

DUKE POWER COMPANY  
PROCEDURE PREPARATION  
PROCESS RECORD

(1) ID No: CP/c/4/1510/06  
Change(s) 12 to  
- Incorporated

- (2) STATION: I cone
- (3) PROCEDURE TITLE: Spent Fuel Transfer - NAC-1  
CASK
- (4) PREPARED BY: Cut Holland DATE: 11-5-81
- (5) REVIEWED BY: Wayne Morgan DATE: 11-9-81
- Cross-Disciplinary Review By: \_\_\_\_\_ N/R: WJM
- (6) TEMPORARY APPROVAL (IF NECESSARY):
- By: \_\_\_\_\_ (SRO) Date: \_\_\_\_\_
- By: \_\_\_\_\_ Date: \_\_\_\_\_
- (7) APPROVED BY: J N Pope/wm Date: 11-18-81
- (8) MISCELLANEOUS:
- Reviewed/Approved By: W. Morgan Date: 11/9/81
- Reviewed/Approved By: Chad Funder Date: 11/9/81

820517 0242

Checked Control Copy \_\_\_\_\_

OP/O/A/1510/06

Assembly No. \_\_\_\_\_

Date \_\_\_\_\_

DUKE POWER COMPANY  
OCONEE NUCLEAR STATION  
SPENT FUEL TRANSFER, NAC-1 CASK

1.0 Purpose

To provide a method for loading, shipping, and receiving spent fuel in the NAC-1 spent fuel shipping cask.

- 4.0 Receiving an Empty Cask
- 5.0 Loading the Cask with a Spent Fuel Assembly
- 6.0 Closing the Cask and Decontamination
- 7.0 Preparation of Cask for Shipment
- 8.0 Receiving A Loaded Spent Fuel Cask
- 9.0 Unloading the Cask
- 10.0 Closing and Preparing An Empty Cask for Shipment
- 11.0 Procedure to Return Loaded Cask to Pool Bottom for O-Ring Replacement
- 12.0 Procedure to Return Empty Cask to Pool Platform for O-Ring Replacement

2.0 Limits and Precautions

- 2.1 The shipping cask shall not be moved outdoors when the threat of a severe weather disturbance exists. In the event of rain, the cask will be covered by poly.
- 2.2 Many pinch-point hazards are presented by the massive cask and other heavy equipment. A very slow swing of the suspended cask contains a large amount of energy.

- 2.3 The 100-ton crane main block and hook will not be submerged in the spent fuel pool.
- 2.4 The slowest speed on the 100-ton crane main hoist should not be used more than 15 seconds out of any minute to prevent overheating electrical components.
- 2.5 The fuel receiving area rolldown door shall be left closed when the cask is in a position which allows potential damage to spent fuel assemblies stored in the pool.
- 2.6 Following any incident which could cause damage to a spent assembly or if an alarm sounds from either RIA-6 (Area Monitor) Spent Fuel Bridge or RIA-41 - Spent Fuel Building Ventilation Air, personnel shall evacuate the spent fuel pool area going to Room 615 (Unit 1&2) or Room 662 (Unit 3), waiting there until the Spent Fuel Pool area has been cleared by H.P.
- 2.7 The cask exterior is thin stainless sheet metal. Care must be exercised when handling to prevent denting the cask.
- 2.8 The cask must be vented to SFP ventilation system prior to unbolting the closure head.
- 2.9 Exercise care when loading the fuel assembly into the cask and installing the closure head to prevent damaging the O-ring sealing surface.
- 2.10 The cask surface shall not be cleaned with an abrasive material. No polishing of the cask exterior shall be permitted.
- 2.11 Do not place crane block weight upon the long adapter storage bracket.
- 2.12 Do not immerse the cask in water that has a temperature of 100°F less than the cask surface to prevent thermal shock of the cask.

