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QUESTION 260.1

Section 17.1.2.2 of the standard format (Regulatory Guide 1.70) requires the identification of safety-related structures, systems, and components (Q-list) controlled by the QA program. You are requested to supplement and clarify the Q-list in Table 3.2-1 of the FSAR in accordance with the following:

- a. The following items from the Q-list need expansion and/or clarification as noted. Revise the list as indicated or justify not doing so.
  - 1) Clarify that the Control Rod Drive System includes the scram accumulators.
  - 2) Clarify that discharge piping fill lines and jockey pumps are included in the HPCI, RCIC, RHR, and Core Spray Systems.
  - 3) Clarify that the Emergency Core Cooling and RCIC Systems include the mechanical vortex suppression devices.
  - 4) Identify the "equipment associated with a safety action" as regards the Leakage Detection System. For example, it is not clear that post-LOCA ECCS Leakage Detection Systems are included.
  
- b. The following items do not appear on the Q-list. Add the following items to the list or justify not doing so.
  - 1) ESSW Spray Pond Emergency Spillway.
  - 2) Site grading.
  - 3) Roof scuppers and parapet openings.
  - 4) Pressure resisting doors.
  - 5) Meteorological data collection programs.
  - 6) Refueling Interlock System.
  - 7) Rod worth minimizer.
  - 8) Primary Containment Vacuum Relief System - instrumentation and controls.
  - 9) Standby Gas Treatment System - instrumentation and controls.

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- 10) Missile barriers for safety related equipment.
- 11) Steam lines to the HPCI and RCIC turbines along with the associated valves and restraints.
- 12) Equipment and drain floor - piping and containment isolation valves.
- 13) Quencher and quencher support.
- 14) Downcomers and braces.
- 15) Primary Containment Purge System.
- 16) Primary Containment Ventilation System - piping and containment isolation valves.
- 17) Onsite Power Systems (Class 1E)
  - a) transformers
  - b) valve operators
  - c) protective relays and control panels
- 18) Engineered safety features DC equipment - protective relays and control panels.
- 19) Biological shielding within primary containment, reactor building, and control building.
- 20) Nuclear boiler system instrumentation piping beyond the outermost isolation valve.
- 21) Drywell cooling system piping and valves for coolers V-414A and B, V-415A and B, and V-416A and B.
- 22) Mainsteam system piping to turbine stop valves and branch line piping up to and including first valve.
- 23) Spent fuel pool liner.
- 24) Radiation monitoring (fixed and portable).
- 25) Radioactivity monitoring (fixed and portable).
- 26) Radioactivity sampling (air, surfaces, liquids).
- 27) Radioactive contamination measurement and analysis.

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- 28) Personnel monitoring internal (e.g., whole body counter) and external (e.g., TLD system).
- 29) Instrument storage, calibration, and maintenance.
- 30) Decontamination (facilities, personnel, and equipment).
- 31) Respiratory protection, including testing.
- 32) Contamination control.
- 33) Feedwater spargers.
- 34) Safety-related masonry walls (see 1E Bulletin No. 80-11).
- 35) Measuring and test equipment used for safety-related structures, systems, and components.
- 36) Expendable and consumable items necessary for the functional performance of safety-related structures, systems, and components (i.e., weld rod, fuel oil, boric acid, snubber oil, etc.).

- c. Enclosure 2 of NUREG-0737, "Clarification of TMI Action Plan Requirements" (November 1980) identified numerous items that are safety-related and appropriate for OL application and therefore should be on the Q-list. These items are listed below. Add these items to the Q-list and/or indicate where on the Q-list they can be found. Otherwise justify not doing so.

