VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

December 10, 2012

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Serial No.: 12-452
SPS/LIC-CGL R0
Docket Nos.: 50-280/281
License Nos.: DPR-32/37

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
10CFR50 APPENDIX R EXEMPTION REQUEST
REACTOR COOLANT PUMP OIL COLLECTION SYSTEM

Pursuant to 10CFR50.12, Virginia Electric and Power Company (Dominion) requests an exemption from the requirements of 10CFR50, Appendix R, Section III.O for Operating Licenses DPR-32 and DPR-37 for Surry Power Station (Surry) Units 1 and 2, respectively. Section III.O requires that the Reactor Coolant Pumps (RCPs) be equipped with an oil collection system (OCS) if the containment is not inerted. In addition, Section III.O requires that collection systems shall be capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the RCP lube oil system.

The purpose of this exemption request is to: 1) address the potential for minor, uncollected oil misting from the RCP motors, and 2) provide the basis for the acceptability of routing the RCP OCS discharge flow from the collection trays for the stator coolers to the Control Rod Drive Mechanism cooler drain system (to the containment sump). Justification for this exemption request is included in the enclosure.

The modification to route the RCP OCS discharge from the collection tray to outside the OCS will meet the safety intent of 10CFR50, Appendix R, Section III.O to assure failure of the lube oil system will not lead to fire during normal or design basis accident conditions. No oil misting or pooling has been noted on the Surry RCP motors; however, minor oil misting may be possible and may not be collected by the OCS. Any uncollected oil misting or oil misting collected by the stator drip trays and directed to the containment sump would be bounded by the fire hazards analysis and would not adversely impact the safe operation of the plant.

This exemption request has been reviewed and approved by the Facility Safety Review Committee. In accordance with 10CFR50.12, this exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security.

A006
NRR

Dominion requests approval of this exemption request by November 29, 2013.

If you have any questions or require additional information, please contact Mr. Gary D. Miller at (804) 273-2771.

Sincerely,

J. Alan Price
Vice President – Nuclear Engineering

Commitments made by this letter: None

Enclosure: 10CFR50 Appendix R Exemption Request – Reactor Coolant Pump Oil Collection System

cc: U. S. Nuclear Regulatory Commission, Region II
245 Peachtree Center Ave., NE, Suite 1200
Atlanta, Georgia 30303-1257

Ms. K. R. Cotton
NRC Project Manager Surry
U. S. Nuclear Regulatory Commission
One White Flint North
Mail Stop O 8G-9A
11555 Rockville Pike
Rockville, MD 20852-2738

Dr. V. Sreenivas
NRC Project Manager North Anna
U. S. Nuclear Regulatory Commission
One White Flint North
Mail Stop O 8G-9A
11555 Rockville Pike
Rockville, MD 20852-2738

NRC Senior Resident Inspector
Surry Power Station

ENCLOSURE

10CFR50 APPENDIX R EXEMPTION REQUEST - REACTOR COOLANT PUMP OIL COLLECTION SYSTEM

Virginia Electric and Power Company
(Dominion)
Surry Power Station Units 1 and 2

**Surry Power Station Units 1 and 2 –
Potential for Uncollected RCP Motor Oil Misting and
RCP Stator Cooler Collection Tray Discharge to Containment Sump
Outside the Oil Collection System**

1 EXEMPTION REQUEST PURPOSE

Pursuant to 10CFR50.12, an exemption from 10CFR50, Appendix R, Section III.O is being requested. The purpose of this Exemption Request is to: 1) address the potential for minor, uncollected oil misting from the Reactor Coolant Pump (RCP) motors and 2) provide the basis for the acceptability of the RCP oil collection system (OCS) to route the discharge from the collection trays for the stator coolers to the Control Rod Drive Mechanism (CRDM) cooler drain system (to the containment sump).

2 BACKGROUND

In accordance with 10CFR50, Appendix R, Section III.O, Surry Power Station's existing RCP OCS was designed and installed to collect potential oil leakage. Appendix R, Section III.O requires a RCP OCS that is capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the RCP lube oil system.

However, if it were to occur, minor oil misting from the RCP motors may not be collected by the OCS, and the discharge from the collection trays for the stator coolers will not be captured by the RCP OCS. The collection trays were installed on the RCP motor stator coolers at Surry to address Operating Experience involving oil misting at North Anna Power Station. Oil misting has not been an issue at Surry Power Station, but similarly designed collection trays were installed as a conservative measure. As a result of the installation, the RCP oil collection tanks are filled by water condensation from the stator coolers which is collected by the stator cooler collection trays.

The stator cooler collection tray discharges were modified to direct flow to the CRDM cooler drain system (to the containment sump) to address the overfilling of the oil collection drain tank with condensation. This modification was installed in Units 1 and 2 during the Spring 2012 and Fall 2012 refueling outages, respectively.

3 TECHNICAL JUSTIFICATION OF ACCEPTABILITY

Area Description

Fire Areas 15 and 16 are the primary containments for Surry Units 1 and 2, respectively. Each area is a multi-level structure with floor elevations of (-)27'-7",(-)3'-6", 18'-4", and 45'-4". Of concern in this exemption request are the RCP motor cubicles and loop rooms, which occupy the 18'-4" and (-)3'-6", levels of containment, respectively. The boundaries of Fire Areas 15 and 16 are made of reinforced concrete with an inherent fire rating in excess of three hours.

The RCPs are located in cubicles with the steam generators (SGs) and the Reactor Coolant System (RCS) piping. As water exits a SG, it travels through "intermediate leg" piping, into the

RCP, out into the "cold leg" piping, and finally to the reactor vessel inlet. The coolant temperature entering/leaving the reactor vessel is nominally 540°F/605°F respectively during normal operation at 100% power. The RCP motor cubicle walls are constructed of reinforced concrete and extend up to the 45'-4" elevation. The cubicles contain access doors on elevations (-)3'-6" and 18'-4". Although the cubicles do not fully enclose the equipment, they provide a large degree of physical separation.

The RCP motor stator coolers are located on the 18'-4" level. Two coolers are attached to each RCP motor. The motor stator is cooled using forced circulation. Air is drawn in through the motor ventilation ports at the top and bottom of the motor frame by two sets of fins located on the RCP rotor. The air is forced through the motor stator and discharges at the center of the motor frames where the RCP stator coolers are located.

The RCP stator coolers use Component Cooling water to cool the air discharged from the motor stator to control the ambient temperature in the RCP motor cubicle. It should be noted that the RCP motor stator coolers are not associated with the RCP motor lube oil system and, therefore, do not contain any oil. The stator coolers are oriented so as to discharge into the void space above both the intermediate leg and the cold leg piping of the RCS.

Reactor Coolant Pump Motor Design / Oil Collection Considerations

A collection assembly was installed below each of the two stator cooler outlets of the 1/2-RC-P-1A, B, and C pump motors in 2010 and 2011. Each assembly consists of a tray attached to the lower front flange of each stator cooler (out of the flow stream) and a braided stainless steel flex drain hose to the RCP oil collection drain tank (Figure 1). Subsequently, during the Unit 1 Spring 2012 and Unit 2 Fall 2012 refueling outages, the discharge of the trays was rerouted to the existing CRDM Cooling Coil drain system (to the containment sump).

No oil misting or pooling has been noted on the Surry RCP motors. The stator cooler collection trays were installed on the Surry motors in response to oil misting being observed from the RCP motor stator cooler discharge at the North Anna Power Station in 2009. North Anna Engineering evaluated the possible sources of the oil misting and determined that: 1) it is common over the normal operating cycle to lose between 0.5 – 1.5 gallons of oil, and 2) the two most probable sources of the oil misting were identified as the Lower Reservoir Oil Pot Labyrinth Seal and, to a lesser degree, the Upper Reservoir Oil Pot Labyrinth Seal (Flywheel Seal) (Figure 2). The RCP motors at Surry are similar to (but smaller than) the motors used at North Anna. They are both Westinghouse RCP motors and have similar motor lubrication systems with labyrinth seals.

The flywheel labyrinth seal forms the cover of the upper bearing reservoir oil pot separating the RCP motor flywheel space and the oil reservoir (Figure 3). The flywheel seal has two functions. The primary function is to establish a blanket of air pressure in the upper oil reservoir. This blanket pressure must be maintained in reasonable agreement with the air pressure at the oil reservoir standpipe. A mismatch of these two pressures would result in either oil loss over the standpipe or air ingestion into the oil reservoir. The secondary function of the seal is to avoid oil loss at the seal. The seal is located approximately 8 inches above the normal oil level in the reservoir. If misting or oil leakage were to occur at the flywheel seal, it would cause the oil to

migrate into the flywheel enclosure. Eventually, the oil would discharge through the flywheel enclosure vent openings.

The lower oil reservoir labyrinth seal separates the lower oil reservoir from the motor/stator ventilation flow space (Figure 4). The seal is installed approximately 2.75 inches above the normal oil level in the reservoir. Typical oil leaks associated with the lower reservoir involve the reservoir oil pan, standpipe, valve packing, mechanical joints, gaskets, and reservoir cooling line penetrations. These potential leak sources have been modified or repaired in accordance with Westinghouse recommendations. In addition, the current OCS encompasses these potential sources.

The only documented labyrinth seal failure at Surry was associated with a low oil level incident involving the lower RCP motor lower radial bearing in 2003. Degraded motor bearings caused the rotating element to contact the labyrinth seal surface, wiping the seal. An investigation into the cause of the low oil level in the reservoir did not identify the labyrinth seal as being a leak source, nor was any oil found in the vicinity of the seal during the as-found inspection of the motor.

By design, a labyrinth seal does not degrade in operation, as it is a "non-contact" seal, and oil misting is a function of the seal clearances. The amount of misting that may occur would remain constant over the 18-month operating cycle.

The North Anna motors' lower bearing assemblies have seven guide pads as opposed to six in the Surry motors. The additional guide pad can lead to an increase in oil turbulence in the lower reservoir and, thereby, increase the amount of oil on the shaft and misting. The Surry RCP motor cubicles do not have any evidence of an oil sheen on the surrounding surfaces, nor is there evidence of oil coalescing on the stator cooling units as found at North Anna, which may be attributed (in part) to the guide pad design differences.

