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Page 1 of 1

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1	/	Design Authority	WJ Powell	8/13/99	S7-70
1	/	Cog. Engr. MF Erhart	MF Erhart	8/13/99	R1-56
1	/	Cog. Mgr. RW Reed	RW Reed	8/13/99	T4-07
1	/	QA ML McElroy	ML McElroy	8/13/99	S7-07
1	/	Safety LS Krogsrud	LS Krogsrud	8/13/99	T4-07
18.		19.		20.	
JR Buchanan Signature of EDT Originator		RW Reed Authorized Representative for Receiving Organization		WJ Powell Design Authority/ Cognizant Manager	
8/17/99		8/13/99		8/13/99	
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6430.1A Compliance Matrix for 241-SY-101 Surface Level Rise Remediation Project

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Lockheed Martin Hanford Company

Richland, WA 99352

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Abstract:

This document shows compliance with DOE order 6430.1A of the 241-SY-101 RAPID Mitigation system Prefabricated Pump Pit (PPP) for functions related to shielding, sealing tanks dome space, and not damaging the riser.

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1.0 BACKGROUND

Tank 241-SY-101 (SY-101) has recently exhibited a steady waste surface level growth. A path forward to mitigate the SY-101 surface level growth issue has been developed. The project has been directed to install the necessary equipment to transfer 380-570m³ (100,000-150,000 gallons) of waste from SY-101 to SY-102 before the waste elevation reached the region of the tank where the transition from a double to a single shell tank occurs.

2.0 PURPOSE

The purpose of this document is to record the design attributes of the RAPID mitigation system which fulfill the requirements specified in DOE order 6430.1A as it relates to the 241-SY-101 RAPID Mitigation System.

3.0 ANALYSIS

The following matrix records specific requirements contained in DOE order 6430.1A for the SY-101 RAPID Mitigation System related to the Prefabricated Pump Pit and its ability to fulfill shielding, atmosphere sealing of the tank dome space, and prevention of riser damage functions. A citation is provided which specifies the design document and attribute which fulfills each criterion's requirement. Matrix items directly related to verification of the PPP's ability to fulfill these functions upon initial installation, are enclosed in a dark border.

DESIGN COMPLIANCE MATRIX					DESIGN COMPLIANCE CITATION				
Compliance Citations for DOE Order B430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System					ORDER B430.1A REQUIREMENTS				
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control	Citation			
1	The latest edition of standards and guides shall be used.	Order B430.1A, Section 0109		The Functional Requirements and Technical Criteria for the 241 SY-101 RAPID Mitigation System, the Structural Design Criteria, and the specifications for individual SSCs comply with this criterion, EXCEPT that the 1994 edition of UBC is used for seismic criteria.					
2	Designs shall produce facilities that are straightforward and businesslike.	Order B430.1A, Section 0110-1.1.1		Compliance with this criterion results from the formal and documented design review process.					
3	Designs shall be defensible in terms of scope, cost, and appearance.	Order B430.1A, Section 0110-1.1.1		Compliance with this criterion results from the formal and documented design review process.					
4	Appropriate design shall meet and not exceed users' needs.	Order B430.1A, Section 0110-1.1.1		Compliance with this criterion results from the formal and documented design review process.					
5	Programmatic studies shall include a detailed consideration of the functional requirements of ... the facility.	Order B430.1A, Section 0110-1.1.2		HNF-3824, Tank 241 SY-101 Surface Level Rise Remediation Project Plan constitutes the programmatic study that includes consideration of the functional requirements of the facility. HNF-3885, Functional and Technical Criteria for the 241 SY-101 RAPID Mitigation System enumerates explicit functional requirements.					
6	The design criteria document shall make programmatic and operating requirements explicit in compliance with DOE 4700.1, Project Management System.	Order B430.1A, Section 0110-1.1.2		HNF-3885, Functional Requirements and Technical Criteria for the 241 SY-101 RAPID Mitigation System identifies explicit programmatic and operating requirements.					
7	The designer shall consider the program and resolve perceived deficiencies with the user and cognizant DOE authority.	Order B430.1A, Section 0110-1.1.2		Guidance from the cognizant DOE authority is based on FY-99 PA 6.1.5, incorporated into HNF-3824, Tank 241 SY-101 Surface Level Rise Remediation Project Plan. Compliance with this criterion results from the formal and documented design review process, which includes participation by the user (Tank Farm Facility Operations) and an RL representative.					
8	The designer shall question apparently excessive scope demands when they occur.	Order B430.1A, Section 0110-1.1.2		Compliance with this criterion results from the formal and documented design review process.					
9	When two or more services or systems ... are to be incorporated into a facility or a facility complex, these systems shall be considered to determine if they can be integrated...	Order B430.1A, Section 0110-1.2		The SSCs within the scope of this project are first-of-a-kind/one-of-a-kind for the single purpose of waste transfer. The system has been physically integrated with existing Tank Farm utilities and programmaticaly integrated in site and Tank Farm programs to the extent appropriate, as documented in Section 2.4 of HNF-3824, Tank 241 SY-101 Surface Level Rise Remediation Project Plan.					
10	Emergency planning requirements ... shall be considered ...	Order B430.1A, Section 0110-1.3		Compliance with this criterion is/will be achieved by implementation of an existing Tank Farm program, plan, or procedure.					
11	During the ... conceptual design, alternative designs shall be developed.	Order B430.1A, Section 0110-2		Alternatives were identified and evaluated in Alternative Generation and Analysis for 241-SY-101 Expedited Waste Transfer to 241-SY-102, Review Draft, COGEMA Engineering Corp., January, 1999.					

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control	Citation
12	..the design shall...provide sufficient flexibility to accommodate for programmatic changes or operational modifications.	Order 6430.1A, Section 0110-3		The required flexibility, and extra waste transfer capacity, results from additional system availability. The system has additional availability because the planned transfer(s) are temporary in duration and intermittent in occurrence.		
13	The layout ... shall address anticipated future needs.	Order 6430.1A, Section 0110-3		Flexibility in system availability and capacity results from the requirement for temporary and intermittent transfers.		
14	Design solutions shall demonstrate methods for modification and expansion including ... additional capacities...	Order 6430.1A, Section 0110-3		Additional capacity results from the requirement for temporary and intermittent transfers.		
15	Organizational, functional, spatial, and adjacency aspects of design shall promote operational efficiency in a workable and logical manner.	Order 6430.1A, Section 0110-4		Tank Farm Facilities Operation personnel have participated in all project design reviews. This participation assures that organizational, functional, and spatial aspects of design promote operational efficiency in a workable and logical manner. Adjacency aspects, specifically any potential impacts on the tank mixer pump operations, are addressed in HNF-3524, Tank 241 SY-101 Surface Level Rise Remediation Project Plan.		
16	Health and safety performance objectives ... include: Protection of the public and personnel from injury and from exposure to toxic materials, radiation, and other hazards in accordance with DOE requirements and allowable limits.	Order 6430.1A, Section 0110-5.1		The required objectives are established in the BIO, the Tank Farm HASP, and Engineering, TWR-4176, Draft in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design		
17	Health and safety performance objectives ... include: Protection of private and public property against damage resulting from DOE operations.	Order 6430.1A, Section 0110-5.1		The required objectives are established in the BIO, the Tank Farm HASP, and Engineering, TWR-4176, Draft in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design		
18	Health and safety performance objectives ... include: Continuation of operations by minimizing accident potential.	Order 6430.1A, Section 0110-5.1		The required objectives are established in the BIO, the Tank Farm HASP, and Engineering, TWR-4176, Draft in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design		
19	Health and safety performance objectives ... include: Limitation of loss or damage to readily decontaminable or decommission facilities for other subsequent uses.	Order 6430.1A, Section 0110-5.1		The required objectives are established in the BIO, the Tank Farm HASP, and Engineering, TWR-4176, Draft in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design		
20	Specific project design criteria in the areas of emergency preparedness and emergency management shall be developed with the advice and assistance of DOE organizations responsible for DOE emergency management/emergency preparedness programs. Such criteria shall comply with: DOE 5500.1A and DOE 5500.3.	Order 6430.1A, Section 0110-5.1		Compliance with this criterion is/will be achieved by implementation of an existing Tank Farm program, plan, or procedure.		

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ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
21	All DOE facilities shall be evaluated for potential risks to the operators, the public, and the environment. DOE 5481.1B contains criteria for determining the level of reporting required based on facility functions and potential accident risks. Safety analysis report timing, content, and format criteria and approval provisions are contained in DOE 5481.1B.	Order 6430.1A, Section 0110-5.2		The required evaluations are documented in the B/C. The B/C is the functional equivalent to a DOE 5481.1B-compliant safety analysis for this project.		
22	The preliminary safety analysis shall be initiated during the conceptual design phase of the project and further developed during preliminary (Title I) design and detailed (Title II) design phases.	Order 6430.1A, Section 0110-5.2		The B/C is the functional equivalent to a DOE 5481.1B-compliant safety analysis for this project.		
23	Facility design and construction features identified as a result of the PSAR shall be factored into the conceptual design before establishing the project cost estimate and requesting Congressional authorization for design and construction.	Order 6430.1A, Section 0110-5.2		The B/C is the functional equivalent to a DOE 5481.1B-compliant safety analysis for this project. Design and construction features resultant from the analyses in the B/C have been incorporated into the design as appropriate. This project is not a budget line item, and Congressional authorization is not applicable.		
24	The PSAR shall be completed and approved prior to the start of construction (including site preparation), consistent with DOE 4700.1.	Order 6430.1A, Section 0110-5.2		The B/C is the functional equivalent to a DOE 5481.1B-compliant safety analysis for this project.		
25	The Final Safety Analysis Report (FSAR) shall be developed during the construction phase of the project and shall be completed and approved prior to the initiation of facility operations.	Order 6430.1A, Section 0110-5.2		The B/C is the functional equivalent to a DOE 5481.1B-compliant safety analysis for this project.		
26	Each facility that has potential on-site or off-site effects during normal or abnormal operations shall have an Emergency Plan prepared which shall be incorporated with the Site Emergency Preparedness Plan.	Order 6430.1A, Section 0110-5.3		Compliance with this criterion shall be achieved by implementation of an existing Tank Farm program, plan, or procedure.		
27	Facilities shall comply with DOE 5480.4 Attachment 2, Section 2.C. (DOE 5480.4, Environmental Protection, Safety, and Health Protection Standards)	Order 6430.1A, Section 0110-6.1		Environmental Protection permits and analyses required for the project are identified in HNF-3824, Tank 241 SY-101 Surface Level Rise Remediation Project Plan. Compliances with the permitting and analytical requirements are scheduled project activities.		
28	Facilities shall comply with DOE 5480.7, Fire Protection.	Order 6430.1A, Section 0110-6.1		The project is within the scope of the existing Tank Farm Fire Protection program, which is assumed to be compliant with this Order.		
29	Facilities shall comply with Section 1530, Fire Protection	Order 6430.1A, Section 0110-6.1		Refer to specific criteria from Section 1530		

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ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
30	Facilities shall also comply with 29 CFR 1926 and 29 CFR 1910. (29 CFR 1926, Safety and Health Regulations for Construction; 29 CFR 1910, Occupational Safety and Health Standards.)	Order 6430.1A, Section 0110-6.1		CFR requirements are imposed on design/build vendors by the Functional Requirements and Technical Criteria for the 241 SY-101 RAPID Mitigation System and individual SSC specifications. Construction and operations activities associated with the project comply with the CFR requirements by compliance with the Tank Farm HASP		
31	Except as required by other sections of these criteria, NFPA 101 shall apply where 29 CFR 1926 and 29 CFR 1910 does not apply or where NFPA 101 exceeds the requirements of 29 CFR 1926 and 29 CFR 1910.	Order 6430.1A, Section 0110-6.1		CFR requirements are imposed on design/build vendors by the Functional Requirements and Technical Criteria for the 241 SY-101 RAPID Mitigation System and individual SSC specifications. Construction and operations activities associated with the project comply with the CFR requirements by compliance with the Tank Farm HASP		
32	Definitions, fire resistance ratings, and types of construction shall be as contained in the UBC.	Order 6430.1A, Section 0110-6.1		The existing Tank Farm Fire Protection program complies with this criterion.		
33	Any materials with unusual fire characteristics, such as urethane foams, and any materials that develop significant quantities of toxic or other harmful products of combustion, shall not be used as interior finishes or other interior applications without the approval of the cognizant DOE fire protection authority.	Order 6430.1A, Section 0110-6.1		No materials within the scope of this criterion have been specified.		
34	The use of foamed plastics in construction shall be prohibited unless it fully complies with FM 1-57.	Order 6430.1A, Section 0110-6.1		No materials within the scope of this criterion have been specified.		
35	A special fire protection design analysis shall be made of each facility vital to DOE mission accomplishment.	Order 6430.1A, Section 0110-6.2		To the extent that the Mitigation System relates to "a public health and safety function," the system is covered by the BIC analyses (including fire protection) for an above ground transfer. No additional "spectat" analysis is appropriate.		
36	All facilities shall be divided into areas in which the total potential fire loss to each area and its equipment does not exceed \$75 million as described in DOE 5480.7.	Order 6430.1A, Section 0110-6.3		RAPID Mitigation Project potential loss (equipment, installation and construction) is less than \$75 million (HNF-3824, Tank 241 SY-101 Surface Level Rise Remediation Project Plan)		
37	When exemptions are granted to specific DOE fire protection standards for reasons unique to DOE facilities, as in the case of some containment structures, fire protection shall be provided so as to assure the life safety of facility occupants as required by the cognizant DOE fire protection authority.	Order 6430.1A, Section 0110-6.4		The required fire protection and life safety assurance are provided by existing equipment/programs/procedures of the Tank Farm. The RAPID Mitigation System is too small for any "Facility occupants", the system creates no new or additional fire or life safety hazards.		
38	Hazardous areas, such as radioactive spaces or spaces with inert atmospheres, shall have sufficient alarms and interlocks to assure that access by emergency personnel will not endanger such personnel or result in a public hazard.	Order 6430.1A, Section 0110-6.4		Routine or emergency access will be in accord with existing procedures, including appropriate PPE. Any SSCs within the scope of this project that could potentially contain an inert atmosphere are too small to allow personnel access.		

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ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
50	Planning and design of ... structures, including ... operating components and systems, shall take into account all aspects of operation and maintenance including: frequency of preventive maintenance	Order 6430.1A, Section 0110-9		Tank Farm Facilities Operation personnel have participated in all project design reviews.		
51	Planning and design of ... structures, including ... operating components and systems, shall take into account all aspects of operation and maintenance including: inspection requirements	Order 6430.1A, Section 0110-9		Tank Farm Facilities Operation personnel have participated in all project design reviews.		
52	Planning and design of ... structures, including ... operating components and systems, shall take into account all aspects of operation and maintenance including: personnel safety	Order 6430.1A, Section 0110-9		Tank Farm Facilities Operation personnel have participated in all project design reviews.		
53	Planning and design of ... structures, including ... operating components and systems, shall take into account all aspects of operation and maintenance including: day-to-day operations	Order 6430.1A, Section 0110-9		Tank Farm Facilities Operation personnel have participated in all project design reviews.		
54	Design decisions for all projects shall be based on considerations of LCC as well as all other programmatic requirements affecting the facility.	Order 6430.1A, Section 0110-9		Alternative Generation and Analysis for 241-SY-101 Expedited Waste Transfer to 241-SY-102, Review Draft, COGEMA Engineering Corp., January, 1999, includes consideration of initial and decommissioning costs in design decisions.		
55	Studies shall be made that balance initial construction cost with the operating and maintenance costs over the anticipated life of the facility.	Order 6430.1A, Section 0110-9		Alternative Generation and Analysis for 241-SY-101 Expedited Waste Transfer to 241-SY-102, Review Draft, COGEMA Engineering Corp., January, 1999, includes consideration of initial and decommissioning costs in design decisions.		
56	LCC analyses used to select materials and equipment shall include the cost and availability of materials, parts, and labor required for operation, maintenance, repair, and replacement.	Order 6430.1A, Section 0110-9		Alternative Generation and Analysis for 241-SY-101 Expedited Waste Transfer to 241-SY-102, Review Draft, COGEMA Engineering Corp., January, 1999, includes consideration of initial and decommissioning costs in design decisions.		
57	Space for the operation, maintenance, repair, and replacement of materials and equipment shall be provided and shall be included in LCC analyses used to select materials and equipment.	Order 6430.1A, Section 0110-9		Tank Farm Facilities Operation personnel have identified space requirements for the operation, maintenance, repair, and replacement of materials and equipment; incremental costs are insignificant and did not influence material or equipment selection.		
58	LCC analyses shall be appendices in a project's design criteria document or other such project file...	Order 6430.1A, Section 0110-9		Alternative Generation and Analysis for 241-SY-101 Expedited Waste Transfer to 241-SY-102, Review Draft, COGEMA Engineering Corp., January, 1999, includes consideration of initial and decommissioning costs in design decisions.		
59	...[S]pecial facilities shall be planned and layout developed on the basis of repetitive or discrete processing steps, grouped according to facilities services ...	Order 6430.1A, Section 0110-99.0.1		Layout of SSCs is based on specific functional requirements and existing configuration of tanks SY-101 and SY-102		

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DESIGN COMPLIANCE CITATION			ORDER 6430.1A REQUIREMENTS		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference Citation
60	[Special facilities] shall be contained in individual process rooms or cells to the extent practical	Order 6430.1A, Section 0110-99.0.1		The transfer pump is contained within existing tank SY-101, transfer valves and other appurtenances are contained within the Prefabricated Pump Pit, the transfer line is contained within the transfer encasement, and the drop leg is contained within existing tank SY-102. It is not judged "practical" to design or construct additional individual rooms or cells.	
61	The design professional shall consider the need for safe normal and emergency access, egress, and internal traffic flow.	Order 6430.1A, Section 0110-99.0.1		Existing structures, programs, and procedures in place at the Tank Farm provide for safe normal and emergency access, egress, and traffic flow. No additional needs result from the mitigation project.	
62	The type and level of hazard shall be determined for each functional area of the special facility, the attendant degree of risk established, and the possibility of cross-contamination considered.	Order 6430.1A, Section 0110-99.0.1		The hazards are identified and analyzed in the BIC and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft	
63	Radioactive and hazardous materials shall be segregated from each other to minimize the generation of mixed waste.	Order 6430.1A, Section 0110-99.0.1		Lead used as shielding is covered in accordance with TBD to prevent radioactive contamination of the lead (as well as to prevent release of lead to the environment). No other new radioactive or hazardous materials (i.e., materials not already present as part of the waste in SY-101) are specified for use in the project.	
64	Wherever possible, areas for work with radioactive or other hazardous contaminants shall be located together to simplify solutions to problems of air supply and exhaust, waste disposal, decontamination, and cross contamination...	Order 6430.1A, Section 0110-99.0.1		Work areas for this project are fixed by location of SY-101	
65	[Areas where radioactive materials are used shall be designed for ease of decontamination during ... usage and ... decommissioning.	Order 6430.1A, Section 0110-99.0.1		The material of construction and the finish specified for the Prefabricated Pump Pit were selected for ease of decontamination. The Prefabricated Pump Pit spray ring and the Water Support Skid flush water capability are additional design elements included for ease of decontamination.	
66	Energy conservation shall be given particular attention in the planning and design of special facilities.	Order 6430.1A, Section 0110-99.0.1		This criterion is not applicable for this project, because the RAPID mitigation system uses less than 500 million BTU per year. (Reference TBD)	
67	A special facilities utilization schedule shall be developed to show the intended schedule of operations of energy-using systems and equipment.	Order 6430.1A, Section 0110-99.0.3		The project is not within the scope of this criterion.	
68	[These [utilization] schedules shall be used in performing computerized or other energy-use analyses to develop energy-efficient special facility design.	Order 6430.1A, Section 0110-99.0.3		The project is not within the scope of this criterion.	
69	The design of the facility shall include controlled access to areas of potential hazards.	Order 6430.1A, Section 0110-99.0.4		Compliance with this criterion is/will be achieved by implementation of an existing Tank Farm program, plan, or procedure.	
70	The facility layout shall provide for the segregation of administrative and other support personnel from operations and process activities and areas.	Order 6430.1A, Section 0110-99.0.4		Compliance with this criterion is/will be achieved by implementation of an existing Tank Farm program, plan, or procedure.	