- 2.13 The temperature rise of the cask surface after loading and removal from the pool shall be monitored.
- 2.14 The NAC license requires that, for a loaded cask, 27 times the neutron dose rate plus 1.4 times the gamma dose rate shall not exceed 1.0 Rem/hr. at 3 feet from the external cask surface.
- 2.15 Prior to each shift, notify applicable Control Room that fuel transferring is in operation.
- 2.16 Contact Security prior to opening roll-up door.
- 2.17 If sipping cans are in deep end of pool, insure adequate clearance between cask and sipping can supports.
- 2.18 During periods of idleness (of 15 minutes or greater) of the Spent Fuel Bridge turn off the hydraulic pump to prevent overheating.
- 2.19 Stop the hoist motor when ratcheting occurs to prevent overheating. Allow motor to cool for a short period.
- 2.20 All major decontamination work will be done in the decon pit to avoid exposure to decontamination agents in poor ventilation areas (i.e. fuel receiving area).
- 2.21 Verify overhead cranes have met PM/safety inspection requirements per MP/0/A/1710/06 and MP/0/A/1710/09 within past six (6) months, also MP/0/A/3000/10A within past 12 months.
- 2.22 Refer to OP/0/A/1506/1, Fuel and Component Handling, for S.F. Bridge operation.

| <u>Verification</u> |
|---------------------|
| <u>Date</u>         |
| <u>Init./Time</u>   |

### 3.0 Initial Conditions

- 3.1 Obtain RWP from HP prior to beginning of work.
-

|   | <u>Date</u><br><u>Init./Time</u> | <u>Verification</u><br><u>Date</u><br><u>Init./Time</u> |
|---|----------------------------------|---|
| 3.2 Verify functional check of Spent Fuel Handling Bridge and Interlocks, OP/O/A/1503/01, Enclosure 8.3 has been performed within the past 6 months. 1&2 , 3  |                                  |   |
| 3.3 Personnel operating the 100-ton crane shall meet all ANSI Training Requirements.  |                                  |   |
| 3.4 Spent Fuel Ventilation System is operable, as verified with the Applicable Control Room at least once during movement of Spent Fuel Assembly.   |                                  |   |
| 3.5 RIA-6 and RIA-41 or equivalent instruments are available.   |                                  |   |
| 3.6 Wrap the cask trailer in poly to prevent contamination of the trailer.  |                                  |   |
| 3.7 Prior to spent cask movement, spent fuel stored in the first 28 rows (closest to the cask handling area) of Unit 1 and 2 S.F.P., shall be decayed a minimum of 55 days. In Unit 3 S.F.P., spent fuel stored in the first 20 rows (closest to the spent fuel cask handling area), shall be decayed a minimum of 43 days. This shall be verified with the Performance Group prior to shipping after a refueling operation or prior to each shipping during a refueling operation. |                                  |   |

Date  
Init./Time

Verification  
Date  
Init./Time

3.8 Quarterly maintenance has been completed on cask within 3 months and annual maintenance has been completed within 12 months and thermal test has been completed within 36 months or has not exceeded the maximum allowable internal.

Q.M. \_\_\_\_\_, A.M. \_\_\_\_\_, T.T. \_\_\_\_\_.

4.0 Receiving An Empty Cask

4.1 Verify the short adapter with J-hook is installed on the 100-ton crane hook and the cover is removed from the decon pit. (NOTE: Safety rails or chain must be used whenever decon pit cover is removed.) \_\_\_\_\_

4.2 Open roll-up door and place the trailer in the fuel receiving area, set the trailer brakes, and chock the trailer wheels. Close the roll-up door after the tractor has left the receiving area. \_\_\_\_\_