NUREG-0737  
(Enclosure 2)  
Clarification Item

- |  |          |
|--|----------|
| 1) Plant-safety-parameter display console. | I.D.2    |
| 2) Reactor coolant system vents.           | II.B.1   |
| 3) Plant shielding.                        | II.B.2   |
| 4) Post accident sampling.                 | II.B.3   |
| 5) Valve position indication.              | II.D.3   |
| 6) Dedicated hydrogen penetrations.        | II.E.4.1 |
| 7) Containment isolation dependability.    | II.E.4.2 |

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8) Accident monitoring instrumentation.	II.F.1
9) Instrumentation for detection of inadequate core-cooling.	II.F.2
10) HPCI & RCIC initiation levels.	II.K.3(13)
11) Isolation of HPCI and RCIC	II.K.3(15)
12) Challenges to and failure of relief valves.	II.K.3(16)
13) ADS actuation.	II.K.3(18)
14) Restart of core spray and LPCI.	II.K.3(21)
15) RCIC suction.	II.K.3(22)
16) Space cooling for HPCI & RCIC.	II.K.3(24)
17) Power on pump seals.	II.K.3(25)
18) Common reference level.	II.K.3(27)
19) ADS valves, accumulator, and associated equipment and instrumentation.	II.K.3(28)
20) Emergency plans.	III.A.1.1/ III.A.2
21) Emergency support facilities.	III.A.1.2
22) Inplant I radiation monitoring.	III.D.3.3
23) Control-room habitability.	III.D.3.4

- d. The instrumentation and control systems and components must be identified on the Q-list (FSAR Table 3.2-1) to the same scope and level of detail provided in Chapter 7 of the FSAR.

RESPONSE:

Introduction

Table 3.2-1 (SSES Design Criteria Summary) of the FSAR is intended to provide identification of safety-related structures, systems, and components as required by Section 17.1.2.2 of the standard format (Regulatory Guide 1.70). The "Q List" for Susquehanna SES is not a part of the FSAR. The "Q-List" is just one of a series of

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controlled QA program documents which serve to identify in expanded detail the quality classification of SSES items and related services in response to FSAR commitments. Quality classifications used include but are not limited to safety related, ASME Code Section III related, safety impact related, fire protection related, environmental monitoring related, etc. The SSES QA Manual and its implementing procedures prescribe the preparation and maintenance of these quality classification documents and defines the quality assurance controls that are to be applied to such items/services.

a-1 The scram accumulators are a part of the hydraulic control unit which is indicated as safety related in Table 3.2-1.

a-2 The discharge piping fill lines for HPCI, RCIC, RHR and core spray systems are included in Table 3.2-1 of the FSAR. These lines, between the main system piping and the condensate system outer isolation check valve, are included under the respective systems subsection's "Piping Beyond Outermost Containment Isolation Valves."

The line fill system adopted for SSES does not incorporate jockey pumps to perform the fill function. The fill function is performed by the condensate transfer system. See response to Question 211.211 and FSAR Section 6.3.

a-3 The SSES Suppression Pool has no vortex suppression devices. Testing is conducted to assure that vortices do not adversely affect ECCS systems. The condensate storage tank supply line is provided with a vortex breaker; however, it is not safety related inasmuch as the tank is not safety related. See response to NRC Question 211.214 for testing information.

a-4 See revised Note 39 to FSAR Table 3.2-1.

b-1 ESSW Spray Pond Emergency Spillway

The ESSW Spray Pond Emergency Spillway was installed as part of the spray pond concrete liner. The material used to construct the spillway (concrete and reinforcing steel) was controlled by the same quality requirements in effect for the concrete liner. Therefore, the listing on Table 3.2-1 for Spray Pond (Structures Page 26) applies to the ESSW Spray Pond Emergency Spillway as a safety-related structure.

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- b-2 Site grading which could impact the safety-related equipment and structures in the spray pond and the power block, i.e., reactor building, control structure and diesel generator building is limited to the periphery channel and cooling tower basin areas as described in the flooding scenarios of FSAR Section 2.4.2.3 for maximum probable precipitation and basin rupture.
- The process for reviewing and approving future change to the periphery channel and the area between the cooling tower basin and the power block will be controlled by procedures which are responsive to the appropriate portion of the QA Program described in Section 17.2.
- b-3 Future changes to the roof scuppers and parapet openings on safety-related buildings will be made in accordance with the appropriate portions of the Quality Assurance Program described in Section 17.2.
- b-4 Pressure-resisting doors classified as safety-related components have been added to Table 3.2-1 (Buildings).
- b-5 Calibration and data collection of the meteorological system are controlled by procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2.
- b-6 The testing and surveillance requirements for the refueling interlock system are included in the technical specifications and are covered by the procedures which are responsive to appropriate portions of the Quality Assurance Program described in Section 17.2.
- b-7 The testing and surveillance requirements for the rod worth minimizer are included in the technical specifications and are covered by procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2.
- b-8 The instrumentation and controls for the Primary Containment Vacuum Relief System have no safety-related function. They are only for testing and are not used post-LOCA.
- b-9 See revised Table 3.2-1 under Standby Gas Treatment "and associated instrumentation" has been added to Control Panels.