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ORDER 6430.1A REQUIREMENTS					DESIGN COMPLIANCE CITATION				
Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control	Citation				
71 Maintenance and radiation shielding shall ensure that exposure to hazardous materials is within the requirements of DOE 5480.11 and DOE 5480.10, respectively.	Order 6430.1A, Section 0110-89.0.4		The RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft documents that exposure to radiation is within the requirements of DOE 5480.11. The BIO (?) documents that potential exposures to other hazardous materials are within the requirements of DOE 5480.10.						
72 [Exposures shall be maintained ALARA	Order 6430.1A, Section 0110-89.0.4		The RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft documents that exposure to radiation is maintained ALARA.						
73 The design shall protect workers sufficiently from hazards to ensure that workers can perform actions required during normal operations, anticipated operational occurrences, and postulated DBAs.	Order 6430.1A, Section 0110-89.0.4		The design protects workers from radiological hazards by maintaining exposures ALARA (TWR-4176). Protection from other hazards results from existing safety program and procedures.						
74 The design shall ensure prompt, safe shutdown in emergencies, and allow ready access to areas where manual corrective actions are required and to areas that contain radiation monitoring equipment.	Order 6430.1A, Section 0110-89.0.4		The design includes the following SSCs to ensure prompt, safe shutdown: TBD. Tank Farm O&M participation in design reviews has ensured the required ready access. The design of the prefabricated pump pit does not impede the required access.						
75 The facility design shall provide space to accommodate all planned activities, operations, and maintenance.	Order 6430.1A, Section 0110-89.0.4		Tank Farm O&M personnel have identified space requirements for the operation, maintenance, repair, and replacement of materials and equipment through the design review process.						
76 Layout of the facility shall provide specific control and isolation, if possible, of quantities of flammable, toxic, and explosive gases, chemicals, and other hazardous materials admitted to the facility.	Order 6430.1A, Section 0110-89.0.4		The Mitigation System design includes a safety class seal loop to isolate the prefabricated Pump Pit and other SSCs from the potentially flammable head space gases in SY-101						
77 The provision of additional space or temporary shielding shall be considered in the event radiation levels are higher than anticipated.	Order 6430.1A, Section 0110-89.0.4		Since the Mitigation System is outdoors, additional space is essentially unlimited. Additional shielding is limited only by tank dome bearing capacity; a case-specific analysis would be required in the event higher than expected radiation levels require additional temporary shielding.						
78 Development of the DBF shall include consideration of conditions that may exist during normal operations and special situations (e.g., during periods of decontamination, removal, modification, repair, and maintenance).	Order 6430.1A, Section 0110-89.0.6		The BIO defines the DBF, as well as prevention and mitigation SSCs, for Tank Farm operations, including above-ground transfers. The BIO analyzes the consequences of normal operations and accident conditions. This RAPID Mitigation project is within the analytical scope of the BIO; no additional fire hazards result.						
79 The structural shell surrounding the critical areas and their supporting members shall remain standing and continue to act as a confinement structure during the DBF under conditions of failure of any fire suppression system not designed as a safety class item.	Order 6430.1A, Section 0110-89.0.6		SSCs that comprise the "confinement structure" are designated as safety class items. The safety class SSCs maintain their identified safety functions during a DBF. No credit for a fire suppression system is credited.						

DESIGN COMPLIANCE MATRIX					
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System					
DESIGN COMPLIANCE CITATION			ORDER 6430.1A REQUIREMENTS		
Citation	Configuration Control	Design Attribute	Notes, Assumptions, Implications	Source	Criteria
				Order 6430.1A, Section 0110-99.0.6	Fire resistance of this shell shall be attained by an integral part of the structure (concrete slabs, walls, beams, and columns) and not by a composite assembly (membrane fireproofing).
		There are no new or modified fire suppression SSCs within the scope of the Mitigation project. The BIO establishes that the Tank Farm DBF is < 2 hours. A Mitigation System fire resistance rating > 2 hours is assumed because of the near-total use of steel as the material of construction.		Order 6430.1A, Section 0110-99.0.6	In no event shall the fire resistance rating be less than two hours under conditions of failure of any fire suppression system not designed as a safety class item.
		Applicable penetrations are those in the Prefabricated Pump Pit. ALARA considerations govern.		Order 6430.1A, Section 0110-99.0.6	Penetrations in this shell shall incorporate, as a minimum, protection against DBF exposures unless greater protection is required by other sections of these criteria.
		Mitigating design features are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft		Order 6430.1A, Section 0110-99.0.8	The design of special facilities shall reduce the consequences of normal and DBA events by incorporating ALARA design concepts.
		Occupancy time, spacing, and shielding were considered, as documented in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft. Shielding of the transfer line and the Prefabricated Pump Pit are included in the design.		Order 6430.1A, Section 0110-99.0.8	Occupancy time, spacing, remote handling equipment, and shielding shall be considered.
		Safety class leak detectors will detect and annunciate release of radioactive materials within the confinement system of the Mitigation System. Releases from the Mitigation System will be detected by existing TFFO monitoring devices, and alarms given as appropriate.		Order 6430.1A, Section 0110-99.0.8	(Where required by the form and potential hazard of the material being handled or stored) to detect the presence of significant levels or increases of radioactivity and, if feasible, any other hazardous materials, either released in the special facility or escaping from it.
		The required component(s) are provided in the design as identified on the SEL.		Order 6430.1A, Section 0110-99.0.8	Where monitoring devices are not available for specific contaminants, sampling devices shall be substituted and be evaluated on a frequency sufficient to detect release levels of interest.
		Compliance with this criterion results from implementation of existing Tank Farm radiological controls supplemented as appropriate by additional radiological area posting requirements established in Project Radiological Controls (DRAFT, HNF-XXXX)		Order 6430.1A, Section 0110-99.0.8	Cautionary systems or interlocks shall prevent inadvertent entry into hazardous areas.
		The required component(s) are provided in the design as identified on the SEL		Order 6430.1A, Section 0110-99.0.8	All safety alarm systems shall annunciate inside of the special facility so as to identify hazardous areas.
		The required component(s) are provided in the design as identified on the SEL		Order 6430.1A, Section 0110-99.0.8	In addition to audible alarm devices, shall be considered, in the special facility.

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation	
90 Where alarms can preclude or minimize exposures outside of the facility, they shall be provided (such as critically alarms).	Order 6430.1A, Section 0110-99.0.8		The required component(s) are provided in the design as identified on the SEL.			
91 DOE 5480.5 elements for safety of nuclear facilities. In requirements, personnel exposure levels shall comply with Section 1300-6.2, Shielding Design.	Order 6430.1A, Section 0110-99.0.8		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft			
92 exposure of the public shall comply with Section 1300-1.4, Guidance on Limiting Exposure of the Public.	Order 6430.1A, Section 0110-99.0.8		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft			
93 Proper consideration shall also be given to chemical toxicity protection, as well as radiation protection.	Order 6430.1A, Section 0110-99.0.8		No new or additional toxic chemicals are specified for the Mitigation System. Consideration of chemical protection for accident scenarios is provided in the BIO; protection measures, if required, are specified in existing TWO procedures.			
94 Local availability of construction materials and labor force shall be considered in the selection of the structural system.	Order 6430.1A, Section 0111-1		Multiple qualified suppliers are locally available			
95 The structural design drawings shall indicate the design criteria, the structural materials and their strengths with applicable materials standards, the design loads including loads that can occur during construction, and the allowable foundation loads that were used in the design.	Order 6430.1A, Section 0111-1		Specifications for individual SSCs define the applicable design criteria, the structural materials and their strengths with applicable materials standards, the design loads including loads that can occur during construction, and the allowable foundation loads that are to be used in the design. Design drawings are to be provided by the design/build vendor.			
96 Where earthquake resistance is required, the cognizant DOE authority should consult LBL-9143 for practical guidelines for engineering earthquake safety and management planning and technical procedures for design of new facilities...	Order 6430.1A, Section 0111-1		Seismic planning and design procedures are based on site specific hazards analyses and DBE definition in the BIO, which provides equivalent compliance.			
97 Structures and their elements shall be designed for the loads prescribed in these criteria.	Order 6430.1A, Section 0111-2.1		The required loads are set as design bases in Structural Design Criteria			
98 Dead loads ... shall include the weights of all permanent materials and equipment, including the structure's own weight, supported in, or on, a structure.	Order 6430.1A, Section 0111-2.2		The required loads are set as design bases in Structural Design Criteria			
99 Load calculations shall include an allowance for any loadings anticipated to be added at a later date.	Order 6430.1A, Section 0111-2.2		The required loads are set as design bases in Structural Design Criteria			
100 Initially assumed loads shall be revised so that the final design reflects the configuration shown on the drawings.	Order 6430.1A, Section 0111-2.2		Initially assumed loads revised as necessary through the design review process.			
101 The unit weights of materials ... for ... structures shall be those given in ANSI A58.1. Where unit weights are neither established in that standard nor determined by test or analysis, the weights shall be determined from data in manufacturers' drawings or catalogs.	Order 6430.1A, Section 0111-2.2		The weight of the NGTP is determined from manufacturer's data submittals. Weights of standard steel, pipe, and fittings are based on handbook data and/or manufacturer's data submittals.			

DESIGN COMPLIANCE MATRIX					
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System					
DESIGN COMPLIANCE CITATION			ORDER 6430.1A REQUIREMENTS		
#	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference
102	Design dead loads shall include the weight of all permanent service loads.	Order 6430.1A, Section 0111-2.2		The required loads are set as design bases in Structural Design Criteria	
103	Live loads resulting from the occupancy of the structure, whether acting vertically down, locally up, or laterally.	Order 6430.1A, Section 0111-2.3		The required loads are set as design bases in Structural Design Criteria	
104	Operating, moving, stopping, and impact forces shall be considered part of the live loads.	Order 6430.1A, Section 0111-2.3		The required loads are set as design bases in Structural Design Criteria	
105	Live loads shall include neither dead loads nor loads from the environment, such as wind, tornado, earthquake, thermal forces, earth pressure, and fluid pressure.	Order 6430.1A, Section 0111-2.3		The required loads are set as design bases in Structural Design Criteria	
106	Live loads for buildings and other structures shall be those produced by the intended use or occupancy. In no case shall they be less than the minimum uniform load or concentrated load stipulated in ANSI A58.1.	Order 6430.1A, Section 0111-2.3		The required loads are set as design bases in Structural Design Criteria	
107	The structural components of exposed structures shall be designed to resist pressures due to wind assumed to act from any direction.	Order 6430.1A, Section 0111-2.4		The required loads are set as design bases in Structural Design Criteria	
108	Partial wind loading shall be considered if it produces a more severe effect.	Order 6430.1A, Section 0111-2.4		The required loads are set as design bases in Structural Design Criteria	
109	Wind load design for structures shall be determined in accordance with procedures in ANSI A58.1 with the basic wind speed being obtained from UCRL 15910.	Order 6430.1A, Section 0111-2.4		The required loads are set as design bases in Structural Design Criteria. Site-specific wind speed design bases are obtained from DOE-STD-1020-94.	
110	The basic wind speed shall be derived from DOE site-specific hazard and model studies summarized in UCRL 53526, Rev. 1.	Order 6430.1A, Section 0111-2.4		Design wind speed was derived from site-specific requirements of STD-1020-94, which incorporates UCRL 53526 by reference.	
111	To determine the design wind loads, all factors and coefficients stipulated in ANSI A58.1 shall be applied to the site-specific basic wind speeds.	Order 6430.1A, Section 0111-2.4		Design wind speed was derived from site-specific requirements of STD-1020-94	
112	The basic wind speed and missile parameters shall be derived from DOE site-specific hazard model studies summarized in UCRL 53526, Rev. 1. If site-specific hazards developed consistent with the approach used in UCRL 53526, Rev. 1.	Order 6430.1A, Section 0111-2.5		Design wind speed was derived from site-specific requirements of STD-1020-94, which incorporates UCRL 53526 by reference.	
113	Facilities for radioactive material handling, processing, or storage, and other facilities having high value or vital importance to DOE programs that are classified as critical facilities, shall require special loading criteria as stipulated in Section 0111-99.0, Nonreactor Nuclear Facilities General.	Order 6430.1A, Section 0111-2.5		Design wind speed was derived from site-specific requirements of STD-1020-94	

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
#	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
114	The basic seismic parameters shall be derived from DOE site-specific hazard model studies summarized in UCRL 53582. If site-specific hazard model studies are not available, a hazard model shall be developed that is consistent with the approach used in UCRL 53582.	Order 6430.1A, Section 0111-2.6		The site specific seismic hazard model used is derived from DOE-STD-1020-94		
115	In applying UCRL 53582, specific guidance on relating frequency of occurrence to facility hazard levels shall be obtained from UCRL 15910.	Order 6430.1A, Section 0111-2.6		The site specific seismic hazard model used is derived from DOE-STD-1020-94		
116	Earthquake load design for buildings and other structures shall be determined in accordance with the procedures contained in the UBC and UCRL 15910.	Order 6430.1A, Section 0111-2.6		The required loads are as specified in HANF-PRO-097 and are established as design bases in <i>Structural Design Criteria</i>		
117	For critical facilities, the provisions and design procedures of TM 5-809-10.1 shall be used.	Order 6430.1A, Section 0111-2.6	Critical facilities. Facilities such as those for radioactive material handling, processing, or storage and those facilities having high replacement value or vital importance to	The design procedures of DOE-STD-1020-94 have been applied, providing equivalent compliance		
118	Facilities for radioactive material handling, processing, or storage, and other facilities having high value or vital importance to DOE programs that are classified as critical facilities, shall require application of dynamic analysis in determining structural requirements for earthquake loading as stipulated in Section 0111-99.0, Nonreactor Nuclear Facilities-General.	Order 6430.1A, Section 0111-2.6		Static load analysis has been deemed to provide adequate seismic design.		
119	An independent review of the seismic design shall be made for facilities and buildings where a seismic event can have a potential risk to operator lives, to public safety, or of large economic loss. The review shall be made in two stages, the first at the end of preliminary design and the second before final design is complete. For additional guidance on independent reviews, see LBL-9143 and UCRL 15910.	Order 6430.1A, Section 0111-2.6		Seismic design requirements are addressed in HNF-3885, the functions and requirements document, HNF-4252, the design requirements document, and HNF-4359, the design calculation. All of these documents were reviewed by Hassan Zia, an independent and qualified reviewer.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
120	Equipment supports shall be designed to avoid resonance resulting from the harmony between the natural frequency of the structure and the operating frequency of reciprocating or rotating equipment supported on the structure.	Order 6430.1A, Section 0111-2.8.1		The requirement(s) of this criterion are met by compliance with ASME B31.3, Chemical Plant and Petroleum Refinery Piping, which is incorporated by reference into applicable specifications (Water Support Skid and Prefabricated Pump Pit)		
121	The operating frequency of supported equipment shall be determined from manufacturer's data prior to completion of structural design.	Order 6430.1A, Section 0111-2.8.1		The requirement(s) of this criterion are met by compliance with ASME B31.3, Chemical Plant and Petroleum Refinery Piping, which is incorporated by reference into applicable specifications (Water Support Skid and Prefabricated Pump Pit)		
122	Resonance shall be prevented by designing equipment isolation supports to reduce the dynamic transmission of the applied load to as low a level as can be economically achieved in the design.	Order 6430.1A, Section 0111-2.8.1		The requirement(s) of this criterion are met by compliance with ASME B31.3, Chemical Plant and Petroleum Refinery Piping, which is incorporated by reference into applicable specifications (Water Support Skid and Prefabricated Pump Pit)		
123	The provisions of the UBC shall be the minimum requirements for foundations design.	Section 0111-3.4		Provisions of the UBC are established as requirements by the Structural Design Criteria		
124	The potential adverse effects of frost heave and movements due to expansive soils shall also be considered in the design.	Order 6430.1A, Section 0111-3.4		Foilings were installed below the frost line. There is no adverse effect.		
125	For all structures, Section 0201, Subsurface Investigations, shall be complied with to determine subsurface conditions, recommended foundation type, allowable design soil bearing pressure, seismic potential, and differential settlement.	Order 6430.1A, Section 0111-3.4		Existing data were used. Additional investigations were not deemed necessary (SDC). Foundation types are as specified in the SDC and project drawings		
126	Analysis of foundation vibrations, design to avoid resonance, and vibration and shock isolation, where required, shall be in accordance with Chapter 1 of DM-7.03 (U.S. Naval Facilities Engineering Command - DM-7.03, Soil Dynamics, Deep Stabilization, and Special Geotechnical Construction)	Order 6430.1A, Section 0111-3.4		The Mitigation System does not have "foundations" as defined by Order references. Criteria applicable to "supports" are appropriate for application to this system design.		
127	Special facility structures that need not be designed to withstand severe natural phenomena or man-made events shall be designed to the requirements in Section 0111-2, Loads.	Order 6430.1A, Section 0111-99.0.1		Applicable structures (e.g., the Water Support Skid) are designed to the required loads. Other "structures" (i.e., PPP, encasement, drop leg) are safety class		
128	A case-by-case written evaluation shall be performed to determine which structures or components may be excluded from these criteria.	Order 6430.1A, Section 0111-99.0.1		The SEL constitutes the written evaluation required		

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
129	Safety class items required to function during or following severe natural phenomena shall not be prevented from performing their required safety functions by the failure of components, systems, or structures that are not designed to the severe natural phenomena criteria.	Order 6430.1A, Section 0111-99.0.1		This requirement is satisfied via HNF-3885, the functions and requirements document, HNF-4252, the design requirements document, and HNF-4359, the design calculation. All of these documents were reviewed by Hassan Zlata, an independent and qualified reviewer. According to the BIO, no equipment is required to function during or after a severe natural phenomena hazard.		
130	Safety class structures shall be protected against dynamic effects ... that may result from natural phenomena, accidents at nearby facilities, ... transportation facilities, equipment failure, and similar events and conditions inside and outside the facility.	Order 6430.1A, Section 0111-99.0.1		This requirement is satisfied via HNF-3885, the functions and requirements document, HNF-4252, the design requirements document, and HNF-4359, the design calculation. All of these documents were reviewed by Hassan Zlata, an independent and qualified reviewer.		
131	The design bases for such events shall take into account their historic frequency and severity in the region of the site and the potential risk to the environment or the health and safety of the public. The type of severe events to be considered will vary among sites. However, earthquakes, tornados, straight winds and floods shall be addressed.	Order 6430.1A, Section 0111-99.0.1		Site specific design bases from DOE-STD-1020-94, <i>Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities</i> , were applied for earthquakes, tornados, winds, and floods.		
132	Facilities containing ... radioactive material...shall be evaluated as to the degree of risk, and more stringent criteria applied in structural design, as necessary. Design criteria for enclosures of radioactive and other hazardous materials are provided in Section 1161, Enclosures.	Order 6430.1A, Section 0111-99.0.1		The evaluations of above-ground waste transfers in the BIO are commensurate with the degree of risk. More stringent criteria have been applied (e.g., addition of SSCs to the SEL) as a result of the BIO analyses or the design review process.		
133	The design of structures, including their supports, that are confinement system barriers shall ensure satisfaction of the functional requirements for the specific confinement system they are part of.	Order 6430.1A, Section 0111-99.0.1		This criterion is applicable to the PPP, the PPP supports, the transfer encasement, and the drop leg, which collectively comprise the safety class confinement system. The design of those SSCs satisfies the functional requirements of the confinement system established in HNF-3885, <i>Functional and Technical Criteria for the 241 SY-101 RAPID Mitigation System</i> .		
134	In addition, safety class confinement barriers (barriers whose continued integrity is shown by a safety analysis to be required following severe natural phenomena, including the DBE, and man-made events) shall be designed to withstand secondary events as well as primary events. Potential secondary events might be fire, explosion, or nuclear criticality caused by the DBE.	Order 6430.1A, Section 0111-99.0.1		The BIO, HNF-SD-WM-BIO-001, assumes that all SSCs fail and that procedurally, the site will defer to the Hanford Alarm and Emergency Response Plan.		
135	In no case shall the total combustible loading located in a fire area exceed the fire resistance rating of the area enclosure. This shall be documented in a fire risk analysis.	Order 6430.1A, Section 0111-99.0.1		Any additions to the combustible loading in the Tank Farm resultant from the RAPID Mitigation Project are extremely minor; the materials of construction of the SSCs are noncombustible. The Fire Risk Analysis incorporated by reference to the BIO is applicable.		

