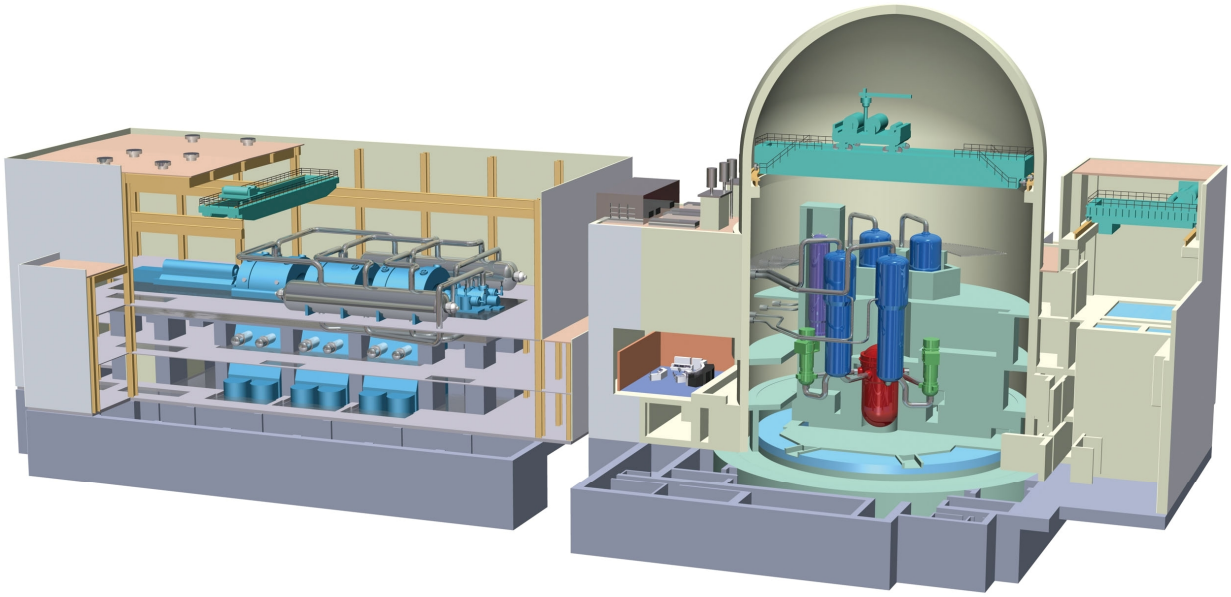
DESIGN CONTROL DOCUMENT FOR THE
US-APWR
Chapter 13
Conduct of Operations

MUAP- DC013

REVISION 3

MARCH 2011



MITSUBISHI HEAVY INDUSTRIES, LTD.

©2011
Mitsubishi Heavy Industries, Ltd.
All Rights Reserved

© 2011

MITSUBISHI HEAVY INDUSTRIES, LTD.

All Rights Reserved

This document has been prepared by Mitsubishi Heavy Industries, Ltd. ("MHI") in connection with the U.S. Nuclear Regulatory Commission's ("NRC") licensing review of MHI's US-APWR nuclear power plant design. No right to disclose, use or copy any of the information in this document, other than by the NRC and its contractors in support of the licensing review of the US-APWR, is authorized without the express written permission of MHI.

This document contains technology information and intellectual property relating to the US-APWR and it is delivered to the NRC on the express condition that it not be disclosed, copied or reproduced in whole or in part, or used for the benefit of anyone other than MHI without the express written permission of MHI, except as set forth in the previous paragraph.

This document is protected by the laws of Japan, U.S. copyright law, international treaties and conventions, and the applicable laws of any country where it is being used.

Mitsubishi Heavy Industries, Ltd.