RCP Motor Maintenance

As noted in Electric Power Research Institute (EPRI) Report 1013456, "Reactor Coolant Pump/Reactor Recirculation Pump Motor Lubrication Oil Systems Maintenance Guide," dated December 2006, Westinghouse developed four modifications/upgrades to the RCP motor to significantly reduce the potential for oil misting/oil loss from the flywheel seal. The modifications/upgrades are Viscosity Pump Upgrade, Truncated Flow Chamber Modifications, Top Oil Reservoir Cover Modification, and Flywheel Seal Upgrade. These modifications/upgrades were implemented on the Surry RCP motors, with the exception of the flywheel seal upgrade. A review of the RCP motor work order history did not reveal any indication that there has ever been any oil leakage from the flywheel (upper reservoir oil pot) labyrinth seal at Surry.

Surry follows the manufacturer's recommendations for the one-year, five-year, and ten-year maintenance under Technical Bulletin 04-5, "Westinghouse RCP Motor Recommended 1-Year, 5-Year, and 10-Year Inspection and Maintenance." The ten-year maintenance is performed at a vendor maintenance facility (EMC) on a nine year frequency to coincide with established refueling cycles. In order to perform this work, a spare motor is used in the rotation, allowing overhaul of the motor that was removed. EPRI Guideline 1013456 recommends performing

preventive maintenance in line with the vendor recommendations. Surry follows these recommendations. The Preventive Maintenance Program at Surry is used to track preventive and recurring maintenance activities and has been successful by ensuring that maintenance is performed at the correct interval. Preventive maintenance tasks are controlled by established preplanned work orders under the recurring task evaluation process. Deferral of any of these work orders requires an evaluation by Engineering. Maintenance performed on the RCP motors is the same. The Post-Maintenance Testing (PMT) Program ensures that the maintenance was successful. Surry has experienced past issues with insufficient baffling in the oil lift pump collection enclosure and with insufficiently sealed conduit penetrations. The baffling on the oil collection enclosures for the seven motors (including the spare) has been modified to ensure that no oil can spray directly out of the enclosure. The conduit penetrations through the oil lift pump collection enclosure are specifically addressed by the installation procedure when the enclosure is installed. The OCSs are inspected by surveillance procedure prior to a unit leaving cold shutdown. A listing of Unit 1 RCP motor periodic maintenance performed at Surry is provided in Attachment 1. The Unit 1 listing is representative of the Unit 2 RCP motor periodic maintenance.

Discussion of Oil Properties and Performance on Hot Surfaces

As previously stated, no oil misting or pooling has been noted on the Surry RCP motors, even though North Anna has experienced RCP motor oil misting. The air that flows through the coolers is cooled by Component Cooling water and then exhausted back into the motor cubicles. During this process at North Anna, some of the oil mist going through the coolers is collected on the cooler tubes or is pushed out into the motor cubicle. This collection of oil on the cooler fin framing is mixed with condensation. Chevron Regal R+O ISO 46 oil is used in the Surry RCP motors. The flashpoint of the lubricating oil is 374°F with an auto-ignition temperature of 608°F. Chevron has no data on the physical properties of the oil above its flash point. Nominal temperatures of the Surry RCP motor and pump flanges are approximately 220°F and 550°F, respectively. During design basis events, the highest cold leg temperature occurs during a loss of load with a temperature of 581°F, and the second highest temperature is 572°F for a loss of feedwater. These temperatures are below the auto-ignition temperature, which is the temperature required to spontaneously ignite and sustain burning of the oil. Therefore, a postulated oil mist fire at Surry would not be credible or sustainable. In addition, guidance in the Station Lubrication Manual outlines the procedural controls that ensure that RCP oil of different properties is not used. The Station Lubrication Manual is procedurally controlled requiring revisions to be authorized and approved.

Potential Ignition Sources

A review of equipment in the area has identified several potential ignition sources which includes the RCPs themselves. Each RCP is protected from being an ignition source by the current OCS. The following table lists typical electrical equipment and other potential ignition sources located in the Unit 1 RCP motor cubicles and loop rooms; the Unit 1 listing is representative of the typical Unit 2 equipment and potential ignition sources.

Mark #	Description	Voltage	Power	Remarks
Unit 1 Containment, A RCP Cubicle (Elevation 18' 4")				
1-RC-MOV-1590	RC Hot Leg Isolation	480V, 3Ø	13.3 HP	Breaker off and locked at power (Tech Spec 3.1 a.4.b)
1-RC-MOV-1591	RC Cold Leg Isolation	480V, 3Ø	13.3 HP	Breaker off and locked at power (Tech Spec 3.1 a.4.b)
1-RC-MOV-1585	RC 8" Bypass Valve	480V, 3Ø	0.66 HP	Breaker off and locked at power
1-RC-P-1A1	Oil Lift Pump for 1-RC-P-1A	480V, 3Ø	10 HP	Normally de-energized
-	480V Welding Receptacle	480V, 3Ø	-	Connected to 40 amp breaker on MCC 1A1-1
Unit 1 Containment, A RCP Cubicle (Elevation 30')				
1-VS-F-60A	CRDM Cooling Fan	480V, 3Ø	75 HP	Only one fan running at power (well above RCP motor)
1-VS-F-60D	CRDM Cooling Fan	480V, 3Ø	75 HP	Only one fan running at power (well above RCP motor)
Unit 1 Containment, A Loop Room (Elevation -3' 6")				
1-RH-MOV-1700	RHR Inlet to A Hot Leg	480V, 3Ø	2.6	Breaker off and locked at power
1-CH-LCV-1460A	Letdown AOV	125VDC	10.6 Watt	ASCO 8316 (normally energized)
1-CH-LCV-1460B	Letdown AOV	125VDC	10.6 Watt	ASCO 8316 (normally energized)
1-RC-HCV-1556A	Loop Fill AOV	125VDC	10.6 Watt	ASCO 8316 (normally de-energized)
1-RC-HCV-1557A	Loop Drain AOV	125VDC	10.6 Watt	ASCO 8316 (normally de-energized)

The noted valve motor actuators could be considered as an ignition source. However, power is removed from these valves by opening the supply breakers prior to start-up and administratively verified open throughout the operating cycle.

Surry Fire Protection/Appendix R procedures provide administrative controls to protect safe shutdown equipment and provide for control of flammable and combustible material. No transient material is allowed in containment while the unit is at power. Verification of containment cleanliness is performed prior to unit startup to ensure that no transient combustible material exists.

Fire Modeling

Surry has not experienced the oil misting condition that was noted at North Anna; however, a discussion of the fire modeling used at North Anna is being provided for reference. For the North Anna oil misting condition, a NUREG-1805 fire model was developed for the worse-case condition, assuming the observed oil leakage from the 1A RCP motor. The oil accumulation in the stator cooler trays was not considered because an ignition source was lacking. The upper pump flange was observed to have a standing film of oil approximately 5-10 mils in thickness; thus, a fire involving the pump flange was postulated.

The fire model used at North Anna assumed 1 – 2 ft^2 of oil pooling. Although not easily measured, a conservative estimate of 16 - 32 ounces was used based on visual inspection. It was then assumed that 100% of the flange was coated with oil and that the film thickness was 10 times the observed thickness, or 50 mils.

Using the NUREG-1805 Chapter 3 equation (Estimated Burning Characteristics of Liquid Pool Fire, Heat Release Rate, Burning Duration, and Flame Height), the fire model demonstrated that the Heat Release Rates (HRR) were low (<100 KW) and burning duration would be brief (less than 2 minutes). Under this worse-case condition, it was shown that the postulated fire would be of insufficient duration to provide continued fire spread due to lack of combustible material in the RCP motor cubicle or loop room. [The lack of combustibles in these areas is applicable to Surry as well, as discussed in the "Prevention" section below.]

The RCS piping insulation used in the loop rooms consists of non-absorptive reflective metallic insulation. Other types of insulation (such as Temp-Mat) exist on smaller lines in the RCP motor cubicles and loop rooms, but these are jacketed with 0.020" stainless steel and banded in place. Plant insulation standards require this configuration. An NEI White Paper published in May 2007 (although not approved by the NRC) discusses that the use of non-absorptive reflective metallic insulation would have precluded fires that occurred at Haddam Neck and Arkansas Nuclear One. The fire model supports the argument that oil misting does not create a fire concern as it will be contained within the RCP motor cubicle.

Fire Prevention

Surry has administrative controls in place to control combustibles in the plant. No transient combustible materials are normally in containment at power. Hot work does not occur within the RCP cubicles at power. During refueling outages, transient combustible permits are not typically issued for containment. The RCP cubicles are concrete compartments that are open to the containment on the top and house the RCPs, SGs, and RCS piping.

With the exception of the oil contained within the RCP motor, combustibles within each cubicle and loop room are negligible. In addition, containment is maintained at a sub-atmospheric pressure of approximately 9.5 psia during power operation and is not routinely occupied, thus preventing the introduction of transient combustibles.

Each RCP oil collection tank is located in the loop room (elevation (-)3' 6") under the RCP motor cubicle. The tank is designed to contain the entire contents of the RCP oil reservoirs. A vent and flame arrestor, as well as a drain line, are provided for each tank. Operations must enter the loop room to drain the tank, which is done at cold shutdown just prior to unit startup. In the event that oil is required to be added to the RCP at power, the tank is not drained. The Surry Technical Requirements Manual (TRM) provides the following actions in the event that the OCS is not functional:

- Monitor containment air temperature at least once per hour for significant rise,
- Stage foam suppression near the containment personnel hatch, and
- Return oil collection to a functional status prior to entering Intermediate Shutdown from an outage of sufficient duration to return the system to a functional status.

These measures are provided to mitigate the effects should a tank overflow occur and to ensure that safe shutdown is not affected. If the tank were to overflow, the path would be out of the vent and flame arrestor onto the loop room floor, as no dams or dikes are provided. Floor drains would direct any overflow to the containment sump. As a result, a fire developing from an overflow event is not likely to occur.