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
136	DOE site-specific hazard model studies summarized in UCRL 53526, Rev. 1 ... shall be used to select the DBT and extreme wind characteristics for the design of structures. If site-specific hazard model studies are not available, a hazard model shall be developed consistent with the approach used in UCRL 15910.	Order 6430.1A, Section 0111-99.0.2		DBT and extreme wind design bases are established in the BIO, compliant with site-specific values tabulated in STD-1020.		
137	In applying UCRL 53526, Rev. 1, specific guidance on relating frequency of occurrence to facility hazard levels shall be obtained from UCRL 15910.	Order 6430.1A, Section 0111-99.0.2		Specific guidance on relating frequency of occurrence to facility hazard levels was obtained from the BIO, which provides equivalent compliance.		
138	In designing for tornado or extreme wind resistance, the tornado rotational speed shall be appropriately combined with the translational speed.	Order 6430.1A, Section 0111-99.0.2		DBT and extreme wind design bases are established in the BIO, compliant with site-specific values tabulated in STD-1020.		
139	Resulting loads from the rate of pressure drop, taking into consideration any pressure equalization due to permissible venting, shall be combined with velocity-induced pressure loads as stipulated in UCRL 15910.	Order 6430.1A, Section 0111-99.0.2		DBT and extreme wind design bases are established in the BIO, compliant with site-specific values tabulated in STD-1020.		
140	UCRL 53526, Rev. 1, provides the characteristics of typical potential tornado-generated missiles. Additional missiles may be identified from review of on-site sources and possible missiles that could be borne to the site by a tornado. Both small high-velocity missiles and massive low-velocity missiles shall be considered separately in terms of penetration, perforation, or crushing effects	Order 6430.1A, Section 0111-99.0.2		DBT and extreme wind design bases are established in the BIO, compliant with site-specific values tabulated in STD-1020.		
141	The horizontal and vertical velocities of the missiles shall be combined in the design.	Order 6430.1A, Section 0111-99.0.2		DBT and extreme wind design bases are established in the BIO, compliant with site-specific values tabulated in STD-1020.		
142	The minimum wind speed used shall be 70 mph.	Order 6430.1A, Section 0111-99.0.2		DBT and extreme wind design bases are established in the BIO, compliant with site-specific values tabulated in STD-1020.		
143	The systems, components, and structures that shall be designed to meet these special facility criteria shall be identified through a written evaluation (see Section 0111-99.0.1, General). Such systems, components, and structures shall be designed to provide their passive or active functions as required by the SAR in accord with their designated safety classes.	Order 6430.1A, Section 0111-99.0.4		The project SEL identifies the SSCs for which this criterion is applicable. The SEL also identifies the safety class and safety functions for each SSC.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION			
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
144	Site-specific seismic parameters shall be determined for a DBE. The SSE shall be equivalent to the DBE.	Order 6430.1A, Section 0111-99.0.4		The site-specific parameters from the BIO and from HANF-PRO-097 were applied and are incorporated by reference into the Structural Design Criteria. No separate and less restrictive seismic parameters were developed for the SSE; DBE parameters govern.		
145	New seismic design, including additions or modifications to existing structures, shall be reviewed by a qualified, independent organization. This review must include evaluation of the design approach, the lateral force resisting system, and the design detailing, per UCRL-15910. TM-5-809-10 can be used for design detail guidance.	Order 6430.1A, Section 0111-99.0.4		This requirement is satisfied via the design requirements document, HNF-4252, the design calculations, HNF-4359, and meeting the requirements of the BIO, HNF-SD-WM-BIO-001. The design requirements document and the design calculations have been reviewed by Hassan Zlata, an independent and qualified reviewer.		
146	Generally, a DBE shall have a ground acceleration of 0.1g or greater. To determine the DBE, site-specific earthquake hazard models and response spectra given in UCRL 53582, Rev. 1, shall be used to select the appropriate seismic ground acceleration. Design guidance in UCRL 15910 shall be used in applying UCRL 53582, Rev. 1.	Order 6430.1A, Section 0111-99.0.4		Structural Design Criteria incorporates the site-specific models and response spectra of DOE-STD-1020-94 by reference.		
147	Site-specific studies can be substituted for the UCRL 53582, Rev. 1, data where no data exist or where a higher level of detail is required.	Order 6430.1A, Section 0111-99.0.4		Structural Design Criteria incorporates the site-specific models and response spectra of DOE-STD-1020-94 by reference.		
148	The DBE shall be defined by design response spectra, appropriate for the site, or by acceleration time histories, representative of the anticipated ground motions.	Order 6430.1A, Section 0111-99.0.4		Structural Design Criteria incorporates the site-specific models and response spectra of DOE-STD-1020-94 by reference.		
149	The adequacy of systems, components, and structures to withstand a seismic event shall be verified by a dynamic analysis, except where it can be demonstrated that the use of a simplified approach, such as a static load method, component testing, or a combination of testing and analysis provides assurance of adequate seismic design.	Order 6430.1A, Section 0111-99.0.4		This requirement is satisfied via HNF-3885, the functions and requirements document, HNF-4252, the design requirements document, and HNF-4359, the design calculation. All of these documents were reviewed by Hassan Zlata, an independent and qualified reviewer.		
150	The ratio of vertical-to-horizontal acceleration shall be two-thirds, unless site-specific data justify the use of a different ratio.	Order 6430.1A, Section 0111-99.0.4		Structural Design Criteria incorporates the site-specific models and response spectra of DOE-STD-1020-94 by reference.		

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER #6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION			
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
151	The use of earthquake experience data is an acceptable approach to the seismic qualification of safety class items. If experience data are used for seismic qualification, the following shall be considered: Safety class equipment shall be essentially identical to the equipment that has data in the experience data base (i.e., this comparison should take into account the manufacturer, vintage, and general configuration of such equipment). Equipment shall be mounted and anchored in essentially an identical fashion as that for the experience data base equipment; and Consideration of the above and an independent review of this consideration must be adequately documented.	Order 6430.1A, Section 0111-99.0.4		Structural Design Criteria incorporates the site-specific models and response spectra of DOE-STD-1020-94 by reference. The STD-1020 data are not experience based. The remainder to this criterion is not applicable.		
152	The potential effects of a major explosion at a nearby facility or transportation route shall be considered among the spectrum of external blast effects and missiles that confinement structures shall be designed to withstand or against which they shall be protected.	Order 6430.1A, Section 0111-99.0.6		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
153	The probable consequence of DBAs involving internally generated missiles or blast effects shall be considered. Such DBAs typically involve failure of high-speed rotating machinery, cranes, experimental facilities, high-energy fluid system components, or explosives.	Order 6430.1A, Section 0111-99.0.7		No such DBAs involving internally generated missiles or blast effects are identified in the BIO.		
154	Structures required to function following such accidents shall be designed to withstand these DBAs.	Order 6430.1A, Section 0111-99.0.7		There are no SSCs within the scope of this criterion.		
155	Safety class structures and structural members shall be designed to resist the appropriate load combinations provided in UCRL 15910.	Order 6430.1A, Section 0111-99.0.8		Equivalent appropriate load combinations are specified in SDC		
156	Concrete structures and structural members for safety class concrete structures shall meet the design and construction requirements of ACI 349 for new construction or original (or equivalent) codes for existing construction providing the margin of safety of the overall facility is maintained.	Order 6430.1A, Section 0111-99.0.8		There are no safety class concrete structures within the scope of the project.		
157	Safety class steel structures shall meet the design, fabrication, and erection requirements of AISI N690 for new construction or original (or equivalent) codes for existing construction providing the margin of safety of the overall facility is maintained.	Order 6430.1A, Section 0111-99.0.8		The ASME B31.3 Process Piping code with additional inspection requirements will be used to ensure that safety class steel structures are suitable for safety class functions. This is an appropriate equivalent compliance with the criterion.		

DESIGN COMPLIANCE MATRIX					
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System					
ORDER 6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference
158	Facility design shall be conducted under QA requirements to ensure that the established program and project quality objectives are satisfied.	Order 6430.1A, Section 0140		The existing TWRS Quality Assurance Program Plan, HNF-IP-0842, Volume XI, Sec. 1.1, is implemented for this project	
159	A QA program shall be developed and implemented in compliance with DOE 5700.6B and using the elements of DOE 4700.1 and ANS ANSI/ASME NQA-1.	Order 6430.1A, Section 0140		The existing TWRS Quality Assurance Program Plan, HNF-IP-0842, Volume XI, Sec. 1.1, is implemented for this project	
160	CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS	Order 6430.1A, Section 0150		Criterion applicable to Construction Phase activity.	
161	CONSTRUCTION CONTRACT CLOSEOUT	Order 6430.1A, Section 0170		Criterion applicable to Construction Phase activity.	
162	The selection of sites for new facilities shall comply with DOE 4300.1B.	Order 6430.1A, Section 0200-1		Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102	
163	Site development and facility utilization planning shall comply with DOE 4300.1B.	Order 6430.1A, Section 0200-1		Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102	
164	Site development planning for energy management shall comply with DOE/MA 0129	Order 6430.1A, Section 0200-1		Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102	
165	A site development plan shall be used to locate new facilities on existing or new sites to assure effective site utilization and to preclude future conflicts between existing and new facilities.	Order 6430.1A, Section 0200-1		Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102	
166	During site selection for new facilities the following conditions and requirements shall be considered: Programmatic and operating efficiency; Natural topographic and geologic conditions; Endemic plant and animal species; Existence of known RCRA and/or CERCLA sites; Special siting requirements for facilities containing, using, or processing hazardous materials; Health, safety and environmental protection requirements; Indoor air quality impacts (e.g., presence of radon in foundation soils, building materials that off-gas irritating-chemical vapors and the need to "bake out" new buildings prior to occupancy); Hazardous operations and consequences of potential accidents in adjacent facilities; Natural hazards including seismic activity, wind, hurricane, tornado, flood, hail, volcanic; Physical protection requirements; Security and safeguard requirements; Adequacy of existing or planned support and service facilities, including utilities, roads, and parking areas; Interrelationships between facilities and aesthetic compatibility; Energy conservation requirements.	Order 6430.1A, Section 0200-1		Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102	
167	Location analyses performed during the preparation of CDRs shall consider but not be limited to these same criteria.	Order 6430.1A, Section 0200-1		Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102	

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
168	The NEPA/DOE 5440.1C require the preparation of an environmental assessment prior to the initiation of a government action that may significantly affect the environment. These requirements shall be considered during facility siting.	Order 6430.1A, Section 0200-1		HNF-3824, <i>Tank 241 SY-101 Surface Level Rise Remediation Project Plan</i> , identifies the appropriate level of NEPA consideration. Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102		
169	To the extent possible, facility siting shall preclude the use of floodplains or areas subject to flash floods and shall minimize destruction, loss, or degradation of wetlands.	Order 6430.1A, Section 0200-1		Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102		
170	Radiological siting requirements shall be considered during site selection and facility planning efforts.	Order 6430.1A, Section 0200-1		Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102		
171	For those facilities in which radioactive materials are processed, used, or stored, or those facilities that incorporate radiation-producing machines, the acceptability of the site shall be evaluated in terms of potential radiological consequences.	Order 6430.1A, Section 0200-1		Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102. Potential radiological consequences are evaluated in the BIO and RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, DRAFT.		
172	Radiation dose to an off-site individual receiving maximum exposure shall be evaluated. For both on-site and off-site individuals, emergency response planning shall be an important criterion in determining the acceptability of a site.	Order 6430.1A, Section 0200-1		Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102. Radiation dose to the maximally exposed off site individual is evaluated in the BIO and RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, DRAFT. Emergency response planning for the transfer operations phase will be within the scope of the existing TFFO Emergency Response Plan		
173	Dose shall be calculated and compared to the dose guidelines established below. Comparisons shall be based on a 50-year committed effective dose-equivalent.	Order 6430.1A, Section 0200-1		Requirements of this criterion are met by <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, DRAFT		
174	The off-site individual receiving the maximum dose shall be assumed to be located at the point of highest concentration (or highest exposure rate) outside the boundary controlled by the site.	Order 6430.1A, Section 0200-1		Requirements of this criterion are met by <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, DRAFT		
175	Meteorological conditions used in dose calculations shall be representative of unfavorable dispersion, determined by comparing the 0.5 percent dispersion factors (X/Q) for each sector to the 5-percent overall site X/Q and selecting the highest value.	Order 6430.1A, Section 0200-1		Requirements of this criterion are met by <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, DRAFT		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION			
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
176	The dose assessment shall consider both the duration of the event and, consistent with emergency response capability to control or evacuate individuals, the duration of exposure.	Order 6430.1A, Section 0200-1		Requirements of this criterion are met by <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, DRAFT		
177	The duration of exposure should not exceed two hours.	Order 6430.1A, Section 0200-1		Requirements of this criterion are met by <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, DRAFT		
178	The dose calculated shall be compared to the numerical guidelines within 0200-1.2, Radiological Siting Guidelines.	Order 6430.1A, Section 0200-1		Requirements of this criterion are met by <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, DRAFT		
179	Consideration shall be given to on-site individuals.	Order 6430.1A, Section 0200-1		Both the <i>BIO</i> and <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, DRAFT, present radiological evaluations applicable to on-site individuals.		
180	Prudent measures associated with the radiological protection of on-site personnel and in conjunction with the on-site emergency response planning, as required through implementation of DOE 5500.3, Planning and Preparedness for Operational Emergencies, shall be incorporated into the design and siting of a new facility.	Order 6430.1A, Section 0200-1		Compliance with this criterion is/will be achieved by implementation of an existing Tank Farm program, plan, or procedure.		
181	Information on the siting evaluation, including the models, parameters, and assumptions used in the dose calculations shall be documented for use in the facility's SAR and emergency response plans. See DOE 5440.1C and DOE 5481.1B.	Order 6430.1A, Section 0200-1		Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102		
182	The following siting guidelines apply to off-site individuals receiving maximum dose from exposure to internally-deposited radioactive materials and/or to radiation from external sources. Guidelines are based on a 50-year committed dose equivalent. The maximum calculated dose shall not exceed 25 rem to the whole body, 300 rem to the thyroid, 300 rem to the bone surface, 75 rem to the lung, or 150 rem to any other organ. If multiple organs receive doses from the same exposure, the effective dose equivalent from all sources shall not exceed 25 rem when calculated by using the ICRP Report No. 26 weighting factors.	Order 6430.1A, Section 0200-1		Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102. Compliance with the radiological requirements of this criterion for the project site are documented in <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, DRAFT		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
183	These siting guidelines (from above) apply to nonreactor nuclear facilities. When calculating these doses, degraded performance of ESF and administrative controls shall be assumed unless they can be clearly shown to be unaffected by the accident (capable of performing their safety function) by proper design, installation, testing, and maintenance according to prescribed standards.	Order 6430.1A, Section 0200-1		Application of site selection criteria from this Order is not appropriate, since the project site is fixed by the location of SY-101 and SY-102. Compliance with the radiological requirements of this criterion for the project site are documented in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, DRAFT		
184	For permanent structures, subsurface conditions shall be determined by means of borings or other methods that adequately disclose soil and groundwater conditions.	Order 6430.1A, Section 0201		There are no "permanent structures" within the scope of the project. Subsurface conditions are determined from existing Tank Farm data.		
185	Data and other information obtained from prior subsurface investigations shall be used, supplemented by additional investigations at the specific location as deemed necessary by the design professional.	Order 6430.1A, Section 0201		Existing data were used. Additional investigations were not deemed necessary (SDC).		
186	Subsurface investigations shall be made for critical facilities.	Order 6430.1A, Section 0201		Existing data were used. Additional analyses related to the PPP and transfer line supports are in progress.		
187	Subsurface investigations shall be performed under the direction of a qualified soils engineer.	Order 6430.1A, Section 0201		Existing data were used. Additional analyses related to the PPP and transfer line supports are in progress.		
188	In earthquake-prone areas, appropriate geotechnical investigations shall be made to determine the contribution of the foundation (subsurface) to the earthquake loads imposed on the structure and shall include, but not be limited to, a recommendation of foundation type, determinations of allowable soil bearing design capacity, and the possible effects of seismic activity on the soil mass.	Order 6430.1A, Section 0201		Existing data were used. Additional analyses related to the PPP and transfer line supports are in progress. Support types are as specified in the SDC and project drawings		
189	A settlement analysis under differential design loads shall be performed where differential settlement may cause structural or architectural damage.	Order 6430.1A, Section 0201		Existing data were used. Additional analyses were not deemed necessary (SDC).		
190	The soils engineer shall analyze the information developed by investigation or otherwise available, including any aspect of the soil conditions that might affect design and construction of proposed structures, and shall consult with the engineer on the design requirements of the project.	Order 6430.1A, Section 0201-4		Existing data were used. Additional analyses related to the PPP and transfer line supports are in progress.		

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
191	The soils engineer shall submit a professional evaluation, recommended construction specifications, and recommendations including the following where applicable: Foundation support of the structure and slabs, including soil bearing pressures, bearing elevations, foundation design recommendations and anticipated settlement; ... Soil material and compaction requirements for site fill, construction backfill, and for the support of structures and pavement; ... Seismic activity; Frost penetration depth and effect; Analysis of the effect of weather and construction equipment on soil during construction; Analysis of soils to ascertain presence of dispersive potentially expansive, deleterious, chemically active or corrosive materials or conditions, or presence of gas; Recommendation of the most proper foundation system and other alternative workable systems; ...	Order 6430.1A, Section 0201-4		The required evaluations, recommended construction specifications, and recommendations are incorporated in HNF-4349, Transfer System Calculations.		
192	Construction, control, property and topographic surveys shall be coordinated with the cognizant DOE authority.	Order 6430.1A, Section 0202		Existing surveys are adequate for the design phases of the project. Requirements of this criterion may become applicable to the construction phase.		
193	Where feasible, surveying support available from DOE contractors shall be used.	Order 6430.1A, Section 0202		Existing surveys are adequate for the project.		
194	Survey field notes shall be legibly recorded on standardized (8-1/2 inch x 11 inch) field note forms.	Order 6430.1A, Section 0202		Existing surveys are adequate for the design phases of the project. Requirements of this criterion may become applicable to the construction phase.		
195	Field notes and final plots of surveys shall be furnished to the cognizant DOE authority.	Order 6430.1A, Section 0202		Existing surveys are adequate for the design phases of the project. Requirements of this criterion may become applicable to the construction phase.		
196	Any boundary surveys and recorded maps shall be forwarded to the DOE Operations Office.	Order 6430.1A, Section 0202		Existing surveys are adequate for the design phases of the project. Requirements of this criterion may become applicable to the construction phase.		
197	The degree of accuracy for construction, control, property, and topographic surveys shall be consistent with the nature and importance of each survey.	Order 6430.1A, Section 0202		Existing surveys are adequate for the design phases of the project. Requirements of this criterion may become applicable to the construction phase.		
198	Each DOE Facilities Engineering Group shall be responsible for establishing, recording, and perpetuating primary on-site horizontal and vertical control monumentation.	Order 6430.1A, Section 0202		Existing surveys are adequate for the design phases of the project. Requirements of this criterion may become applicable to the construction phase.		
199	Temporary on-site horizontal and vertical control monumentation shall comply with ACSM NGS 3.	Order 6430.1A, Section 0202		Existing surveys are adequate for the design phases of the project. Requirements of this criterion may become applicable to the construction phase.		
200	The location and description of all temporary control monuments in the immediate vicinity of new construction shall be provided on construction drawings.	Order 6430.1A, Section 0202		Existing surveys are adequate for the design phases of the project. Requirements of this criterion may become applicable to the construction phase.		

