident sequences described in the ISA Summary...*". Two paragraphs later in §6.3 the review is to address "...*accident sequences in the [license] application or ISA Summary...*" and finally in §6.5.2.1 the review should "...*focus on [accident] sequences that would exceed the performance requirements of §70.61...*" (i.e. high- and intermediate-consequence accidents). The review must consistently state that the chemical safety review will address those accident sequences described in the ISA Summary. The inconsistent use of terms must be clarified and the contents of the ISA Summary must be clearly defined in 10 CFR 70.65.

10 CFR 70.62(a) permits, but no longer mandates, use of a graded approach to safety. Language in the SRP (e.g. §6.5.2.2, paragraph 2) still indicates that grading is required and that the reviewer must assess the grading method. This inconsistency between the rule and SRP must be corrected.

Several inconsistencies between the SRP and Rule remain. For example, the draft SRP requires adherence to baseline design criteria for "...*new facilities or new processes...*" [§6.3(8)] or for "...*new facilities or new processes at existing facilities...*" [§6.4.3.3)]. To comply with 10 CFR 70.64(a), the correct requirement should read "...*new facilities or new processes at existing facilities that require a license amendment under 10 CFR 70.72...*" The requirement of §6.3, Item 2 for a "...*quantitative interpretation of the qualitative chemical risk levels...*" is obscure and may prompt confusion on behalf of the reviewer. The NRC has previously stated on numerous occasions that use of quantitative analysis (such as Probabilistic Risk Analysis) is inappropriate for fuel cycle facilities. The quantitative interpretation required in §6.3 should not, therefore, be sought.

In several sections of Chapter 6 NEI has adopted language from the draft SRP for the AVLIS facility (draft NUREG-1701) where such language is more clearly and succinctly expressed than in draft NUREG-1520.

II. Specific Comments

Specific comments are noted on the attached copy of draft SRP Chapter 6.

Ref: I:\Files\Part 70\SRP (June 1999 Version) Sec 6.msw

6.0 CHEMICAL PROCESS SAFETY

6.1 PURPOSE OF REVIEW

The primary purpose of the review is to determine with reasonable assurance that the applicant has designed a facility that will provide adequate protection against chemical hazards related to the storage, handling and processing of nuclear material. The facility design must applicant's facility, process design, and commitments to implement and maintain a chemical safety function will adequately protect the health and safety of workers and the public during normal operations and during credible accident conditions from chemical risks produced by licensed material and, hazardous chemicals produced from licensed material. It must also protect against ,and from plant conditions that could affect the safety of radioactive materials and thus present an increased radiation risk (e.g. release of a gas that could incapacitate or suffocate operators and preclude their entry to an area of the plant handling radioactive materials).; during normal operations, anticipated (off-normal) events, and during accidents. This chapter facilitates the review of the chemical safety aspects for normal operations and for accidents that are analyzed in the integrated safety analysis (ISA), through interfaces with SRP Sections 3.0 and 11.0.

An additional purpose of the review is to verify with reasonable assurance that the areas of NRC responsibility, as specified in the NRC-OSHA Memorandum of Understanding (MOU) dated October 31, 1988, in the area of chemical process safety, are properly implemented by the applicant.

Chemical safety issues were initially evaluated as part of the applicant's Integrated Safety Analysis (ISA). The ISA evaluated credible accident sequences at the facility, identified items relied on for safety to prevent their occurrence or to mitigate their consequences and recommended management measures to ensure the availability and reliability of items relied on for safety, when needed. Prior to assessing the applicant's facility design to protect against chemical hazards, the reviewer should first consult the ISA Summary (Chapter 3) to gain familiarity with:

- (1) accident sequences leading to conditions that could pose chemical hazards
- (2) specific items relied on for safety to prevent or mitigate such chemical hazards
- (3) management measures recommended to ensure the items relied on for safety will be available and reliable when required

In summary, the object of the chemical process safety review is determination that the applicant's facility design and items relied on for safety provide reasonable assurance of chemical safety at the facility for routine operations, off-normal conditions and credible, potential accidents.