16-5, Konan 2-chome, Minato-ku

Tokyo 108-8215 Japan

CONTENTS

Page

13.0 Conduct Of Operations 13.1-1

13.1 Organizational Structure of Applicant 13.1-1

13.1.1 Management and Technical Support Organization 13.1-1

13.1.1.1 Design, Construction, and Operating Responsibilities 13.1-1

13.1.1.2 Organizational Arrangement 13.1-1

13.1.1.3 Qualifications 13.1-1

13.1.2 Operating Organization 13.1-2

13.1.3 Qualifications of Nuclear Plant Personnel 13.1-2

13.1.4 Combined License Information 13.1-2

13.1.5 References 13.1-4

13.2 Training 13.2-1

13.2.1 Plant Staff Training Program 13.2-1

13.2.1.1 Program Description 13.2-1

13.2.1.2 Coordination with Preoperational Tests and Fuel Loading 13.2-1

13.2.2 Applicable Nuclear Regulatory Commission Documents 13.2-1

13.2.3 Combined License Information 13.2-2

13.2.4 References 13.2-2

13.3 Emergency Planning 13.3-1

13.3.1 Combined License Application and Emergency Plan Content 13.3-4

13.3.2 Emergency Plan Considerations for Multi-Unit Site 13.3-4

13.3.3 Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria 13.3-4

13.3.4 Combined License Information 13.3-5

13.3.5 References 13.3-5
13.4 Operational Program Implementation 13.4-1
13.4.1 Combined License Information 13.4-1
13.4.2 References 13.4-1
13.5 Plant Procedures 13.5-1
13.5.1 Administrative Procedures 13.5-1
13.5.2 Operating and Maintenance Procedures 13.5-1
13.5.2.1 Operating and Emergency Operating Procedures 13.5-1
13.5.2.2 Maintenance and Other Operating Procedures 13.5-2
13.5.3 Combined License Information 13.5-3
13.5.4 References 13.5-3
13.6 Security 13.6-1
13.6.1 Physical Security – Combined License 13.6-1
13.6.2 US-APWR Physical Security 13.6-2
13.6.2.1 Barriers, Isolation Zone, and Controlled Access Points 13.6-2
13.6.2.2 Vital Areas and Vital Equipment 13.6-2
13.6.2.3 Alarm Systems and Detection Aids 13.6-3
13.6.2.4 Security Lighting 13.6-4
13.6.2.5 Security Communication Systems 13.6-4
13.6.2.6 Security Power 13.6-5
13.6.3 Physical Security – Early Site Permit 13.6-5
13.6.4 Combined License Information 13.6-6
13.6.5 References 13.6-6
13.7 Fitness for Duty 13.7-1
13.7.1 Combined License Information 13.7-1

13.7.2 References 13.7-1

ACRONYMS AND ABBREVIATIONS

A/B	auxiliary building
CCTV	closed circuit television
CFR	Code of Federal Regulations
COL	Combined License
CAS	central alarm station
DBT	design basis threat
EOF	emergency operations facility
ERDS	emergency response data system
FSAR	Final Safety Analysis Report
HSI	human-system interface
HVAC	heating, ventilation, and air conditioning
I&C	instrumentation and control
IDS	intrusion detection system
MCR	main control room
NRC	U.S. Nuclear Regulatory Commission
NUREG	NRC Technical Report Designation (Nuclear Regulatory Commission)
RG	Regulatory Guide
SAS	secondary alarm station
SPDS	safety parameter display system
SRP	Standard Review Plan
TSC	technical support center

13.0 CONDUCT OF OPERATIONS

This chapter provides information relating to the preparations and plans for the design, construction, and operation of the US-APWR plant. Its purpose is to provide adequate assurance that the Combined License (COL) Applicant establishes and maintains a staff of adequate size and technical competence and that operating plans followed by the licensee are adequate to protect the public health and safety (Ref. 13.1-1, 13.1-2, 13.1-3, 13.1-4, 13.1-5).

13.1 Organizational Structure of Applicant

13.1.1 Management and Technical Support Organization

The development of the management and technical support organization structure is designated as the responsibility of the COL Applicant. The COL Applicant provides a description of the corporate or home office organization, its functions and responsibilities, and the number and qualifications of personnel. The COL Applicant directs attention to activities that include facility design, design review, design approval, construction management, testing, and operation of the plant.

13.1.1.1 Design, Construction, and Operating Responsibilities

The development of a description of past experience in the design, construction, and operation of nuclear power plants and past experience in activities of similar scope and complexity is designated as the responsibility of the COL Applicant. The Applicant describes its management, engineering, and technical support organizations. The description includes organizational charts for the current headquarters and engineering structure and any planned modifications and additions to those organizations that reflect the added functional responsibilities with the nuclear power plant.

13.1.1.2 Organizational Arrangement

The development of a description of the organizational arrangement is designated as the responsibility of the COL Applicant. This description shows how the added functional responsibilities associated with the addition of the nuclear power plant to the Applicant's power generation capacity are delegated and assigned (or expected to be assigned to each of the working or performance-level organizational units to implement these responsibilities). The description includes organizational charts reflecting the current corporate structure and the specific working- or performance-level organizational units that provide technical support for the operation.

13.1.1.3 Qualifications

The development of the description of the general qualification requirements in terms of educational background and experience for positions or classes of positions depicted in the organizational arrangement is designated as the responsibility of the COL Applicant. For identified positions or classes of positions that have functional responsibilities for other than the identified application, the expected proportion of time assigned to the other activities is described.

