

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
FUEL TRANSFER SYSTEM OPERATION

1.0 PURPOSE

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

3.0 Startup of Fuel Transfer System

4.0 Transfer of Fuel Assembly From the Spent Fuel Pool to Reactor Side

5.0 Transfer of Fuel Assembly From the Reactor Side to the Spent Fuel Pool

6.0 Securing Fuel Transfer System

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 Reactor, Canal or Fuel Pool. Personnel monitoring equipment must be secured with tape.

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

2.4 Bypass switches are only to be used in accordance with Station Directive 3.1.17 (Fuel Handling Interlocks).

2.5 All Fuel Movement must be authorized in advance by the Reactor Engineer per OP/0/A/6550/11 (Internal Transfer of Fuel Assemblies).

3.0 STARTUP OF TRANSFER SYSTEM

Date
Time/Initial

3.1 Initial Conditions

_____ 3.1.1 Functional check of the fuel transfer system has been performed as per PT/0/A/4550/01 (Preparation for Refueling).

_____ 3.1.2 Communications are established between the pool side and reactor side control stations.

_____ 3.1.3 The Transfer System Traverse car is located at the end of its travel under the appropriate lifting frame.

_____ 3.1.4 1KF-122 (KF Fuel Transfer Canal Isol) open.

Date
Time/Initial

3.2 Procedure

- _____ 3.2.1 Close the main power switch on the pit side control console and the reactor side console.
- _____ 3.2.2 Push to test the indicating lights on the pit side and reactor side control consoles. Replace any bulbs that will not light and retest.
- _____ 3.2.3 De-energize heaters on both reactor and pit side control console.

4.0 TRANSFER OF FUEL ASSEMBLY FROM THE SPENT FUEL POOL TO REACTOR SIDE

4.1 Initial Conditions

- _____ 4.1.1 Functional check of the fuel transfer system has been performed as per PT/0/A/4550/01 (Preparation for Refueling).
- _____ 4.1.2 Communications are established between the pool side and reactor side control stations.
- _____ 4.1.3 The Transfer System Traverse car is located at the end of its travel under the ^{spent fuel pit} appropriate lifting frame.
- _____ 4.1.4 1KF-122 (KF Fuel Transfer Canal Isol) open.
- _____ 4.1.5 Notify Health Physics prior to transferring fuel.

4.2 Procedure

- 4.2.1 Place the pump control select switch to the "START" position on the pit side control console.
 - 4.2.2 Push the "RAISE FRAME" pushbutton on the pit side console and verify the "FRAME DOWN" light goes out.
 - 4.2.3 Verify the "FRAME UP" light comes on when the frame reaches the vertical position.
- NOTE: Leave the pump control select switch in the "START" position until the frame is returned to the horizontal position.
- 4.2.4 Verify the pit side transfer system control console is aligned per Enclosure 7.1 Appendix A.
 - 4.2.5 Verify the reactor side fuel transfer system control console is aligned per Enclosure 7.2 Appendix A.

- 4.2.6 Place fuel assembly in the pit side Upender per OP/0/A/6550/06 (Transferring Fuel With the Spent Fuel Manipulator Crane).
- 4.2.7 Push the "LOWER FRAME" button, on the pit side control console and verify that the "FRAME UP" light goes out.
- 4.2.8 Verify the "FRAME DOWN" light on the pit side comes on when the frame is in the horizontal position.
Console
- 4.2.9 Turn pump control select switch to "STOP" on the pit side.
Console
- 4.2.10 Turn the traverse control select switch on the reactor side control panel to the "ON" position. Verify "TRAVERSE CONTROL" lamp on pit side comes "ON".
-console
- 4.2.11 Set the traverse selector switch to "REACTOR" on the pit side control panel.
- 4.2.12 Push the "TRAVERSE START" pushbutton and verify that the car begins to move toward the reactor and the "CAR AT PIT" light goes out.
- 4.2.13 Verify the car stops and the "CAR AT REACTOR" light comes on when the car reaches the Reactor Side.
(on the spent fuel side control console)
- 4.2.14 Verify that on the reactor side control console, the "CAR AT REACTOR" light comes on.
to
- 4.2.15 Turn the "TRAVERSE CONTROL"- "OFF" on the reactor side and verify the "TRAVERSE CONTROL" light goes off on the pit side console.
console
- 4.2.16 Turn the pump control select switch to "START" on the reactor side.
Console
- 4.2.17 Push the "RAISE FRAME" pushbutton on reactor side control console and verify the frame begins to move up and "FRAME DOWN" light goes "OFF".
- 4.2.18 Verify the "FRAME UP" light comes on when the frame reaches the vertical position.
- 4.2.19 Remove the fuel assembly from the Upender per ~~Control Rods~~ and Thimble Plugs with the Reactor Building OP/0/A/6550/07 (Transferring Fuel, Manipulator Crane).
Control Rods
- 4.2.20 If transfer system is not to be used for at least 30 minutes:
 - 4.2.20.1 Depress "LOWER FRAME" pushbutton on Reactor side console and verify "FRAME DOWN" light comes on when frame reaches horizontal position.