6.2 RESPONSIBILITY FOR REVIEW

Primary: Chemical Process Safety Reviewer (all sections of this chapter)

Secondary: None

Supporting: Project Manager and Fuel Facility Inspection Staff (as needed)
Health Physicist (for Part 20 uranium toxicity issues)

6.3 AREAS OF REVIEW

~~The regulation, 10 CFR 70.62(a), requires an applicant to establish and maintain that a safety program be established and maintained that will adequately protect provide adequate protection from licensed materials, for worker and public health and safety and the environment from the chemical hazards of licensed material. This does not necessarily require the establishment of a separate chemical process safety program, but it does require that chemical hazards and accident sequences that affect licensed materials be considered and adequately prevented or mitigated. is not required to provide chemical process safety. Applicants are required to conduct an ISA, identify accident sequences along with items relied on for safety, identify management measures that ensure items are available and reliable, maintain records that demonstrate chemical process safety compliance to the regulation and provide reporting commitments for chemical process releases if applicable.~~

The staff's chemical safety review should focus on the chemical safety-related accident sequences described in the ISA Summary (~~some of the relevant information may appear in~~ SRP Section 3.0) and the ~~corresponding interfaces with~~ management measures (~~some of the relevant information may appear in~~ SRP Section 11.0) to confirm that the applicant's equipment, facilities and procedures are adequate to protect against releases and chemical exposures of licensed material, hazardous chemicals produced from licensed material and chemical risks produced from plant conditions that affect the safety of radioactive materials. Also to be reviewed is the applicant's ~~demonstration evidence~~ that items identified as relied on for safety would adequately mitigate or prevent such accident sequences. The review will verify that ~~any~~ the grading of ~~both the items relied on for safety or management measures proposed by the applicant in accordance with 10 CFR 70.62(a) controls and assurances applied to such controls are commensurate with appropriate for~~ the accident risk that the controls are designed to reduce.

~~The NRC-OSHA MOU directs the NRC to oversee chemical safety issues related to: An additional area of review is the applicant's application of the principles of the MOU, in identifying the hazards to be evaluated in the ISA and controlled by items and management measures. The MOU delineates the areas of federal agency responsibility for chemical process safety at NRC licensed nuclear facilities. NRC is responsible for regulating: (a) radiation risk produced by radioactive materials; (b) chemical risk produced by radioactive materials; and (c) plant conditions which affect or may affect the safety of radioactive materials and thus present an increased radiation risk to workers, the public and the environment. The NRC does not oversee plant conditions which result in an occupational risk, but do not affect the safe use of licensed materials. Occupational risks both from plant conditions that do not affect the safety of licensed materials and from substances prior to process addition to licensed material or after process separation from licensed material are not subject to NRC regulatory oversight; therefore, these risks are not required by Part 70 to be addressed in the ISA, ISA summary, or management measures (although addressing these risks is not required, the applicant could choose to include them in the ISA if, for example, the ISA is also used to comply with OSHA regulatory requirements).~~

Specific areas to be reviewed by the staff, ~~for commitments to protect workers and the public, and address chemical process accident sequences in the application or ISA summary,~~ include:

1. Chemical Process Description – including process chemistry, flow diagrams, major process steps and major pieces of equipment~~The narrative description of the site, facility, and~~

~~processes with respect to chemical safety for normal operations. This applies to substances addressed in the NRC-OSHA MOU.~~

2. ~~Chemical Accident Sequences – including The description of the unmitigated accident sequences involving hazardous chemicals and licensed materials and interpretation and the applicant's quantitative interpretation~~ of the qualitative chemical risk levels.
3. ~~Chemical Accident Consequences – including interpretation of the qualitative chemical risk levels, assumptions, bases and methods used to forecast the consequences of accidents for workers and the public identified in the ISA Summary that involve hazardous chemicals and licensed materials.~~
43. ~~Chemical Process Items Relied on For Safety – including The~~ identification and description of the adequacy of items relied on for (chemical) safety.
54. ~~Chemical Process Management Measures – including The~~ management measures to assure the reliability and availability of items relied on for (chemical) safety.
65. ~~Safety Grading – The~~including, if applicable, grading of items relied on for safety and their associated management measures ~~safety controls and assurances placed on such controls.~~
6. ~~The interface between chemical process safety and management measures and emergency management.~~ [Comment: addressed in Chapter 8. Delete from Chapter 6.]
7. ~~The applicant's commitment to retain R~~records for chemical process safety compliance and reporting commitments for chemical releases.
8. ~~The applicant's commitment to adhere to the Use of 10 CFR 70.64~~ chemical baseline design criteria for new facilities or new processes at existing facilities that require a license amendment under 10 CFR 70.72 (as applicable). [Comment: consistency with the rule language in 10 CFR 70.64(a) is required.]
9. ~~The applicant's commitment to refer to the facility's corrective action program any unacceptable performance deficiency.~~

6.4 ACCEPTANCE CRITERIA

~~An applicant who has met the following acceptance criteria, should be considered to have an acceptable chemical process safety function.~~ [Comment: redundant sentence. Delete.]