Fire Detection and Suppression

Fire detection within the containment consists of continuous strip heat detection on each RCP, smoke and heat detection within the cable penetration area of containment, and duct smoke detection on the outlet of each of the three containment air recirculation fans. The RCP heat detection alarms at 575°F. The alarm is received locally in containment at the local control panel, on the control room vertical board, and on the control room fire detection panel. Both smoke and heat detectors are provided in an alternating fashion in the cable penetration area, located on the 25' and 47' levels. Heat detectors are set at 165°F. The remaining fire detection in containment consists of smoke detectors mounted on the outlet of each containment air recirculation fan. The fans are located in the containment basement at the (-)27' 7" level. System operation is similar to the RCP continuous strip heat detection. System trouble conditions are annunciated similarly.

Manual fire suppression equipment for containment consists of six CO_2 extinguishers at the personnel entrance to each containment and a dry standpipe system with hose stations. There are four hose stations on the 47' level, as well as three on the 18' 4", (-)3' 6", and (-)27' 7" elevations. Two sections of 1½" hose are connected at each hose station. A fire brigade equipment gang box is provided outside the personnel entrance to containment. This box contains twenty-six (26) sections of 1½" hose, two 1½" hose nozzles, and appropriate tools (spanner wrenches, etc). The dry chemical extinguishers are rated for a Class B fire (flammable and combustible liquids). The initial fire fighting attack can be made using CO_2 extinguishers. A fire hose can be used if CO_2 is ineffective or does not completely extinguish the fire. In addition, foam is available and can be applied if determined necessary by the fire brigade.

Preservation of Safe Shutdown Capability

The containment building is a multi-level structure. The boundary fire barriers for containment are reinforced concrete with an inherent fire rating in excess of 3 hours. Access is gained into containment through a personnel access hatch. The RCP motor cubicles are located above the associated reactor coolant loop room. The floor of the RCP motor cubicle consists of steel grating with multiple openings between the motor cubicle and reactor coolant loop room. The rooms are separated from the remainder of containment by heavy concrete shield walls with a personnel access door for each cubicle and loop room. There are multiple openings in the ceiling of the motor cubicles. Although not designated as rated fire boundaries, the heavy shield walls provide a degree of separation. Plant drawings of the containment levels [Drawing 11448-FAR-201 Sheets 1 – 4] are attached.

The only safe shutdown instruments in the area are the six resistance temperature detectors (RTDs) that provide indication of the reactor coolant hot and cold leg temperatures in the control room. There is no credible means for minor oil misting to impact the safe shutdown function of the RTDs. Each set of RTDs is separated from the closest redundant RTD set located in

another loop room (-3' 6" level) by two heavy concrete walls. Therefore, a credible fire in one RCP cubicle or loop room would not affect RCS temperature indication from the other two loops. In the event that the hot leg or cold leg temperature indications are lost due to fire or fire fighting activities, monitoring can be done in the Main Control Room (all indications available) or at the Remote Monitoring Panels in the Unit 1 Cable Spreading Room (A and B loop indication available for Unit 1, A and C loop indication for Unit 2). Indication channels are routed in independent, separate pathways. If both the hot leg and cold leg indications are lost on one loop, another loop indication can be used for cooldown. The Surry Fire Protection Program does not assume the loss of the entire containment (Fire Areas 15 or 16) for a credible fire.

Based on the discussion above, defense-in-depth exists for a fire within the containment building. An adequate level of safety is provided through the prevention of fires, detection, control and extinguishment of fires, and the protection of structures, systems and components important to safety. These measures preserve and maintain safe shutdown capability in the event of a fire within an RCP cubicle or loop room, and no new accident precursors are introduced by rerouting the discharge from the stator cooler collection trays from the RCP OCS to the CRDM cooler drain system (to the containment sump).

As indicated previously, there has been no oil misting on the stator cooling units in the past at Surry. However, if this condition presents itself, any oil misting collected by the stator drip trays will be directed to the containment sump/trench system. This portion of the oil misting will be combined with the water condensation from the stator cooler, as well as with the other fluids in the trench/sump system. This will further dilute the oil concentration resulting in further breakdown of the oil into smaller globules, rendering it a non-fire hazard. Furthermore, the cooler temperature of the condensation will bring the temperature of the oil/condensation mixture below the auto-ignition temperature. In addition, the containment sump is pumped out and processed on a regular basis preventing any accumulation of oil in the sump, and there are no Appendix R components within or near the sump/trench system. In the unlikely event of oil being directed to the containment sump and being pumped out through the containment discharge trip valves, no degradation of the valve seats/valve stem seals or impact on the valves' containment isolation capability will occur since the seats and stem seals are fabricated of Viton-A and PEEK (plastic) materials, respectively; both of these materials are compatible with petroleum oil products.

Other Design Considerations

The RCP OCS is designed to withstand a Safe Shutdown Earthquake, and the stator cooler collection tray modification was developed accordingly. The total added weight of each stator cooler collection box and attachments is approximately 25 lbs. (87 lbs. filled with water), which is not seismically significant compared to the RCP motor, as it weighs in excess of 81,000 lbs. The stator cooler collection tray is seismically supported to prevent it from striking safety-related equipment during an earthquake.

The RCP stator cooler outlet discharge assemblies' parts are made of stainless steel, which is compatible with the RCP motors.

In summary, rerouting the stator cooler collection tray discharge to flow to the CRDM cooler drain system (to the containment trench/sump system) does not create a fire hazard or a safety concern for the following reasons:

1) Westinghouse modifications/upgrades to the RCP motor (with the exception of the flywheel seal upgrade) to reduce the potential for oil misting/oil loss were implemented for the upper oil reservoir.
2) There is no history of any oil leakage in the upper oil reservoir.
3) The labyrinth seal design does not degrade, as it is a "non-contact" seal.
4) Westinghouse recommendations were implemented to address typical oil leaks associated with the lower reservoir.
5) The lower bearing assembly design used at Surry is less likely to create oil misting due to a fewer number of guide pads, which results in less oil turbulence in the lower reservoir. North Anna uses seven compared to Surry's six.
6) The potential ignition sources are not likely to spontaneously ignite and sustain burning of the oil.
7) North Anna fire modeling has demonstrated that a fire is unlikely to spread outside the RCP motor cubicle and loop room. This is also true for the Surry post-modification configuration that will direct condensation and any oil originating from misting from the stator cooler collection tray to the containment trench/sump system.
8) Administrative controls are in place to control combustibles and ignition sources.
9) Defense-in-depth fire protection features are in place to mitigate and contain a fire.
10) Any oil originating from misting directed to the containment trench/sump system is diluted with condensation, which will render the mixture a non-fire hazard.

Industry Experience with Oil Misting

In addressing the oil misting issue at North Anna, Dominion contacted several nuclear power stations and concluded the following:

- The phenomenon of minor oil misting from RCP motors is a common experience and not all misting can be collected,
- Some stations have performed specific evaluations in the past of the misting condition (similar to the Fire Hazards Analysis discussed above) and have found no impact on safe shutdown capability, and
- Not all collection systems are the same; however, most have a catch pan at the bottom of the motor to collect any significant leakage down the shaft with no direct method of capturing oil misting (similar to North Anna).

Previous Exemptions from 10CFR50, Appendix R, Section III.O

The following three previous permanent exemptions to 10CFR50, Appendix R, Section III.O are germane to this request:

- The first exemption was granted to the LaCrosse Boiling Water Reactor (LACBWR) [LS05-81-06-004]. The quantity of flammable liquid in their lube oil system was reduced from 90 gallons to 15 gallons by replacing existing inventory with a non-flammable fluid. The NRC concluded LACBWR did not need to install an OCS because providing collection for the remaining 15 gallons of flammable lube oil "would not enhance fire protection safety."

- The second exemption was granted to Big Rock Point [LS05-82-04-014]. This exemption was based on two conclusions from the NRC fire analysis. First, the entire lube oil inventory of a single pump was 31.75 gallons and complete combustion of this entire inventory did not present a significant hazard. Second, the potential for leakage of the entire quantity of oil was small and any credible fire would be of a limited magnitude.

- The third exemption was granted to Unit 1 North Anna Power Station. This exemption concluded that minor misting on the surface of the RCP components not enclosed by the OCS would not present a significant fire hazard. This conclusion is based upon the quantity of oil expected to be lost due to misting outside the OCS, the physical properties of the oil, and the lack of available ignition sources within the RCP cubicle.

4 JUSTIFICATION OF EXEMPTION

10CFR50.12, "Specific Exemptions," states that the NRC may grant exemptions from the requirements of the regulations of this part of the Code of Federal Regulations provided three conditions are met. The three conditions are: 1) the exemption is authorized by law, 2) the exemption will not present an undue risk to the health and safety of the public, and 3) the exemption is consistent with the common defense and security.

The requested exemption to: 1) address the potential for minor, uncollected oil misting from the RCP motors, and 2) route the discharge from the collection tray for the stator coolers to flow to the CRDM cooler drain system (to the containment sump) satisfies these criteria as described below.

1. This exemption is authorized by law.

   As required by 10CFR50.12(a)(1), this requested exemption is "authorized by law." The safety intent of 10CFR50, Appendix R, Section III.O is to ensure that safe shutdown capabilities will not be compromised by a fire associated with oil leakage during either normal or design basis accidents. The NRC has in the past used their authority under Section 50.12 to grant exemptions from the requirements of Section III.O.

   Exemptions have been granted for systems that meet the functional intent of this regulation, but do not meet verbatim compliance. In addition to those previously discussed, Generic Letter 86-10 addressed an exemption for systems that utilize splash guards in conjunction with a sump system instead of a leakage collection system with drain lines. Regulatory Guide 1.189 allows an exemption to be taken for oil collection tanks whose capacity is only sufficient to hold the oil inventory of a single RCP motor, instead of the entire lube oil system inventory, provided the RCP motors themselves are seismically qualified.

   By submitting this exemption request, Dominion does not seek an exemption from the safety intent of 10CFR50, Appendix R, Section III.O. The intent of the request is solely to address the generic concern of minor, uncollected oil misting that is collected and discharged to the containment sump.