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ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
201	Temporary control monuments shall be 5/8-inch diameter mild steel bars or 3/4-inch diameter iron pipe with a minimum length of 2 feet.	Order 6430.1A, Section 0202		Existing surveys are adequate for the design phases of the project. Requirements of this criterion may become applicable to the construction phase.		
202	In loose sand or unstable soil, such temporary control monuments shall have a minimum length of 3 feet.	Order 6430.1A, Section 0202		Existing surveys are adequate for the design phases of the project. Requirements of this criterion may become applicable to the construction phase.		
203	With written approval from the cognizant DOE Facilities Engineering Group, manhole rims, markings chiseled in concrete, PK nails in asphalt, and lead and tack in bedrock or concrete shall be suitable alternative temporary control monuments.	Order 6430.1A, Section 0202		Existing surveys are adequate for the design phases of the project. Requirements of this criterion may become applicable to the construction phase.		
204	Three guard posts with reflective paint striping shall be installed adjacent to temporary control monuments in high traffic areas to preclude vehicular damage.	Order 6430.1A, Section 0202		Existing surveys are adequate for the design phases of the project. Requirements of this criterion may become applicable to the construction phase.		
205	Utility locations shall take into consideration the following: Location, size, and elevation of sanitary sewers, storm drains or open drainage channels, drain inlets and manholes; Location, size, and elevation of water, gas, heat transmission mains and underground electrical service; Location and size of overhead electric service, street lighting, and telephone lines, including pole and manhole locations; Location of fire alarm call boxes.	Order 6430.1A, Section 0203		Applicable configurations of existing utilities were considered during the design review process.		
206	Above-ground utility features shall not be located in front of, or in such a manner as to detract from the facility. They shall not make landscaping more difficult or restrict or negate close-in recreational areas.	Order 6430.1A, Section 0203		Utilities associated with the project are temporary. No landscaping or recreational areas are impacted.		
207	Separation of utilities from security-related equipment must be considered when planning utility installations. A special emphasis should be given to maintaining clear ground around security fences and in security areas. Utilities that penetrate or pass under a security barrier through an opening of more than 96 square inches in smallest dimension shall provide the same degree of penetration delay as is required for the security barrier.	Order 6430.1A, Section 0203		No interfaces with existing security barriers are within project scope		

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ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
208	Facilities where radioactive or other hazardous contaminating materials will be used or will result from facility operation shall be designed to limit dispersion and simplify periodic decontamination and ultimate facility decommissioning and disposal or reuse. Requirements are provided in Section 1300-11, Decontamination and Decommissioning.	Order 6430.1A, Section 0205		Design elements that limit dispersion of radioactive materials include: the safety class confinement system (PPP, transfer encasement, and drop leg), which prevents release of materials for dispersal; and the PPP cover, which mitigates the spread of material and generation of aerosols in the event of a spray leak.		
209	Prior to earthwork design, the design engineer shall confer with the soils engineer to define subsurface investigation recommendations required in accordance with Section 0201, Subsurface Investigations.	Order 6430.1A, Section 0220		No earthwork design is within project scope		
210	The earthwork design and specification shall comply with the recommendations in the project subsurface investigation.	Order 6430.1A, Section 0220		No earthwork design is within project scope		
211	Building foundations shall be designed in accordance with the requirements of the UBC and ACI 318.	Order 6430.1A, Section 0235-1		Requirements applicable to system supports are incorporated in SDC. The Mitigation System does not include "foundations" within the scope of the codes and standards referenced in this criterion.		
212	Based on preliminary information concerning the purpose of the structure, foundation loads, and subsurface soil conditions, the design professional shall consider alternative types of foundations...	Order 6430.1A, Section 0235-2		Alternatives were informally considered by design engineers and reviewers (HNF-4519, Design Review Document for SY-101 RAPID project). Cost, purpose, and timeliness support the current design of piers for the prefabricated pump pit.		
213	Where reasonable alternative design foundation types are possible, preliminary designs shall be prepared for the purpose of detailed cost comparisons.	Order 6430.1A, Section 0235-2		Design of supports is based on functional requirements. Cost differences between alternatives are not of significant amount to impact selection.		
214	Final foundation design shall not be initiated until the evaluation and cost comparison of the proposed alternatives have been completed.	Order 6430.1A, Section 0235-2		Design of supports is based on functional requirements. Cost differences between alternatives are not of significant amount to impact selection.		
215	Concrete for building foundations shall be designed in accordance with Section 0330, Cast-In-Place Concrete.	Order 6430.1A, Section 0235-3		There is no cast-in-place concrete within project scope.		
216	Heavy, vibration-producing equipment, such as high-pressure air compressors, chillers, fire pumps and engine/generator sets, shall have separate, isolated foundations.	Order 6430.1A, Section 0235-8		This criterion was considered for applicability to the NGTP. The manufacturer's design report includes a dynamic analysis, which does not require separate or isolated support. Reference Model 2A-513-A1 Lead Unit Final Design Report Addendum, S.O. V001, Engineering Memorandum 6673, Revision 3, Westinghouse Electric Corporation, April 30, 1997, Chapter 10 - "Dynamic Analysis."		

DESIGN COMPLIANCE MATRIX					DESIGN COMPLIANCE CITATION				
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System									
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control	Citation			
217	A structural vibration analysis and design shall be provided for vibration equipment, where appropriate.	Order 6430.1A, Section 0235-8		This criterion was considered for applicability to the NGTP. The manufacturer's design report includes a dynamic analysis, which does not require separate or isolated support. Reference Model 2A-513-A1 Lead Unit Final Design Report Addendum, S.O. V001, Engineering Memorandum 6673, Revision 3, Westinghouse Electric Corporation, April 30, 1997, Chapter 10 - Dynamic Analysis."					
218	Concrete materials, design, and construction for ... structures shall comply with ACI 318 and 40 CFR 249.	Order 6430.1A, Section 0301		The SDC imposes ACI compliance on suppliers for design and construction. Concrete piers fabricated to support the PPP in service are outside the scope of ACI Standard 318, per the provisions of ACI 318, Paragraph 1.1.5.					
219	Reinforcement materials for ... structures shall comply with ACI 318	Order 6430.1A, Section 0320		The SDC imposes ACI compliance on suppliers for design and construction. Concrete piers fabricated to support the PPP in service are outside the scope of ACI Standard 318, per the provisions of ACI 318, Paragraph 1.1.5.					
220	Reinforcement details shall comply with ACI 352R and ACI SP-66 in addition to ACI 318 for ... structures	Order 6430.1A, Section 0320		Concrete piers fabricated to support the PPP in service are outside the scope of ACI Standard 352R and ACI SP-66. Piers are also outside the scope of ACI 318, per the provisions of ACI 318, Paragraph 1.1.5.					
221	Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products. ... Precast concrete shall comply with the PCI MNL-116.	Order 6430.1A, Section 0340		Per HNF-4169, RAPID Mitigation Prefabricated Pump Pit (PPP), Section 3.4 and Appendix C, piers comply with ACI Standards 117 and 301, and ASTM Standards A615, C31, C93, C94, C143, C260, and C494, as required by Divisions III through VI of PCI MNL-116. Quality Control requirements in force for the design and fabrication of the piers is in compliance with NQA-1, which meets or exceeds the requirements of PCI MNL-116, Division I.					
222	Structural steel for ... structures shall comply with the UBC.	Order 6430.1A, Section 0512		The Structural Design Criteria, as well as HNF-4043, Specification for SY-101 Rapid Mitigation Mobile Water Support Skid, HNF-4169, Specification for SY-101 RAPID Mitigation Prefabricated Pump Pit, HNF-4170, Specification for SY-101 RAPID Mitigation Transfer Pump Piping and HNF-4216, Specification for SY-101 RAPID Mitigation System Anti-Siphoning Slurry Distributor Assembly incorporate the requirements of UBC by reference.					
223	Structural steel for ... structures shall comply with ASC S326, Specification for the Design, Fabrication and Erection of Structural Steel for Buildings (included in ASC Manual of Steel Construction)	Order 6430.1A, Section 0512		The Structural Design Criteria, as well as HNF-4043, Specification for SY-101 Rapid Mitigation Mobile Water Support Skid, HNF-4169, Specification for SY-101 RAPID Mitigation Prefabricated Pump Pit, HNF-4170, Specification for SY-101 RAPID Mitigation Transfer Pump Piping and HNF-4216, Specification for SY-101 RAPID Mitigation System Anti-Siphoning Slurry Distributor Assembly incorporate appropriate codes and standards.					

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
224	Structural steel for ... structures shall comply with AISI M011, Manual of Steel Construction	Order 6430.1A, Section 0512		The Structural Design Criteria, as well as HNF-4043, Specification for SY-101 RAPID Mitigation Mobile Water Support Skid, HNF-4169, Specification for SY-101 RAPID Mitigation Prefabricated Pump Pit, HNF-4170, Specification for SY-101 RAPID Mitigation Transfer Pump Piping and HNF-4216, Specification for SY-101 RAPID Mitigation System Anti-Siphoning Slurry Distributor Assembly incorporate appropriate codes and standards.		
225	Structural connections for ... structures shall comply with the requirements of the UBC	Order 6430.1A, Section 0532		The Structural Design Criteria, as well as HNF-4043, Specification for SY-101 RAPID Mitigation Mobile Water Support Skid, HNF-4169, Specification for SY-101 RAPID Mitigation Prefabricated Pump Pit, HNF-4170, Specification for SY-101 RAPID Mitigation Transfer Pump Piping and HNF-4216, Specification for SY-101 RAPID Mitigation System Anti-Siphoning Slurry Distributor Assembly incorporate the requirements of UBC by reference.		
226	Structural connections for ... structures shall comply with the requirements of AISI M011, Manual of Steel Construction.	Order 6430.1A, Section 0532		The Structural Design Criteria, as well as HNF-4043, Specification for SY-101 RAPID Mitigation Mobile Water Support Skid, HNF-4169, Specification for SY-101 RAPID Mitigation Prefabricated Pump Pit, HNF-4170, Specification for SY-101 RAPID Mitigation Transfer Pump Piping and HNF-4216, Specification for SY-101 RAPID Mitigation System Anti-Siphoning Slurry Distributor Assembly incorporate appropriate codes and standards.		
227	Welding of structures shall comply with AWS D1.1, Structural Welding Code - Steel	Order 6430.1A, Section 0532		The Structural Design Criteria, as well as HNF-4043, Specification for SY-101 RAPID Mitigation Mobile Water Support Skid, HNF-4169, Specification for SY-101 RAPID Mitigation Prefabricated Pump Pit, HNF-4170, Specification for SY-101 RAPID Mitigation Transfer Pump Piping and HNF-4216, Specification for SY-101 RAPID Mitigation System Anti-Siphoning Slurry Distributor Assembly incorporate the requirements of AWS D1.1 by reference. Specifically, each specification invokes FDNW-VS-7, Welding of Stainless Steel and Nickel Alloy Structural and Other Components, which includes applicable requirements of the AWS standard.		

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
238	The design objective shall be to prevent exposure of the plant personnel to airborne contamination and shall implement ALARA concepts as practical to minimize operator exposures.	Order 6430.1A, Section 1161-1		The design objective is established in Functional Requirements and Technical Criteria for the 241 SY-101 RAPID Mitigation System and RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering report		
239	The enclosure system, including its internal and external support structures, shall be designed to withstand the effects of normal operating conditions and the environment.	Order 6430.1A, Section 1161-1		Normal operating conditions and environment are defined and established as design bases in Functional Requirements and Technical Criteria for the 241 SY-101 RAPID Mitigation System and SDC		
240	...DBAs such as fire, explosion, ...and natural phenomena shall be considered in the design of the enclosure.	Order 6430.1A, Section 1161-1		DBAs are defined and analyzed in the BIO and are established as design bases in Functional Requirements and Technical Criteria for the 241 SY-101 RAPID Mitigation System		
241	Enclosure stability during a seismic event shall be based on the seismic parameters described in Section 0111-99.0.4, Earthquakes.	Order 6430.1A, Section 1161-1		Seismic parameters are defined in the BIO and are established as design bases in Functional Requirements and Technical Criteria for the 241 SY-101 RAPID Mitigation System		
242	Where practical and without penetrating the enclosure, all equipment components not functionally required to operate directly in the presence of radioactive materials shall be located outside the enclosure.	Order 6430.1A, Section 1161-1		The water support skid is not functionally required to operate directly in the presence of radioactive materials and is located outside the enclosure. Other SSCs comprise parts of the "enclosure"		
243	All equipment that must be located within the enclosure shall be designed to allow for in-place maintenance and/or replacement.	Order 6430.1A, Section 1161-1		spray ring and high pressure flush, P3 maintenance holes		
244	The design ... of support and protection systems ... shall not promote the failure of the enclosure system integrity or the loss of confinement.	Order 6430.1A, Section 1161-1		Design requirements included the maintenance of the enclosure system integrity. The enclosure system was designed to require minimal maintenance and be robust.		
245	Noncombustible or fire-resistant and corrosion-resistant materials shall be used for enclosures.	Order 6430.1A, Section 1161-2		Enclosure SSCs are Stainless Steel		
246	Noncombustible or fire-resistant and corrosion-resistant materials shall be used, to the maximum extent practicable, for any required radiation shielding.	Order 6430.1A, Section 1161-2		Specified radiation shielding materials for the Mitigation System are limited to concrete, SS, and lead		

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
238	The design objective shall be to prevent exposure of the plant personnel to airborne contamination and shall implement ALARA concepts as practical to minimize operator exposures.	Order 6430.1A, Section 1161-1		The design objective is established in Functional Requirements and Technical Criteria for the 241 SY-101 RAPID Mitigation System and RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering report		
239	The enclosure system, including its internal and external support structures, shall be designed to withstand the effects of normal operating conditions and the environment.	Order 6430.1A, Section 1161-1		Normal operating conditions and environment are defined and established as design bases in Functional Requirements and Technical Criteria for the 241 SY-101 RAPID Mitigation System and SDC		
240	...DBAs such as fire, explosion, ...and natural phenomena shall be considered in the design of the enclosure.	Order 6430.1A, Section 1161-1		DBAs are defined and analyzed in the BIO and are established as design bases in Functional Requirements and Technical Criteria for the 241 SY-101 RAPID Mitigation System		
241	Enclosure stability during a seismic event shall be based on the seismic parameters described in Section 0111-99.D.4, Earthquakes.	Order 6430.1A, Section 1161-1		Seismic parameters are defined in the BIO and are established as design bases in Functional Requirements and Technical Criteria for the 241 SY-101 RAPID Mitigation System		
242	Where practical and without penetrating the enclosure, all equipment components not functionally required to operate directly in the presence of radioactive materials shall be located outside the enclosure.	Order 6430.1A, Section 1161-1		The water support skid is not functionally required to operate directly in the presence of radioactive materials and is located outside the enclosure. Other SSCs comprise parts of the "enclosure"		
243	All equipment that must be located within the enclosure shall be designed to allow for in-place maintenance and/or replacement.	Order 6430.1A, Section 1161-1		spray ring and high pressure flush, P3 maintenance holes		
244	The design ... of support and protection systems ... shall not promote the failure of the enclosure system integrity or the loss of confinement.	Order 6430.1A, Section 1161-1		Design requirements included the maintenance of the enclosure system integrity. The enclosure system was designed to require minimal maintenance and be robust.		
245	Noncombustible or fire-resistant and corrosion-resistant materials shall be used for enclosures.	Order 6430.1A, Section 1161-2		Enclosure SSCs are Stainless Steel		
246	Noncombustible or fire-resistant and corrosion-resistant materials shall be used, to the maximum extent practicable, for any required radiation shielding.	Order 6430.1A, Section 1161-2		Specified radiation shielding materials for the Mitigation System are limited to concrete, SS, and lead		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
247	In no case shall the total combustible loading located in a fire area exceed the fire resistance rating of the structural envelope (see Section 0110-99.0.6, Fire Resistance). This shall be documented in a fire risk analysis performed according to a methodology approved by the DOE Fire Protection Authority.	Order 6430.1A, Section 1161-2		The SSCs of the mitigation system do not add to the total combustible loading in the Tank Farm. The specified materials of construction are noncombustible.		
248	Enclosures ... shall be designed with the objective of being leak-tight.	Order 6430.1A, Section 1161-2		All SSCs of the enclosure are designed to be leak tight to the level appropriate to their release prevention or mitigation functions. The Prefabricated Pump Pit cover is intended to allow sufficient leakage of ambient air so that the active ventilation system of SY-102 can maintain the interior of the Pit at a negative pressure.		
249	In conjunction with their ventilation systems, all enclosures shall be capable of maintaining confinement (i.e., negative pressure with respect to the surrounding operating area).	Order 6430.1A, Section 1161-2		The SSCs of the enclosure are safety class and maintain confinement in conjunction with the ventilation system of SY-102		
250	Without their associated ventilation systems enclosures shall be designed with appropriate physical features to provide an essentially leak-tight confinement ... for the containmentants they handle.	Order 6430.1A, Section 1161-2		Without SY-102 ventilation, the SSCs of the enclosure remain leak tight except for the P3 cover, which continues to mitigate a spray leak, as analyzed in the BIO.		
251	Enclosure specifications should include the following standardized features, where applicable: Ease of cleaning (radius corners, smooth interior and exterior surfaces, minimal protruberances, and accessibility of all parts) Adequate interior illumination (from fixtures mounted on the exterior where feasible) Connections for services lines, conduits, instrument leads and ductwork Fire barriers and filter installation, Sample removal ports Pressure differential readouts.	Order 6430.1A, Section 1161-2		Applicable features are included in individual SSC specifications		
252	closure devices or permanent seals shall be provided on entrances and exits of piping, ducts, or conduits penetrating confinement barriers. Such closures or seals shall have an integrity equal to or greater than the barrier itself.	Order 6430.1A, Section 1161-2		Applicable features are included in individual SSC specifications		
253	Where pertinent to safety, the enclosure design shall consider the heat generation in the enclosure.	Order 6430.1A, Section 1161-2		Heat generation within the enclosure is not pertinent to safety; the criterion is not applicable.		

