Form SPD-1002-1

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: OP/1/A/6550/06
Change(s) 0 to
0 Incorporated

(2) STATION: Catawba Nuclear Station

(3) PROCEDURE TITLE: Transferring Fuel With the Spent Fuel Manipulator Crane

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Cross-Disciplinary Review By: J. W. Gf 4/30/82 N/R: SRC 82/15

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: C. W. Graves for Date: 5/19/82

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

INFORMATION ONLY

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
TRANSFERRING FUEL WITH THE SPENT FUEL MANIPULATOR CRANE

1.0 PURPOSE

The purpose of this procedure is to describe the handling of fuel during fuel transferring operations.

3.0 Startup of the Spent Fuel Pool Manipulator Crane

4.0 Transferring Fuel

5.0 Securing the Spent Fuel Pool Manipulator Crane

2.0 LIMITS AND PRECAUTIONS

2.1 Small tools or other items used on the fuel handling bridges must be secured by a safety line or other positive means.

2.2 Remove all loose articles from pockets before working over the Fuel Pool. Personnel monitoring equipment must be secured with tape.

2.3 Do not exceed the drag force limits as imposed in Enclosure 6.1.

2.4 Do not energize the under water lights unless they are submerged.

2.5 Bypass switches are only to be used in accordance with Station Directive 3.1.17.

2.6 Under water lights may require removal when storing or removing fuel and/or components from the perimeter storage racks adjacent to the lights.

2.7 All Fuel Assembly and Component movement must be authorized in advance by the Reactor Engineer per OP/0/A/6550/11 (Internal Transfer of Fuel Assemblies and Components).

3.0 STARTUP OF THE SPENT FUEL POOL MANIPULATOR CRANE

3.1 Initial Conditions

Date
Time/Initial

_____3.1.1 Functional check of the Spent Fuel Pool Manipulator crane has been performed as per PT/1/A/4550/01 (Preparation for Refueling) within past six (6) months.

_____3.1.2 Only qualified operators and trainees under their supervision, as determined by the Superintendent of Operations, will operate the cranes.

Date
Time/Initial

3.2 Procedure

_____ 3.2.1 Verify that air is available to the gripper assembly, with the pressure gauge reading 70-100 psi.

_____ 3.2.2 Verify that the emergency handwheels are mounted in the storage position.

_____ 3.2.3 Verify the sprocket on the selsyn drive is properly engaged in its chain.

_____ 3.2.4 Unlock the control console and verify that all interlock by-pass switches are in the "OFF" position.

_____ 3.2.5 Relock the control console.

_____ 3.2.6 Verify Dillon has been calibrated within the last 6 months.

_____ 3.2.7 Place the "MAIN POWER" breaker (on the outside of the Bridge Crane MCC) in the "ON" position.

_____ 3.2.8 Verify the power light "ON" for the fuel bridge area monitor and verify the calibration sticker is valid.

_____ 3.2.9 Check (push-to-test) all indicating lights. If any light fails to come on replace the bulb and check it again.

_____ 3.2.10 Verify the following lights are on:

"GRIPPER DISENGAGED" (opal)
"GRIPPER UP DISENGAGED" (green).
"MONORAIL HOIST FULL UP" (green).

_____ 3.2.11 Verify power available to the auxiliary hoists by momentarily depressing the "DOWN" pushbutton, then the "UP" pushbutton.

_____ 3.2.12 Verify "Z-Z" tape reading per Enclosure 6.2.

4.0 TRANSFERRING FUEL

4.1 Initial Conditions

_____ 4.1.1 The Spent Fuel Manipulator Crane has been started per Section 3.0 of this procedure.

_____ 4.1.2 Spent Fuel Pool level is $\geq$ minus 2 feet on the Control Room gage.

Date
Time/Initial

_____ 4.1.3 A qualified operator is available to perform or direct all manipulator crane operations.

_____ 4.1.4 Local radiation monitoring equipment (1EMF-15) or equivalent substitute monitors must be operable for the handling of or movement of loads over a pool containing irradiated fuel and components.

_____ 4.1.5 Spent Fuel Pool Ventilation System (VF) must be operating and discharging through one train of HEPA filters and charcoal absorbers when:

1) Moving irradiated fuel in the storage pool.

2) During crane operation with loads over the storage pool containing irradiated fuel.

4.2 Procedure

CAUTION: When accessing the new fuel elevator, verify the elevator is in its full down position and the overhead fuel handling crane is clear of the elevator.

CAUTION: When accessing the upender, verify the basket is in its full up position.

4.2.1 Move the bridge "RIGHT" or "LEFT" and the trolley "FORWARD" or "REVERSE" to index the MAST over the desired location to pick up a fuel assembly.

4.2.2 If accessing a perimeter rack, obtain permission from the fuel handling supervisor to bypass the bridge and trolley interlocks; use extreme caution when maneuvering while the interlocks are bypassed.

4.2.3 If it was necessary to bypass the bridge and trolley interlocks in Step 4.2.2. return the bypass switches to "OFF" as soon as the mast is in position.

4.2.4 Verify the gripper "DISENGAGED" light is on.

4.2.5 Using the hoist control handle, lower the gripper until it is stopped by "SLOW ZONE #2" (Bottom of Basket/Rack).

4.2.6 Using the jog pendant control, lower the gripper to the top of the fuel assembly

4.2.7 Verify that the "GRIPPER TUBE DOWN" light comes on.

NOTE. "GRIPPER TUBE DOWN" light will not come on when accessing the elevator or upender.