6.4.1 Regulatory Requirements

The regulatory basis for the review should be the general and additional contents of an application as required by 10 CFR 70.22 and 70.65. In addition, the chemical process safety review should be conducted to provide reasonable assurance of compliance with 10 CFR 70.61, 70.62, as well as 10 CFR 70.64, for new facilities or new processes at existing facilities that require a license amendment under 10 CFR 70.72.

6.4.2 Regulatory Guidance

Relevant regulatory guidance for chemical process safety includes:

1. NUREG/CR-6410, "Nuclear Fuel Cycle Facility Accident Analysis Handbook", 1998.
2. NUREG-1513, "Integrated Safety Analysis Guidance Document", latest revision.
3. NUREG-1601, "Chemical Process Safety at Fuel Cycle Facilities", 1997.

6.4.3 Regulatory Acceptance Criteria

~~The reviewer should find the applicant's chemical process safety information acceptable if it provides reasonable assurance that the following acceptance criteria are adequately addressed and satisfied. The applicant may elect to incorporate some or all of the requested chemical process information in the Facility and Process Description (SRP Chapter 1.1) or ISA Summary (SRP Chapter 3) rather than in this section. Either approach is acceptable so long as the information is adequately cross-referenced. Applicant's license application may address these criterion by reference to information supplied to satisfy SRP Section 3.0 (ISA) or other chapters of this SRP (information need not be repeated). The chemical safety reviewer reviews the application, ISA summary, and other ISA documentation as needed with respect to these acceptance criteria regardless of where the information appears. NRC should find the applicant's chemical process safety approach or function acceptable if license commitments provide chemical process safety for the workers, the public and the environment, and satisfy the following criteria:~~

6.4.3.1 Process Chemical Risk and Accident Sequences

~~The applicant's descriptions of facility processes and chemical accident sequences are acceptable if they contain the following information: -provides an adequate process description that provides sufficient detail to allow an independent assessment of the chemical hazards and potential chemical accident sequences. This information should be included in the ISA summary. Additional criteria that should be addressed in an acceptable ISA summary are:~~

- a. Process descriptions of sufficient detail are provided to support an understanding of chemical process hazards (including radiological hazards caused by or involving chemical accidents) and to allow development of potential accident sequences.
- b. The applicant provides an adequate list of the consequences and likelihoods of accident sequences identified in the ISA summary involving hazardous chemicals produced from licensed material, and chemical risks produced by plant conditions that effect the safety of radioactive materials. Each accident sequence should include the chemical hazard evaluation that identifies potential interactions of process chemicals with associated confinement vessels, process equipment, and plant personnel. The hazard evaluation should use appropriate, accepted methods.
- c. The applicant identifies and uses appropriate techniques and valid assumptions in estimating the concentrations of hazardous chemicals produced from licensed material or predicting the "toxic" footprint for releases from abnormal plant condition that affects the safety of radioactive materials for comparison with the "Performance Requirements", as described in 10 CFR 70.61(b) and 70.61(c).

- d. Source term and vapor dispersion models used to calculate the concentration of UF₆ and its reaction products conform to guidance on the applicability of models provided in NUREG/CR-6481, *Review of Models Used for Determining Consequences of UF₆ Release*.
- e. If dispersion models are used to determine whether a release of chemicals might affect worker or public health and safety, the applicant provides evidence that the models used are appropriate to the application and that the assumed input data leads to a conservative estimate of potential consequences. Consequence analyses conform to the guidance on atmospheric and consequence modeling found in NUREG/CR-6410, *Nuclear Fuel Cycle Facility Accident Analysis Handbook*, 1998.
- f. The applicant proposes appropriate chemical exposure standards to assess chemical consequences. Acceptable exposure standards include, but are not limited to, Emergency Response Planning Guidelines (ERPGs) established by the American Industrial Hygiene Association, Acute Exposure Guideline Levels (AEGLs) established by the National Advisory Committee for Acute Guideline Levels for Hazardous Substances, exposure limits established by the Occupational Safety and Health Administration or exposure limits contained in international standards organization (ISO) standards. If the applicant does not use a published exposure standard, or if a chemical has an unknown exposure standard, the applicant may propose an alternate exposure standard accompanied by supporting documentation to justify selection of such alternative. Note: 10 CFR 70.61, "Performance Requirements" are for "acute chemical exposures", and OSHA permissible exposure limits (PELS) are typically time weighted average (TWA) values. Consequently, for ISA purposes only, acute chemical release limits may not be adjusted using the TWA calculation where concentration and time of exposure are used, unless a rational basis is provided in the ISA summary.