DESIGN COMPLIANCE MATRIX					
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System					
ORDER 6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference
254	Consideration shall be given to modular construction, versatility, relocation, and incorporation of shielding.	Order 6430.1A, Section 1161-2		Modular construction is incorporated into the system design in the case of the water support skid, which is separated from radioactive materials and could conceivably be relocated for another use. Other SSCs are custom designed for unique locations and configurations. Structural strength and mounting appurtenances for shielding are incorporated into the PPP design.	
255	Structural support shall be provided to accommodate any anticipated loading resulting from shielding.	Order 6430.1A, Section 1161-2		Structural strength and mounting appurtenances for shielding are incorporated into the PPP design.	
256	Discrete work stations or process areas shall be separated from each other by a barrier designed to prevent the spread of fire based on safety analysts review.	Order 6430.1A, Section 1161-2		Safety analysis (BIO) does not identify any appropriate applications of this criterion to the Mitigation System design.	
257	[F]ire detection shall be installed.	Order 6430.1A, Section 1161-3		Summary of Tank 241 SY-101 Waste Transfer Hazard and Accident Analyses; Safety, Structures, Systems, and Components; and Technical Safety Requirements (DRAFT) does not establish any requirement for new fire detection instrumentation.	
258	Provisions shall also be made for manual fire suppression where deemed necessary.	Order 6430.1A, Section 1161-3		Summary of Tank 241 SY-101 Waste Transfer Hazard and Accident Analyses; Safety, Structures, Systems, and Components; and Technical Safety Requirements (DRAFT) does not establish any requirement for new manual fire suppression equipment.	
259	Fire detection systems shall be integrated with any central alarm location and any associated automatic fire suppression systems.	Order 6430.1A, Section 1161-3		There are no applicable fire detection systems	
260	A ventilation system shall be installed on all enclosure systems to maintain a minimum negative pressure differential of 0.3 in. of water inside the enclosure with respect to the operating area.	Order 6430.1A, Section 1161-4		The required minimum negative pressure differential is achieved by connection of the enclosure (PPP, transfer enclosure, and drop leg) to the active ventilation system of SY-102	
261	Safety class items of the ventilation system shall be supplied with emergency power.	Order 6430.1A, Section 1161-4		Operating Enabling Assumption 5.2.1.5, SY Exhauster, of HNF-3824, documents that connection to the ventilation system of SY-102 is appropriate compliance with this criterion.	
262	[For safety class items.] [Failure of any single component or control function shall not compromise minimum adequate ventilation.	Order 6430.1A, Section 1161-4		Operating Enabling Assumption 5.2.1.5, SY Exhauster, of HNF-3824, documents that connection to the ventilation system of SY-102 is appropriate compliance with this criterion.	
263	The design professional shall consider the possible necessity to remove moisture, heat, and explosive and corrosive gases, as well as other contaminants.	Order 6430.1A, Section 1161-4		Operating Enabling Assumption 5.2.1.5, SY Exhauster, of HNF-3824, documents that connection to the ventilation system of SY-102 is appropriate compliance with this criterion.	
264	HEPA filters shall be provided at the interface of the enclosure outlet and the ventilation system to minimize the contamination of ductwork and at the enclosure inlet to prevent movement of contamination within the enclosure to the operating area in the event of a flow reversal. A roughing filter should be installed to reduce HEPA filter loading.	Order 6430.1A, Section 1161-4		Operating Enabling Assumption 5.2.1.5, SY Exhauster, of HNF-3824, documents that connection to the ventilation system of SY-102 is appropriate compliance with this criterion.	

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION			
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
265	The system shall be designed to automatically ensure adequate inflow of air through a credible breach in the enclosure system. Minimum inward air velocity shall be 125 plus or minus 25 linear ft/min or as determined from guidance provided in the ACGIH Industrial Ventilation Manual.	Order 6430.1A, Section 1161-4		Operating Enabling Assumption 5.2.1.5, SY Exhauster, of HNF-3824, documents that connection to the ventilation system of SY-102 is appropriate compliance with this criterion.		
266	The design of the enclosure ventilation flow pattern shall minimize the spread of fire, and fire screens shall be provided where necessary.	Order 6430.1A, Section 1161-4		Operating Enabling Assumption 5.2.1.5, SY Exhauster, of HNF-3824, documents that connection to the ventilation system of SY-102 is appropriate compliance with this criterion.		
267	For enclosures where overpressurization is possible, a system shall be provided to ensure that confinement is not breached.	Order 6430.1A, Section 1161-4		The PPP cover has a total of 11 open penetrations; overpressurization is not possible. (reference TBD)		
268	Shielding, shape, size, and any other pertinent design criteria for all enclosures ... and process equipment should be coordinated with operations requirements to ensure continuity and performance of operations.	Order 6430.1A, Section 1161-5		The required coordination results from TWO personnel participation in the design review process.		
269	The design of special facilities shall: Protect the public and facility personnel from hazards associated with the use of radioactive and other hazardous materials as a result of normal operations, anticipated operational occurrences, and DBA conditions, including the effects of natural phenomena pertinent to the site, and maintain these effects ALARA.	Order 6430.1A, Section 1300-1.3		The BIO analyses and amended AB document compliance with this criterion		
270	The design of special facilities shall: Ensure compliance with DOE policies regarding nuclear safety, ... radiation safety, ... industrial safety, fire protection, environmental protection...	Order 6430.1A, Section 1300-1.3		The BIO analyses and amended AB, as well as this compliance matrix, document compliance with this criterion		
271	The design of special facilities shall: Protect government property and essential operations from the effects of potential accidents	Order 6430.1A, Section 1300-1.3		The BIO analyses and amended AB document compliance with this criterion		
272	Minimize exposures of personnel and the general public to hazardous materials by emphasizing ALARA concerns during all design, construction, and operational phases of special facilities	Order 6430.1A, Section 1300-1.3		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft		
273	The design of new or modification of existing special facilities shall address the health hazards represented by all hazardous materials in enclosures, general work areas, and noncontaminated areas.	Order 6430.1A, Section 1300-1.3		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft		

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
274	The release of hazardous materials under normal operating conditions and anticipated operational upset occurrences shall be designed to be less than release guideline limits contained in applicable orders, regulations, and requirements. In addition, to the extent practical, such releases shall be maintained ALARA	Order 6430.1A, Section 1300-1.3		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering , TWR-4176, Draft		
275	Consideration shall be given to the frequency of occurrence and the effects of DBAs in the design features of special facilities. The depth of the risk analysis involved in this consideration should be in some measure proportional to the level of risk at the facility under consideration.	Order 6430.1A, Section 1300-1.3		The depth of the risk analysis appropriate for this project is the level of analysis contained in the BIO for above-ground waste transfers. The BIO analysis considers frequency and effects of DBAs.		
276	Protection of employees within the facility and at nearby facilities shall be a requirement in all aspects of the design.	Order 6430.1A, Section 1300-1.3		Maintenance of system integrity is the means of ensuring personnel and facility protection. This was met by meeting the design requirements.		
277	Protection shall be provided for normal operation and for those accidents that can be anticipated as occurring during the facility lifetime such as radioactive material spills and small fires controlled by the facility fire suppression system.	Order 6430.1A, Section 1300-1.3		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering , TWR-4176, Draft		
278	Occupational exposure to radiation shall be limited according to DOE 5480.11.	Order 6430.1A, Section 1300-1.3		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering , TWR-4176, Draft		
279	Design goals shall be established to maintain radiation exposure of employees ALARA.	Order 6430.1A, Section 1300-1.3		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering , TWR-4176, Draft		
280	The nature of the hazardous materials in the facility, including radionuclides, shall be considered in the assessment of potential employee exposure.	Order 6430.1A, Section 1300-1.3		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering , TWR-4176, Draft		
281	The confinement of hazardous materials produced, processed, or stored in special facilities shall be designed to minimize dose to a maximally exposed member of the public.	Order 6430.1A, Section 1300-1.4.1		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering , TWR-4176, Draft		
282	Releases of hazardous materials postulated to occur as a result of DBAs shall be limited by designing facilities such that at least one confinement system remains fully functional following any credible DBA.	Order 6430.1A, Section 1300-1.4.2		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering , TWR-4176, Draft		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
283	Facility design shall provide attenuation features for postulated accidents (up to and including DBAs) that preclude offsite releases that would cause doses in excess of the DOE 5400 series limits for public exposure.	Order 6430.1A, Section 1300-1.4.2		The BIO documents that the appropriate DBA relative to this criterion is the spray leak from overground waste transfer line. The PPP, with cover, provides mitigation of this DBA to the extent that dose limits are met.		
284	To the extent practical, ALARA concepts shall be applied when designing special facilities to mitigate post-DBA releases of hazardous materials.	Order 6430.1A, Section 1300-1.4.2		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft		
285	The annual dose resulting from postulated, planned, or expected releases from the proposed facility shall be considered in combination with the annual doses resulting from planned or expected releases from other facilities at the same site.	Order 6430.1A, Section 1300-1.4.3		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft		
286	The sum of the doses from the site shall be limited according to DOE Radiation Standards of Protection of the Public in the Vicinity of DOE Facilities or subsequent guidance included in the directive on Radiation Protection of the Public and the Environment in the DOE 5400 series.	Order 6430.1A, Section 1300-1.4.3		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft		
287	Releases shall be monitored in accordance with the directive on Radiological Effluent Monitoring and Environmental Surveillance in the DOE 5400 series.	Order 6430.1A, Section 1300-1.4.4		Mitigation System operations will be monitored in accordance with existing Tank Farm programs and procedures		
288	Safety analysis shall comply with DOE 5481.1B. See also Section 0110-5.2, Safety Analysis.	Order 6430.1A, Section 1300-2		The BIO is the functional equivalent to a DOE 5481.1B-compliant safety analysis for this project.		
289	Special facility components, systems, and structures shall be designed, fabricated, erected, and tested to standards and quality commensurate with the hazards and potential consequences associated with both the facility and the role of each component, system, and structure in mitigating the consequences of DBAs.	Order 6430.1A, Section 1300-3.1		The BIO is the functional equivalent to a DOE 5481.1B-compliant safety analysis for this project.		
290	Safety class items shall be subject to appropriately higher credit to be taken for its capabilities in a safety analysis. codes ... to increase the reliability of the item and allow quality design, fabrication, and industrial test standards and credit to be taken for its capabilities in a safety analysis.	Order 6430.1A, Section 1300-3.2		Safety Class items (per SEL) are subject to appropriately higher-quality design, fabrication, and industrial test standards and codes ... to increase the reliability of the item and allow credit to be taken for its capabilities in a safety analysis. Safety Class items are procured only from qualified suppliers, who have demonstrated compliance with the codes, standards, and QA programs required for safety class items.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Milligallon System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
291	Safety class items shall be designed to the ASME Boiler and Pressure Vessel Code (Section III, Class II) or to other comparable safety-related codes and standards that are appropriate for the system being designed.	Section 1300-3.2 Order 6430.1A		The prefabricated pump pit was designed to ASME B31.3 with supplemental requirements equivalent to ASME Boiler and Pressure Vessel Code Section III. See design specification HNF-4169, Section 2.1.		
292	Safety class and non-safety class items shall comply with Section 0140, Quality Assurance.	Order 6430.1A Section 1300-3.2		The prefabricated pump pit procurement was made from NQA-1 qualified suppliers.		
293	The design of systems, components and structures that are not safety class items shall, as a minimum, be subject to conventional industrial design standards, codes, and quality standards.	Order 6430.1A Section 1300-3.2		SSCs that are not safety class are required to comply with appropriate and applicable industrial design standard, codes, and quality standards, as called out in the DRD and specifications for individual SSCs.		
294	Failure of these items [i.e., non-safety class items] shall not adversely affect the environment or the safety and health of the public.	Order 6430.1A Section 1300-3.2		The only non-safety class item related to the installation of the prefabricated pump pit is a single pre-poured pier with four support studs. The design allows for footings are all safety class with four support studs each. Therefore, failure of the non-safety pier does not endanger the safety or health of the public.		
295	[Their] i.e., non-safety class items failure shall not prevent safety class items from performing their required functions.	Order 6430.1A Section 1300-3.2		During installation, the prefabricated pump pit's safety function, if any, is to not damage the tank or riser. Failure of the support pier will not affect this function due to redundancy of the load bearing components.		
296	The design shall ensure that a single failure does not result in the loss of capability of a safety class system to accomplish its required safety functions.	Order 6430.1A Section 1300-3.3		Support of the prefabricated pump pit is accomplished through the use of four support piers, each having four bolts. The pit can be supported by any two bolts. Provided any two bolts remain undamaged, the safety function of not damaging the tank or riser is maintained.		
297	To protect against single failures, the design shall include appropriate redundancy and shall consider diversity to minimize the possibility of concurrent common-mode failures of redundant items.	Order 6430.1A Section 1300-3.3		Common mode pier failure potential is minimized prevented by the use of evaluated suppliers and imposing appropriate codes and standards. See HNF-4169.		
298	Safety class items shall be designed to withstand the effects of, and be compatible with, the environmental conditions associated with operation, maintenance, shutdown, testing, and accidents.	Order 6430.1A Section 1300-3.4		The DRD and specifications for individual SSCs identify applicable environmental conditions with which safety class items, as identified on the SEL, must be compatible. Implementation of the design standards and codes applicable to safety class items, as noted elsewhere in this compliance matrix, provide assurance that the safety class items will withstand the effects conditions enumerated in this criterion.		
299	The environmental capability of equipment shall be demonstrated by appropriate testing, analysis, and operating experience, or other methods that can be supported by auditable documentation, or a combination of these methods.	Order 6430.1A Section 1300-3.4		The DRD and specifications for individual SSCs identify applicable environmental conditions and capabilities required. The DRD and specifications for individual SSCs also require appropriate testing, analysis, and/or operating experience, supported by documentation, from SSC designers, fabricators, and suppliers.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control	Citation
300	Equipment qualification shall provide assurance that safety class items will be capable of performing required safety functions under DBA conditions. The qualification shall demonstrate that the equipment can at least perform for the period of time that its safety functions are required.	Order 6430.1A, Section 1300-3.4		Equipment qualification of the prefabricated pump pit is met by fulfilling the structural design requirements of HNF-4252 and has been analyzed in HNF-4359. These documents and calculations have been independently reviewed by Hassan Zadea, a qualified reviewer. The gasketing material is the only material needing environmental qualification. Similar materials are qualified in nuclear plants for years in harsh environments, whereas these gaskets will be functionally required for only a matter of hours.		
301	Temperature, pressure, and humidity environments shall be based on the most severe postulated accident affecting the particular item. The postulated environment shall reflect an environment that considers both radiological composition (e.g., elements, isotopes, total radioactivity) and chemical composition (e.g., abrasives, acids, smoke, caustic vapors) of all material physical forms likely to affect the equipment.	Order 6430.1A, Section 1300-3.4		Environmental conditions were defined in the Functions and Requirements document, HNF-3885. There were no credible accident scenarios that caused the prefabricated pump pit to fail its safety class function of double shell tank and riser protection, see SD-WM-SAD-033.		
302	Testing or a combination of testing and analysis shall be the preferred method of demonstrating the operability of fluid system components, mechanical equipment that are required instrumentation, and electrical equipment that are required to operate during and following a DBE.	Order 6430.1A, Section 1300-3.4		The prefabricated pump pit is not required to operate during or following a DBE.		
303	The design shall consider the maintainability factors peculiar to the specific equipment to be used in the facility.	Order 6430.1A, Section 1300-3.5		TFFO participation in the design review process constitutes consideration of maintainability		
304	Facility design shall provide for routine maintenance, repair, or replacement of equipment subject to failure.	Order 6430.1A, Section 1300-3.5		TFFO participation in the design review process constitutes consideration of maintainability		
305	Safety class items shall be designed to allow inspection, maintenance, and testing to ensure their continued functioning, readiness for operation, and accuracy.	Order 6430.1A, Section 1300-3.5		Participation of TFO personnel in the design review process ensures that the design of safety class items allows inspection, maintenance and testing.		
306	Auxiliary equipment, such as pumps, blowers, motors, compressors, gear trains, and controls, shall be located in an area least likely to be contaminated.	Order 6430.1A, Section 1300-3.5		The water support skid will be located at a distance from the PFP and other risers of SY-101 and SY-102, in an area least likely to be contaminated. Locations of other SSCs are determined by function.		
307	The design of equipment that must be located within confinement systems shall allow for in-place maintenance or replacement.	Order 6430.1A, Section 1300-3.5		Valves and other appurtenances within PFP can be decontaminated, using the spray ring, to allow for in-place maintenance.		
308	The capability shall be provided for the maintenance of contaminated equipment that cannot be repaired in place. This capability shall include the necessary provisions for confinement, ventilation, and waste control.	Order 6430.1A, Section 1300-3.5		Maintenance of contaminated equipment that cannot be repaired in-place will be accomplished with existing facilities and handling procedures of TFO. Based on analysis in the AOA, in the event of failure the NGTP will be replaced rather than repaired.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
309	The design of all process equipment shall include features to minimize self-contamination of the equipment, piping, and confinement areas.	Order 6430.1A, Section 1300-3.5		Self contamination is minimized by specification of a smooth surface finish and stainless steel. The design also contains a drain trap to minimize self contamination.		
310	The design of process equipment shall also include features to minimize the spread of contamination out of local areas.	Order 6430.1A, Section 1300-3.5		Relevant design features include the decontamination spray ring and connection to the active ventilation system of SY-1102		
311	The design shall include provisions for periodic testing of monitoring, surveillance, and alarm systems.	Order 6430.1A, Section 1300-3.6		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
312	The design shall provide the capability to test periodically, under simulated emergency conditions, safety class items that are required to function under emergency conditions	Order 6430.1A, Section 1300-3.6		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
313	All systems for which credit is taken to meet the criteria of Section 1300-1.4.2, Accidental Releases, shall be in-place, testable in terms of pressure, filtration or removal efficiency, alarm capability, leak resistance, and the like	Order 6430.1A, Section 1300-3.6		Vent systems are testable.		
314	Safety class items shall be designed to be testable on a regular schedule.	Order 6430.1A, Section 1300-3.6		For installation, the critical issue is that no damage occurs to the riser. The primary consideration is that the elevation and attitude of the pit be correct. This is tested via surveys.		
315	The facility design shall allow for routine in-place testing of HEPA filtration systems as outlined by ASME NS10.	Order 6430.1A, Section 1300-3.6		The mitigation system does not include any HEPA filtration		
316	Special facilities shall be designed to minimize personnel exposures to external and internal radiological hazards, and provide adequate space for health physics activities.	Order 6430.1A, Section 1300-6		The mitigation system has been designed to keep exposures ALARA (RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft). Existing Tank Farm radiation monitoring and alarm systems, plus Mitigation System leak detectors, are provided. Existing Tank Farm space for health physics activities is adequate.		
317	Primary radiation protection shall be provided by the use of engineered controls (e.g., confinement, ventilation, remote handling, equipment layout, and shielding).	Order 6430.1A, Section 1300-6		Engineered controls that provide radiation protection include the safety class enclosure, remote decontamination of the PPP, shielding of the PPP and the transfer line.		
318	Secondary radiation protection shall be provided by administrative control	Order 6430.1A, Section 1300-6		Administrative controls that provide radiation protection include provisions for maximum operator distance during transfers, plus the existing administrative radiological controls of TWR.		
319	ALARA concepts shall be applied to minimize exposures where cost-effective.	Order 6430.1A, Section 1300-6		ALARA concepts that will be applied are identified and analyzed in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft		