NOTE: Security must be present before  
roll-up door is opened. \_\_\_\_\_

4.3 Open the trailer doors as required for access. \_\_\_\_\_

4.4 With the yoke installed, raise the cask to a vertical position on the transport trailer by moving the crane as necessary to keep the hoist

|   | <u>Date</u><br><u>Init./Time</u> | <u>Verification</u><br><u>Date</u><br><u>Init./Time</u> |
|---|----------------------------------|---|
| cables vertical. When the cask is vertical, lift the cask bottom clear of the trailer support.  |                                  |   |
| 4.5 Raise the cask to the vicinity of the decon pit and remove any grease from the trunnion area.   |                                  |   |
| 4.6 Remove the five port covers with the special spanner wrench, and remove tape and rags from all ports. Verify that the drain valves are closed.  |                                  |   |
| 4.7 Open the vent valve to relieve any internal pressure to SFP ventilation system and then leave the vent valve open. Install snap-tite fitting to open check valve. See Enclosure 13.1.   |                                  |   |
| 4.8 Remove the six closure head hold-down bolts (1-7/8 inch hex head) and attach the closure head lifting spider (1½ inch bolts).   |                                  |   |
| 4.9 Raise the cask out of the Decon Pit and attach the cask bottom shield. Rinse the cask with D. W. over the pool for preventive contamination control, as the cask is lowered onto the pool platform. Then disconnect the J-hook from the cask. |                                  |   |
| 4.10 Place the J-hook and the short adapter on their storage stands.  |                                  |   |

Date  
Init./Time

Verification  
Date  
Init./Time

4.11 Raise the closure head with an auxiliary crain hook, rinsing with D.W. as it clears the pool surface. Perform radiation survey. \_\_\_\_\_

4.12 Inspect the closure head O-rings for damage and replace if necessary. Place the closure head on blotter paper on the pool deck at a convenient storage location. \_\_\_\_\_

NOTE:      Silicone should be used to coat "O" rings to prevent dropping rings into pool.

4.13 Attach the long lift adapter to the 100-ton crane hook, and then engage the J-hook on the cask and move the cask to the pool bottom depression, rinsing with D.W. objects as they enter the pool. Position the cask as far East and North as possible. (If sipping cans are present, rotate hook to face west prior to picking up cask from platform.) Align the cask so that the lifting yoke rotates to the east or west as the hook is lowered with the cask on the pool bottom. The fuel assembly hole should be square with the pool walls. Do not rotate the cask with the long lift adapter. Move the yoke west into its resting position on the cask. \_\_\_\_\_



Date  
Init./Time

Verification  
Date  
Init./Time

4.14 Remove the J-hook from the cask yoke and raise the lift adapter and hook from the pool, rinsing with D. W. as they emerge from the pool surface. Move the adapter/hook assembly to the decon pit area to provide clear access to the cask by the spent fuel bridge.

5.0 Loading The Cask With A Spent Fuel Assembly

5.1 Using the spent fuel bridge, pick up the spent fuel assembly to be shipped from the spent fuel pool racks. Rack # \_\_\_\_\_; pool \_\_\_\_\_.

5.2 Using the bridge and trolley interlock bypass switches as necessary, position the fuel mast over the cask insuring adequate clearance between mast and yoke.

5.3 After visually indexing the mast over the cask, lower the assembly into the cask. Use caution to prevent touching the closure head sealing surface. Monitor Dillon carefully while lowering.

5.4 Note the ZZ tape reading at low-load on the fuel mast and visually inspect the grapple/assembly position in the cask. ZZ reading \_\_\_\_\_.

|  | <u>Date</u><br><u>Init./Time</u> | <u>Verification</u><br><u>Date</u><br><u>Init./Time</u> |
|--|----------------------------------|---|
| 5.5 Disengage from the assembly and raise the fuel mast to Grapple Up Disengaged.  | _____                            | _____   |
| 5.6 Verify assembly number, using T. V. camera if available. Double verification by personnel not knowing assembly number is required.<br>_____<br>Assembly number by _____<br>_____<br>Assembly number by _____   | _____                            | _____   |
| 5.7 Move bridge to a position over the spent fuel racks and return any bypass switches used to their normal positions.   | _____                            | _____   |
| 5.8 Using an auxiliary crane, pick up the closure head and suspend the closure head over the cask, rinsing with D.W. as it enters the pool.  | _____                            | _____   |
| 6.0 <u>Closing The Cask And Decontamination</u>  |                                  |   |
| 6.1 With the closure head suspended over cask, lower the head onto the cask, rinsing objects with D.W. as they enter the pool. Align the Δ mark on the closure head with ∇ mark on the cask. To insure proper alignment, verify the indexing pin on the cask is in the lid guide hole. | _____                            | _____   |
| 6.2 Release the auxiliary crane hook from the closure head spider and raise the hook from the pool. Rinse the hook with D. W. as it emerges from the pool.   | _____                            | _____   |