6.4.3.2 Items Relied on for Safety and Management Measures

The application should identify the design basis that provides safety for normal operations. A description could include specified features such as materials of construction, sizing, system fabrication, and process control schemes. Based upon a comparison of the unmitigated chemical consequences determined in 6.4.3.1 with the performance criteria of 10 CFR 70.61 above, to the standards developed, in accordance with §70.61, the applicant should identify (in the ISA summary) chemical process safety controls (i.e., items relied on for safety) suitable to prevent or mitigate potential accidents. Items relied on for safety also should be identified for those accident sequences containing a chemical system/process failure that may ultimately lead to radiological consequences that exceed the performance requirements ~~(basis: MOU item (c))~~. [Comment: the following two sentences have been relocated from §6.5.2.2] If the applicant has elected to apply a graded approach to safety in accordance with 10 CFR 70.62(a), the reviewer should establish that the grading of items relied on for safety or management measures is appropriate and sufficient to protect against chemical process risks. For example, the applicant should consider reliance on passive controls over active systems and consider defense-in-depth. To reduce common mode failures, the applicant should favor design features that utilize independent sources of motive force for items such as control actuators, jet pumps, eductors, and ejectors. Fail-safe controls are preferred unless safety concerns preclude this approach. Management measures to assure the availability and reliability of such items relied on for safety when they are required to perform their safety functions must also be described in the application. Management measures may be graded commensurate with risk.

~~The applicant must also address the following: With respect to chemical safety, acceptability of the application and ISA summary should be based upon the degree to which each satisfies the following criteria:~~

- a. The application should describe the engineering approach, basis or schemes employed for maintaining safety in normal operations.
- b. The ISA summary includes the following information: identification of the administrative and engineered controls to prevent or mitigate chemical process risks and the risk category. If applicable, the applicant should also explain how the controls and management measures have been graded commensurate with the reduction in risk that the controls are designed to achieve.
- c. The application should describe the management measures proposed to assure items relied on for safety are available and reliable when required by satisfying the following criteria:
 - a) Engineered Controls: procedures to ensure the reliable operation of engineered controls should be briefly described (e.g., inspection and testing procedures and frequencies, calibration programs, functional tests, corrective and preventive maintenance programs, criteria for acceptable test results, etc.)
 - b) Administrative Controls: procedures to ensure that administrative controls will be correctly implemented when required should be briefly described (e.g., employee training and qualification in operating procedures, ~~periodic retraining~~, safety work practices, development of standard operating procedures, training program evaluation, etc.)

6.4.3.3 Requirements for New Facilities or New Processes at Existing Facilities

The application should address the baseline design criteria (BDC) for new facilities or new processes at existing facilities ~~that require a license amendment under 10 CFR 70.72. [Comment: consistency with the Rule language of 10 CFR 70.64(a) is required.]~~ NUREG-1601, Section 2.4, Design Basis, contains a list of items that should be considered in an adequate facility design. With respect to chemical safety, ~~acceptability of the application should be considered acceptable if it includes (or references other sections of the application): based upon it providing the following information:~~

- ~~a~~A. A brief description of how the ISA was performed for the new process, including ~~its~~'s use and relationship to the performance requirements in 10 CFR 70.61, the BDC, and a defense-in-depth strategy for higher-risk accident sequences. Acceptable principles for defense-in-depth of the chemical design would be those that support hierarchy of controls with preference for prevention, mitigation, and operator intervention (in that order). For example, limiting inventory of on-site chemicals would be a preferred, preventive practice for limiting chemical safety-related accidents.
- ~~b~~B. The descriptions of proposed facility-specific or process-specific relaxations or additions to BDC along with justification for relaxation.
- ~~c~~C. In the ISA summary a description of how the chemical safety BDC were applied in establishing the design principles, features, and control systems of the new process.