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
320	The shielding design basis shall be to limit the maximum exposure to an individual worker to one-fifth of the annual occupational external exposure limits specified in DOE 5480.11. Within this design basis, personnel exposures shall be maintained ALARA.	Order 6430.1A, Section 1300-6		Potential exposures are identified and analyzed in the <i>BIO</i> and in <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, Draft		
321	[S]hielding shall be designed with the objective of limiting the total EDE to less than 1 rem per year to workers, based on their predicted exposure time in the normally occupied area.	Order 6430.1A, Section 1300-6		Potential exposures are identified and analyzed in the <i>BIO</i> and in <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, Draft		
322	[A]ppropriate shielding shall be installed, if necessary, to minimize nonpenetrating external radiation exposures to the skin and lens of the eye of the worker.	Order 6430.1A, Section 1300-6		Potential exposures are identified and analyzed in the <i>BIO</i> and in <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, Draft		
323	Shielding and other radiation protection measures shall be provided for areas requiring intermittent access, such as for preventive maintenance, component changes, adjustment of systems and equipment, and so forth.	Order 6430.1A, Section 1300-6		Potential exposures are identified and analyzed in the <i>BIO</i> and in <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, Draft		
324	The projected dose rates based on occupancy, time, and frequency of exposure shall not exceed 1 rem/yr.	Order 6430.1A, Section 1300-6		Potential exposures are identified and analyzed in the <i>BIO</i> and in <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, Draft		
325	Straightline penetration of shield walls shall be avoided to prevent radiation streaming.	Order 6430.1A, Section 1300-6		Penetrations in the PPP cover are straightline. However, during transfers no personnel are in the vicinity of any streaming that occurs through the penetrations. Personnel access the penetrations, such as to change valve configurations, only when transfers have stopped and the radiation source (waste) is no longer present in the PPP.		
326	Remote shielded operation (i.e., with remote handling equipment such as remote manipulators) shall be considered where it is anticipated that exposures to hands and forearms would otherwise approach the dose guidance in 5480.11 or where contaminated puncture wounds could occur.	Order 6430.1A, Section 1300-6		Design of the PPP includes provision for using long-reach valve operators through holes in the shielded pit cover, exposures are thereby reduced.		
327	The design shall ensure that occupied operating areas do not exceed the airborne concentration limits of the DOE 5480 series for normal operating conditions.	Order 6430.1A, Section 1300-6		Potential exposures are identified and analyzed in the <i>BIO</i> and in <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, Draft		
328	[T]o the extent practical, the concept of ALARA shall be used when designing confinement and ventilation systems to limit airborne contamination levels.	Order 6430.1A, Section 1300-6		Potential exposures are identified and analyzed in the <i>BIO</i> and in <i>RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering</i> , TWR-4176, Draft		
329	The design shall ensure that respirators are not required to meet the dose limits for normal operations.	Order 6430.1A, Section 1300-6		Normal operation of the Mitigation System is not planned to require additional personnel protective equipment beyond that already required for operations in the SY Tank Farm.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
330	Engineered controls and features shall also be provided to minimize potential inhalation of radioactive and other hazardous materials under all conditions.	Order 6430.1A, Section 1300-6		Potential exposures are identified and analyzed in the BIO and in RAPID SY-101 Surface Level Rise Mitigation Project Radiological Design Engineering, TWR-4176, Draft		
331	All monitoring systems shall be calibrated annually with appropriate national standards to ensure validity of reported values.	Order 6430.1A, Section 1300-6		Monitoring instruments included in the project design will be covered by the existing calibration and maintenance program and procedures of the Tank Farm		
332	All radiation monitoring, alarm, and warning systems that are required to function during a loss of normal power shall be provided with an emergency UPS (internal or external on-line) unless it is demonstrated that they can tolerate a temporary loss of function without losing needed data and they are provided with standby or emergency (switched) power.	Order 6430.1A, Section 1300-6		There is no standby power, emergency power, safety class power, or uninterruptible power available. However, the demonstrated reliability of Hanford site power meets the power requirements of this criterion.		
333	Determination of the power supply type and quality shall be based on the safety classification of the monitoring system or device. The sampling motivation (vacuum) shall be installed to the same requirement.	Order 6430.1A, Section 1300-6		There is no standby power, emergency power, safety class power, or uninterruptible power available. However, the demonstrated reliability of Hanford site power meets the power requirements of this criterion.		
334	Air monitoring and warning systems shall be installed in work areas where hazardous materials are stored or handled and where hazardous airborne particles or vapors may be present.	Order 6430.1A, Section 1300-6		Existing TWO programs, systems, equipment, and procedures meet the requirements of this criterion.		
335	Air sampling heads shall be located to provide a representative sample of potential airborne radioactive materials being breathed.	Order 6430.1A, Section 1300-6		Existing TWO programs, systems, equipment, and procedures meet the requirements of this criterion.		
336	Air monitoring systems shall comply with ANSI N13.1.	Order 6430.1A, Section 1300-6		Existing TWO programs, systems, equipment, and procedures meet the requirements of this criterion.		
337	Use of devices to warn personnel of possible contamination or other hazardous materials shall be evaluated and such devices shall be provided in accordance with this evaluation.	Order 6430.1A, Section 1300-6		Existing TWO programs, systems, equipment, and procedures meet the requirements of this criterion.		
338	Provisions shall be made for personnel monitoring devices, such as hand and foot counters, in the vicinity of work stations.	Order 6430.1A, Section 1300-6		Existing TWO programs, systems, equipment, and procedures meet the requirements of this criterion.		
339	Installed monitors (supplemented with personal monitoring methods if necessary) shall be used to monitor personnel exiting an operating area through access ways.	Order 6430.1A, Section 1300-6		Existing TWO programs, systems, equipment, and procedures meet the requirements of this criterion.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION			
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
340	CAMSs shall be provided to detect and to alarm at prescribed airborne radioactivity levels.	Order 6430.1A, Section 1300-6		Existing TWO programs, systems, equipment, and procedures meet the requirements of this criterion.		
341	Where ionizing radiation is present (due to process material, equipment, or operations), an area radiation monitoring and alarm system shall be provided to alert personnel of unexpected increases in ionizing radiation levels.	Order 6430.1A, Section 1300-6		Existing TWO programs, systems, equipment, and procedures meet the requirements of this criterion.		
342	Warning and alarm systems shall be designed, installed, and tested to ensure that they can be heard in the ambient conditions of the area they are intended to cover.	Order 6430.1A, Section 1300-6		Existing TWO programs, systems, equipment, and procedures meet the requirements of this criterion.		
343	Evacuation alarm systems shall comply with ANSI N2.3.	Order 6430.1A, Section 1300-6		Existing TWO programs, systems, equipment, and procedures meet the requirements of this criterion.		
344	In addition to a local station alarm, radiation monitoring systems (criticality alarms, CAMSs, alarms associated with stack monitoring systems, and so on) shall have central (i.e., control room or radiation monitoring office) readout and alarm panels that are accessible after a DBA to evaluate internal conditions.	Order 6430.1A, Section 1300-6		Existing TWO programs, systems, equipment, and procedures meet the requirements of this criterion.		
345	Design shall provide for personnel decontamination facilities close to areas that represent sources of potential contamination.	Order 6430.1A, Section 1300-6		Existing TWO programs, systems, equipment, and procedures meet the requirements of this criterion.		
346	Meteorological equipment shall be provided to measure and record wind speed and direction.	Order 6430.1A, Section 1300-6		Data from existing Tank Farm and Hanford equipment is sufficient for compliance		
347	Consideration shall be given to the need for additional equipment to provide meteorological parameters such as humidity data and wind direction frequencies for heights related to the estimated heights at which stack effluents and cooling tower moisture will be dispersed.	Order 6430.1A, Section 1300-6		Data from existing Tank Farm and Hanford equipment is sufficient for compliance. No stacks or cooling towers are within the scope of this project		
348	As necessary, special equipment for stack effluent dispersal and tracking shall be considered for installation.	Order 6430.1A, Section 1300-6		Data from existing Tank Farm and Hanford equipment is sufficient for compliance. No stacks are within the scope of this project		
349	Central site meteorological monitoring capability shall be considered as a substitute for individual facility monitoring.	Order 6430.1A, Section 1300-6		Available meteorological monitoring is used in lieu of new monitoring capability		
350	Confinement systems shall minimize the spread of radioactive and other hazardous materials within the unoccupied process areas.	Order 6430.1A, Section 1300-7.1		The design of the confinement system, comprised of the SY-101 riser extension, the Prefabricated Pump Pit, the transfer encasement, and the SY-102 riser extension (an element of the drop leg), meets the requirements of this criterion as analyzed and documented in TWR-4176.		
351	Confinement systems shall prevent, if possible, or else minimize the spread of radioactive and other hazardous materials to occupied areas	Order 6430.1A, Section 1300-7.1		The design of the confinement system, comprised of the SY-101 riser extension, the Prefabricated Pump Pit, the transfer encasement, and the SY-102 riser extension (an element of the drop leg), meets the requirements of this criterion as analyzed and documented in TWR-4176.		
352	Confinement systems shall minimize the release of radioactive and other hazardous materials in facility effluents during normal operation and anticipated operational occurrences	Order 6430.1A, Section 1300-7.1		The design of the confinement system, comprised of the SY-101 riser extension, the Prefabricated Pump Pit, the transfer encasement, and the SY-102 riser extension (an element of the drop leg), meets the requirements of this criterion as analyzed and documented in TWR-4176.		

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
353	Confinement systems shall limit the release of radioactive and other hazardous materials resulting from DBAs including severe natural phenomena and man-made events in compliance with the guidelines contained in Section 1300 1.4.2, Accidental Releases.	Order 6430.1A, Section 1300-7.1		The design of the confinement system, comprised of the SY-101 riser extension, the Prefabricated Pump Pit, the transfer encasement, and the SY-102 riser extension (an element of the drop leg), meets the requirements of this criterion as analyzed and documented in TWR-4176.		
354	Confinement systems shall minimize the spread of radioactive and other hazardous materials within the unoccupied process areas	Order 6430.1A, Section 1300-7.1		The design of the confinement system, comprised of the SY-101 riser extension, the Prefabricated Pump Pit, the transfer encasement, and the SY-102 riser extension (an element of the drop leg), meets the requirements of this criterion as analyzed and documented in TWR-4176.		
355	Confinement systems shall prevent, if possible, or else minimize the spread of radioactive and other hazardous materials to occupied areas	Order 6430.1A, Section 1300-7.1		The design of the confinement system, comprised of the SY-101 riser extension, the Prefabricated Pump Pit, the transfer encasement, and the SY-102 riser extension (an element of the drop leg), meets the requirements of this criterion as analyzed and documented in TWR-4176.		
356	Confinement systems shall minimize the release of radioactive and other hazardous materials in facility effluents during normal operation and anticipated operational occurrences	Order 6430.1A, Section 1300-7.1		The design of the confinement system, comprised of the SY-101 riser extension, the Prefabricated Pump Pit, the transfer encasement, and the SY-102 riser extension (an element of the drop leg), meets the requirements of this criterion as analyzed and documented in TWR-4176.		
357	Confinement systems shall limit the release of radioactive and other hazardous materials resulting from DBAs including severe natural phenomena and man-made events in compliance with the guidelines contained in Section 1300 1.4.2, Accidental Releases.	Order 6430.1A, Section 1300-7.1		The design of the confinement system, comprised of the SY-101 riser extension, the Prefabricated Pump Pit, the transfer encasement, and the SY-102 riser extension (an element of the drop leg), meets the requirements of this criterion as analyzed and documented in TWR-4176.		
358	For a specific nuclear facility, the number and arrangement of confinement barriers and their required design features and characteristics shall be determined on a case-by-case basis. ... Engineering evaluations, trade-offs, and experience shall be used to develop a practical design that achieves confinement system objectives.	Order 6430.1A, Section 1300-7.2		Confinement barriers are in accord with STD-1020. Specifically, the primary confinement boundary is the pump column, the distribution and valving appurtenances in the PPP, the transfer line and the drop leg. The secondary confinement boundary is comprised of the SY-101 riser extension, the Prefabricated Pump Pit, the transfer encasement, and the SY-102 riser extension. The tertiary confinement is the soil surrounding the SY Tank Farm. Based on engineering evaluations, the secondary confinement barrier is classified as safety class.		
359	Although individual confinement systems are not required to withstand the effects of every accident, they shall effectively perform their required functions for the DBAs they are required to withstand.	Order 6430.1A, Section 1300-7.2		The confinement system is required to withstand the DBE. Individual SSCs of the confinement system are classified as safety class, required to perform their confinement function following the DBE.		
360	Sufficient redundancy shall be provided in the unlikely event of a confinement system failure.	Order 6430.1A, Section 1300-7.2		The safety class confinement system is actually the secondary confinement boundary. Redundancy is provided by the primary confinement boundary (pump column and transfer line) and the tertiary confinement boundary (soil).		
361	At least one of the confinement systems shall be designed to ensure that it can withstand the effects of severe natural phenomena and man-made events, including the postulated DBAs and DBF initiated by these events, and remain functional to the extent that the guidelines of Section 1300-1.4.2 Accidental Releases, are not violated.	Order 6430.1A, Section 1300-7.2		The secondary confinement system is designated safety class and is designed to remain functional following NPH and DBAs.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
362	The adequacy of the design of these confinement systems to effectively perform their required functions shall be demonstrated by the safety analysis.	Order 6430.1A, Section 1300-7.2		The secondary confinement system is designated safety class and is designed to remain functional following NPH and DBAs. The adequacy of the safety class system to perform the required function is demonstrated by analysis in the BIO		
363	To the extent practical, the ALARA concept shall be applied to the design of all confinement systems to minimize exposures to hazardous materials.	Order 6430.1A, Section 1300-7.2		The ALARA concept is fully applied to all of the Mitigation System, as documented in TWR-4176		
364	Design of confinement areas shall provide adequate means for decontamination of the areas prior to entry or breaching for maintenance and repair purposes.	Order 6430.1A, Section 1300-7.2		The PPP design includes the remotely operable decontaminatin spray ring.		
365	Double-walled pipes or pipes within a secondary confinement structure encasement shall be used in all areas where the primary pipe leaves the facility.	Order 6430.1A, Section 1300-7.4		The transfer pipe is confined within a safety class encasement		
366	In areas within the facility, the use of double-walled pipe shall be considered.	Order 6430.1A, Section 1300-7.4		The transfer pipe is confined within a safety class encasement		
367	Leakage monitoring shall be provided to detect leakage into the space between the primary pipe and the secondary confinement barrier.	Order 6430.1A, Section 1300-7.4		Safety class leak detectors are incorporated into the design		
368	Process systems shall minimize the production of wastes at the sources and minimize the mixing of radioactive and nonradioactive hazardous wastes.	Order 6430.1A, Section 1300-8		Operations waste management, including waste minimization and avoidance of mixed waste generation, is conducted within the existing Tank Farm Radioactive Waste Management Program and Procedures, which in turn are compliant with the Order.		
369	The waste management systems shall provide facilities and equipment (or incorporate existing facilities and equipment) to handle ... wastes safely and effectively.	Order 6430.1A, Section 1300-8		Operations waste management is conducted within the existing Tank Farm Radioactive Waste Management Program and Procedures, which in turn are compliant with the Order.		
370	Volume reduction equipment for both liquid and solid wastes shall be required where feasible and shall be designed for process capability and capacity commensurate with the types and quantities of wastes expected.	Order 6430.1A, Section 1300-8		Operations waste management is conducted within the existing Tank Farm Radioactive Waste Management Program and Procedures, which in turn are compliant with the Order.		
371	Waste handling areas shall comply with the standards of confinement and ventilation requirements commensurate with the potential for spreading contamination by the waste packages/forms handled.	Order 6430.1A, Section 1300-8		Operations waste management is conducted within the existing Tank Farm Radioactive Waste Management Program and Procedures, which in turn are compliant with the Order.		
372	Design of the areas in a facility that may become contaminated with radioactive or other hazardous materials under normal or abnormal operating conditions shall incorporate measures to simplify future decontamination.	Order 6430.1A, Section 1300-11		The PPP design includes the remotely operable decontaminatin spray ring. The water support skid provides capability for decontamination of the transfer line by water flushing.		
373	Such items as service piping, conduits, and ductwork shall be kept to a minimum in these areas and shall be arranged to facilitate decontamination.	Order 6430.1A, Section 1300-11		Service piping and conduits in potentially contaminated areas are minimized to the extent compatible with the system function by use of the water support skid. Appurtenances within the PPP are arranged to facilitate decontaminatin by the spray ring.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
374	Filters shall be positioned in ventilation systems in locations that minimize contamination of ductwork.	Order 6430.1A, Section 1300-11		No applicable SSCs are within scope of project		
375	Walls, ceilings, and floors shall be finished with washable or stripable coverings.	Order 6430.1A, Section 1300-11		Chosen material of construction for potentially contaminated surfaces is SS		
376	In some areas, metal liners shall be required.	Order 6430.1A, Section 1300-11		The P3 is SS		
377	If necessary all cracks, crevices, and joints shall be caulked or sealed and finished smooth to prevent contaminated material accumulation in inaccessible areas.	Order 6430.1A, Section 1300-11		Stainless steel surfaces are specified to a finish of TDB ms		
378	Finishes shall comply with Section 0900-99, Special Facilities.	Order 6430.1A, Section 1300-11		Specified finishes for SSCs meet the applicable requirements of this criterion.		
379	Designs consistent with the program requirements of DOE 5820.2A (Radioactive Waste Management) shall be developed during the planning and design phases based on a proposed decommissioning method or a conversion method leading to other uses.	Order 6430.1A, Section 1300-11		Operations waste management is conducted within the existing Tank Farm Radiactive Waste Management Program and Procedures, which in turn are compliant with the Order. A D&D plan is being developed as a design element.		
380	The facility design shall include features that will facilitate decontamination for future decommissioning, increase the potential for other uses, or both.	Order 6430.1A, Section 1300-11		Required features are the PPP decontamination spray ring and the provision for transfer line flush		
381	[T]he following design principles shall be considered for facilities handling radioactive and other hazardous materials: Use of modular, separable confinements for radioactive and other hazardous materials ...; use of localized liquid transfer systems that avoid long runs of buried contaminated piping; ...; equipment, including effluent decontamination equipment, that precludes the accumulation of radioactive or other hazardous materials in relatively inaccessible areas; accessible, removable inspection covers are encouraged to allow visual inspection; materials that ... are easily decontaminated Designs that ease cut-up, dismantlement, removal and packaging of contaminated equipment from the facility; use of modular radiation shielding; Use of lifting lugs on large tanks and equipment; Fully drainable piping systems that carry contaminated or potentially contaminated liquids	Order 6430.1A, Section 1300-11		Each of the design principles listed has been incorporated into appropriate sections of the system design		

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
382	It is DOE policy to ensure that appropriate human factors technology is considered in the design, operation, and maintenance of Departmental nonreactor nuclear facilities.	Order 6430.1A, Section 1300-12		Compliance with the DOE policy results from: (1) Design/build SSC contractors are required to meet requirements of the Functions and Requirements Document, including layout of displays, labeling of components, and control orientation should be readable and adhere to the guidelines of MIL-STD-1472C, "Human Engineering Design Criteria for Military Systems, Equipment, and Facilities", EPRI NP-3659, "Human Factors Guide for Nuclear Power Plant Control Room," to the extent practical. The requirements of HNF-IP-0842, Volume IV, Section 4.14, "Tank Farm Operations Equipment Labeling and Master Equipment List Control" shall be met. The design of the RAPID system should follow the guidance of UCRL-15673, "Human Factors Design Guidelines for Maintainability of DOE Nuclear Facilities." (2) Appropriate operations and maintenance human factors issues are addressed by inclusion of Tank Farm O&M personnel in the design review process.		
383	The design objective shall be to ensure that conservatively estimated consequences of normal operations and credible accidents are limited in accordance with the guidelines contained in Section 1300-1.4, Guidance on Limiting Exposure of the Public.	Order 6430.1A, Section 1323-2		The project is within the scope of the BIO, in which analyses document compliance with this criterion		
384	The use of multiple barriers shall be emphasized when necessary to restrict the movement of radioactive liquid waste that has the potential for human contact or for reducing groundwater quality below the requirements in DOE 5400.1.	Order 6430.1A, Section 1323-4.1		The system incorporates primary, secondary, and tertiary confinement barriers (as defined in STD-10207)		
385	Measurement capability shall be provided to determine the volume and radioactivity of wastes fed to collection tank(s).	Order 6430.1A, Section 1323-4.2		Flow meters and totalizers (waster support skid and P3) provide the required capability		
386	Individual lines shall be used for each waste stream fed to central collection tanks, where necessary, to prevent chemical reactions or introduction of contaminants such as complexing agents that could interfere with waste decontamination.	Order 6430.1A, Section 1323-4.2		Only one transfer line is within the scope of this project		
387	The use of traps in radioactive liquid waste lines shall be avoided.	Order 6430.1A, Section 1323-4.2		The only trap in the prefabricated pump pit is a "P" trap on a drain line required to fulfill the safety function of preventing the release of gases from the tank.		
388	[P]iping shall be designed to minimize entrapment and buildup of solids in the system.	Order 6430.1A, Section 1323-4.2		The transfer pipe has been designed with a minimum flow velocity of (??) to ensure that solids in the waste remain suspended. Low points in the transfer line, P3, and drop leg have been minimized		
389	Bypasses that would allow waste streams to be routed around collection tanks shall be avoided.	Order 6430.1A, Section 1323-4.2		No proscribed bypasses are included in the design		
390	Provisions shall be made so that liquids can be analyzed prior to transfer.	Order 6430.1A, Section 1323-4.3		Contents of SY-101 have been sampled and analyzed as appropriate to design and operations planning.		