Date  
Init./Time

Verification  
Date  
Init./Time

- 6.3 Reposition the lift adapter/hook over the cask and lower the hook. Engage the hook on the cask yoke. (If sipping cans are present, engage hook on yoke with hook facing West.) Care should be taken while lifting yoke so as not to hook platform supports. \_\_\_\_\_
- 6.4 Raise the cask from the pool bottom and rinse with D. W. the lift adapter, yoke, and cask as they emerge from the water. As the cask is removed from the pool, monitor for neutron and gamma radiation (this should not exceed about 10 mR/hr. total at eight feet from the cask). Place the cask on the pool platform. \_\_\_\_\_
- 6.5 Disengage the hook from the cask and return the lift adapter and hook to its storage location after wiping off excess water. \_\_\_\_\_
- 6.6 Attach the J-hook and the short adapter to the 100-ton crane hook. \_\_\_\_\_
- 6.7 Remove water from the bolt holes with hand pipet and hand tighten all of the six closure head bolts. Engage the J-hook on the cask yoke and raise the cask to a convenient height. Rinse the cask with D. W. and monitor it for radiation as it emerges from the pool. \_\_\_\_\_

Date  
Init./Time

Verification  
Date  
Init./Time

6.8 Place blotter paper on the pool deck between the pool and the decon pit. Move the cask from the pool to the decon pit. Remove cask bottom shield, and wipe off excess water before storage.

6.9 Remove the closure head lifting spider, and remove water from spider bolt holes.

6.10 Torque the closure head bolts to 600 ft-lbs. with a 1, 4, 2, 5, 3, 6 bolt sequence (using any bolt as 1, and then 1 thru 6 numbered in a clockwise direction). Then torque the bolts to 1,000 ft-lbs. using the same sequence.

NOTE: Torque wrench used will be issued from and returned to the Tool Room.

6.11 Using compressed air, pressurize the cask cavity to 80-120 psig through the vent line. See Enclosure 13.1 for valve locations. Visually inspect the cask, closure head and valves for leakage. To check the valves for leakage, a snaptite fitting must be installed to open the check valve in the fitting. Hold this pressure for ten minutes. There may be a small pressure transient as temperature equalizes. If seal leakage is present, the cask

Date  
Init./Time

Verification  
Date  
Init./Time

should be returned to the pool bottom and O-rings replaced per Section 10.0 of this procedure.

---

6.12 Disconnect the pressurizing air line and vent pressure to S.F.P. ventilation.

---

6.13 Using a compressed air hose attachment and a pressure gauge, pressurize the annulus between the double O-rings to 80 to 100 psig through annulus valve, see Enclosure 13.1. Hold this pressure for 5 minutes. If seal leakage is present, the cask should be returned to the pool bottom and replace O-rings per Section 10.0 of this procedure.

---

6.14 Disconnect the pressurizing air line and vent pressure to S.F.P. vent system off of the cask.

---

6.15 Attach a drain hose to one of the drain valves and drain 10 (+0, -2) gallons of water from the cask cavity into the calibrated drum for surge volume. Monitor the collected water for radiation. Then drain drum into pool and rinse it out.

---

6.16 Shut the vent valve and check that all valves are shut. Place water-absorbent rags in all valve ports. Then replace all valve port covers finger tight.