2. This exemption will not present an undue risk to public health and safety.

   Section 3 of this exemption request addresses the potential consequences of a fire that could result from minor oil misting. As indicated in that section, any minor misting that may not be collected by the OCS or is collected by the stator drip tray/directed to the containment sump would be bounded by the fire hazards analysis contained in Section 3 of this exemption request. This analysis demonstrates that such a postulated fire would neither adversely impact the safe operation nor the safe shutdown capability of the plant. Defense-in-depth is also provided by the limited availability of ignition sources outside the OCS. Thus, the granting of this exemption request will not pose an undue risk to public health and safety.

3. This exemption is consistent with common defense and security.

   Neither minor oil misting from the RCP motor, nor oil misting collected by the stator drip tray/directed to the containment sump, will adversely affect safe shutdown of the plant and will not compromise common defense and security.

5 CONCLUSIONS

The modification to route the discharge from the collection tray for the RCP OCS outside the OCS will meet the safety intent of 10CFR50, Appendix R, Section III.O to assure failure of the lube oil system will not lead to fire during normal or design basis accident conditions. As noted, no oil misting or pooling has been noted on the Surry RCP motors; however, minor oil misting may be possible and may not be collected by the OCS. Any uncollected oil misting or oil misting collected by the stator drip tray/directed to the containment sump would be bounded by the fire hazards analysis and would not adversely impact the safe operation of the plant.

Based upon the preceding evaluation and consistent with 10CFR50.12, an exemption from 10CFR50, Appendix R, Section III.O is requested for cases in which minor oil misting from the RCPs is uncollected or oil misting is collected by the stator drip tray and directed to the containment sump.

6 REFERENCES

1. Electric Power Research Institute Report 1013456, "Reactor Coolant Pump/Reactor Recirculation Pump Motor Lubrication Oil Systems Maintenance Guide, Dated December 2006.

2. USNRC Letter, Docket Nos. 50-280 and 50-281, dated May 29, 1980 – Fire Protection Information Review.

3. Virginia Electric and Power Company North Anna Power Station Units 1 and 2, 10CFR50 Appendix R Exemption Request Reactor Coolant Pump Oil Collection Systems, Letter Serial No. 10-114, dated April 23, 2010.

4. Virginia Electric and Power Company North Anna Power Station Units 1 and 2, 10CFR50 Appendix R Exemption Request Reactor Coolant Pump Oil Collection Systems, Letter Serial No. 10-114A, dated May 13, 2010.

5. Virginia Electric and Power Company North Anna Power Station Units 1 and 2, Partial Response to Request for Additional Information for 10CFR50 Appendix R Exemption Request Reactor Coolant Pump Oil Collection Systems, Letter Serial No. 10-114B, dated September 27, 2010.

6. Virginia Electric and Power Company North Anna Power Station Units 1 and 2, Resubmittal of Response to Request for Additional Information for 10CFR50 Appendix R Exemption Request Reactor Coolant Pump Oil Collection Systems, Letter Serial No. 10-114C, dated October 11, 2010.

7. Virginia Electric and Power Company North Anna Power Station Units 1 and 2, Submittal Response to Request for Additional Information for 10CFR50 Appendix R Exemption Request Reactor Coolant Pump Oil Collection Systems, Letter Serial No. 10-114D, dated November 15, 2010.

8. United States Nuclear Regulatory Commission, "North Anna Power Station Unit No. 1, Virginia Electric and Power Company, LLC, Exemption from the Requirements of Title 10 of the *Code of Federal Regulations*, Part 50, Appendix R, Section III.O (TAC No. ME3820), dated April 21, 2011.

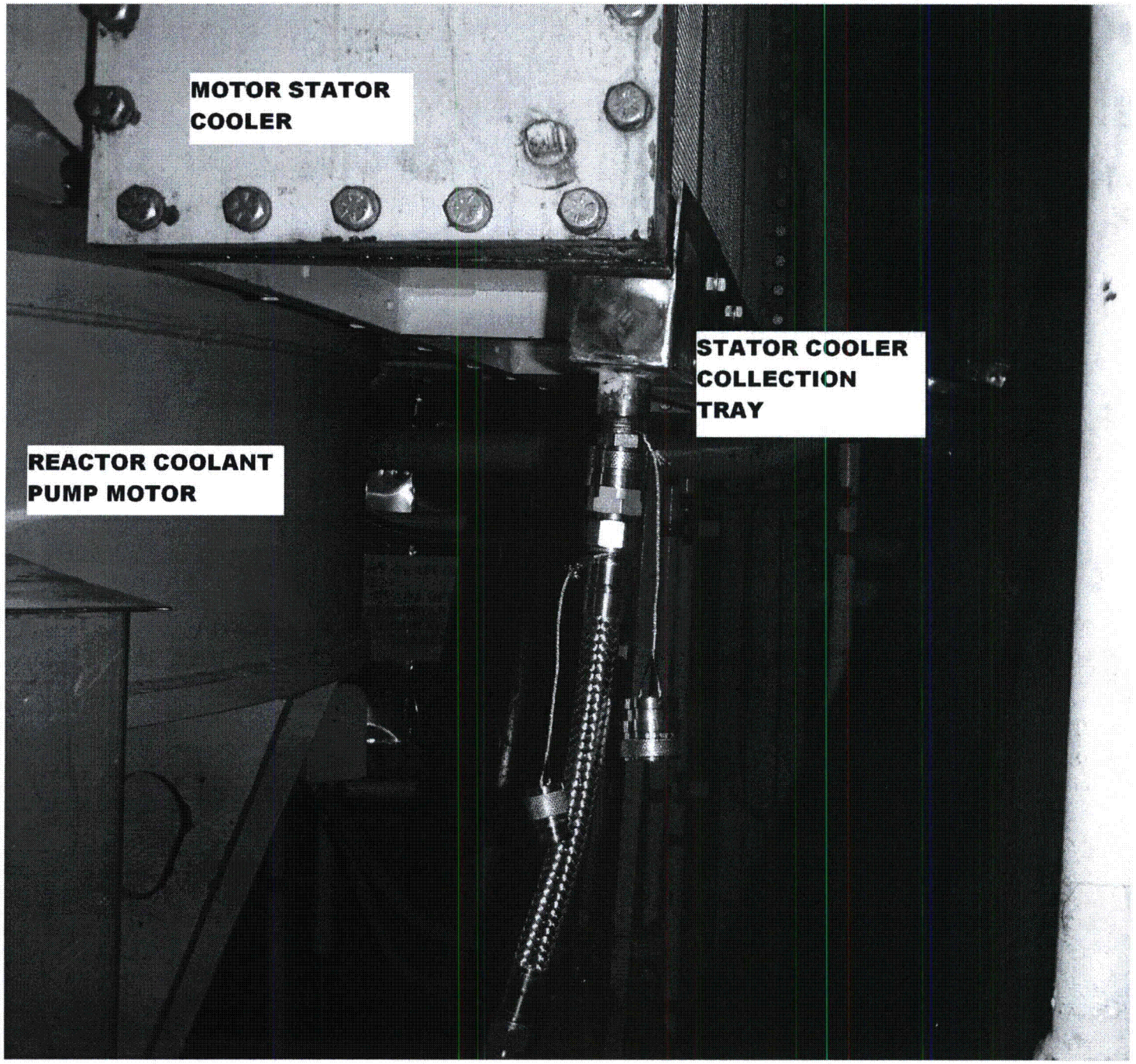
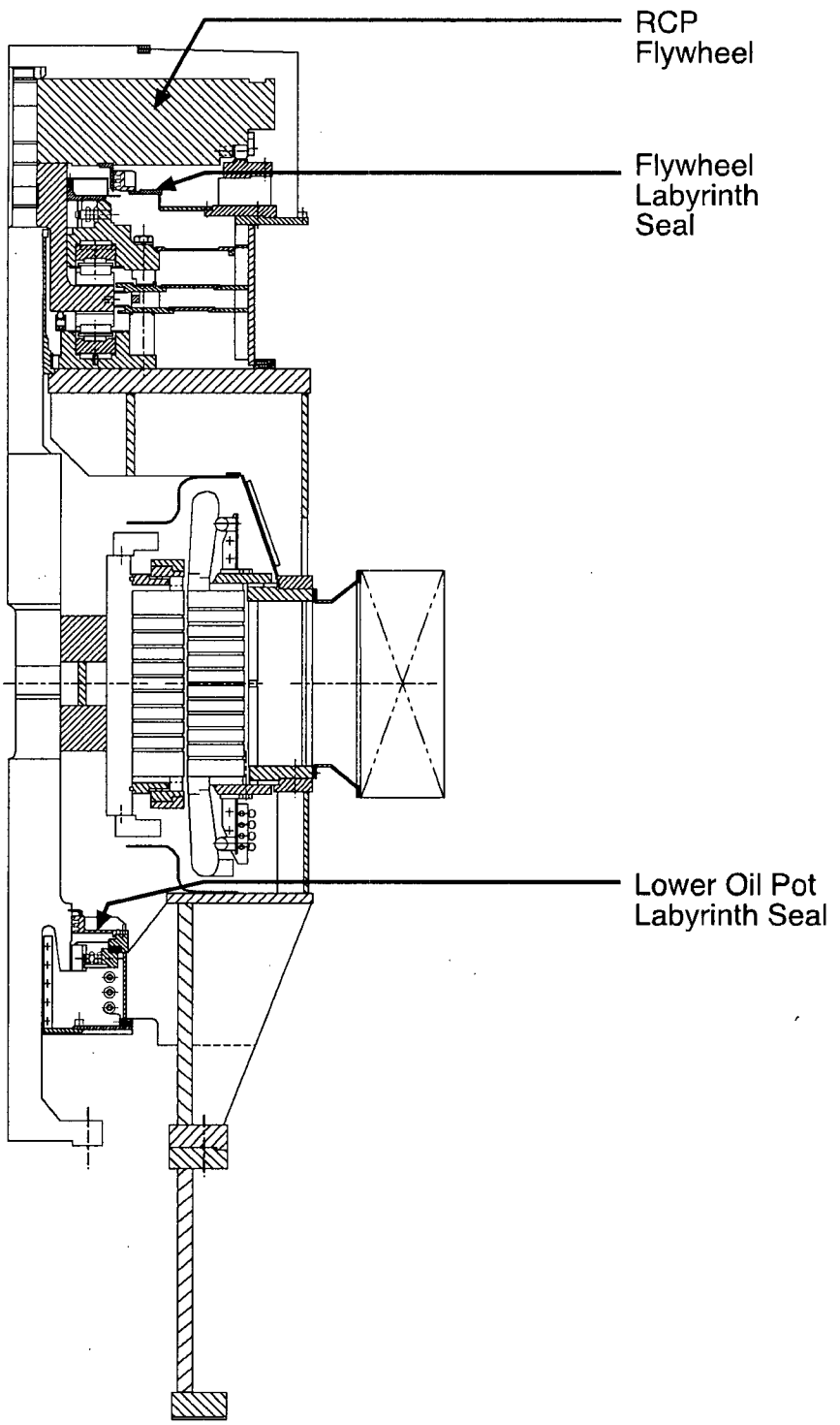
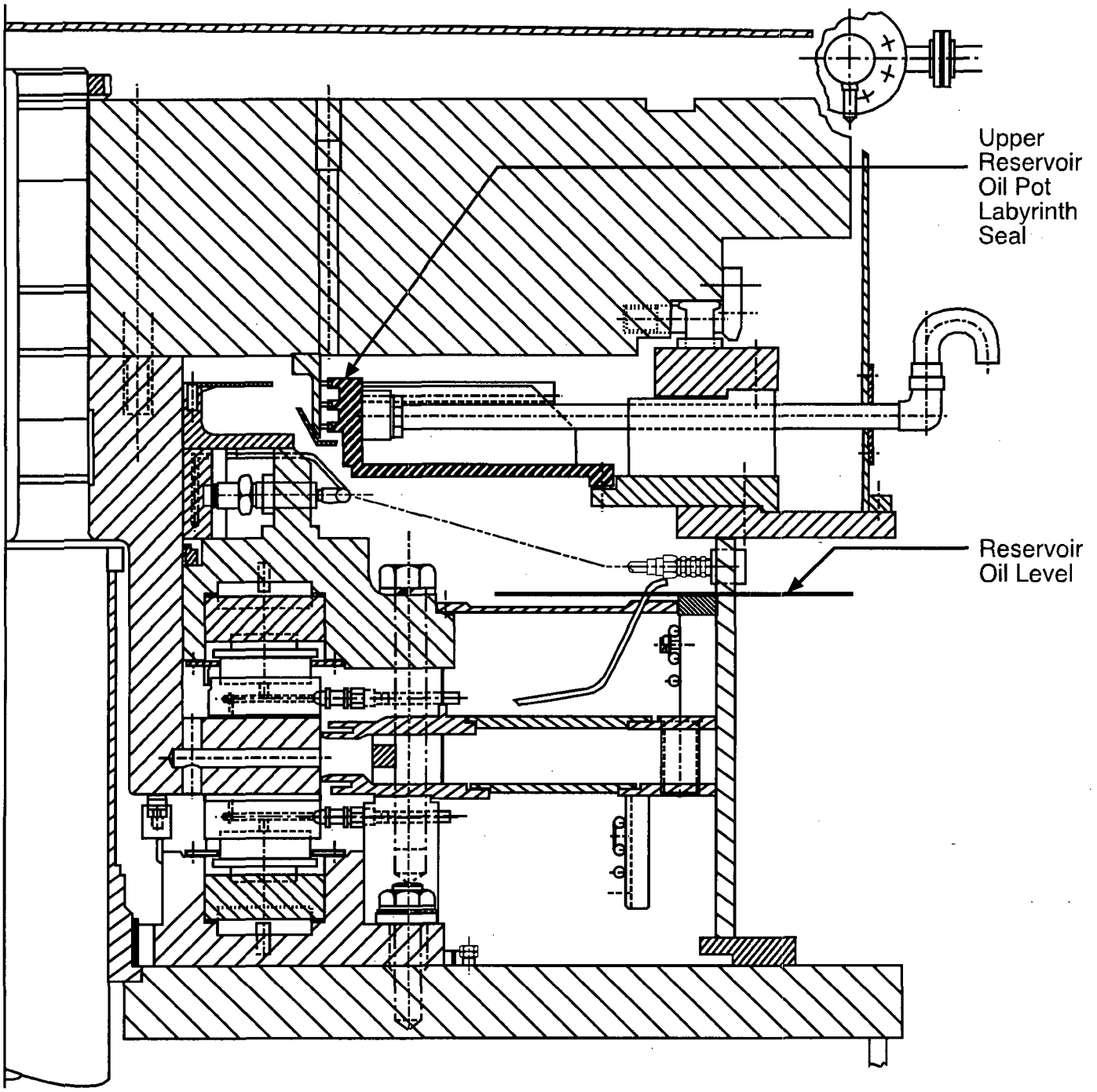