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- b-10 Those missile barriers classified as safety-related structure are designed in accordance with the criteria shown in the revised section of Table 3.2-1 (Structures).
- b-11 Piping and associated valves to the HPCI and RCIC turbines are included in Table 3.2-1 of the FSAR under the following subsections:
- HPCI - "Piping beyond outermost containment isolation valve, other"  
"Valves other"
- RCIC - "Piping beyond outermost containment isolation valve, other"  
"Valves other"
- Associated restraints for the HPCI and RCIC turbine piping are not detailed in Table 3.2-1 of the FSAR as they are not principal components of systems. The restraints are covered by procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2.
- b-12 Table 3.2-1 of the FSAR has been revised to incorporate the safety related piping and isolation valves and applicable codes and standards associated with the containment penetrations.
- b-13 See revised Table 3.2-1 (Nuclear Boiler System).
- b-14 See revised Table 3.2-1 (Buildings).
- b-15 The Primary Containment Purge System is not safety related with the exception of the piping and valving associated with the primary containment penetration boundary. See revised Table 3.2-1 under Combustible Gas Control System.
- b-16 The Primary Containment Ventilation System should be referred to as the Dry Well Cooling System. The Dry Well Cooling System has no primary containment penetration.
- b-17 Appropriate onsite power system components which are safety-related are listed in Table 3.2-1. Where the specific components are part of a safety-related (class 1E) system, they appear in Table 3.2-1 as subsets of the Onsite Power Systems. (Example: Load



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Center Transformers are a subcomponent of Load Center, and Valve Operators are a subcomponent of Motor Operated Valves.)

- b-18 Engineered safety features DC equipment listed under electric systems are safety-related. See Table 3.2-1. The protective relays and control panels are subsets of this system.
- b-19 Biological shielding determined to be safety-related is designed in accordance with the criteria shown in the revised section of Table 3.2-1 (Structures).
- b-20 Instrument lines are safety-related for all divisionalized loops all the way to the local instruments. These are included as a subset of the various systems identified in Table 3.2-1.
- b-21 With the exception of cooling water piping and valves associated with the primary containment penetration boundary the reactor building chilled water system is not safety related. In Table 3.2-1 the components of the Drywell Coolers have been listed separately under Drywell Cooling System. The piping and valves are not required to the system to perform its safety-related function.
- b-22 As indicated in Table 3.2-1, under Nuclear Boiler System, the piping beyond the outermost isolation valves up to the turbine casing is Quality Group "B" and as stated in Note 20, has been designed by the use of a dynamic seismic system analysis to withstand the OBE and SSE design loads in combination with other appropriate loads, within the limits specified for Class 2 pipe in the ASME Section 3 Code. Per ASME and PP&L's Quality Assurance Program, the same quality assurance requirements which were in effect during procurement and construction of this portion of the main steam line will be in effect during the operation of this line.
- b-23 Spent fuel pool liner is addressed in Table 3.2-1 under "Structures."
- b-24 This is not a "structure, system or component" requiring entry in Table 3.2-1. Control and calibration of radiation monitoring (fixed and portable) is provided by procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2.