---

|  | <u>Date</u><br><u>Init./Time</u> | <u>Verification</u><br><u>Date</u><br><u>Init./Time</u> |
|--|----------------------------------|---|
| 6.17 Decon cask to HP requirements.  | _____                            |   |
| 7.0 <u>Preparation of Cask For Shipment</u>  |                                  |   |
| 7.1 When cask has been decontaminated to H.P. requirements, rotate the cask to its proper orientation for trailer loading. (Yoke lay down arms towards front of trailer.)  | _____                            |   |
| 7.2 With the transport trailer in position move the cask over the trailer and lower it near the trailer.   | _____                            |   |
| 7.3 Lower the cask so that the lower trunnions fit into the tie-downs at the trailer rear.   | _____                            |   |
| 7.4 Lower the cask to a horizontal position and move the 100-ton crane as required to keep the crane cables vertical.  | _____                            |   |
| 7.5 Close the transport trailer doors and rotate the two (2) EMPTY signs to read RADIOACTIVE III and the four (4) DRIVE SAFELY signs to read RADIOACTIVE.  | _____                            |   |
| 7.6 When trailer and cask are decontaminated to H.P. requirements, open the fuel receiving area door and attach a tractor to the trailer. Remove the wheel chocks and move cask and trailer out of receiving area. | _____                            |   |
| 7.7 Notify Performance to mail the DOE/NRC Form 741, Nuclear Transportation Report to the Dept. of Energy the same day.  | _____                            |   |

Date  
Init./Time

Verification  
Date  
Init./Time

8.0 Receiving A Loaded Spent Fuel Cask

- 8.1 Open roll-up door and place the trailer in the fuel receiving area, set the trailer brakes, and chock the trailer wheels. Close the roll-down door after the tractor has left the receiving area. \_\_\_\_\_
- 8.2 Verify that the J-hook and the short adapter is installed on the 100-ton crane hook and that the cover is removed from the decon pit. \_\_\_\_\_
- 8.3 Open the trailer doors as required for access. \_\_\_\_\_
- 8.4 With the yoke installed, raise the cask to a vertical position on the transport trailer by moving the crane as necessary to keep the hoist cables vertical. When the cask is vertical, lift the cask bottom clear of the trailer support. \_\_\_\_\_
- 8.5 Raise the cask to the vicinity of the decon pit and remove any grease from the trunnion area. Attach the cask bottom shield. \_\_\_\_\_
- 8.6 Check the external cask temperature at the cask midpoint using "feel" test. If cask temp. is excessive, check with a thermometer and record this temp. \_\_\_\_\_ °F. \_\_\_\_\_

Date  
Init./Time

Verification  
Date  
Init./Time

- 8.7 Remove the five port covers with the special spanner wrench. Remove all rags from valve ports. \_\_\_\_\_
- 8.8 Inspect the cask externals for damage to the neutron shield, valves, rupture disc, fittings, etc. \_\_\_\_\_
- 8.9 If the cask exterior temp. was greater than 170°F in Step 7.6, cool the cask exterior with a water spray until the temp. is reduced to less than 150°F. The water hose O. D. should not exceed 1 inch and the cask decon spray tank must have available volume to contain the spray drained from the decon pit. \_\_\_\_\_
- 8.10 Attach the check assembly to the vent valve and open the vent valve. Open the check assembly valve and vent the cask into the SFP ventilation system. Remove the vent line and the check assembly after the vent is complete and leave the vent valve open. Install snap-tite fitting on vent valve. CAUTION: Airborne contaminants may be released during this operation. \_\_\_\_\_
- 8.11 Remove the closure head holddown bolts (six 1-7/8 in. dia. hex-head bolts) and then attach



Date  
Init./Time

Verification  
Date  
Init./Time

the closure head lifting spider using four 1-1/2 inch bolts. Do not raise the closure lid. \_\_\_\_\_

CAUTION: The cask closure head is not to be removed until the cask is at the bottom of the spent fuel pool.