6.5 REVIEW PROCEDURES

The reviewer should use the Regulatory Guidance stated in this chapter; references in this chapter; the applicant's 91-01, 70.50, and 70.74 reports; and 10 CFR Part 70 Appendix A reporting requirements. [Comment: redundant information already provided earlier in the chapter. Note that 91-01 reports have been done away with.]

6.5.1 Acceptance Review ~~Technical Review~~

The Primary Reviewer should evaluate the application to determine whether it addresses the topics in Section 6.3 'Areas of Review.' If significant deficiencies are identified, the applicant should be requested to submit additional material before the start of the safety evaluation. ~~should review the applicant's chemical process safety information for completeness with respect to the requirements in 10 CFR 70.22, 70.24, 70.61, 70.62, 70.65 and the Acceptance Criteria in Section 6.4. Using guidance in the "FCLB Materials Licensing Procedures Manual," if deficiencies are identified, the applicant should either be requested to submit additional material, or the application should be denied for further safety evaluation under section 6.5.2.~~ [Comments: (1) §6.5.1. should be renamed 'Acceptance Review' to be consistent with the other SRP chapters, and (2) the language of this paragraph should be revised to be consistent with the that used in every other 'Acceptance Review' section in the remaining SRP chapters.]

6.5.2 Safety Evaluation

[Comment: this section can be significantly condensed without losing the substantive issues contained in the May, 1999 revision of Chapter 6.]

After determining that the application is acceptable for review in accordance with §6.5.1, the primary reviewer will perform a safety evaluation against the Acceptance Criteria described in §6.4. If, during the course of the safety evaluation, the primary reviewer determines a need for additional information, the primary reviewer coordinates a request for additional information with the licensing project manager. The reviewer should ascertain that the chemical safety approach is consistent with other sections of the application including the ISA Summary (SRP Chapter 3), radiation safety (SRP Chapter 4) and emergency management (SRP Chapter 7). For example, the reviewer should determine that the chemical safety program will not have unacceptably adverse impacts on the radiological safety at the facility.

For an existing facility the reviewer may consult cognizant NRC inspectors to identify and resolve any issue of concern related to the licensing review. For a planned facility the reviewers may wish to consult with the facility design team to gain a better understanding of the process, its potential hazards and safety approaches. ~~When an acceptable application is received from the applicant, the primary reviewer will conduct a complete review of the application and determine its acceptability, consulting with the supporting reviewers to identify and resolve any issues of concern related to the licensing review. The primary reviewer (acting as a secondary or supporting reviewer) should also coordinate with other reviewers concerning chemical safety regarding the following:~~

1. ~~_____ In support of the Primary Reviewer for Chapter 2.0, the chemical process safety reviewer should determine whether the Acceptance Criteria in Chapter 2.0 have been met as they relate to chemical process safety.~~

- ~~2. In support of the Primary Reviewer for Sections 11.1 through 11.8, the chemical process safety reviewer should determine whether the Acceptance Criteria in Sections 11.1 through 11.8 have been met as they relate to chemical process safety.~~
- ~~3. In support of the Primary Reviewer for Chapter 3.0, the chemical process safety reviewer should determine whether the Acceptance Criteria in Chapter 3.0 have been met as they relate to chemical process safety.~~
- ~~4. In support of the Primary Reviewer for Chapter 8.0, the chemical process safety reviewer should determine whether the Acceptance Criteria in Chapter 8.0 have been met as they relate to chemical process safety.~~

~~The Primary Reviewer will should determine whether the Acceptance Criteria in Section 6.4 have been met using the review procedures in the following sections, then the reviewer should prepare a Safety Evaluation Report (SER) for the Licensing Project Manager in support of the licensing action-NCS chapter in accordance with Section 6.6~~

~~The applicant is not required to duplicate information in separate locations. For existing licensees (renewals and amendments) the chemical safety reviewer should interface with the fuel cycle facility inspection staff to obtain any insights particular to the applicant's operations that are relevant to the chemical process safety review.~~