Figure 1
RCP Motor Stator Cooler Collection Tray Configuration



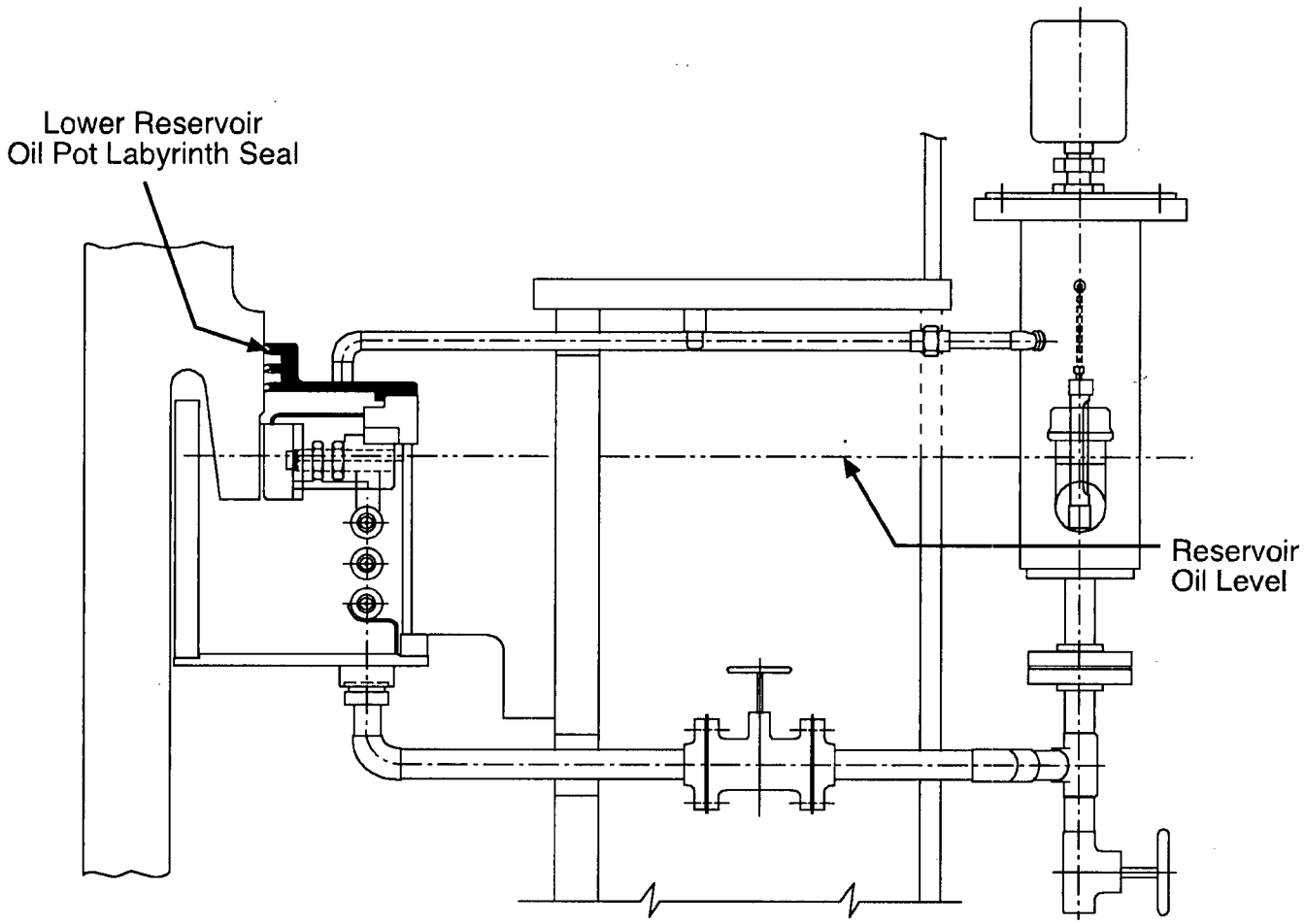
Graphics No. CS7401

Figure 2
RCP Motor Labyrinth Seal Configuration
(Reference Drawing Westinghouse 614F099)



Graphics No. CS7402

Figure 3
Upper Reservoir Oil Pot Labyrinth Seal (Flywheel Seal)
(Reference Drawing Westinghouse 614F067)