13.1.2 Operating Organization

The development of the organizational structure for the plant organization, its personnel responsibilities and authorities, and operating shift crews is designated as the responsibility of the COL Applicant.

13.1.3 Qualifications of Nuclear Plant Personnel

The development of the description of education, training, and experience requirements established for management, operating, technical, and maintenance positions for the operating organization is designated as the responsibility of the COL Applicant.

13.1.4 Combined License Information

COL 13.1(1) *The COL Applicant is to provide a description of the corporate or home office organization, its functions and responsibilities, and the number and qualifications of personnel. The COL Applicant directs attention to activities that include facility design, design review, design approval, construction management, testing, and operation of the plant.*

COL 13.1(2) *The COL Applicant is to develop a description of past experience in the design, construction, and operation of nuclear power plants and past experience in activities of similar scope and complexity.*

COL 13.1(3) *The COL Applicant is to describe its management, engineering, and technical support organizations. The description includes organizational charts for the current headquarters and engineering structure and any planned modifications and additions to those organizations that reflect the added functional responsibilities with the nuclear power plant.*

COL 13.1(4) *The COL Applicant is to develop a description of the organizational arrangement. This description shows how the added functional responsibilities associated with the addition of the nuclear power plant to the Applicant's power generation capacity are delegated and assigned (or expected to be assigned) to each of the working or performance-level organizational units to implement these responsibilities. The description includes organizational charts reflecting the current corporate structure and the specific working- or performance-level organizational units that provide technical support for the operation.*

COL 13.1(5) *The COL Applicant is to develop the description of the general qualification requirements in terms of educational background and experience for positions or classes of positions depicted in the organizational arrangement.*

COL 13.1(6) *The COL Applicant is to develop the organizational structure for the plant organization, its personnel responsibilities and authorities, and operating shift crews.*

COL 13.1(7) *The COL Applicant is to develop the description of education, training, and experience requirements established for management, operating, technical, and maintenance positions for the operating organization.*

13.1.5 References

13.1-1 "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants," Energy. Title 10, Code of Federal Regulations, Part 52, U.S. Nuclear Regulatory Commission, Washington, DC.

13.1-2 "Domestic Licensing of Production and Utilization Facilities," Energy. Title 10, Code of Federal Regulations, Part 50, U.S. Nuclear Regulatory Commission, Washington, DC.

13.1-3 Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants. NUREG-0800, U.S. Nuclear Regulatory Commission, Washington, DC.

13.1-4 Combined License Applications for Nuclear Power Plants (LWR Edition). Regulatory Guide 1.206, U.S. Nuclear Regulatory Commission, Washington, DC, June 2007.

13.1-5 "Human-System Interface Design," Human Factors Engineering Program Review Model. Element 8, NUREG-0711, Rev. 2, U.S. Nuclear Regulatory Commission, Washington, DC, February 2004.

13.2 Training

The development of training programs is designated as the responsibility of the COL Applicant. The training program development is consistent with the human-system interface (HSI) guidance in Chapter 18 (Ref. 13.2-1, 13.2-2, 13.2-3).

13.2.1 Plant Staff Training Program

13.2.1.1 Program Description

NEI 06-13A, “Template for an Industry Training Program Description” Revision 2, provides a complete generic training program description for use with COL applications. The document reflects guidance provided by the NRC and by Industry-NRC discussions on training-related issues. The NRC has deemed NEI 06-13A as an acceptable template for describing reactor operator and non-licensed plant staff training programs.

The development of the site specific training program is designated as the responsibility of the COL Applicant. However, NEI 06-13A should be utilized as the template for program basic structure and content.

13.2.1.1.1 Licensed Plant Staff Training Program

The development of the Licensed Plant Staff Training Program is designated as the responsibility of the COL Applicant. However, NEI 06-13A should be utilized as the template for program basic structure and content.

13.2.1.1.2 Non-licensed Plant Staff Training Program (to be verified during construction)

The development of the Non-licensed Plant Staff Training Program is designated as the responsibility of the COL Applicant. However, NEI 06-13A should be utilized as the template for program basic structure and content.

13.2.1.2 Coordination with Preoperational Tests and Fuel Loading

The development of training programs is designated as the responsibility of the COL Applicant. These programs include a chart, which shows the schedule of each part of the training program for each functional group of employees in the organization in relation to the schedule for preoperational testing, expected fuel loading, and expected time for examinations prior to plant criticality for licensed operators.