4.2.8 Continue jogging down until "SLACK CABLE" light is on.

4.2.9 Verify "Z-Z" tape reading per Enclosure 6.2.

4.2.10 Place the gripper control to the "ENGAGED" position, the "DISENGAGED" light will go off and the "ENGAGED" light will come on

CAUTION: While raising the fuel assembly, continuously monitor the dillon load cell and do not exceed a drag force of 50 pounds greater than the weight of the fuel assembly and its inserted component (weights are given in Enclosure 6.1).

4.2.11 Push the "UP" button on the pendant control. The "SLACK CABLE" light and "GRIPPER TUBE DOWN" light will go off and the load cell reading will increase to approximately 2500 lbs. without insert when the full weight of the fuel assembly is lifted. (Refer to Enclosure 6.1 for additional weight of insert).

4.2.12 Raise the fuel assembly with pendant control until "SLOW ZONE #2" light goes out.

4.2.13 Raise the fuel assembly with the hoist control handle until hoist stops and "GRIPPER TUBE UP" light is come on.

4.2.14 Verify "Z-Z" tape reading per Enclosure 6.2.

NOTE: If the hoist is stopped in "Slow Zone #1" only the jog pendant station can be used to raise the gripper tube.

CAUTION: When accessing the new fuel elevator, verify the elevator is in its full down position, and the overhead fuel handling crane is clear of the elevator.

CAUTION: When accessing in the upending, verify the basket is in its full up position.

4.2.15 Move the bridge "RIGHT" or "LEFT" and the trolley "FORWARD" or "REVERSE" to place the mast over the desired location to deposit the fuel assembly.

4.2.16 Verify the desired location is not occupied by another fuel assembly or BPRA insert.

4.2.17 If accessing a perimeter rack, obtain permission from the fuel handling supervisor to bypass the bridge and trolley interlocks; use extreme caution when maneuvering while the interlocks are bypassed.

4.2.18 If it was necessary to bypass the bridge and trolley interlocks in Step 4.2.17 return the bypass switches to "OFF" as soon as the mast is in position.

CAUTION: While lowering the fuel assembly into the desired location, continously monitor the dillon load cell and do not exceed a drag force of 50 pounds less than the total suspended weight prior to lowering.

4.2.19 Turn the hoist control handle to the "DOWN" position and lower until "SLOW ZONE #1" light comes on and hoist stops. Then using the jog pendant control, push the "DOWN" button until the "SLOW ZONE #1" light goes off.

4.2.20 Using the hoist control handle, lower the gripper until it is stopped by "SLOW ZONE #2" (Bottom of Basket/Rack).

4.2.21 Using the jog pendant control, push the "DOWN" button and lower the gripper until the "GRIPPER TUBE DOWN" light comes on.

NOTE: "GRIPPER TUBE DOWN" light will not come on when accessing the elevator or upender.

4.2.22 Continue jogging down until "SLACK CABLE" light comes on.

4.2.23 Verify "Z-Z" tape reading per Enclosure 6.2.

4.2.24 Place the gripper control to the "DISENGAGED" position and verify that the "DISENGAGED" light is comes on and "ENGAGED" light goes off.

4.2.25 Push the "UP" button on the pendant control and raise the gripper. When the "SLOW ZONE #2" light goes out, the hoist control handle may be used to raise the gripper.

4.2.26 Raise the gripper until it stops, and the "GRIPPER UP DISENGAGED" light is comes on.

4.2.27 Verify "Z-Z" tape reading per Enclosure 6.2.

4.2.28 Complete and transmit a completed OP/0/A/6550/11 (Internal Transfer of Fuel Assemblies and Components) to the Reactor Engineer.

5.0 SECURING THE SPENT FUEL POOL MANIPULATOR CRANE

5.1 Initial Conditions

Date
Time/Initial

_____ 5.1.1 Manipulator crane mast is empty.

5.2 Procedure

_____ 5.2.1 Place the "MAIN POWER" and "LIGHTING" breakers (on the outside of the bridge crane MCC) in the "OFF" position.

6.0 ENCLOSURES

6.1 Fuel Assembly and Insert Weights and Associated Drag Forces.

6.2 "Z-Z" Tape Readings.

TRANSFERRING FUEL WITH THE SPENT FUEL MANIPULATOR CRANE
OP/1/A/6550/06
FUEL ASSEMBLY AND INSERT WEIGHTS AND ASSOCIATED DRAG FORCES
ENCLOSURE 6.1

		Weight	Drag Limit
1.	Fuel Assembly Without Insert	1218	50 Lbs.
2.	Full Length RCC	83 Lbs.	
3.	Burnable Poison Assembly:		
	24 BP	33 Lbs.	
	20 BP	31 Lbs.	
	16 BP	26 Lbs.	
	12 BP	22 Lbs.	
	10 BP	20 Lbs.	
	9 BP	20 Lbs.	
4.	Primary Source Assembly	32 Lbs.	
5.	Secondary Source Assembly:		
	20 BP	32 Lbs.	
	20 PLUGS	15 Lbs.	
6.	Thimble Plug Assembly	10 Lbs.	

TRANSFERRING FUEL WITH THE SPENT FUEL MANIPULATOR CRANE
OP/1/A/6550/06
ZZ TAPE READINGS
ENCLOSURE 6.2

(LATER)