6.5.2.1 Process Chemical Risks and Accident Sequences

~~The results of the ISA form the basis for the chemical process safety evaluation. The reviewer should review the staff reviews the chemical risks identified in the ISA Summary and ensure that the level of safety deemed necessary by the ISA is reflected in the design and operational plans for the facility. against acceptance criteria in 6.4.3.1. [Comment: the following sentence is erroneous. The requested review was performed as a Chapter 3 task and need not be repeated.] The applicant's process safety information is reviewed and compared to the acceptance criteria in SRP Chapter 3.0, ISA. The reviewer should establish that the applicant's facility design, operations and items relied on for safety pertaining to chemical safety provide reasonable assurance that they will function as intended and provide for the safe handling of licensed material at the facility. The reviewer should review the mechanisms that will allow the applicant to identify and correct potential problems. Verification of selected chemical, and physical properties and chemical incompatibilities may require the use of engineering and chemistry handbooks. NUREG-1601 may be used to determine if the safety information provided by the applicant is adequate for chemical process safety purposes.~~

The reviewer will make an independent judgment of the comparative risks assigned by the applicant to accident sequences identified in the ISA summary based on risk relative to other sequences (competing risks), the complexity of the sequence, plant operating history, and general industry performance. The focus will be on sequences which would exceed the performance requirements of 10 CFR 70.61 if they were not mitigated or prevented by one or more items relied on for safety. The review may encompass examination of a selected number of lower risk chemical safety-related accident sequences not contained in the ISA summary to validate the risk threshold criteria used by the applicant in assigning sequences to the ISA summary.

6.5.2.2 Items Relied on for Safety and Management Measures

The staff reviews the chemical process safety ~~items relied on for safety to ensure their adequacy in protecting against controls to ensure that adequate controls have been identified and will be reliable and available in accordance with criteria in 6.4.3.2. The review assures the adequacy of controls for all unmitigated sequences identified in the ISA Summary. [Comment: coordination of complementary SRP reviews was addressed in §6.5.2 and need not be repeated again. Delete the following sentence.]~~ The chemical process safety review should be coordinated with the ISA (SRP Section 3.0), Nuclear Criticality Safety (SRP Section 5.0), Fire Safety (SRP Section 7.0), Emergency Management (SRP Section 8.0), Environmental Protection (SRP Section 9.0) and Management Measures (SRP Section 11.0) reviewers to achieve thoroughness.

If the applicant has applied a graded approach to safety, the reviewer should establish that the grading of items relied on for safety or management measures is appropriate and sufficient to protect against chemical process risks. ~~For items relied on for safety the applicant should apply the graded approach, i.e. provide controls or management measures commensurate with risk. [Comment: the following sentences introduce material that is far too detailed for inclusion in a 'Summary' section of the SRP. This guidance has been relocated to §6.4.3.2] For example, the applicant should consider reliance on passive controls over active systems and consider defense-in-depth. To reduce common mode failures, the applicant should favor design features that utilize independent sources of motive force for items like: control actuators, jet pumps, eductors, and ejectors. Fail-safe controls are preferred unless safety concerns preclude this approach. The graded approach should also be applied to management measures.~~

~~[Comment: the following sentence is poorly written and is not needed. The reviewer will have already evaluated the adequacy of administrative control items relied on for safety in higher-risk accident sequences and will have, presumably, accepted their adequacy or requested the applicant to propose more robust controls. The requirement of this paragraph is really a management measure (i.e. sufficient training of plant operators to learn the importance of the administrative control) that also will have already been evaluated by the reviewer. As this paragraph adds nothing new to the chemical safety evaluation, it should be deleted.]~~ If procedures are used by an applicant as an item relied on for safety for higher risk accident sequences, verify for chemical process safety that the applicant identifies the importance of procedure adherence for both worker and/or public safety. Verify the same for alarm response procedures that require operators to initiate actions to prevent or mitigate any higher risk accident sequences.

6.5.2.3 Requirements for New Facilities or New Processes at Existing Facilities

The staff reviews ~~the applicants commitments to adhere to the baseline design criteria in 10 CFR 70.64(a) for the design of new facilities or new processes at existing facilities that require a license amendment under 10 CFR 70.72. information required in 6.4.3.3 Acceptance Criteria, using the review methods in 6.5.2.1 and 6.5.2.2.~~

~~When the safety evaluation is complete, the staff reviewer documents the safety review in a Safety Evaluation Report (SER) for chemical process safety, as described in section 6.6.~~

6.6 EVALUATION FINDINGS

[Comment: the language of §6.6 has been revised to be consistent with that used in other chapters of the SRP.]