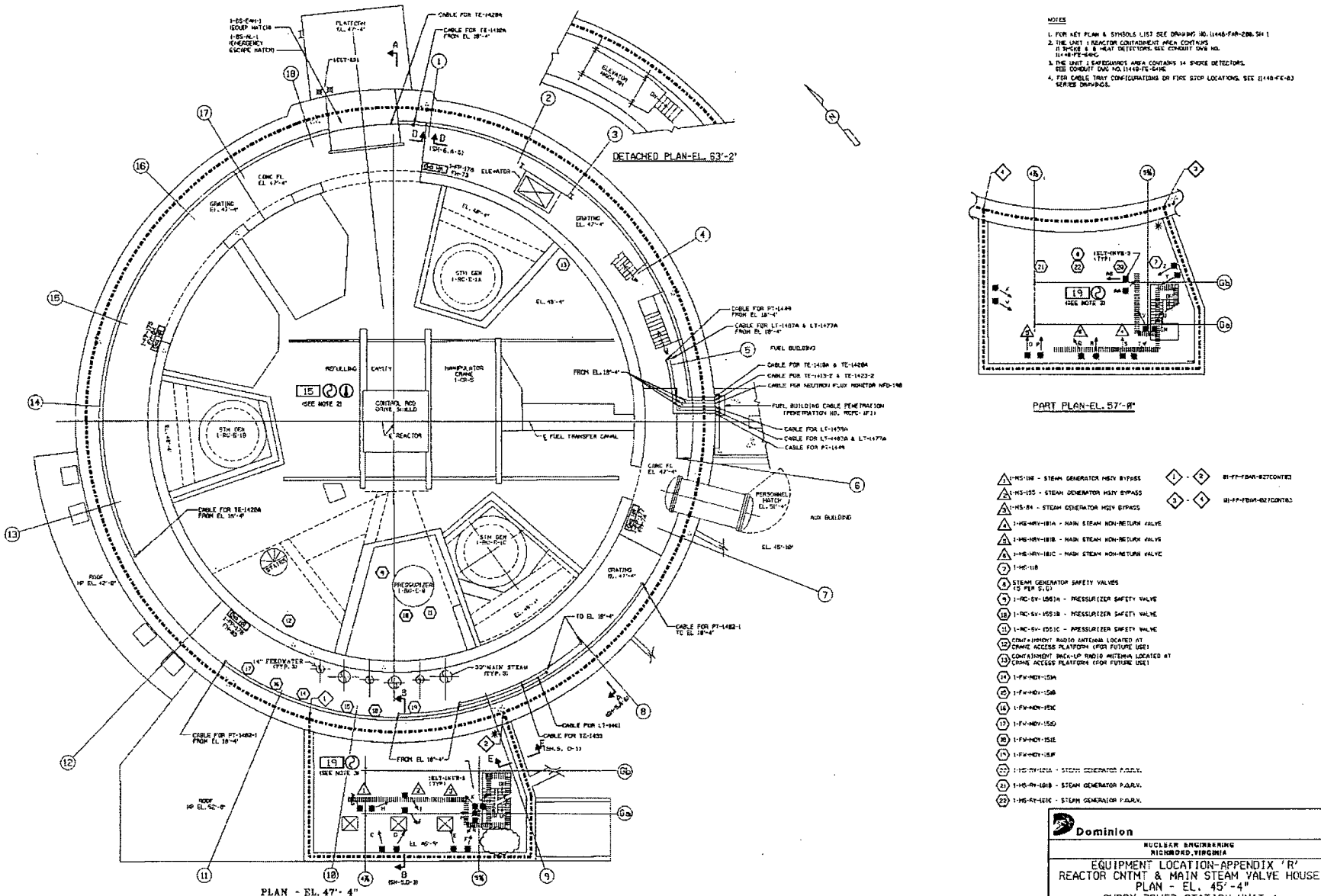


Graphics No. CS7400

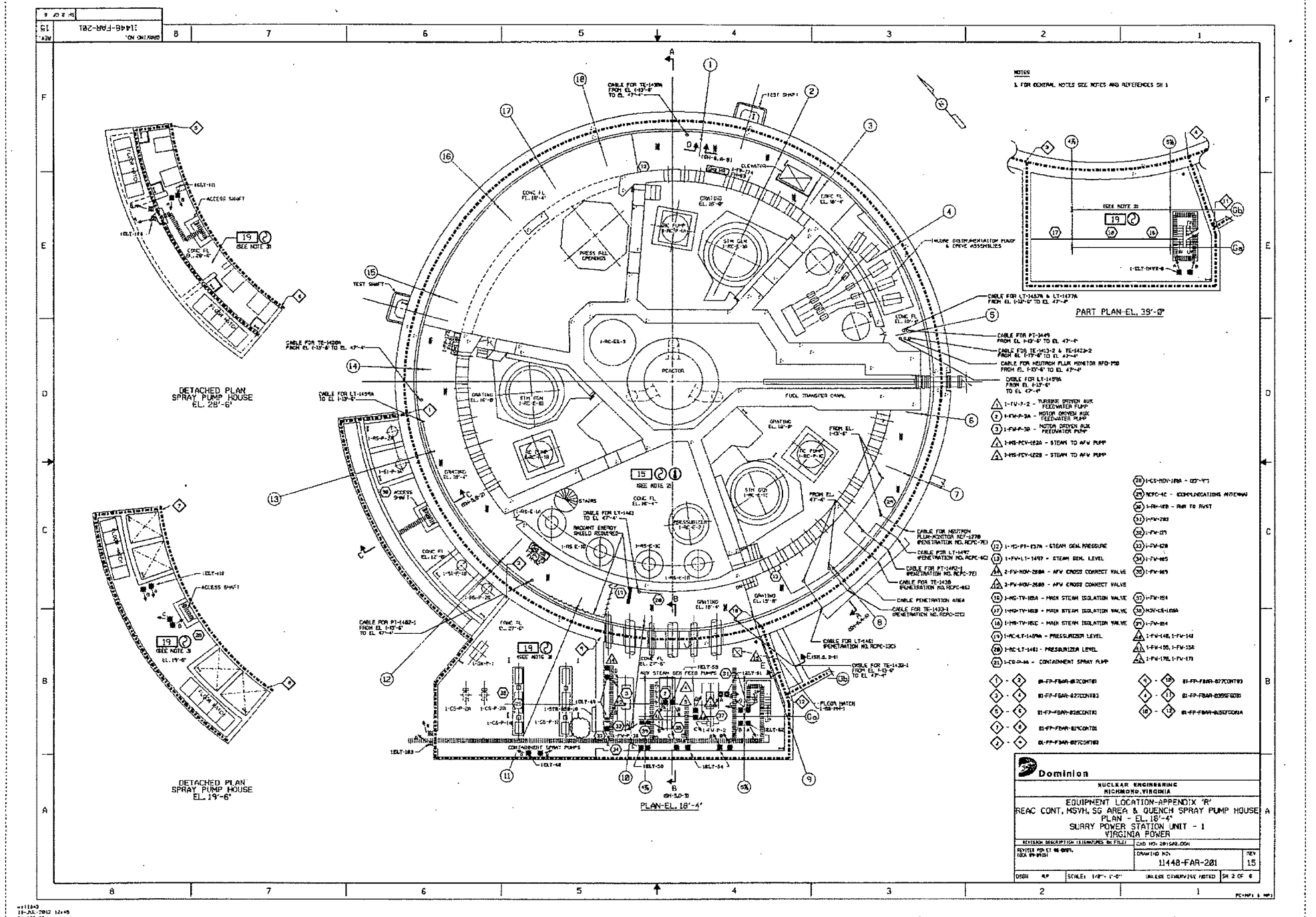
Figure 4
Lower Reservoir Oil Pot Labyrinth Seal
(Reference Drawing Westinghouse 4943D17)

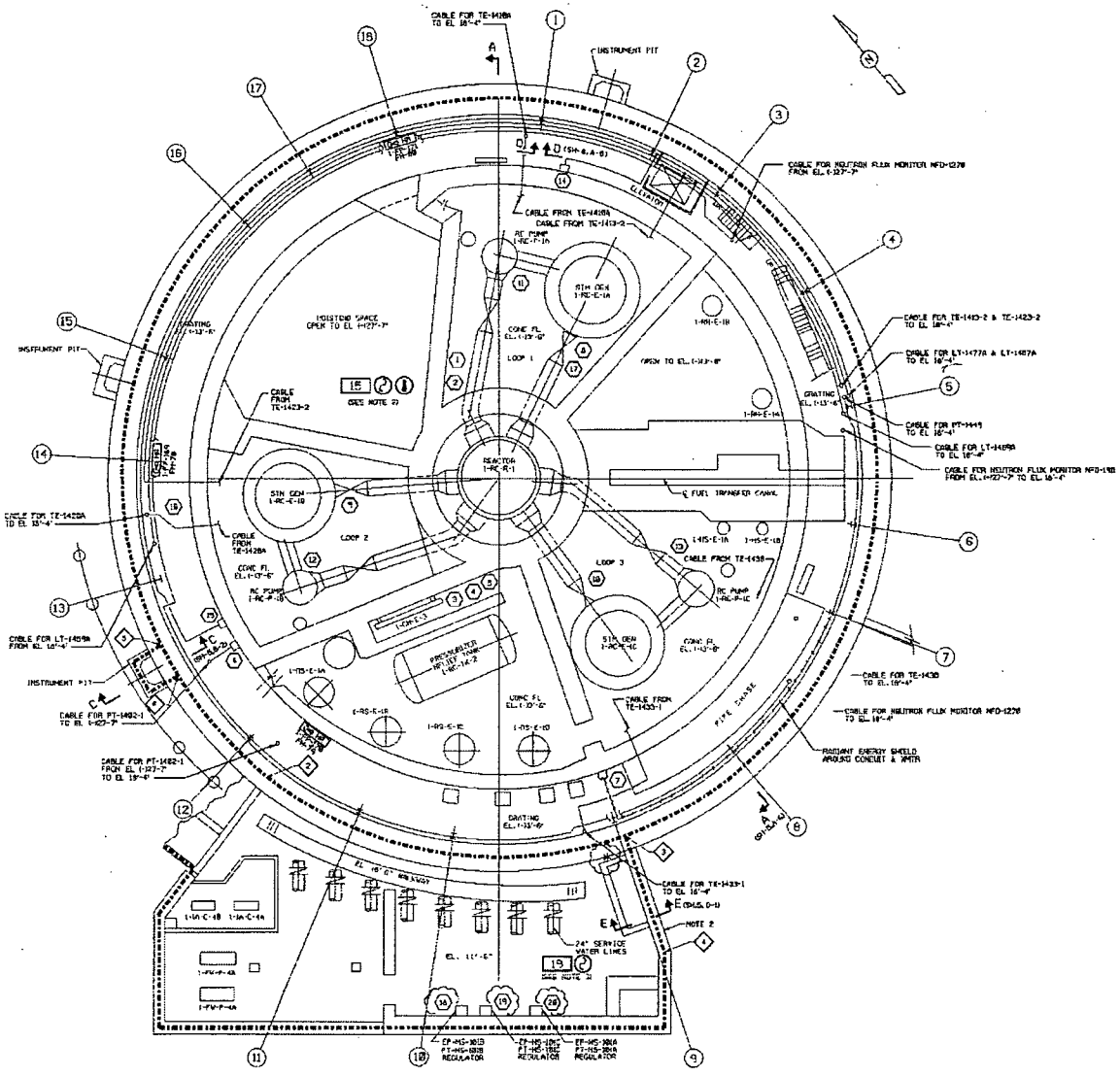
Attachment 1
Reactor Coolant Pump Periodic Maintenance