#### 9.0 Unloading the Cask

9.1 Raise the cask out of the decon pit with the J-hook and inspect the cask bottom shield for a secure fit. While rinsing the cask with D. W. over the pool for perventive contamination control, lower the cask on the pool platform and disconnect the J-hook from the cask. Place the J-hook and the short adapter in their storage stand. \_\_\_\_\_

9.2 Attach the long lift adapter to the 100-ton crane hook and engage the J-hook on the cask and move the cask to the pool bottom depression, rinsing with D.W. as it enters the pool.  
(If sipping cans are present, rotate hook to face west prior to picking up cask from platform.) Position the cask as far East and North as possible. Align the cask so that the lifting yoke rotates to the east or west as the hook is lowered with the cask on the pool bottom. The cask trunnions should be square

Date  
Init./Time

Verification  
Date  
Init./Time

with the pool walls. Do not rotate cask with long lift adapter. Move the yoke west into its resting position on the cask. \_\_\_\_\_

- 9.3 Remove the J-hook from the cask yoke and raise the lift adapter and hook from the pool, rinsing with D. W. as they emerge from the pool water. Move the adapter/hook assembly to the decon pit area to provide clear access to the cask by the spent fuel bridge. \_\_\_\_\_

- 9.4 Using an auxiliary crane hoist pickup closure head lifting spider. Slowly raise the closure head. Air that has not escaped through the vent will be released at this time. Rinse all objects with D.W. as they clear pool surface. Raise the closure head and place on the pool deck. Monitor for radiation. \_\_\_\_\_

- 9.5 Using the spent fuel bridge and trolley interlock bypass switches as necessary, position the fuel mast over the cask insuring adequate clearance between yoke and mast. Lower the grapple onto the fuel assembly. Use caution to prevent touching the closure head sealing flange. \_\_\_\_\_

- 9.6 Note the ZZ tape reading at low load on the fuel mast and visually inspect the grapple/

Date  
Init./Time

Verification  
Date  
Init./Time

assembly position in the cask.

ZZ reading \_\_\_\_\_.

- 9.7 Engage the fuel assembly and raise the fuel assembly from the cask and place it into a spent fuel rack. Note the rack and pool

location: Rack \_\_\_\_\_

Pool \_\_\_\_\_ Insure all bypass switches used are returned to normal as soon as S.F.

Bridge is moved away from cask.

10.0 Closing and Preparing An Empty Cask For Shipment.

- 10.1 Reposition the long lift adapter/hook over the cask and lower the hook. Engage the hook on the lifting yoke.

- 10.2 Raise the cask from the pool bottom and rinse the lift adapter, yoke, and cask with D. W. as they emerge from the pool. Place the cask on pool platform. Monitor the cask for gamma radiation as it emerges from the pool.

- 10.3 Disengage the hook from the cask and then return the long lift adapter and J-hook to its storage location after wiping it down over Decon Pit.

- 10.4 With an auxiliary crane, pick up the closure head from the pool deck. Lower the head onto

Date  
Init./Time

Verification  
Date  
Init./Time

the cask. Align the  $\Delta$  mark on the closure head with the  $\nabla$  mark on the cask. To insure proper alignment, verify the indexing pin on the cask is in the lid guide hole.

- 10.5 Attach the J-hook and the short adapter to the 100-ton crane hook.
- 10.6 Place blotter paper between the decon pit and the side of the pool.
- 10.7 Engage the J-hook on the cask yoke and raise the cask from the pool and place it in the decon pit. Rinse the cask with D. W. as it emerges from pool.
- 10.8 Remove cask bottom shield and wipe off excess water before storage.
- 10.9 Remove water from the bolt holes with hand pipet and install the six closure head bolts hand tight.
- 10.10 Remove the closure head lifting spider, and remove water from spider bolt holes.
- 10.11 Torque the closure head bolts to 600 ft-lbs. with a 1, 4, 2, 5, 3, 6 bolt sequence (using any bolt as 1, and then 1 thru 6 numbered in a clockwise direction). Then torque the bolts to 1,000 ft-lbs. using the same sequence.

Date  
Init./Time

Verification  
Date  
Init./Time

10.12 Using compressed air, pressurize the cask cavity to 80-120 psig through the vent line. Visually inspect the cask, closure head, and valves for leakage. To check the valves for leakage, a snaptite fitting must be installed to open the check valve in the fitting. Hold this pressure for ten minutes. There may be a small pressure transient as temperature equalizes. If seal leakage is present, remove the closure head and replace O-rings per Section 11.0 of this procedure.