13.2.2 Applicable Nuclear Regulatory Commission Documents

The extent to which portions of applicable NRC guidance is used in the facility training program or the justification of exceptions are designated as the responsibilities of the COL Applicant.

13.2.3 Combined License Information

COL 13.2(1) *The COL Applicant is to develop the training program description.*

COL 13.2(2) *The COL Applicant is to develop training programs for reactor operators in accordance with NUREG-0800, Section 13.2.1.I.3 (Ref. 13.2-4).*

COL 13.2(3) *The COL Applicant is to develop training programs for non-licensed plant staff In accordance with NUREG-0800, Section 13.2.2.I.3 (Ref. 13.2-4).*

COL 13.2(4) *The COL Applicant is to develop training programs. These programs include a chart, which shows the schedule of each part of the training program for each functional group of employees in the organization in relation to the schedule for preoperational testing, expected fuel loading, and expected time for examinations prior to plant criticality for licensed operators.*

COL 13.2(5) *The COL Applicant is to determine the extent to which portions of applicable NRC guidance is used in the facility training program or the justification of exceptions.*

13.2.4 References

13.2-1 Qualification and Training of Personnel for Nuclear Power Plants. Regulatory Guide 1.8, Rev. 3, Nuclear Regulatory Commission, Washington, DC, May 2000.

13.2-2 "Human-System Interface Design," Human Factors Engineering Program Review Model. Element 8, NUREG-0711, Rev. 2, U.S. Nuclear Regulatory Commission, Washington, DC, February 2004.

13.2-3 "Operators' Licenses," Energy. Title 10, Code of Federal Regulations, Part 55, U.S. Nuclear Regulatory Commission, Washington, DC.

13.2-4 Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants. NUREG-800, U.S. Nuclear Regulatory Commission, Washington, DC.

13.3 Emergency Planning

Emergency planning is designated as the responsibility of the COL Applicant. However, design features, facilities, functions, and equipment necessary for emergency planning are considered in the design bases for the standard plant (Ref. 13.3-1, 13.3-2, 13.3-3, 13.3-4, 13.3-5). Details of these features, as they relate to the basic design, are included as follows and are consistent with the descriptions in Chapter 7. Interfaces of these features with site-specific designs and site parameters are the responsibility of the COL Applicant.

- Technical Support Center (TSC)

  The TSC is an onsite facility that provides plant management and technical support to the plant operations personnel during emergency conditions as described in subsection 7.5.1.6.1. The TSC has technical data displays and plant records available to assist in the detailed analysis and diagnosis of abnormal plant conditions and any significant release of radioactivity to the environment. The TSC provides the following functions:

  - The TSC has facilities to support the plant management and technical personnel who are assigned there during an emergency.
  - The TSC is the primary onsite communications center for the plant during an emergency.
  - The facility provides a plant data display system consisting of visual display units and large display panel. These equipments (i.e. visual display units and large display panel) are redundant including their power supplies. The TSC displays include,
    - Plant systems variables,
    - In-plant radiological information,
    - Meteorological information, and
    - Offsite radiological information.
  - The TSC provides telephones and facsimile machines, including land-line, cellular, and satellite communication capabilities, which utilize by multiple methods of telecommunication including private and public lines, satellite communications. Ample working areas for all personnel as described in section 9.5.2.
  - The TSC is close to the main control room (MCR), located in the access building (AC/B). The walking time from the TSC to the MCR does not exceed 2 minutes.
  - Working space, without crowding, for the personnel assigned to the TSC at the maximum level of occupancy is approximately 75 square feet per person.

    - The TSC working space is sized for a minimum of 25 persons including 20 persons designated by the licensee and five NRC personnel. The size and layout of TSC gives necessary space to maintain and repair TSC equipment, and is sufficient for storage of plant records and historical data.

  - A TSC heating, ventilation, and air conditioning (HVAC) system is provided that includes high-efficiency particulate air and charcoal filters as described in subsection 9.4.3.1.2.4.

    - The TSC HVAC system functions in a manner comparable to the main control room HVAC system.

    - The TSC HVAC need not be seismic Category I qualified, redundant, instrumented in the MCR, or automatically activated to fulfill its role.

- Emergency Operations Facility (EOF)

  The EOF is a support facility for the management of overall licensee emergency response (including coordination with Federal, State, and local officials), coordination of radiological and environmental assessments, and determination of recommended public protective actions.

  - The EOF has the appropriate technical data displays and plant records to assist in the diagnosis of plant conditions and to evaluate the potential or actual release of radioactive materials to the environment.