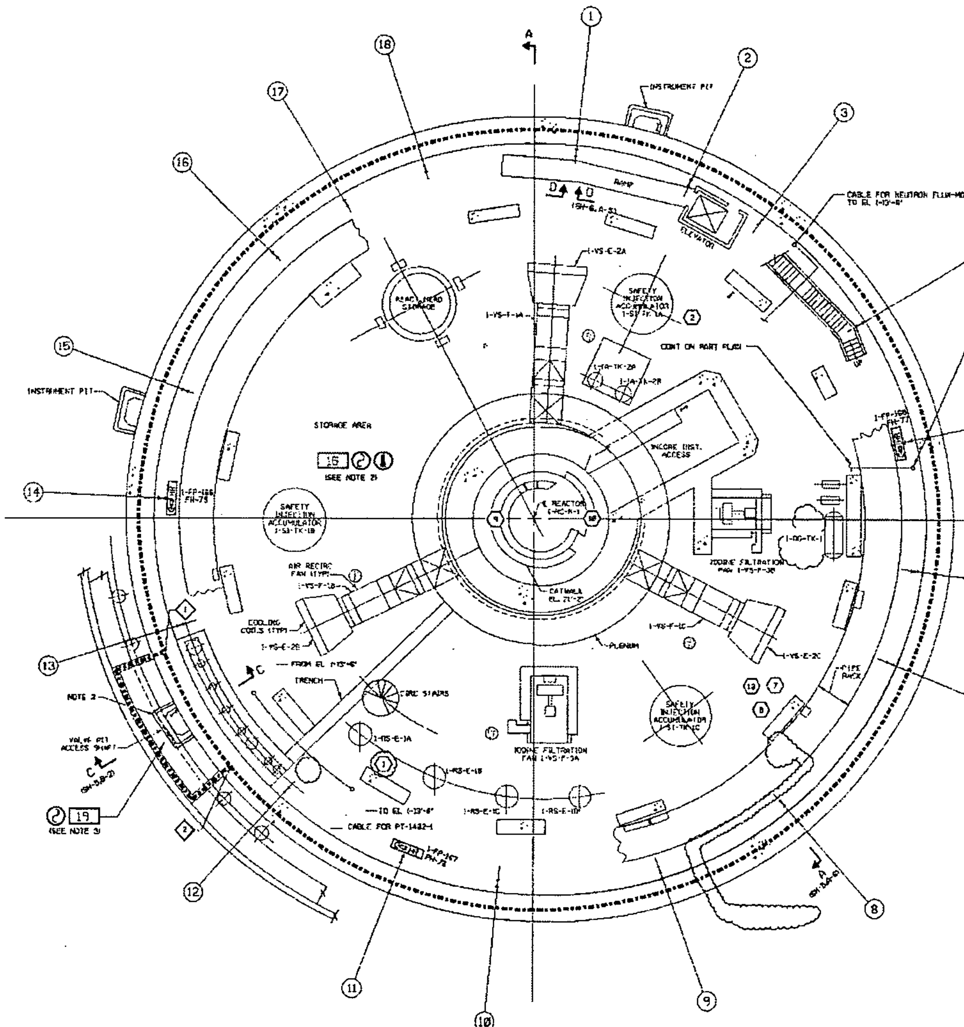
Periodic Maintenance	Description
RCP Motor 01-RC-P-1A-MOTOR	
RE401695	PM: RCP Motor Checks, Motor Megger, Oil Change
RE401701	PM: RCP Motor Heater Tests
RE427203	PM: Testing of RCP Vibration Equipment
RE431495	PM: Uncoupled RCP Motor Checks
RE432453	As-found/As-left Level and Alarm Checks
RE432455	Drain Oil Collection Tank
RE434653	PM: Perform RCP Motor Swap
RE436751	PM: RCP Motor Oil Functional Checks
RE437743	RM: On Demand RCP Swing Checks
RE441865	Disconnect/Remove/Reinstall/Reconnect Motor
RE444987	RM: Perform NDE Exam of RCP Motor Flywheel
RE444989	PM: Electrical Offline Test
RE444991	PM: Electrical Online Test (Running)
RE444993	PM: Electrical Online Test (Startup)
RCP Motor 01-RC-P-1B-MOTOR	
RE401697	PM: RCP Motor Checks, Motor Megger, Oil Change
RE401703	PM: RCP Motor Heater Tests
RE427205	PM: Testing of RCP Vibration Equipment
RE431497	PM: Uncoupled RCP Motor Checks
RE432457	As-found/As-left Level and Alarm Checks
RE432459	Drain Oil Collection Tank
RE434655	PM: Perform RCP Motor Swap
RE436753	PM: RCP Motor Oil Functional Checks
RE437745	RM: On Demand RCP Swing Checks
RE441869	Disconnect/Remove/Reinstall/Reconnect Motor
RE444995	RM: Perform NDE Exam of RCP Motor Flywheel
RE444997	PM: Electrical Offline Test
RE444999	PM: Electrical Online Test (Running)
RE445001	PM: Electrical Online Test (Startup)
RCP Motor 01-RC-P-1C-MOTOR	
RE401699	PM: RCP Motor Checks, Motor Megger, Oil Change
RE401705	PM: RCP Motor Heater Tests
RE427207	PM: Testing of RCP Vibration Equipment
RE431499	PM: Uncoupled RCP Motor Checks
RE432461	As-found/As-left Level and Alarm Checks
RE432463	Drain Oil Collection Tank
RE434657	PM: Perform RCP Motor Swap
RE436755	PM: RCP Motor Oil Functional Checks
RE437747	RM: On Demand RCP Swing Checks
RE441875	Disconnect/Remove/Reinstall/Reconnect Motor
RE445003	RM: Perform NDE Exam of RCP Motor Flywheel
RE445213	PM: Electrical Offline Test
RE445215	PM: Electrical Online Test (Running)
RE445217	PM: Electrical Online Test (Startup)



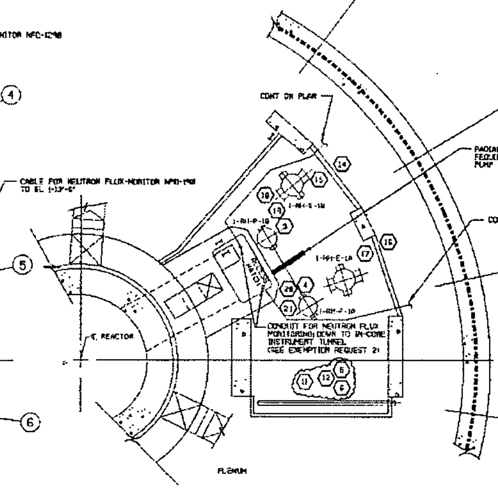
PRIOR TO USING FOR DESIGN WORK CHECK OMIS FOR WORK PENDING


NOTES
1. FOR GENERAL NOTES SEE NOTES AND REFERENCES SH 1
PART PLAN-EL. 39'-0"
PLAN-EL. 18'-4"
DETACHED PLAN SPRAY PUMP HOUSE EL. 28'-6"
DETACHED PLAN SPRAY PUMP HOUSE EL. 19'-6"
REACTOR
FUEL TRANSFER CANAL
ACCESS SHAFT
TEST SHAFT
ELEVATOR
STAIRS
FLOOR HATCH
CONTAINMENT SPRAY PUMPS
ANY STEAM GEN FEED PUMPS
SEE NOTE 30
SEE NOTE 29
SEE NOTE 28
SEE NOTE 27
SEE NOTE 26
SEE NOTE 25
SEE NOTE 24
SEE NOTE 23
SEE NOTE 22
SEE NOTE 21
SEE NOTE 20
SEE NOTE 19
SEE NOTE 18
SEE NOTE 17
SEE NOTE 16
SEE NOTE 15
SEE NOTE 14
SEE NOTE 13
SEE NOTE 12
SEE NOTE 11
SEE NOTE 10
SEE NOTE 9
SEE NOTE 8
SEE NOTE 7
SEE NOTE 6
SEE NOTE 5
SEE NOTE 4
SEE NOTE 3
SEE NOTE 2
SEE NOTE 1
1-FW-P-2 - TURBINE DRIVEN AUX FEEDWATER PUMP
1-FW-P-3A - MOTOR DRIVEN AUX FEEDWATER PUMP
1-FW-P-3B - MOTOR DRIVEN AUX FEEDWATER PUMP
1-MS-PCV-1228 - STEAM TO AFW PUMP
1-MS-PCV-1228 - STEAM TO AFW PUMP
1-MS-PT-1137A - STEAM GEN PRESSURE
1-FW-LT-1497 - STEAM GEN. LEVEL
2-FW-MOV-2688 - AFW CROSS CONNECT VALVE
3-FW-MOV-2688 - AFW CROSS CONNECT VALVE
1-MS-TV-108A - MAIN STEAM ISOLATION VALVE
1-MS-TV-108B - MAIN STEAM ISOLATION VALVE
1-MS-TV-108C - MAIN STEAM ISOLATION VALVE
1-RC-LT-1459A - PRESSURIZER LEVEL
1-RC-LT-1461 - PRESSURIZER LEVEL
1-CS-P-1A - CONTAINMENT SPRAY PUMP
1-CS-MOV-1286A - 027'-9"
RCPC-1C - COMMUNICATIONS ANTENNA
1-RM-1128 - RMA TO AVST
1-FW-283
1-FW-221
1-FW-128
1-FW-185
1-FW-189
1-FW-154
MOV-CS-1286A
1-FW-184
1-FW-148, 1-FW-149
1-FW-155, 1-FW-156
1-FW-170, 1-FW-171
CABLE FOR TE-1439A FROM EL 1-13'-6" TO EL. 47'-4"
CABLE FOR LT-1459A TO EL 1-13'-6"
CABLE FOR LT-1463 TO EL 47'-4"
CABLE FOR PT-1449 FROM EL 1-13'-6" TO EL 47'-4"
CABLE FOR TE-1413-2 & TE-1423-2 FROM EL 1-13'-6" TO EL 47'-4"
CABLE FOR NEUTRON FLUX MONITOR NFO-1150 FROM EL 1-13'-6" TO EL 47'-4"
CABLE FOR LT-1459A FROM EL 1-13'-6" TO EL 47'-4"
CABLE FOR LT-1437A & LT-1437A FROM EL 1-13'-6" TO EL 47'-4"
CABLE FOR NEUTRON FLUX MONITOR NCP-1278 (PENETRATION NO. RCPC-7E)
CABLE FOR LT-1497 (PENETRATION NO. RCPC-6C)
CABLE FOR PT-1492-1 (PENETRATION NO. RCPC-7E)
CABLE FOR TE-1438 (PENETRATION NO. RCPC-6C)
CABLE PENETRATION AREA
CABLE FOR TE-1433-1 (PENETRATION NO. RCPC-12C)
CABLE FOR PT-1482-1 FROM EL 1-13'-6" TO EL 47'-4"
CABLE FOR LT-1461 (PENETRATION NO. RCPC-13C)
CABLE FOR TE-1439-1 FROM EL 1-13'-6" TO EL 47'-4"
1 - 2 01-FP-F8AR-812CONT01
2 - 4 01-FP-F8AR-827CONT03
5 - 6 01-FP-F8AR-828CONT01
7 - 8 01-FP-F8AR-811CONT01
9 - 10 01-FP-F8AR-827CONT03
11 - 12 01-FP-F8AR-8055FC01A
Dominion
NUCLEAR ENGINEERING
RICHMOND, VIRGINIA
EQUIPMENT LOCATION-APPENDIX 'R'
REAC CONT, MSVH, SG AREA & QUENCH SPRAY PUMP HOUSE
PLAN - EL. 18'-4"
SURRY POWER STATION UNIT - 1
VIRGINIA POWER
DRAWING NO. 11448-FAR-201
REV 15
SCALE: 1/8"= 1'-0"
UNLESS OTHERWISE NOTED
SH 2 OF 6
PRIOR TO USING FOR DESIGN WORK CHECK DMS FOR WORK PENDING