---

10.13 Disconnect the pressurizing air line and vent pressure to S.F.P. ventilation.

---

10.14 Using compressed air, pressurize the annulus between the double O-rings to 80-100 psig. Hold this pressure for 5 minutes. If seal leakage is present, replace O-rings per Section 11.0 of this procedure.

---

10.15 Disconnect the air line and attach a quick disconnect fitting to the vent valve. Open the vent valve to vent pressure off of the cask to the SFP ventilation system.

---

10.16 Shut the vent valve and check that all valves are shut. Disconnect all hoses from the cask. Place rags in valve ports and replace the valve port covers finger tight.

---

Date  
Init./Time

Verification  
Date  
Init./Time

10.17 Decon cask to H. P. requirements. \_\_\_\_\_

10.18 Rotate the cask to the proper loading orientation and move the cask to the transport trailer. Lower the cask and carefully place the lower trunnions into the tie-downs at the back end of the trailer. \_\_\_\_\_

10.19 Lower the cask to a horizontal position and move the crane as necessary to keep the crane cables vertical during this operation. \_\_\_\_\_

Signature of Supervisor \_\_\_\_\_

Date \_\_\_\_\_

11.0 Procedure To Return Loaded Cask To Pool Bottom For O-Ring Replacement

NOTE: This section would be completed following a seal failure indication from step 5.12, 5.14.

11.1 Close the valve on the pressure check assembly. Attach pressure check assembly to the vent valve and open the vent valve. Run a hose from the check assembly to a pool ventilation system intake duct. Open the valve on the pressure check assembly to vent off any cask internal pressure. \_\_\_\_\_

11.2 Remove the closure head hold down bolts and attach the closure head lifting spider using four 1-1/2 inch bolts. Do not raise the closure lid. \_\_\_\_\_

Date  
Init./Time

Verification  
Date  
Init./Time

11.3 Repeat steps 8.1 to 8.4 (initial in margin). \_\_\_\_\_

11.4 Replace the O-rings on the head with ones supplied by NAC. Work over blotter paper to prevent spreading contamination. \_\_\_\_\_

11.5 Repeat steps 4.8 through 5.14 (initial in margin). \_\_\_\_\_

11.6 If the seal leakage persists, repeat steps 10.1 through 10.5 for subsequent O-ring replacement. \_\_\_\_\_

11.7 After seal leakage is corrected, resume with step 5.15 of this procedure. \_\_\_\_\_

12.0 Procedure to Return Empty Cask to Pool Platform for O-Ring Replacement

NOTE: This section would be completed following a seal failure indication from step 9.12 and 9.14.

12.1 Close the valve on the pressure check assembly.

Attach pressure check assembly to the vent valve and open the vent valve. Run a hose from the check assembly to a pool ventilation system intake duct. Open the valve on the pressure check assembly to vent off any cask internal pressure. \_\_\_\_\_

12.2 Remove the closure head hold-down bolts and attach the closure head lifting spider using

Date  
Init./Time

Verification  
Date  
Init./Time

four 1½-inch bolts. Do not raise the closure head.

12.3 Raise the cask out of the decon pit with the J-hook and inspect the cask bottom shield for a secure fit. While rinsing the cask with D. W. over the pool for preventive contamination control, lower the cask on the pool platform and disconnect the J-hook from the cask.

12.4 Using the auxiliary crane hook, raise the cask closure head to poolside and replace the O-rings on the head with ones supplied by NAC. Work over absorbent paper to prevent spreading contamination. Monitor for radiation.

12.5 Repeat steps 9.4 through 9.14 (Initial in margin).

12.6 If the seal leakage persists, repeat steps 11.1 through 11.5 for subsequent O-ring replacement.

12.7 After seal leakage is corrected, resume with step 9.15 of this procedure.

### 13.0 Enclosures

13.1 NAC-1 Cask Valve Location



# NAC-1 CASK VALVE LOCATION