The reviewer writes an SER addressing each topic reviewed and explains why the NRC staff has reasonable assurance that the chemical safety part of the application is acceptable. License conditions may be proposed to impose requirements where the application is deficient. The SER should include a summary statement of what was evaluated and the basis for the reviewer' conclusions. The following kinds of statements and conclusions will be included in the staff SER: verifies that the information submitted by the applicant is in accordance with 10 CFR Part 70. In the staff's Safety Evaluation Report (SER), the reviewer documents the basis for determining the adequacy of the application with respect to chemical process safety. The reviewer also describes the applicant's approach to ensuring the availability and reliability of the controls. Based on the review of the application, statements and conclusions of the following type should be included in the staff's draft SER as appropriate:

The staff has evaluated ... [insert a summary statement of what was evaluated and why the reviewer finds the submittal acceptable ...] Based on the review of the license application, the NRC staff concluded that the applicant has adequately described and assessed accident consequences having potentially with significant chemical consequences and effects that could result from the handling, storage, or processing of licensed radioactive materials ~~special nuclear material~~. A hazard analysis has been conducted that ~~identified and evaluated those chemical process hazards and potential accidents,~~ and established safety controls to ensure safe facility operation. To ensure that the performance requirements limits in 10 CFR Part 70 are met, the applicant will ensure that controls are maintained available and reliable when required to perform their safety functions. The staff has reviewed these safety controls and the applicant's plan for managing chemical process safety and finds them acceptable.

The staff concludes that the applicant's plan for managing chemical process safety and the chemical process safety controls meet the requirements of 10 CFR Part 70, and provide reasonable assurance that the health and safety of the public will be protected.

[Comment: the following paragraph is not used in other SRP Chapters. NEI recommends that it be deleted, or else appended to the 'Evaluation Findings' sections of each other SRP chapter.]~~In cases where the SER is drafted in advance of resolving all outstanding chemical process safety issues, the reviewer documents the review as described above and includes a list of open issues that require resolution prior to the staff finding of reasonable assurance. For partial reviews, revisions, and process changes, the reviewer will use applicable sections of the acceptance criteria and the SER will be written to reflect what portions were not reviewed and the chemical process safety significance, if any. Upon completion of the review, NRC staff may impose temporary or one-time license conditions to authorize short duration activities. For certain functions and requirements that concern safety or regulatory issues, a license condition may be imposed and remain in effect until removed by an amendment or license renewal.~~

6.7 REFERENCES

Chemical Manufacturers Association, "Responsible Care[®], Process Safety Code of Management Practices", Washington, 1990. [Comment; no reference to this document is made in the text of SRP Chapter 6. Delete the reference.]

~~Center for Chemical Process Safety, "Guidelines for the Technical Management of Chemical Process Safety", American Institute of Chemical Engineers, New York, 1989, Chapter 11, as revised. [Comment; no reference to this document is made in the text of SRP Chapter 6. Delete the reference.]~~

Code of Federal Regulations, Title 10, Part 70, "Domestic Licensing of Special Nuclear Material", U.S. Government Printing Office, Washington, D.C., as revised.

~~Code of Federal Regulations, Title 29, Part 1910.119, "Process Safety Management of Highly Hazardous Chemicals", U.S. Government Printing Office, Washington, D.C., as revised. [Comment; no reference to this document is made in the text of SRP Chapter 6. Delete the reference.]~~

~~Manual Chapter 2603, "Inspection of the Nuclear Chemical Process Safety Program at Fuel Cycle Facilities", as revised. [Comment; no reference to this document is made in the text of SRP Chapter 6. Delete the reference.]~~

Memorandum of Understanding between the Nuclear Regulatory Commission and the Occupational Safety and Health Administration, "Worker Protection at NRC-Licensed Facilities", Federal Register No. 53, October 31, 1988.

NUREG/CR-6410, "Nuclear Fuel Cycle Facility Accident Analysis Handbook", 1998.

NUREG-1601, "Chemical Process Safety at Fuel Cycle Facilities", 1997.

NUREG/CR-6481, "Review of Models Used for Determining Consequences of UF₆ Release", as revised.

NUREG-1513, "Integrated Safety Analysis Guidance Document", latest revision.