
2.10 Other Systems**2.10.1 Cranes****Design Description****1.0 System Description**

The containment polar crane and the Fuel Building auxiliary crane provide for the lifting of heavy loads. The cranes can be operated during shutdown and refueling conditions. Some components of the cranes may be operated during plant operation.

The cask loading penetration upper cover hoist and the biological lid handling station located in the Fuel Building Spent Fuel Cask Transfer Facility (SFCTF) provide for the handling of heavy loads. While these are not conventional cranes, they are designed to meet the applicable design criteria for heavy load handling specified for Type I equipment in ASME NOG-1. The penetration upper cover hoist and the biological lid handling station may be operated during plant operation, shutdown and refueling conditions.

2.0 Arrangement

2.1 The locations of the containment polar crane, the Fuel Building (FB) auxiliary crane, the cask loading penetration upper cover hoist, and the SFCTF biological lid handling station are as listed in Table 2.10.1-1—Crane Equipment Mechanical Design.

2.2 Non-Seismic Category I equipment identified in Table 2.10.1-1 will not impair the ability of Seismic Category I SSC to perform their safety function(s).

3.0 Mechanical Design Features

3.1 Deleted.

3.2 The containment polar crane main hoist is equipped with a dual load path reeving system from the hook to the hoist brakes and redundant holding brakes.

3.3 The FB auxiliary crane hoist is equipped with a dual load path reeving system from the hook to the hoist brakes and redundant holding brakes.

3.4 The cask loading penetration upper cover hoist is equipped with a dual load path reeving system from the load attachment point to the hoist brakes and redundant holding brakes.

3.5 The SFCTF biological lid handling station is provided with a load support mechanism (screw drive).

4.0 Equipment and System Performance

4.1 Deleted.

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- 4.2 Deleted.
 - 4.3 The containment polar crane main hoist is load tested followed by non-destructive examination (NDE) of critical welds.
 - 4.4 The FB auxiliary crane hoist is load tested followed by NDE of critical welds.
 - 4.5 Special lifting devices and slings used with the containment polar crane main hoist and the FB auxiliary crane hoist for critical lifts have dual load paths or double safety factors.
 - 4.6 The cask loading penetration upper cover hoist is load tested followed by NDE of critical welds.
 - 4.7 The SFCTF biological lid handling station is load tested followed by NDE of critical welds.

Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.10.1-2 lists the cranes ITAAC.

Table 2.10.1-1—Cranes Equipment Mechanical Design

Description	Tag Number⁽¹⁾	Location	Function	Seismic Category
Containment Polar Crane	SMJ-01	Containment Building	Avoid uncontrolled lowering of heavy load.	II
FB Auxiliary Crane	SMF-01	Fuel Building	Avoid uncontrolled lowering of heavy load.	II
Cask Loading Penetration Upper Cover Hoist	FCJ12	Fuel Building	Avoid uncontrolled movements of heavy load	II
SFCTF Biological Lid Handling Station	FCJ11	Fuel Building	Avoid uncontrolled movements of heavy load	II

1. Equipment tag numbers are provided for information only and are not part of the certified design.

**Table 2.10.1-2—Cranes ITAAC
Sheet 1 of 5**

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
2.1	The locations of the containment polar crane, the FB auxiliary crane, the cask loading penetration upper cover hoist, and the SFCTF biological lid handling station are as listed in Table 2.10.1-1.	An inspection of location of the as-built containment polar crane, the FB auxiliary crane, the cask loading penetration upper cover hoist, and the SFCTF biological lid handling station will be performed.	The containment polar crane, the FB auxiliary crane, the cask loading penetration upper cover hoist, and the SFCTF biological lid handling station are located as listed in Table 2.10.1-1.
2.2	Non-Seismic Category I equipment identified in Table 2.10.1-1 will not impair the ability of Seismic Category I SSC to perform their safety function(s).	<p>a. Type tests, analyses, or a combination of type tests and analyses will be performed on the equipment identified as non-Seismic Category I in Table 2.10.1-1 using analytical assumptions, or under conditions, which bound the Seismic Category II design requirements.</p> <p>b. An inspection will be performed of the as-built equipment identified as non-Seismic Category I in Table 2.10.1-1 to verify that the components, including anchorage, are installed in a condition bounded by the tested or analyzed condition.</p>	<p>a. Test/analysis reports conclude that the equipment identified as non-Seismic Category I in Table 2.10.1-1 can withstand seismic design basis loads without impairing the ability of Seismic Category I SSC to perform the listed function.</p> <p>b. Inspection reports conclude that the equipment identified as non-Seismic Category I in Table 2.10.1-1, including anchorage, are installed in a condition bounded by the tested or analyzed condition.</p>
3.1	Deleted.	Deleted.	Deleted.
3.2	The containment polar crane main hoist is equipped with a dual load path reeving system from the hook to the hoist brakes and redundant holding brakes.	An inspection of the as-built containment polar crane will be performed to verify that the main hoist is equipped with a dual load path reeving system from the hook to the hoist brakes and redundant holding brakes.	The containment polar crane main hoist is equipped with a dual load path reeving system from the hook to the hoist brakes and redundant holding brakes.