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- b-25 This is not a "structure, system or component" requiring entry in Table 3.2-1. Control and calibration of radioactivity monitoring (fixed and portable) is provided by procedures which are responsive to the appropriate portions of Quality Assurance Program described in Section 17.2.
- b-26 This item is not a "structure, system or component" requiring entry in Table 3.2-1. Control of radioactivity contamination measurement and analysis is provided by procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2.
- b-27 This item is not a "structure, system or component" requiring entry in Table 3.2-1. Control of radioactive contamination measurement and analysis is provided by procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2.
- b-28 This item is not a "structure, system or component" requiring entry in Table 3.2-1. Control of personnel monitoring (e.g., while body counter) and external (e.g., TLD system) is provided by procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2.
- b-29 This item is not a "structure, system or component" requiring entry in Table 3.2-1. Control of instrument storage, calibration and maintenance is provided by procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2.
- b-30 Decontamination equipment and facilities are not safety related. Decontamination piping and valves are a part of the "Liquid Radwaste Management Systems -- Liquid & Chemical Waste Piping and Valves" as described in Table 3.2-1 of the FSAR.
- Personnel decontamination is not a "structure, system or component" requiring entry in Table 3.2-1. Control of personnel decontamination is provided by procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2.
- b-31 This item is not a "structure, system or component" requiring entry in Table 3.2-1. Control of respiratory protection, including testing is provided

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by procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2

- b-32 This item is not a "structure, system or component" requiring entry in Table 3.2-1. Contamination control is provided by procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2.
- b-33 The feedwater spargers are a subset of "Reactor System--Reactor Internal Structures--Other" on Table 3.2-1.
- b-34 Masonry walls designed as safety-related structures are designed in accordance with the criteria shown in the revised section of Table 3.2-1 (Structures).
- b-35 Measuring and test equipment is not safety related. Calibration of these pieces of measuring and test equipment used to perform checks on safety functions of safety-related equipment are controlled by the operational QA program described in Section 17.2.
- b-36 The classification of these items is beyond the definition of a "structure, system or component" requiring entry in Table 3.2-1. The quality classification of expendable and consumable items necessary for the functional performance of safety-related structures, systems or components is determined as part of the procurement process in accordance with the provisions of the QA program described in Section 17.2.

c. Introduction

Part C of the question invokes enclosure (2) to NUREG 0737 as the basis for modifying Table 3.2-1 to include certain items. NUREG 0737 does not impose this requirement in all cases. Many of the TMI action plan requirements are intangible in that they call for studies, documentation, administrative controls, etc. Our approach in responding to Part C of this question has been to identify major structural or hardware-related requirements of NUREG 0737, and to apply quality assurance to those items, if appropriate. Finally, for SSES, implementation of many of the identified sections of NUREG 0737 is not yet required per enclosure (2). For all modifications that are eventually required for SSES, safety-related

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classification will be determined. For more information, refer to PP&L's response to NUREG 0737.

- c-1 The Safety Parameter Display System (SPDS) is not safety related and therefore will not be added to Table 3.2-1. However, it will be procured and maintained under procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2.
- c-2 The various reactor coolant system vent paths are safety-related. They are designated in Table 3.2-1, as follows:
- The RCS vessel head vent is a subset of "reactor vessel appurtenances, pressure retaining portions" under "Reactor System."
- The main steam relief valves with their ADS function are a subset of "safety/relief valves" under "Nuclear Boiler System."
- c-3 Shield walls identified as a result of the Plant Shielding Study (NUREG 0737 Item II.B.2) will be reviewed for classification as safety-related structures. Table 3.2-1 reflects the quality assurance requirements under "Structures" of those shield walls classified as safety-related.
- c-4 The Post Accident Sampling Station (PASS), with the exception of its interfaces with safety related systems will not in itself be safety related. All PASS interfaces will be covered in the appropriate systems in their piping/valve descriptions. Specific description of the PASS in Table 3.2-1 will be incorporated upon completion of design.
- PASS operations will not be a "structure, system or component" requiring entry in Table 3.2-1. Control will be provided by appropriate procedures in Chapter 17 of the FSAR and Section 6.8 of the technical specifications describing the QA program coverage of procedural controls.
- c-5 Valve position indication is a subset of Safety Relief Valve under Nuclear Boiler System in Table 3.2-1.
- c-6 Not applicable to SSES. Hydrogen recombiners are inside containment.