DESIGN COMPLIANCE MATRIX									
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System									
ORDER 6430.1A REQUIREMENTS					DESIGN COMPLIANCE CITATION				
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control	Citation			
391	All transfer lines shall have individual identification.	Order 6430.1A, Section 1323-4.3		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.					
392	Provisions shall be made to adjust liquid waste characteristics prior to [transfer].	Order 6430.1A, Section 1323-4.3		Provisions have been made to add hot dilution water to the waste during transfer. This provision adjusts viscosity. No other waste characteristics adjustment are deemed necessary.					
393	There shall be no bypasses or drains in the radioactive liquid waste [transfer] system by which waste may inadvertently be released directly to the environment.	Order 6430.1A, Section 1323-4.3		All drainage from the system (primary or secondary confinement) directs waste back into SY-101					
394	The actual confinement system requirements for a specific RLVF shall be determined on a case-by-case basis.	Order 6430.1A, Section 1323-5		The secondary confinement system, comprised of the SY-101 riser extension, the P3, the transfer encasement, and the drop leg distribution enclosure, have been determined to be safety class. (SEL)					
395	Systems, components, and structures that compose the transfer system shall be designed to ensure their integrity for all normal operations, anticipated operational occurrences, and DBAs they are required to withstand.	Order 6430.1A, Section 1323-5		Applicable SSCs are identified on the SEL. The SSCs are designed to maintain the safety function during normal operations, anticipated operational occurrences, and following DBAs.					
396	Unless it can be demonstrated that the risk is acceptable, the [transfer] system and/or associated supports shall be designed to remain functional following a DBE, and shall facilitate the maintenance of a safe shutdown condition.	Order 6430.1A, Section 1323-5		Applicable SSCs are identified on the SEL. The SSCs are designed to maintain the safety function following a DBE					
397	portions of the [transfer system] whose failure would result in an unacceptable risk and whose functions shall be designed to facilitate a safe shutdown condition shall be designed to remain functional following a DBE.	Order 6430.1A, Section 1323-5		Applicable SSCs are identified on the SEL. The SSCs are designed to maintain the safety function following a DBE					
398	The primary confinement system consisting of the process [piping] shall be designed to operate under process conditions that prevent or minimize the probability of potential explosive chemical reactions.	Order 6430.1A, Section 1323-5		The design will not increase the probability of potential explosive chemical reactions.					
399	Spills, overflow, or leakage from ... primary confinement structures [e.g., the transfer pipe] shall be collected and retained within a suitable secondary confinement structure [e.g., the transfer encasement].	Order 6430.1A, Section 1323-5		Leakage from the transfer pipe or from the appendances within the P3 are collected and retained within the transfer encasement or P3, respectively. Collected leakage is drained back into SY-101					
400	The secondary confinement structure shall be capable of retaining the maximum radioactive liquid ... inventory that may be released by a spill, overflow, or leak from the primary confinement structure.	Order 6430.1A, Section 1323-5		This design requirement is defined in the Functional Requirements (Functional Requirements and Technical Criteria for the 241 SY-101 RAPID Mitigation System)					
401	For outdoor applications, the capacity must also include maximum predicted precipitation.	Order 6430.1A, Section 1323-5		No SSC is open to collect precipitation					

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
402	The capability shall exist to transfer such collected liquid from the secondary confinement structure to a suitable storage location.	Order 6430.1A, Section 1323-5		Liquid collected in the secondary confinement structure (i.e., the transfer encasement and the P3) drains into Tank SY-101		
403	At least one confinement system shall be designed to withstand the effects of man-made events and DBAs.	Order 6430.1A, Section 1323-5		The secondary confinement system (i.e., the transfer encasement and the P3) is categorized as safety class and is qualified to the DBE		
404	The ... secondary ... confinement (i.e., the transfer line encasement and the Prefabricated Pump Pit) and associated ventilation systems shall be designed to remain functional during normal operations, anticipated operational occurrences and for the DBAs they are required to withstand.	Order 6430.1A, Section 1323-5		The transfer encasement and the P3 are designed to maintain the confinement function following a DBE. The "associated ventilation system" is the SY-101 tank ventilation system. Loss of operability or confinement integrity of the tank ventilation system is within the scope of the BIO		
405	[P]iping systems used for high-level liquid waste [transfers] shall be of welded construction to the fullest extent practical. Materials of construction shall be selected to minimize all forms of corrosion.	Order 6430.1A, Section 1323-5		SSCs are of welded construction to the extent practicable taking into account maintenance and decontamination requirements. Principal materials of construction are stainless steel or non-metallic pipe		
406	Consideration shall be given to stress relieving, welding parameter controls, etc., depending on the materials used.	Order 6430.1A, Section 1323-5		304-L Stainless steel selected as material of construction so that stress relieving is not required.		
407	Provisions shall be made to detect leakage from the primary confinement (e.g., the transfer piping) to the interspace [between the transfer piping and the encasement].	Order 6430.1A, Section 1323-5		Safety-class leak detectors are specified		
408	Installation of spare pipe lines between transfer points shall be considered.	Order 6430.1A, Section 1323-5		A spare transfer line is specified.		
409	Process vessels shall be vented through appropriate treatment systems that control the release of radioactive material in gaseous effluents to the extent that the guidelines referenced in Section 1300-1.4.3, Routine Releases, are not exceeded and these releases are ALARA.	Order 6430.1A, Section 1323-5		The transfer encasement and the Prefabricated Pump Pit are maintained at a negative pressure relative to ambient via connection to the actively-ventilated tank head space		
410	Integrity of the primary confinement boundary shall be determined by some or all of the following measures: ... inventory monitoring; on-line leakage monitoring for the interspace; leakage monitoring outside confinement vessels; or capability for periodic visual surveillance, including remote visual surveillance with CCTV	Order 6430.1A, Section 1323-5		Integrity of the primary confinement boundary is determined by safety class leak detectors within the transfer pipe-transfer encasement interspace		
411	Insulation shall be considered for equipment, ductwork, piping, flue pipe, and breeching to minimize energy loss, to prevent condensation, and to provide safe surface temperatures.	Order 6430.1A, Section 1525		Insulation is specified for the fiberglass tank (GFE), the pump output hose, the heated water inlet, and the accumulator tank.		

DESIGN COMPLIANCE MATRIX					
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System					
DESIGN COMPLIANCE CITATION			ORDER 6430.1A REQUIREMENTS		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference Citation
412	All insulation material, media used to apply insulation, and jacking material shall have a maximum flame spread of not more than 25 feet-contributed and smoke-developed ratings of not over 50 when tested using UL 723 Test Methods.	Order 6430.1A, Section 1525		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.	
413	Exception to the smoke-developed rating of 50 shall be made for exterior underground piping and exterior above-ground piping beyond 15 feet from buildings or individual supports	Order 6430.1A, Section 1525		The Water Support Skid is exempt from the smoke-developed rating criterion because it is comprised of exterior above-ground SSCs beyond 15 feet from buildings or supports.	
414	Asbestos or asbestos-containing materials shall not be used.	Order 6430.1A, Section 1525		No asbestos or asbestos-containing materials have been specified.	
415	Insulation thicknesses for exterior and underground distribution systems and equipment shall be based on the TEMA Economic Thickness Manual.	Order 6430.1A, Section 1525		HNF-4043, Specification for SY-101 Rapid Mitigation Mobile Water Support Skid, Section 6.2.1.4.3, Calculations, requires that the design/build vendor document heat loss calculations	
416	Insulation material, thickness, and jacking shall be designed to provide an exterior skin surface temperature greater than the minimum anticipated ambient dew point.	Order 6430.1A, Section 1525		HNF-4043, Specification for SY-101 Rapid Mitigation Mobile Water Support Skid, Section 6.2.1.4.3, Calculations, requires that the design/build vendor document heat loss calculations	
417	Insulation shall be provided on hot and cold generation equipment, ductwork, piping, flues or breeching, using a material, thickness, and surface treatment that will maintain the surface temperature between 35°F and 125°F for conductive surfaces or between 32°F and 1500°F for nonconductive surfaces.	Order 6430.1A, Section 1525		HNF-4043, Specification for SY-101 Rapid Mitigation Mobile Water Support Skid, Section 3.5.1, Insulation, incorporates the requirements of this criterion by reference to OSHA requirements.	
418	Fire protection systems shall comply with DOE 6480.7.	Order 6430.1A, Section 1530		There are no new fire protection systems, or modifications to existing fire protection systems, in project scope	
419	All systems shall comply with NFPA 70 and ANSI C2.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.	
420	Electrical systems shall be designed so that all components operate within their capacities for initial and projected loads.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.	
421	Preferred standard voltages in conformance with ANSI C84.1 shall be used, with a single-voltage level characteristic in any classification, to minimize stocks of spare equipment and to standardize operating and maintenance practices and procedures.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.	

DESIGN COMPLIANCE MATRIX					
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Fit (PPF) for the 241-SY-101 RAPID Mitigation System					
ORDER 6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference Citation
422	Electrical materials and equipment shall be UL- or FM-tested, with label attached, for the purpose intended, whenever such products are available. Where there are no UL- or FM-listed products of the type, testing and certification by another nationally recognized testing agency may be acceptable.	Order 6430.1A, Section 1605		Not applicable to the PPF's functions for shielding, sealing and not damaging the riser.	
423	Installation methods shall be in accordance with the manufacturer's instructions, with NFPA 70, and with other applicable requirements.	Order 6430.1A, Section 1605		Review and approval of ECN 647721, SY-101 Expedited Transfer - Electrical and Instrumentation, by qualified subject matter experts provides compliance with this criterion.	
424	On-site acceptance testing shall be required for each major electrical system.	Order 6430.1A, Section 1605		Appropriate acceptance testing is specified	
425	Tests shall be specified to demonstrate that each function and important parameter is implemented.	Order 6430.1A, Section 1605		Specifications require testing to demonstrate compliance with functions	
426	Specific criteria shall be included to determine pass/fail acceptance	Order 6430.1A, Section 1605		Specifications require testing to demonstrate compliance with functions	
427	Tests shall be performed in the presence of a government representative.	Order 6430.1A, Section 1605		Specifications allow presence of government representative during testing	
428	Copies of all test results shall be submitted for approval.	Order 6430.1A, Section 1605		Specifications require submital of test results	
429	Raceways that penetrate fire-rated assemblies shall be noncombustible.	Order 6430.1A, Section 1605		There are no combustible raceways in the design.	
430	The complete installation shall be suitably sealed to maintain the established fire ratings as defined in UL Building Materials Directory and UL 1479, Fire Test of Through-Penetration Firestops.	Order 6430.1A, Section 1605		There are no firestops required in the design.	
431	Raceways shall be 1/2-inch minimum in diameter	Order 6430.1A, Section 1605		Not applicable to the PPF's functions for shielding, sealing and not damaging the riser.	
432	Raceways embedded in concrete or masonry shall be 3/4-inch minimum and shall be adequate in number and capacity for the initial and projected facility requirements.	Order 6430.1A, Section 1605		Not applicable to the PPF's functions for shielding, sealing and not damaging the riser.	
433	Electrical Metallic Tubing (EMT) shall be used to enclose circuit power conductors, alarm and signal circuits in nonhazardous and noncorrosive locations.	Order 6430.1A, Section 1605		Not applicable to the PPF's functions for shielding, sealing and not damaging the riser.	
434	[EMT] shall not be installed where subjected to physical damages during installation or while in service.	Order 6430.1A, Section 1605		Not applicable to the PPF's functions for shielding, sealing and not damaging the riser.	
435	EMT shall not be installed underground and shall not be encased in concrete.	Order 6430.1A, Section 1605		Not applicable to the PPF's functions for shielding, sealing and not damaging the riser.	
436	When EMT is used outdoors or in damp locations, compression type (rain tight) fittings must be used.	Order 6430.1A, Section 1605		Not applicable to the PPF's functions for shielding, sealing and not damaging the riser.	

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION			
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
437	Flexible steel conduit shall be used for connection to equipment subject to vibration and connection from junction boxes to recessed lighting fixtures.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
438	Rigid steel conduit or intermediate metal conduit shall be used in locations classified as hazardous by NFPA 70.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
439	Only rigid steel conduit or intermediate metal conduit shall be used to route secure circuits through nonsecured areas.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
440	Such circuits shall be capable of detecting tamper with the line.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
441	Aluminum conduit shall be used for high-frequency circuits where steel will cause magnetic problems or in atmospheres where steel conduit is unsuitable.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
442	Aluminum conduit shall not be used to enclose secure conductors carrying classified information (as defined by the cognizant DOE authority).	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
443	Aluminum conduit shall not be installed underground, encased in concrete, or where the atmosphere is corrosive to aluminum.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
444	Nonmetallic conduit shall be used only where allowed by NFPA 70.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
445	Nonmetallic conduit shall not be used in electromagnetically sensitive areas or to enclose secure conductors, except when required in red/black design in accordance with NSA NACSIM 5203.1605-2.1.7	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
446	Except for vertical routings to source or termination points, surface-metal or nonmetallic raceways and multi-outlet assemblies shall be used only where allowed by NFPA 70.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
447	The use of cable trays shall be considered for large multiple-cable applications in both interior and exterior locations.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
448	Conductors for interior electrical systems shall be copper, except that aluminum conductors size No. 4 AWG and larger may be used.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
449	Conductors for power and lighting branch circuits shall be not smaller than No. 12 AWG. No. 10 and No. 12 AWG conductors for power and lighting branch circuits shall be solid.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
450	No. 8 AWG conductors and larger shall be stranded.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
451	Conductors for Class 1 remote-control and signal circuits shall be enclosed in cable and shall comply with NFPA 70.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
452	Conductors for Class 2 low-energy remote-control and signal circuits shall be not smaller than No. 18 AWG.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
453	Power and lighting conductors shall be 600-volt, Type THW, XHHW, or THWN. Conductors required to be rated 90 degrees C in accordance with NFPA 70 shall be Type RHH, THW, or THHN.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
454	Conductors in high-temperature areas shall be NEC Type FEP or TFE as required.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
455	Direct-burial conductors shall be Type UF, UL 493.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
456	Bonding and grounding conductors shall be ASTM B1 solid, bare copper for sizes No. 8 AWG and smaller and shall be ASTM B8 Class B stranded copper for wire sizes No. 6 AWG and larger.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
457	Each set of contract documents shall indicate the basis for the size of the conductors shown on those plans when the option for aluminum conductors has been chosen.	Order 6430.1A, Section 1605		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
458	Demand and diversity factors shall comply with NFPA 70.	Order 6430.1A, Section 1630		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
459	Demand and diversity for feeder and substation load calculations shall be as stated in Fink and Beaty, Standard Handbook for Electrical Engineers.	Order 6430.1A, Section 1630		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
460	Electric service quality and reliability shall be considered in conformance with IEEE 493 to ensure that they meet the load requirements.	Order 6430.1A, Section 1630		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
461	Where loads require a high degree of voltage and frequency stability, the available short-circuit MVA at the service connection and the stability of the supplying utility system shall be considered to ensure adequate power quality.	Order 6430.1A, Section 1630		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
462	An overall power factor of not less than 85 percent shall be achieved.	Order 6430.1A, Section 1630		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
463	When power-factor correction is required, the amount of correction shall be coordinated with the billing tariff to prevent uneconomical overcorrection.	Order 6430.1A, Section 1630		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
464	Switched capacitor banks shall be used only when necessary to prevent overvoltages during off-peak hours during low power consumption.	Order 6430.1A, Section 1630		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
465	Starting capacitors shall be located as near to the loads as practical.	Order 6430.1A, Section 1630		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
466	Starting capacitors shall be switched simultaneously with the load.	Order 6430.1A, Section 1630		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
467	Facilities designated by the cognizant DOE authority as critical shall be served by dedicated, redundant circuits.	Order 6430.1A, Section 1630		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
468	The two services shall be separated by a 4-hour fire-rated barrier and shall be served from separate sources.	Order 6430.1A, Section 1630		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
469	In lieu of providing two separate services, a single service supplied from a loop-type transmission or distribution system having sectionalizing features may be provided when the reliability of the single service proves adequate when considered in conformance with IEEE 399 and IEEE 493.	Order 6430.1A, Section 1630		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
470	Electric circuits shall be located in utility corridors established on master utility plans.	Order 6430.1A, Section 1630		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
471	Grounding systems shall comply with NFPA 70 and IEEE 142.	Order 6430.1A, Section 1639		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
472	A separate ground conductor shall be used.	Order 6430.1A, Section 1639		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
473	Raceway systems shall not be used as ground path.	Order 6430.1A, Section 1639		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
474	Substation and switching station grounding systems shall comply with IEEE 80.	Order 6430.1A, Section 1639		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
475	Grounding connections shall comply with IEEE 837.	Order 6430.1A, Section 1639		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
476	Isolated ground systems may be required to meet special instrumentation or other equipment needs. Such ground systems shall be clearly identified, protected against improper usage, and installed in conformance with NFPA 70.	Order 6430.1A, Section 1639		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
477	Demand and diversity factors shall comply with Section 1630-1.1, Load Requirements.	Order 6430.1A, Section 1640-1.1		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
478	Interior electrical system power factor shall comply with Section 1630-1.2, Power Factor.	Order 6430.1A, Section 1640-1.1		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
479	Standard voltages shall comply with MIL HDBK 1004/4 or shall continue the 240/120-volt single-phase service provided, as applicable.	Order 6430.1A, Section 1640-1.3		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
480	Power system reliability consideration shall comply with IEEE 493 to ensure continual power supply to systems and equipment designated as critical by the cognizant DOE authority.	Order 6430.1A, Section 1640-1.4		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
481	The need for multiple transformer-switchgear service equipment, to ensure power supply continuity within the facility during scheduled or emergency equipment outages, shall ... be considered.	Order 6430.1A, Section 1640-1.4		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
482	Adverse effects of voltage level variations, transients, and frequency variations on equipment operation shall be minimized.	Order 6430.1A, Section 1640-1.5		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		