**Table 2.10.1-2—Cranes ITAAC
Sheet 2 of 5**

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.3	The FB auxiliary crane hoist is equipped with a dual load path reeving system from the hook to the hoist brakes and redundant holding brakes.	An inspection of the as-built FB auxiliary crane will be performed to verify that the hoist is equipped with a dual load path reeving system from the hook to the hoist brakes and redundant holding brakes.	The FB auxiliary crane hoist is equipped with a dual load path from the hook to the hoist brakes and redundant holding brakes.
3.4	The cask loading penetration upper cover hoist is equipped with a dual load path reeving system from the load attachment point to the hoist brakes and redundant holding brakes.	An inspection of the as-built cask loading penetration upper cover hoist will be performed to verify that the hoist is equipped with a dual load path reeving system from the load attachment point to the hoist brakes and redundant holding brakes.	The cask loading penetration upper cover hoist is equipped with a dual load path from the load attachment point to the hoist brakes and redundant holding brakes.
3.5	The SFCTF biological lid handling station is provided with a load support mechanism (screw drive).	An inspection of the as-built SFCTF biological lid handling station will be performed to verify that the station is provided with a load support mechanism (screw drive).	The SFCTF biological lid handling station is provided with a load support mechanism (screw drive).
4.1	Deleted.	Deleted.	Deleted.
4.2	Deleted.	Deleted.	Deleted.

**Table 2.10.1-2—Cranes ITAAC
Sheet 3 of 5**

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
4.3	The containment polar crane main hoist is load tested followed by NDE of critical welds.	<ul style="list-style-type: none"> a. A rated load test will be performed on the containment polar crane main hoist. b. A full load test will be performed on the containment polar crane main hoist. c. A no load test will be performed on the containment polar crane main hoist. d. An inspection will be performed on the as-built welded structural connections of the containment polar crane. 	<ul style="list-style-type: none"> a. Containment polar crane main hoist passes rated load testing at a minimum of 125% of the rated load. b. Containment polar crane main hoist passes full-load testing at a minimum of 100% rated load. c. Containment polar crane main hoist passes no load testing to verify proper operation of limit switches, interlock and stop settings. d. A report concludes that NDE of welded structural connections of the containment polar crane comply with ASME NOG-1 requirements.
4.4	The FB auxiliary crane hoist is load tested followed by NDE of critical welds.	<ul style="list-style-type: none"> a. A rated load test will be performed on the FB auxiliary crane hoist. b. A full load test will be performed on the FB auxiliary crane hoist. c. A no load test will be performed on the FB auxiliary crane hoist. d. An inspection will be performed on the as-built welded structural connections of the FB auxiliary crane. 	<ul style="list-style-type: none"> a. FB auxiliary crane hoist has passed rated load testing at a minimum of 125% of the rated load. b. FB auxiliary crane hoist has passed full-load testing at a minimum of 100% rated load. c. FB auxiliary crane hoist has passed no load testing to verify proper operation of limit switches, interlock and stop settings. d. A report concludes that NDE of welded structural connections of the FB auxiliary crane comply with ASME NOG-1 requirements.

**Table 2.10.1-2—Cranes ITAAC
Sheet 4 of 5**

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
4.5	Special lifting devices and slings used with the containment polar crane main hoist and the FB auxiliary crane hoist for critical lifts have dual load paths or double safety factors.	<ul style="list-style-type: none"> a. An inspection will be performed on the on the as-built special lifting devices used with the containment polar crane main hoist and the FB auxiliary crane hoist to verify that they have dual load paths. b. An inspection will be performed on the on the as-built slings used with the containment polar crane main hoist and FB auxiliary crane hoist to verify that they have double safety factors. 	<ul style="list-style-type: none"> a. The special lifting devices used with the containment polar crane main hoist and the FB auxiliary crane hoist for critical lifts have dual load paths. b. Slings used with used with the containment polar crane main hoist and the FB auxiliary crane hoist for critical lifts have double safety factors.
4.6	The cask loading penetration upper cover hoist is load tested followed by NDE of critical welds.	<ul style="list-style-type: none"> a. A rated load test will be performed on the cask loading penetration upper cover hoist. b. A full load test will be performed on the cask loading penetration upper cover hoist. c. A no load test will be performed on the cask loading penetration upper cover hoist. d. An inspection will be performed on the as-built welded structural connections of the cask loading penetration upper cover hoist. 	<ul style="list-style-type: none"> a. The cask loading penetration upper cover hoist has passed rated load testing at a minimum of 125% of the rated load. b. The cask loading penetration upper cover hoist has passed full-load testing at a minimum of 100% rated load. c. The cask loading penetration upper cover hoist has passed no load testing to verify proper operation of limit switches, interlock and stop settings. d. A report concludes that NDE of welded structural connections of the cask loading penetration upper cover hoist comply with ASME NOG-1 requirements.

**Table 2.10.1-2—Cranes ITAAC
Sheet 5 of 5**

	Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
4.7	The SFCTF biological lid handling station is load tested followed by NDE of critical welds.	<ul style="list-style-type: none"> a. A rated load test will be performed on the SFCTF biological lid handling station. b. A full load test will be performed on the SFCTF biological lid handling station. c. A no load test will be performed on the SFCTF biological lid handling station. d. An inspection will be performed on the as-built welded structural connections of the SFCTF biological lid handling station. e. A load test will be performed by the vendor on the screw drive of the SFCTF biological lid handling station. 	<ul style="list-style-type: none"> a. The SFCTF biological lid handling station has passed rated load testing at a minimum of 125% of the rated load. b. The SFCTF biological lid handling station has passed full-load testing at a minimum of 100% rated load. c. The SFCTF biological lid handling station has passed no load testing to verify proper operation of limit switches, interlock and stop settings. d. A report concludes that NDE of welded structural connections of the SFCTF biological lid handling station comply with ASME NOG-1 requirements. e. The screw drive of the SFCTF biological handling station has passed a load test for 150% of the rated load.