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- c-7 Containment isolation valves are safety-related as shown in Table 3.2-1. This subject was part of a study from which no changes to Table 3.2-1 resulted.
- c-8 Accident monitoring has both safety and non-safety related listing as follows:
- (a) Noble gas effluent radiological monitor is non-safety related per NUREG-0737. The calibration of the noble gas effluent radiological monitor is provided by procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2.
  - (b) Continuous samples of plant effluents for radioactive iodine and particulate are non-safety related. Samples are controlled by procedures which are responsive to the appropriate portions of the Quality Assurance Program described in Section 17.2.
  - (c) Containment Hi-range radioactive monitors are safety related. See revised Table 3.2-1 under Post Accident Monitoring.
  - (d) Containment pressure monitor is safety related. See revised Table 3.2-1 under Post Accident Monitoring.
  - (e) Containment suppression pool water level instrumentation is safety related. See revised Table 3.2-1 under Post Accident Monitoring.
  - (f) Containment H<sub>2</sub>O monitor system is safety related. See revised Table 3.2-1 under Post Accident Monitoring.
- c-9 As a result of this study, no additional instrumentation was required, therefore there is no change required in Table 3.2-1.
- c-10 As a result of these studies there was no change required of the HPCI and RCIC set points. There were no changes to Table 3.2-1 because of these studies.
- c-11 The Quality Assurance requirements for HPCI and RCIC Systems are shown in Table 3.2-1.
- c-12 Response to the TMI study is still in the evaluation phase. Table 3.2-1 will be modified as necessary.

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- c-13 The BWR owners group is still evaluating this requirement. If the study so indicates, Table 3.2-1 will be modified accordingly.
- c-14 This study determined that no changes were required to Table 3.2-1.
- c-15 The Quality Assurance requirements for the RCIC Systems are shown in Table 3.2-1.
- c-16 Safety-related unit coolers are provided in these rooms as necessary to maintain temperature. See ECCS Pump Room in Table 3.2-1.
- c-17 Response to the TMI issues is under evaluation between PP&L and the NRC staff. After the evaluation has been completed any changes to the Quality Assurance requirements will be reflected in Table 3.2-1 as appropriate.
- c-18 This study resulted in no changes to SSES equipment. Entries in Table 3.2-1 are not required as they are included within the individual systems.
- c-19 Response to this TMI issue is under study/evaluation. Any modifications to the SSES design will be evaluated to determine if they are safety related. Table 3.2-1 will be modified as deemed appropriate.
- c-20 This item is not a "structure, system or component" requiring entry in Table 3.2-1. Control of this activity is provided by appropriate procedures. Chapter 17 of the FSAR and Section 6.8 of the Technical Specifications describe the QA program coverage of procedural controls.
- c-21 These items are not safety related. Justification is contained in NUREG 0696 paragraph 2.5 and 4.2 (Table 2 and footnotes). The Emergency Facilities and associated equipment are not required for safe shutdown or immediate or long term operation following a LOCA. The failure of these facilities or the associated equipment will not cause the release of radioactivity in excess of 10 CFR 100 limits or cause or increase severity of a DBA. The individual facilities will be designed and installed in accordance with quality plans set forth under Section I.D of NUREG 0696. For these reasons Emergency Support Facilities will not be added to Table 3.2-1.

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The program for maintenance and independent audits of these facilities and equipment is described in the Susquehanna Emergency Plan and the Susquehanna Technical Specifications.

- c-22 This item is not a "structure, system or component" requiring entry in Table 3.2-1. Control of this activity is provided by appropriate procedures. Chapter 17 of the FSAR and Section 6.8 of the Technical Specifications describe the QA program coverage of procedural controls.
- c-23 Control room habitability is maintained by safety related equipment. This equipment is identified in Table 3.2-1 under the section heading HVAC System-Control Structure.
- d. Instrumentation and Control system are identified only at the system level in Table 3.2-1 without providing information on the individual component level. The quality classification of individual components has been identified in expanded detail in controlled QA program documents (e.g., "Q-List" and the instrument index).