DESIGN COMPLIANCE MATRIX					
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System					
ORDER 6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference
483	Sensitive electrical equipment, such as data processing equipment, shall be isolated as needed for protection. Uninterruptible power systems, motor-generator sets, or power conditioners may be used for isolation.	Order 6430.1A, Section 1640-1.5	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
484	System protection shall comply with IEEE 242.	Order 6430.1A, Section 1640-1.6	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
485	Ground-fault protection shall comply with NFPA 70.	Order 6430.1A, Section 1640-1.7	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
486	The neutral conductor for electric discharge lighting and for data processing and other similar equipment shall be sized in accordance with NFPA 70.	Order 6430.1A, Section 1640-1.8	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
487	Calculations shall include harmonic current.	Order 6430.1A, Section 1640-1.8	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
488	Interior electrical systems shall comply with NFPA 70.	1640-2.1	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
489	Switchgear criteria shall comply with IEEE C37 series.	1640-2.1	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
490	Energy metering requirements for new buildings and building additions shall comply with Section 1595-1, Energy Metering.	1640-2.2	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
491	Conventional kilowatt-hour meters shall be used for measuring and recording electric energy use at the incoming power service to the building and at the internal service points of significant process loads.	1640-2.2	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
492	Where a facility load management program is used, individually for the facility or as a part of a site load management program, demand (kW) metering shall be used.	1640-2.2	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
493	Metering devices shall be compatible with existing or protected EMIs. See Section 1595-10, Energy Management Systems.	1640-2.2	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
494	Where a facility is to be served directly by a utility company, service metering requirements, equipment to be used, and where a facility is to be served directly by a utility company, with the utility company.	Order 6430.1A, Section 1640-2.2	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
495	Interior service transformer installations shall comply with NFPA 70.	Order 6430.1A, Section 1640-2.3	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
496	The minimum number of transformers necessary to satisfy initial and projected facility loads and operational continuity, safety, and security requirements shall be used.	Order 6430.1A, Section 1640-2.3	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
497	Transformer protection and appurtenances shall comply with IEEE C37.91.	Order 6430.1A, Section 1640-2.3	Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		

DESIGN COMPLIANCE MATRIX					
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System					
ORDER 6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference Citation
498	Transformer installation shall comply with FM 5-4/14-8.	Order 6430.1A, Section 1640-2.3		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	
499	Motors shall comply with NEMA MG-1, except that hermetic refrigerant motor compressors shall comply with UL 984.	Order 6430.1A, Section 1640-2.4		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	
500	Motors shall have a sufficient rating for the duty they are to perform and shall not exceed their continuous horsepower rating, including service factor, when the driven equipment is operating at the greatest horsepower renditions it is likely to encounter.	Order 6430.1A, Section 1640-2.4		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	
501	Starting and running characteristics shall be coordinated with the driven machine and the motor control equipment.	Order 6430.1A, Section 1640-2.4		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	
502	Motor enclosures shall be drip-proof for indoor dry locations and totally enclosed or totally enclosed fan-cooled for outdoor or other wet locations, except where special conditions require otherwise.	Order 6430.1A, Section 1640-2.4		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	
503	Single-phase motors 1/8 hp and smaller shall be shaded-pole or permanent split capacitor; those larger than 1/8 hp shall be capacitor-start.	Order 6430.1A, Section 1640-2.4		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	
504	Polyphase motors shall comply with NEMA Design B, unless other characteristics are required by the driven machine or the speed controller.	Order 6430.1A, Section 1640-2.4		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	
505	Motors shall be designed for continuous service at ambient temperature.	Order 6430.1A, Section 1640-2.4		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	
506	Motors shall operate at full capacity, with a voltage variation of plus or minus 10 percent of the nameplate voltage.	Order 6430.1A, Section 1640-2.4		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	
507	High-efficiency motors shall be considered where loading and nearly constant usage may result in significant energy savings.	Order 6430.1A, Section 1640-2.4		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	
508	Except where special conditions require otherwise, motors 1 hp and less shall be specified as single-phase, 115-volt motors, while those greater than 1 hp shall be specified as three-phase, 200- or 460-volt, motors.	Order 6430.1A, Section 1640-2.4		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	
509	Motor characteristics shall be selected to avoid excessive acceleration time for motors driving large masses and starting under load.	Order 6430.1A, Section 1640-2.4		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	
510	Variable-speed drives shall be considered where motor speed requirements vary widely during normal operation. Solid-state variable-frequency units are recommended for smaller horsepower motors.	Order 6430.1A, Section 1640-2.4		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	
511	[T]he driven motor shall be selected in accordance with the drive manufacturer's recommendations to ensure a coordinated system and to avoid overheating the motor.	1640-2.4		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.	

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP)
for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
512	Control equipment shall comply with the NEMA ICS standards and UL 508, Industrial Control Equipment.	Order 6430.1A, Section 1640-2.5		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
513	All motors shall be provided with fully coordinated control equipment to perform the functions required.	Order 6430.1A, Section 1640-2.5		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
514	<i>Overcurrent devices shall be provided in each ungrounded conductor</i>	Order 6430.1A, Section 1640-2.5		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
515	<i>[O]vercurrent devices located in the motor or controller shall be rated in accordance with the manufacturer's instructions.</i>	Order 6430.1A, Section 1640-2.5		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
516	Single-phase motors may be controlled directly by automatic control devices of adequate rating.	Order 6430.1A, Section 1640-2.5		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
517	Polyphase motors controlled automatically and all polyphase motors rated greater than 1 hp shall have magnetic starters.	Order 6430.1A, Section 1640-2.5		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
518	Control devices shall be of adequate voltage and current rating for the duty to be performed.	Order 6430.1A, Section 1640-2.5		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
519	Pilot control circuits shall operate with one side grounded, at no greater than 120 volts.	Order 6430.1A, Section 1640-2.5		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
520	Where control power transformers are required, they shall be located inside the associated motor starter housing.	Order 6430.1A, Section 1640-2.5		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
521	Where control power transformers are required, they shall be protected against faults and overload by properly sized overcurrent devices.	Order 6430.1A, Section 1640-2.5		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
522	Where control power transformers are required, they shall be of sufficient capacity to serve all devices connected to them without overload.	Order 6430.1A, Section 1640-2.5		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
523	Reduced-voltage starters shall be provided for larger motors where starting the motor may result in unacceptable voltage dip.	Order 6430.1A, Section 1640-2.5		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
524	Electric power distribution systems shall be filtered to reduce emanation of detectable electromagnetic signals to acceptable levels as directed by the cognizant DOE telecommunications and security personnel.	Order 6430.1A, Section 1640-3.1		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		

DESIGN COMPLIANCE MATRIX

Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System

ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
525	Installations shall comply with DOE 5300.2B, DOE 5300.3B, and DOE 5300.4B. Additional guidance shall be obtained from the Office of Computer Services and Telecommunications Management, DOE Headquarters, as directed by the cognizant DOE authority.	Order 6430.1A, Section 1640-3.1		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
526	Normal primary power for protective alarm and communications systems shall come directly from the on-site power distribution system or, in the case of isolated facilities, shall come directly from the public utility.	Order 6430.1A, Section 1640-3.2		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
527	Where several primary power sources are available, the most reliable source shall be used.	Order 6430.1A, Section 1640-3.2		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
528	Standby or emergency power supplies for security, communications, and alarm systems shall be provided in accordance with Section 1660, Special Systems.	Order 6430.1A, Section 1640-3.3		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
529	Standby and emergency systems shall serve loads set forth in NFPA 110.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
530	Additional standby or emergency systems shall be provided to support systems or equipment components whose operating continuity is determined to be vital by the cognizant DOE authorities for protection of health, life, property, and safeguards and security systems.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
531	Safety Class 1 Items shall be provided with emergency power.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
532	Optional standby systems shall be provided for production process operations in cases where the cognizant DOE authority determines that the process will become unstable on loss of power or that a severe monetary loss will result.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
533	Uninterruptible power shall be provided for equipment that cannot sustain functions through the momentary power loss that occurs when an alternate power source comes on line and picks up the load. See Section 1660-3, Uninterruptible Power Systems.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
534	Emergency power shall be provided for protective alarm and communications systems as dictated by the system requirements.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
535	Switchover to emergency power shall be automatic on failure of the primary power source and shall be indicated on an annunciator panel. The annunciator shall be located in an occupied area and shall indicate any problems with the emergency system.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
536	Definition of "emergency systems" "legally required standby systems," and "optional standby systems" shall be in accordance with NFPA 70.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
537	Emergency power equipment areas shall be ventilated to exhaust hazardous gases (if applicable) and to maintain satisfactory ambient temperatures for equipment operation or personnel access.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
538	Emergency or standby power shall service fire alarm, security alarm, and supervisory sensing devices designated essential by the cognizant DOE authority.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
539	Emergency power systems shall comply with NFPA 37, NFPA 70, NFPA 101, NFPA 110, and IEEE 446.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
540	Emergency power systems shall be capable of maintaining full operation of emergency loads for the full time period specified by the cognizant DOE authority (nominally, a minimum of 24 hours).	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
541	Such power sources shall have the necessary built-in features to facilitate operational testing on a periodic basis to verify their readiness.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
542	Where emergency generators are required for loads 25 kVA and smaller, gasoline or LPG engines may be used. For loads greater than 25 kVA, diesel engines shall generally be used.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
543	Application of diesel engines shall comply with FCC Technical Report No. 69.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
544	Batteries, when required, shall be rechargeable and shall be kept fully charged at all times when primary power is available.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
545	The charger shall automatically switch from float to fast charge rate at a preset drop in DC bus voltage.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION			
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
546	The charger shall be furnished with a capacity to charge the battery from a fully discharged state to not less than 85 percent of the rated ampere-hour capacity within 24 to 72 hours.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
547	Emergency power systems legally required by NFPA 70 shall be installed to meet normal emergency power requirements.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
548	More stringent emergency power requirements shall be identified by the cognizant DOE authority on a case-by-case basis.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
549	Electric power and electrical instrumentation and control systems are designated safety class electric if they are required to satisfy the safety class criteria in Section 1300-3.1, General, through Section 1300-3.4, Equipment Environment Considerations. These components and systems are subject to the basic approach outlined in the IEEE 308 standards and to higher quality assurance requirements as needed.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
550	For safety class items that require electric power to perform their safety functions, the design shall provide safety class emergency electric power systems (AC, DC, and their distribution systems).	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
551	The design shall define the type, capacity, performance characteristics, and features of the safety class electric systems, including generator and batteries, required to meet safety class system needs.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
552	Safety class electric systems shall be provided with suitable redundancy and separation to ensure that adequate capacity and capability are available with the addition of a single failure.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
553	Redundant safety class electric systems shall be physically protected or separated to prevent a common external event from causing a failure of the redundant systems.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
554	IEEE 379, Standard Application of the Single Failure Criterion to Nuclear Power Generating Station Class 1E Systems and IEEE 384, Standard Criteria for Independence of Class 1E Equipment and Circuits shall be used as redundancy and separation criteria.	Order 6430.1A, Section 1660		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.		
555	The connection of loads that do not require safety class power to safety class buses shall be minimized.	Order 6430.1A, Section 1660		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.		
556	Where such loads must be connected to a safety class electric power system, the loads shall be provided with suitable separation or devices that will prevent failures from affecting the safety class electric system.	Order 6430.1A, Section 1660		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.		
557	Safety class electric systems shall be qualified to the requirements in Section 1300-3.4, Equipment Environment Considerations, and, as appropriate, to the structural requirements imposed on safety class items in Section 0111 99, Special Facilities.	Order 6430.1A, Section 1660		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.		
558	Testing or a combination of testing and analysis shall be the preferred method of demonstrating the operability of instrumentation and electrical equipment that are required to operate during and following a DBE. Seismic experience data may be used as an alternative to testing or dynamic analysis where such data have been documented and validated.	Order 6430.1A, Section 1660		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.		
559	The capability to periodically test safety class electric systems to verify system performance shall be provided.	Order 6430.1A, Section 1660		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.		
560	The design shall provide, as necessary, safety class protection systems and safety class instrumentation and control systems to minimize the risk associated with facility operation.	Order 6430.1A, Section 1660		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.		
561	A protection system is a system that initiates corrective action, eg., fire detection/Shutdown release, UPS. The protection system shall provide automatic initiation of protective actions that require rapid response and automatic control of interlocks that prevent unsafe operator actions.	Order 6430.1A, Section 1660	The applicable protection system is the dilution water supply interlock	Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.		
562	Protection systems shall be designed to sense potentially hazardous conditions and to initiate actions to ensure that specific acceptable design limits are not exceeded as a result of anticipated operational occurrences.	Order 6430.1A, Section 1660		Not applicable to the PPPs functions for shielding, sealing and not damaging the riser.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS				DESIGN COMPLIANCE CITATION		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
563	The protection system shall automatically activate safety class systems and components that are required to ensure the safety of operating personnel and the public.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
564	It shall provide audible and visual indication of system status.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
565	Automatically initiated protective actions shall be provided with a manually initiated backup.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
566	The design of the protection system shall provide suitable redundancy and diversity to ensure that safety functions can be completed, when required, and that no single failure will result in the loss of the protective functions.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
567	The protection system shall be designed to fail in a safe state following a component or channel failure or loss of power (e.g., control air or electric power).	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
568	Safety class instrumentation shall sense abnormal conditions affecting safety and subsequently provide an alarm, e.g., low differential pressure between HVAC zones, critically monitoring.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
569	Safety class instrumentation and control systems shall provide audible and visual alarms so that the operator can take timely corrective actions to ensure the safety of operating personnel and the public.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
570	The safety class instrumentation shall be designed to monitor safety-related variables and safety class systems over expected ranges for normal operation, anticipated operational occurrences, DBA conditions, and for safe shutdown.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
571	Safety class controls shall be provided when they are necessary to control these variables. Typical systems whose design shall require safety class instrumentation and controls include safety-related process systems, safety class confinement systems, and safety class cooling systems.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
572	The design of safety class instrumentation and controls shall provide suitable redundancy and diversity to ensure that safety functions can be completed, when required, and that no single failure will result in the loss of the protective functions.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION			
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
573	The safety class instrumentation and controls shall fail in a safe state following a component or channel failure or loss of power (e.g., control air, electric power).	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
574	Protection systems and safety class instrumentation and control equipment shall be qualified to the environmental qualification requirements in Section 1303.4, Equipment Environment Considerations.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
575	Redundant protection system and safety class instrument channels shall be physically protected or separated to prevent a common external event or failure of one channel from causing a failure in the redundant channel.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
576	The safety class protection system and safety class instrumentation and control system shall be appropriately separated or isolated from other instrumentation and control systems to the extent that a failure (e.g., electrical, control air) in these other systems will not degrade the safety class systems to the extent that they are unable to perform their necessary safety functions.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
577	The design of protection system and safety class instrumentation and control systems shall provide for the periodic in-place testing and calibration of instrument channels and interlocks.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
578	The design of instrumentation and control systems shall allow periodic testing of protective functions to determine whether failure or loss of redundancy may have occurred.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
579	An analysis shall be made to determine power requirements for safe shutdown of the process.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
580	Safety class electric power or a safety class control air system shall be provided unless adequate system performance including fail-safe shutdown can be demonstrated when only the conventional power sources are used.	Order 6430.1A, Section 1660		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
581	Specific project communications requirements shall be designated by the cognizant DOE authority.	Order 6430.1A, Section 1671.1		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
582	Interior communications and alarm systems shall be designed to use standard, commercially available equipment.	Order 6430.1A, Section 1671.1		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		

DESIGN COMPLIANCE MATRIX					
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System					
DESIGN COMPLIANCE CITATION			ORDER 6430.1A REQUIREMENTS		
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference
583	The initial and protected requirements for telecommunications systems shall comply with DOE 5300.1B, Telecommunications.	Order 6430.1A, Section 1671.1	the riser.	Not applicable to the PPP's functions for shielding, sealing and not damaging	
584	Secure communications systems shall comply with DOE 5300.3B.	Order 6430.1A, Section 1671.1	the riser.	Not applicable to the PPP's functions for shielding, sealing and not damaging	
585	TEMPEST criteria shall be as set forth in DOE 5300.2B.	Order 6430.1A, Section 1671.1	Not applicable to the PPP's functions for shielding, sealing and not damaging	the riser.	
586	Protected distribution systems shall comply with DOE 5300.4B.	Order 6430.1A, Section 1671.1	Not applicable to the PPP's functions for shielding, sealing and not damaging	the riser.	
587	Data communications facilities, services, and equipment shall comply with DOE 5300.1B, Telecommunications.	Order 6430.1A, Section 1671.1	Not applicable to the PPP's functions for shielding, sealing and not damaging	the riser.	
588	Spectrum-dependent services shall comply with DOE 5300.1B, Telecommunications.	Order 6430.1A, Section 1671.1	Not applicable to the PPP's functions for shielding, sealing and not damaging	the riser.	
589	Telephone circuits shall be used for other telecommunications and alarm services to the maximum extent practicable. If separate conductors are required, they shall be routed through the main telecommunications and signal raceway systems if raceway systems are present. Separate wireways and cabinets shall be used only when necessary to meet security, technical, or code requirements or to achieve significant economies.	Order 6430.1A, Section 1671.2	the riser.	Not applicable to the PPP's functions for shielding, sealing and not damaging	
590	Telecommunications and alarm equipment and conductors shall be located outside areas subject to explosion, fire, flood, chemical fumes, excessive dust, radiation or vibration, and excessive electrical or electromagnetic noise levels. Where telecommunications and alarm services must be extended into these areas, equipment and installation shall be suitable for the hazard.	Order 6430.1A, Section 1671.3	the riser.	Not applicable to the PPP's functions for shielding, sealing and not damaging	
591	Fire alarm and signaling systems shall comply with NFPA 72A	Order 6430.1A, Section 1671-2	the riser.	Not applicable to the PPP's functions for shielding, sealing and not damaging	
592	Fire alarm and signaling systems shall comply with NFPA 72B	Order 6430.1A, Section 1671-2	the riser.	Not applicable to the PPP's functions for shielding, sealing and not damaging	
593	Fire alarm and signaling systems shall comply with NFPA 72C	Order 6430.1A, Section 1671-2	the riser.	Not applicable to the PPP's functions for shielding, sealing and not damaging	
594	Fire alarm and signaling systems shall comply with NFPA 72D	Order 6430.1A, Section 1671-2	the riser.	Not applicable to the PPP's functions for shielding, sealing and not damaging	
595	Fire alarm and signaling systems shall comply with NFPA 72E	Order 6430.1A, Section 1671-2	the riser.	Not applicable to the PPP's functions for shielding, sealing and not damaging	
596	Fire alarm and signaling systems shall comply with NFPA 72F	Order 6430.1A, Section 1671-2	the riser.	Not applicable to the PPP's functions for shielding, sealing and not damaging	

DESIGN COMPLIANCE MATRIX						
Compliance Citations for DOE Order 6430.1A specifically related to shielding, sealing tank dome space, and not damaging the riser for the Prefabricated Pump Pit (PPP) for the 241-SY-101 RAPID Mitigation System						
ORDER 6430.1A REQUIREMENTS			DESIGN COMPLIANCE CITATION			
Item #	Criteria	Source	Notes, Assumptions, Implications	Design Attribute	Configuration Control Reference	Citation
597	Fire alarm and signaling systems shall comply with NFPA 72G	Order 6430.1A, Section 1671-2		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		
598	Fire alarm and signaling systems shall comply with NFPA 72H	Order 6430.1A, Section 1671-2		Not applicable to the PPP's functions for shielding, sealing and not damaging the riser.		

4.0 CONCLUSIONS

The design attributes noted in Section 3.0 fulfill all criteria related to the PPP's ability to provide shielding, sealing of the tank dome space, and prevention of damage of the riser contained in DOE order 6430.1A as it relates to the 241-SY-101 RAPID Mitigation System.