4.2.20.2 Place "PUMP CONTROL SELECT SWITCH" to the "STOP" position.

4.2.21 Energize the panel and motor heaters on the pool side and reactor side control panels when not in use.

5.0 TRANSFER OF FUEL ASSEMBLY FROM THE REACTOR SIDE TO THE SPENT FUEL POOL

5.1 Initial Conditions

Date
Time/Initial

- _____ 5.1.1 Functional check of the fuel transfer system has been performed as per PT/0/A/4550/01 (Preparation for Refueling).
- _____ 5.1.2 Communications are established between the pool side and reactor side control stations.
- _____ 5.1.3 The Transfer System Traverse car is located at the end of its travel under the ~~appropriate~~ lifting frame.
reactor side
- _____ 5.1.4 IKF-122 (KF Fuel Transfer Canal Isol) open.
- _____ 5.1.5 Notify Health Physics prior to transferring fuel.

5.2 Procedure

- 5.2.1 Place the pump control select switch to the "START" position on the reactor side control console.
 - 5.2.2 Push the "RAISE FRAME" pushbutton on the reactor side console and verify the "FRAME DOWN" light goes out.
 - 5.2.3 Verify the "FRAME UP" light comes on when the frame reaches the vertical position.
- NOTE: Leave the pump control select switch in the "START" position until the frame is returned to the horizontal position.
- 5.2.4 Verify the reactor side console is aligned per Enclosure 7.2 Appendix B.
 - 5.2.5 Verify the pit side console is aligned per Enclosure 7.1 Appendix B.
 - 5.2.6 Place a fuel assembly in the reactor side upender per OP/0/A/6550/07 (Transferring Fuel, Control Rods and Thimble Plugs With the Reactor Building Manipulator Crane).
 - 5.2.7 Push the "LOWER FRAME" button on reactor side control panel and verify that the "FRAME UP" light goes out.

- 5.2.8 Verify the "FRAME DOWN" light on reactor side console comes on when the frame is in the horizontal position.
- 5.2.9 Turn pump control select switch to "STOP" on the reactor side *console*.
- 5.2.10 Turn the traverse control select switch to the "ON" position on the reactor side. Verify "TRAVERSE CONTROL" lamp on the pit side comes on. *console*
- 5.2.11 Set the traverse selector switch to "PIT" on the pit side control console.
- 5.2.12 Push the "TRAVERSE START" pushbutton on the pit side and verify that the car begins to move toward the Spent Fuel Pit and that the "CAR AT REACTOR" light goes out on both pit and reactor side *consoles*. *console*
- 5.2.13 Verify that the car stops and the "CAR AT PIT" light comes "ON" when the car reaches the Spent Fuel Pool side.
- 5.2.14 Turn the "TRAVERSE CONTROL" switch on the reactor side *console* "OFF" and verify the "TRAVERSE CONTROL" light goes off on the pit side console.
- 5.2.15 Turn the pump control switch to "START" on the pit side *console*.
- 5.2.16 Push the "RAISE FRAME" pushbutton on the pit side control console and verify the frame begins to move up. Verify "FRAME DOWN" light goes out.
- 5.2.17 Verify the "FRAME UP" light comes on when the frame reaches the vertical position.
- 5.2.18 Remove the fuel assembly per OP/0/A/6550/06 (Transferring Fuel With the Spent Fuel Manipulator Crane).
- 5.2.19 If the Transfer System is not to be used again within 30 minutes:
 - 5.2.19.1 Depress "LOWER FRAME" pushbutton on the Pit Side Console and verify "FRAME DOWN" light comes on when the frame reaches the horizontal position.
 - 5.2.19.2 Place the "PUMP CONTROL SELECT SWITCH" to the "STOP" position.
- 5.2.20 Energize the panel and motor heaters on the pit side and reactor side control panels when not in use.

6.0 SECURING FUEL TRANSFER SYSTEM

6.1 Initial Conditions

6.1.1 ~~None~~ System is secured. Proceed to 6.0 of this procedure.

6.2 Procedure

6.2.1 Energize heaters on both reactor and pit side control consoles.

6.2.2 Open the main power switch on the pit control console and the reactor side console.

7.0 ENCLOSURES

7.1 Pit Side Transfer System Control Board Alignment

7.2 Reactor Side Transfer System Control Board Alignment

FUEL TRANSFER SYSTEM OPERATION
 OP/0/A/6550/08
 PIT SIDE TRANSFER SYSTEM CONTROL BOARD ALIGNMENT
 ENCLOSURE 7.1 (RC)

	<u>APPENDIX A</u>	<u>APPENDIX B</u>
1. Main Power Breaker	ON	ON
2. Heater Switch	OFF	OFF
3. Frame Up Lamp	ON	OFF
4. Frame Down Lamp	OFF	ON
5. Traverse Interlock Select Switch	IN	IN
6. Car at Pit Lamp	ON	OFF
7. Car at Reactor Lamp	OFF	ON
8. Valve Open Lamp	ON	ON
9. Traverse Control Lamp	OFF	OFF
10. Lift Interlock Select Switch	IN	IN
11. Bridge Interlock Select Switch	IN	IN
12. Heaters on Lamp	OFF	OFF
13. Pump Control Select Switch	START	STOP
14. Interlock Bypass Lamp	OFF	OFF
15. Valve Interlock Select Switch	IN	IN
16. Traverse Control Select Switch	PIT	REACTOR