  - The EOF computer provides plant data displays to assist in the diagnosis of plant conditions and to evaluate the potential or actual release of radioactive materials to the environment.

  - A senior licensee official in the EOF organizes and manages licensee offsite resources to support the TSC and the MCR operators.

- Emergency Response Data System (ERDS)

  The ERDS is a data transmission system. This system is designed to send a set of variables from the plant to the NRC Operations Center. This data may be used for analyses by the NRC headquarters technical support groups and the NRC executive team. The ERDS provides for the following functions:

  - This system fulfills the function of the emergency response data system of Appendix E to Title 10, Code of Federal Regulations (CFR), Part 50 (Ref. 13.3-1).

  - This system transmits information that aids the NRC in its role of providing advice and support to the nuclear power plant licensee, State and local authorities, and other Federal officials.

- Data communication with the TSC, the EOF, and the ERDS

- A data communication system establishes the interface and link with the TSC, the EOF, and the ERDS and allows data exchange with the plant. The TSC receives plant information from the unit bus.

- The EOF and the ERDS receive plant information from the station bus.

- The following countermeasures are applied to prevent cyber security threats:

  - The plant instrumentation and control (I&C) and HSI systems do not link to external networks. An exception is the link from unit management computer to the station bus.

  - Communication from the unit management computer to the station bus is restricted one direction. A dedicated transmission protocol is used which is not general-purpose, such as transmission control protocol/internet protocol, user datagram protocol, etc.

  - Communication between the station bus and the TSC, the EOF or the ERDS (NRC) is also one direction and uses a dedicated transmission protocol.

  - If a computer system, which has a general-purpose local area network, is connected to the station bus, an adequate gateway processor with a firewall function is inserted.

  - The firewall program currently used is MISTY®, which uses 128-bit code key. This firewall program is safer than the data encryption standard code, which is more typically used in the U.S. Alternate firewall programs may be used in the future, as the security features of new technology evolve.

- Safety Parameter Display System (SPDS)

  The SPDS provides a display of plant parameters from which the safety status of operation may be assessed in the MCR, the TSC, and the EOF. The SPDS provides the following functions:

  - The primary function of the SPDS is to help operating personnel in the MCR make quick assessments of the plant safety status.

  - Duplication of the SPDS displays in the TSC and the EOF improves the exchange of information between these facilities and the MCR and assists corporate and plant management in the decision-making process.

  - The SPDS is operated during normal operations and during all classes of emergencies.

  - The SPDS has the flexibility to allow future modifications to be incorporated, such as the capability to handle operator interaction and diagnostic analysis.

- The functions and design of SPDS in the MCR are realized as a part of the overall HSI design

The Postaccident Sampling System (PASS) is provided for emergency response. It is described in section 9.3.2 and 12.3.

- Other Emergency Facilities

  Personnel and equipment decontamination facilities for normal operation are located in the Access Building and described in Subsection 12.3.1.1.2. These facilities would be used in emergency conditions as part of the site Emergency Plan.

13.3.1 Combined License Application and Emergency Plan Content

The development of a comprehensive emergency plan shall be designated as the responsibility of the COL Applicant. The plan is a physically separate document (See section 13.3 of the Final Safety Analysis Report (FSAR)) and developed in accordance with 10 CFR 50.47, Appendix E and 10 CFR 52. It includes copies of letters of agreement from State and local governmental agencies with emergency planning responsibilities.

The emergency plan of COL Application addresses emergency classification and action level scheme. It also addresses security-related aspects of emergency planning.

13.3.2 Emergency Plan Considerations for Multi-Unit Site

The development of the emergency plan for multi-unit site is designated as the responsibility of the COL Applicant depending on the location of the new reactor on, or near, an operating reactor site with an existing emergency plan.

13.3.3 Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria

The development of emergency planning inspections, tests, analyses, and acceptance criteria are designated as the responsibility of the COL Applicant.

13.3.4 Combined License Information

COL 13.3(1) *The COL Applicant is to develop interfaces of design features with site specific designs and site parameters.*

COL 13.3(2) *The COL Applicant is to develop a comprehensive emergency plan as a physically separate document.*

COL 13.3(3) *The COL Applicant is to develop an emergency classification and action level scheme.*

COL 13.3(4) *The COL Applicant is to develop the security-related aspects of emergency planning.*

COL 13.3(5) *The COL Applicant is to develop a multi-unit site interface plan depending on the location of the new reactor on, or near, an operating reactor site with an existing emergency plan.*

COL 13.3(6) *The COL Applicant is to develop an emergency planning inspections, tests, analyses, and acceptance criteria.*

COL 13.3(7) *The COL Applicant is to develop the description of the operation support center.*

13.3.5 References

13.3-1 'Emergency Planning and Preparedness for Production and Utilization Facilities,' "Domestic Licensing of Production and Utilization Facilities," Energy. Title 10, Code of Federal Regulations, Part 50, Appendix E, U.S. Nuclear Regulatory Commission, Washington, DC.

