

18.8 COL License Information

18.8.1 HSI Design Implementation Process

The HSI Design Implementation Process as described in Appendix 18E is the responsibility of the COL applicant. In addition, the following specific COL license information is in effect.

18.8.2 Number of Operators Needing Controls Access

The number of operators needing access to the controls on the main control panel shall be evaluated and the ABWR control room staffing arrangement (Subsection 18.2, Item 1) shall be confirmed as adequate. In addition, the roles and responsibilities of the shift supervisor and assistant shift supervisor shall be specified. The results of the evaluation shall be placed in the HFE Issue Tracking System (Subsection II.2 of Table 18E-1).

18.8.3 Automation Strategies and Their Effect on Operator Reliability

Automation strategies for plant operation shall be evaluated for effects on operator reliability and the appropriateness of the ABWR automation design (Subsection 18.4.2.6.1) shall be confirmed. This evaluation shall be performed according to the criteria of Subsection II of Table 18E-1 and the results of the evaluation shall be placed in the HFE Issue Tracking System.

18.8.4 SPDS Integration With Related Emergency Response Capabilities

The design of the SPDS (Subsection 18.4.2.11) shall be evaluated against the requirements of Paragraph 3.8a of NUREG-0737, Supplement 1, and confirmed to be in compliance with all applicable criteria. The results of the evaluation shall be placed in the HFE Issue Tracking System.

18.8.5 Standard Design Features Design Validation

The design of each of the main control room standard design features (Subsection 18.4.2.1) shall be validated using the applicable criteria in Subsection VIII of Table 18E-1. The results of the validation shall be placed in the HFE Issue Tracking System.

18.8.6 Remote Shutdown System Design Evaluation

Digital versus analog design approaches for the Remote Shutdown System (RSS) shall be evaluated for reliability and the adequacy of the ABWR RSS design (Subsection 18.5) shall be confirmed. The results of the evaluation shall be placed in the HFE Issue Tracking System.

18.8.7 Local Valve Position Indication

The necessity for providing local valve position indication (VPI) for each valve in any of the following categories shall be evaluated

- (1) All power-operated valves (e.g., motor, hydraulic and pneumatic),

- (2) All large manual valves (i.e., 5 cm or larger),
- (3) Small manual valves (i.e., less than 5 cm) which are important to safe plant operations.

These evaluation records shall be placed in the HFE Issue Tracking System.

18.8.8 Operator Training

An operator training program which meets the requirements of 10CFR50 shall be established (Subsection II.1.c of Table 18E-1).

18.8.9 Safety System Status Monitoring

The COL applicant shall address the human factors aspects of TMI Item I.E.3, “Safety System Status Monitoring”, as part of the detailed design implementation process (Subsection 18.4.2.8).

18.8.10 PGCS Malfunction

As part of the verification and validation effort, the COL applicant shall consider malfunctions of the Power Generation Control function of the plant computer functions (Subsection 18.4.2.6.1).

18.8.11 Local Control Stations

The COL applicant shall evaluate all operations at local control stations which are critical to plant safety, as defined in Paragraph V.1.c of Table 18E-1. The results of these evaluations shall be incorporated into the HFE Issue Tracking System.

18.8.12 As-Built Evaluation of MCR and RSS

The COL applicant shall prepare a report which documents that the as-built main control room (MCR) and remote shutdown station (RSS) conform to the certified and validated main control room and remote shutdown station configurations. Aspects of the as-built MCR and RSS to be considered in this report are the area and panel layouts, operator environment, alarms, displays, controls and general human-system interface characteristics.

18.8.13 Accident Monitoring Instrumentation

The COL applicant shall evaluate the instrumentation described in TMI Item II.F.1, “Additional Accident Monitoring Instrumentation”, with regard to the impact of the inclusion of that instrumentation in the MCR HSI on the potential for operator error. The results of this evaluation shall be placed in the HFE Issue Tracking System.

18.8.14 In-Core Cooling Instrumentation

The COL applicant shall evaluate the instrumentation described in TMI Item II.F.2, “Instrumentation For Detection of Inadequate Core-Cooling”, with regard to the impact of the inclusion of that instrumentation in the MCR HSI on the potential for operator error. The results of this evaluation shall be placed in the HFE Issue Tracking System.

18.8.15 Performance of Critical Tasks

The COL applicant shall evaluate the adequacy of the HSI with respect to providing the controls, displays and alarms necessary for timely performance of critical tasks. Critical tasks shall include, as a minimum, those operator actions which have significant impact on the PRA results, as presented in Section 19D.7, and the operator actions to isolate the reactor and inject water for the postulated event scenarios of a common-mode failure of the Safety System Logic and Control System and/or the Essential Communication Function concurrent with the design basis main steamline, feedwater line or shutdown cooling line break LOCA (Paragraph V.2.d of Table 18E-1). The results of this evaluation shall be placed in the HFE Issue Tracking System.

18.8.16 Plant Status and Post-Accident Monitoring

The main control instrumentation described in TMI Item I.D.5 (2), “Plant Status and Post-Accident Monitoring” shall be evaluated with regard to the impact of the inclusion of that instrumentation in the MCR HSI on the potential for operator error and the results of the evaluation shall be placed in the HFE Issue Tracking System.