NOTES
1. FOR GENERAL NOTES SEE NOTES AND REFERENCES SH 1
2. THIS WALL ALSO SEPARATES SAFEGUARDS AREA FROM AUX. BLDG. ELEV. 2'-8".
INSTRUMENT PIT
CABLE FOR TE-1418A TO EL 18'-4"
CABLE FROM TE-1418A
CABLE FROM TE-1413-2
CABLE FOR NEUTRON FLUX MONITOR NFD-1278 FROM EL (-)27'-7"
RC PUMP 1-RC-P-1A
STM GEN 1-RC-E-1A
CABLE FOR TE-1413-2 & TE-1423-2 TO EL 18'-4"
CABLE FOR LT-1477A & LT-1487A TO EL 18'-4"
GRATING EL (-)13'-6"
CABLE FOR PT-1449 TO EL 18'-4"
CABLE FOR LT-1485A TO EL 18'-4"
CABLE FOR NEUTRON FLUX MONITOR NFD-1418 FROM EL (-)27'-7" TO EL 18'-4"
MOISTENED SPACE OPEN TO EL (-)27'-7"
GRATING EL (-)13'-6"
CABLE FROM TE-1423-2
SEE NOTE 2)
REACTOR 1-RC-R-1
FUEL TRANSFER CANAL
CABLE FOR TE-1428A TO EL 18'-4"
CABLE FROM TE-1428A
CONC FL EL (-)17'-6"
LOOP 1
LOOP 2
LOOP 3
CABLE FROM TE-1438
CABLE FOR TE-1438 TO EL 18'-4"
CABLE FOR LT-1459A FROM EL 18'-4"
INSTRUMENT PIT
CABLE FOR PT-1402-1 TO EL (-)27'-7"
CABLE FOR PT-1402-1 FROM EL (-)27'-7" TO EL 18'-4"
PRESSURIZER RELIEF TANK 1-RC-TK-1
CONC FL EL (-)13'-6"
CABLE FROM TE-1433-1
CABLE FOR NEUTRON FLUX MONITOR NFD-1278 TO EL 18'-4"
RADIANT ENERGY SHIELD AROUND CONDUIT & XMTR
PIPE CHASE
GRATING EL (-)13'-6"
CABLE FOR TE-1433-1 TO EL 18'-4"
SEE DWG. 11448-FAR-202
NOTE 2
24" SERVICE WATER LINES
EL. 11'-6"
SEE NOTE 2)
1-VA-C-1B
1-VA-C-1A
1-FW-P-1B
1-FW-P-1A
EP-MS-1013 PT-MS-1018 REGULATOR
EP-MS-1014 PT-MS-1182 REGULATOR
EP-MS-1016 PT-MS-1184 REGULATOR
PLAN - EL. (-)13'-6"
1 1-CH-LCV-1460A - LETDOWN ISOLATION
2 1-CH-LCV-1460B - LETDOWN ISOLATION
3 1-CH-HCV-1208A - LETDOWN ISOLATION
4 1-CH-HCV-1208B - LETDOWN ISOLATION
5 1-CH-HCV-1208C - LETDOWN ISOLATION
6 1-RC-PT-1402-1 - RCS PRESSURE
7 1-RC-PT-1449 - RCS PRESSURE
8 1-RC-TE-1413-2 - RCS HOT LEG TEMP
9 1-RC-TE-1423-2 - RCS HOT LEG TEMP
10 1-RC-TE-1433-1 - RCS HOT LEG TEMP
11 1-RC-TE-1408A - RCS COLD LEG TEMP
12 1-RC-TE-1428A - RCS COLD LEG TEMP
13 1-RC-TE-1438 - RCS COLD LEG TEMP
14 1-FW-LT-1477A - STEAM GEN. LEVEL
15 1-FW-LT-1487A - STEAM GEN. LEVEL
16 1-MS-PT-1278 - STEAM GEN. PRESSURE
17 1-MS-MOV-1768 - MAIN FROM LOOP 1 HOTLEG
18 1-MS-PT-1474 - STEAM GEN. PRESSURE
19 1-MS-PT-1485 - STEAM GEN. PRESSURE
20 1-MS-PT-1496 - STEAM GEN. PRESSURE
2 - 4 BI-FP-7BAR-B1CONT82
3 - 5 BI-FP-7BAR-B2FCCBA
5 - 6 BI-FP-7BAR-B12CONTB1
Dominion
NUCLEAR ENGINEERING
RICHMOND, VIRGINIA
EQUIPMENT LOCATION - APPENDIX R
REAC. CONT. & MSVH
PLAN - EL. -3'-6"
SURRY POWER STATION UNIT - 1
VIRGINIA POWER
REVISION DESCRIPTION SIGNATURES ON FILE
CAD NO: 291503.DGN
DRAWING NO: 11448-FAR-201
REV 4
DESIGNED
DRAWN
CHECKED
SCALE: 1/4"= 1'-0"
UNLESS OTHERWISE NOTED
SH 2 OF 8
REVISED FOR ENGINEERING REVIEW. IDCN 99-14771
PRIOR TO USING FOR DESIGN WORK CHECK DWGS FOR WORK PENDING



PLAN-EL. (-)27'-7"



DETACHED PLAN-EL. (-)13'-0"

NOTES

1. FOR GENERAL NOTES SEE NOTES AND REFERENCES SH 1
2. SEE 11448-FAR-201 SH. 5 FOR SECTION VIEW.

(1) 1-CH-HCV-1310A	(12) 1-RH-25, RHR TO LETDOWN
(2) MOV-1701, RHR FROM LOOP 1 HOT LEG	(13) 1-RH-29, RHR TO RWST
(3) 1-RH-P-1B - RHR PUMP	(14) 1-CC-165, 1-RH-E-1B CC WATER DISCHARGE
(4) 1-RH-P-1A - RHR PUMP	(15) 1-CC-162, 1-RH-E-1B CC WATER INLET
(5) 1-RH-FCV-1605	(16) 1-CC-176, 1-RH-E-1A CC WATER INLET
(6) 1-RH-HCV-1758	(17) 1-CC-181, 1-RH-E-1A CC WATER DISCHARGE
(7) MOV-1720A, RHR TO LOOP 2 COLD LEG	(18) 1-CC-316, SEAL COOLER 1-RH-E-2B INLET
(8) MOV-1720B, RHR TO LOOP 3 COLD LEG	(19) 1-CC-312, SEAL COOLER 1-RH-E-2B DISCHARGE
(9) NFD-1270 - NEUTRON FLUX MONITOR	(20) 1-CC-322, SEAL COOLER 1-RH-E-2A INLET
(10) NFD-1NC - NEUTRON FLUX MONITOR	(21) 1-CC-318, SEAL COOLER 1-RH-E-2A DISCHARGE
(11) 1-RH-HCV-1142, RHR TO LETDOWN	◇1 - ◇2 1K-FP-FBAR-B1ZCONT01

Rev.	Description
3	REVISED TO SHOW ACTUAL LOCATIONS OF 1-RH-HCV-1142 & -1758, 1-RH-FCV-1605, 1-RH-25, 1-FW-LT-1497, & 1-CH-HCV-1310A. REVISED LEGEND.
2	ADDED FIRE BARRIER MARK NUMBERS AND LOCATIONS, PER APPENDIX R REVIEW.
1	INCORPORATED COMMENTS FROM ENGINEERING REVIEW OF SAFE SHUTDOWN EQUIPMENT

Dominion

NUCLEAR ENGINEERING
RICHMOND, VIRGINIA

EQUIPMENT LOCATION - APPENDIX R
REACTOR CONTAINMENT
PLAN-EL. (-)27'-7"
SURRY POWER STATION UNIT - 1
VIRGINIA POWER

DRAWING NO. 11448-FAR-201 REV 3

SCALE: 1/8" = 1'-0" UNLESS OTHERWISE NOTED

SH 4 OF 6

PRIOR TO USING FOR DESIGN WORK CHECK DMIS FOR WORK PENDING