13.3-2 Emergency Planning and Preparedness for Nuclear Power Reactors. Regulatory Guide 1.101, Rev. 5, U.S. Nuclear Regulatory Commission, Washington, DC, June 2005.

13.3-3 Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants. NUREG-0654/FEMA-REP-1, Rev. 1, U.S. Nuclear Regulatory Commission, Washington, DC, November 1980 (supplemented by March 2002 addenda).

13.3-4 Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria. SECY-05-0197, U.S. Nuclear Regulatory Commission, Washington, DC, October 2005.

13.3-5 Staff Requirements-SECY-05-0197-Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria. SRM-SECY-05-0197, U.S. Nuclear Regulatory Commission, Washington, DC, February 2006.

13.4 Operational Program Implementation

The development of operational program descriptions and implementation schedules is designated as the responsibility of the COL Applicant.

13.4.1 Combined License Information

COL 13.4(1) *The COL Applicant is to develop a description and schedule for the implementation of operational programs. The COL Applicant is to "fully describe" the operational programs as defined in SECY-05-0197 (Ref. 13.4-1) and provide commitments for the implementation of operational programs required by regulation. In some instances, programs may be implemented in phases. The COL Applicant is to include the phased implementation milestones in their submittal.*

COL 13.4(2) *The COL Applicant is to develop a leakage monitoring and prevention program for the systems specified in TS 5.5.2. The leakage monitoring and prevention program will include the appropriate methods and acceptance criteria as defined in NUREG-0737 Item III.D.1.1 (Ref 13.4-2).*

13.4.2 References

13.4-1 Staff Requirements-SECY-05-0197-Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria. SRM-SECY-05-0197, U.S. Nuclear Regulatory Commission, Washington, DC, February 2006.

13.4-2 Clarification of TMI Action Plan Requirements, NUREG-0737, U.S. Nuclear Regulatory Commission, Washington, DC, November 1980.

13.5 Plant Procedures

The development of administrative and operating procedures to be used by the operating organization (plant staff) is designated as the responsibility of the COL Applicant. Detailed written procedures are not included in the FSAR; however, a brief description of the nature and content of the procedures and a schedule for their preparation is developed (Ref. 13.5-1, 13.5-2). The development of plant procedures is described in Section 18.8, Procedure Development.

13.5.1 Administrative Procedures

Administrative procedures describing administrative controls over activities that are important to safety for the operation of a facility are to be developed by the COL Applicant. Regulatory Guide (RG) 1.33 (Ref. 13.5-1) policies and procedures or specifically described alternative methods are utilized. A target date for completion of operating procedures prior to fuel loading is established.

Administrative procedures address those that provide administrative controls and those for control of operational activities of the plant staff.

13.5.2 Operating and Maintenance Procedures

Operating and maintenance procedures are developed by the COL Applicant.

13.5.2.1 Operating and Emergency Operating Procedures

Procedures performed by licensed operators in the MCR are developed by the COL Applicant.

However, these procedures shall utilize the US-APWR Procedure Writer's Guide as a template in development of their Plant Operating Procedure Development Plan to ensure consistency in organization, format, and content of the procedures.

- Procedures shall be developed to accomplish the functions contained in the listing of Regulatory Guide 1.33.

Emergency Operating Procedures shall utilize the US-APWR Emergency Operating Procedure Writer's Guide (including generic technical guidelines) as a template in the development of their Emergency Operating Procedure Development Plan (e.g., procedures generation package (PGP)) to ensure consistency in organization, format, and content of the procedures.

- This development package shall be submitted to the NRC for review at least 3 months prior to the commencement of formal operator training.

A Computer Based Procedure (CBP) with corresponding Paper Based Procedure (backup) and stand-alone paper procedure program will be developed utilizing the US-APWR programs as a template for program development.

13.5.2.1.1 Procedure Classification

The COL Applicant is to describe the different classifications of procedures the operators will use in the MCR and locally in the plant for operations, the operating organization responsible for maintaining the procedures, and the general format and content of the different classifications. The classifications must be sufficient to ensure that procedures will be available to the plant staff to accomplish the functions contained in the listing of RG 1.33.

13.5.2.1.2 Operating Procedure Program

The COL Applicant is to describe the program for developing and implementing operating procedures. Target dates for completion of program elements are developed.

13.5.2.1.3 Emergency Operating Procedure Program

The COL Applicant is to describe the program for developing and implementing emergency operating procedures. Target dates for completion and submittal to the NRC (as required) of program elements are also be developed. This procedures generation package includes a plant specific technical guideline, a plant specific writer's guide, a description of a program for verification and validation, and a description of the program for training operators on emergency operating procedures.

13.5.2.2 Maintenance and Other Operating Procedures

The COL Applicant is to describe the classifications of maintenance and other operating procedures, the operating organization group or groups responsible for following each class of procedure, and the general objectives and character of each class and subclass.

13.5.3 Combined License Information

COL 13.5(1) *The COL Applicant is to develop administrative procedures describing administrative controls over activities that are important to safety for the operation of a facility.*

COL 13.5(2) *Deleted*

COL 13.5(3) *The COL Applicant is to develop procedures performed by licensed operators in the main control room. Operating procedures that are used by the operating organization to ensure routine operating, off-normal, and emergency activities are conducted in a safe manner are described. The plan includes the implementation of these procedures (Ref. 13.5-3).*

COL 13.5(4) *The COL Applicant is to describe the different classifications of procedures the operators will use in the main control room and locally in the plant for operations, the operating organization responsible for maintaining the procedures, and the general format and content of the different classifications.*

COL 13.5(5) *The COL Applicant is to describe the program for developing operating procedures.*

COL 13.5(6) *The COL Applicant is to describe the program for developing and implementing emergency operating procedures.*

COL 13.5(7) *The COL Applicant is to describe the classifications of maintenance and other operating procedures, the operating organization group or groups responsible for following each class of procedure, and the general objectives and character of each class and subclass.*

13.5.4 References

13.5-1 Quality Assurance Program Requirements (Operation). Regulatory Guide 1.33, Rev. 2, U.S. Nuclear Regulatory Commission, Washington, DC, February 1978.

13.5-2 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants. ANSI/ANS 3.2, American Nuclear Society, 1994.

13.5-3 Guidelines for the Preparation of Emergency Operating Procedures. NUREG-0899, U.S. Nuclear Regulatory Commission, Washington, DC, August 1982.

13.6 Security

The comprehensive physical security program is the responsibility of the COL Applicant and is addressed in the physical security plan, safeguards contingency plan, guard training and qualification plan, and cyber security plan provided by the COL Applicant. The security plan (consisting of the physical security plan, safeguards contingency plan, and the guard training and qualification plan) and the cyber security plan are submitted to the NRC as separate licensing documents in order to fulfill the requirements of 10 CFR 52.79(a)(35) and 10 CFR 52.79(a)(36) (Ref. 13.6-1). The security plan and the cyber security plan meet the requirements contained in 10 CFR 26 (Ref. 13.6-2) and 10 CFR 73 (Ref. 13.6-3) and are maintained in accordance with the requirements of 10 CFR 50.54 (Ref. 13.6-4). The security plan is classified as security safeguards information and withheld from public disclosure pursuant to 10 CFR 73.21 (Ref. 13.6-5).

The physical security design for the US-APWR provides features to detect, delay, respond to, and defend against the design basis threat (DBT) for radiological sabotage in compliance with the requirements of 10 CFR 73.55. The US-APWR standard plant physical security design in conjunction with the site-specific physical security design and the comprehensive physical security program provide the prerequisite high assurance specified by 10 CFR 73.55(b) that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety.

13.6.1 Physical Security – Combined License

As stated above, the comprehensive physical security program is the responsibility of the COL Applicant. Additionally, as part of its physical security plan (PSP), the COL Applicant will provide for site specific physical security features and capabilities that are beyond the scope of the certified standard plant design, including the following:

- The physical barrier surrounding the protected area boundary in accordance with 10 CFR 73.55(e)(8).
- An isolation zone that meets the performance requirements of 10 CFR 73.55(e)(7) in outdoor areas adjacent to the physical barrier at the protected area perimeter.
- Security lighting, or alternatively the provision of low light technology, to meet the requirements of 10 CFR 73.55(i)(6) for illuminating the isolation zone and protected area.
- A vehicle barrier system (VBS), either constructed or of natural terrain or both, that meets the performance requirements of 10 CFR 73.55(e)(10)
- Controlled access points to control the entry of personnel, vehicles and materials into the protected area.
- An intrusion detection system (IDS) that consists of one or more types of detection, surveillance, and alarm subsystems to monitor the perimeter of the

protected area and to provide the capability to detect attempts to penetrate the perimeter of the protected area.

- A closed circuit television (CCTV) camera and video assessment system providing real-time and play-back/recorded video images to provide monitoring and assessment of the protected area perimeter.

13.6.2 US-APWR Physical Security

Security-Related Information – Withheld Under 10 CFR 2.390

13.6.2.1 Barriers, Isolation Zone, and Controlled Access Points

Security-Related Information – Withheld Under 10 CFR 2.390

13.6.2.2 Vital Areas and Vital Equipment

Security-Related Information – Withheld Under 10 CFR 2.390

Security-Related Information – Withheld Under 10 CFR 2.390

13.6.2.3 Alarm Systems and Detection Aids

Security-Related Information – Withheld Under 10 CFR 2.390

Security-Related Information – Withheld Under 10 CFR 2.390

13.6.2.4 Security Lighting

Security-Related Information – Withheld Under 10 CFR 2.390

13.6.2.5 Security Communication Systems

Security-Related Information – Withheld Under 10 CFR 2.390

Security-Related Information – Withheld Under 10 CFR 2.390

13.6.2.6 Security Power

Security-Related Information – Withheld Under 10 CFR 2.390

13.6.3 Physical Security – Early Site Permit

Not applicable.

13.6.4 Combined License Information

COL 13.6(1) *The COL Applicant is to develop and provide the plant overall security plan* (consisting of the physical security plan, safeguards contingency plan, and the guard training and qualification plan) and the cyber security plan *and the implementation schedule for security programs.*

COL 13.6(2) *The COL Applicant is to develop and provide as part of its physical security plan site specific physical security features and capabilities, such as (i) the physical barrier surrounding the protected area boundary; (ii) the isolation zone in areas adjacent to the protected area boundary, (iii) security lighting, or use of low-light technology, for the isolation zone and protected area; (iv) the vehicle barrier system, (v) controlled access points to control entry of personnel, vehicles and materials into the protected area, (vi) the intrusion detection system, and (vii) the closed circuit television camera and video assessment systems to provide monitoring and assessment of the protected area perimeter.*

COL 13.6(3) *The COL Applicant is to revise the non-standard plant vital area and vital equipment information contained in the US-APWR Design Certification, Physical Element Review to be consistent with its site-specific design.*

COL 13.6(4) *The COL Applicant is to make provision for the secondary alarm station in accordance with the requirements of 10 CFR 73.55(i)(4).*

COL 13.6(5) *The COL Applicant physical security plan is to make provision for radio or microwave transmitted two-way voice communication) to communicate with the local law enforcement agencies.*

13.6.5 References

13.6-1 'Contents of Applications; Technical Information in Final Safety Analysis Report,' "Domestic Licensing of Production and Utilization Facilities," Energy. Title 10, Code of Federal Regulations, Part 52.79, U.S. Nuclear Regulatory Commission, Washington, DC.

13.6-2 "Fitness for Duty Programs," Energy. Title 10, Code of Federal Regulations, Part 26, U.S. Nuclear Regulatory Commission, Washington, DC.

13.6-3 "Physical Protection of Plants and Materials," Energy. Title 10, Code of Federal Regulations, Part 73, U.S. Nuclear Regulatory Commission, Washington, DC.

13.6-4 'Conditions of Licenses,' "Domestic Licensing of Production and Utilization Facilities," Energy. Title 10, Code of Federal Regulations, Part 50.54, U.S. Nuclear Regulatory Commission, Washington, DC.

13.6-5 'Requirements for the Protection of Safeguards Information,' "Physical Protection of Plants and Materials," Energy. Title 10, Code of Federal Regulations, Part 73.21, U.S. Nuclear Regulatory Commission, Washington, DC.

13.6-6 US-APWR Design Certification Physical Security Element Review (Safeguards Information), Rev. 3, October 2010

13.6-7 US-APWR High Assurance Evaluation Assessment (Safeguards Information), Rev. 2, October 2010

13.6-8 Deleted.

13.7 Fitness for Duty

The development of the plant's "fitness-for-duty program" and its implementation for an operating plant is the responsibility of the COL Applicant. The COL application also includes a description of the Applicant's fitness-for-duty programs during the construction [Ref. 13.7-1].

13.7.1 Combined License Information

COL 13.7(1) The COL Applicant is to develop the description of the operating and construction plant fitness-for-duty programs.

13.7.2 References

13.7-1 "Fitness for Duty Programs," Energy. Title 10, Code of Federal Regulations, Part 26, U.S. Nuclear Regulatory Commission, Washington, DC.