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SOUTHERN COMPANY
Energy to Serve Your World℠

August 5, 2004

NL-04-1367

Docket Nos.: 50-348
50-364

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

Joseph M. Farley Nuclear Plant Units 1 and 2
Response to Third Request for Additional Information Related to
Request to Revise Technical Specifications - Containment Equipment Hatch

Ladies and Gentlemen:

By letter dated August 29, 2003, Southern Nuclear Operating Company (SNC) submitted a request to amend the Farley Nuclear Plant (FNP) Unit 1 and Unit 2 Technical Specifications (TS), to allow the equipment hatch to be open during core alterations and/or during movement of irradiated fuel assemblies within containment. By letter dated November 11, 2003, SNC submitted a response to a Request for Additional Information (RAI) related to that submittal. By letter dated May 5, 2004, SNC submitted a response to a second RAI related to that submittal. In a June 10, 2004 letter, SNC provided final responses to RAI questions impacted by tracer gas testing along with portions of the proposed fuel handling calculation related to the evaluation of the open equipment hatch.

Based on a conference call between SNC and the NRC on July 16, 2004, SNC is providing in Enclosure 1 the SNC response to a third set of RAI questions. Enclosure 2 provides a clarification of the SNC response to RAI question number 18 provided in SNC letter dated May 5, 2004. This revised response to question number 18 supersedes the response previously provided by SNC.

The SNC original submittal dated, August 29, 2003, requested approval of this TS amendment by July 31, 2004 to support the fall 2004 Unit 1 outage a scheduled to start on October 2, 2004. SNC now requests approval of the proposed license amendments as soon as possible to support the Unit 1 fall outage. The proposed changes will be implemented within 30 days of issuance of the amendment.

A001

Mr. L. M. Stinson states he is a Vice President of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

This letter contains no NRC commitments. If you have any questions, please advise.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

L. M. Stinson

Sworn to and subscribed before me this 5th *day of* August, *2004.*

Notary Public

My commission expires: 6-7-05

LMS/chm

Enclosures:

cc: Southern Nuclear Operating Company
Mr. J. B. Beasley, Jr., Executive Vice President
Mr. D. E. Grissette, General Manager – Plant Farley
RTYPE: CFA04.054; LC# 14094

U. S. Nuclear Regulatory Commission
Dr. W. D. Travers, Regional Administrator
Mr. S. E. Peters, NRR Project Manager – Farley
Mr. C. A. Patterson, Senior Resident Inspector – Farley

Alabama Department of Public Health
Dr. D. E. Williamson, State Health Officer

Joseph M. Farley Nuclear Plant Units 1 and 2
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Enclosure 1

SNC Response to NRC Request for Additional Information

Joseph M. Farley Nuclear Plant Units 1 and 2
Response to Third Request for Additional Information Related to
Request to Revise Technical Specifications - Containment Equipment Hatch

Enclosure 1

SNC Response to NRC Request for Additional Information

NRC Question 1.a)

The response to RAI 13(f) needs further discussion and clarification. In particular, the resulting χ/Q values used in the CR dose analyses need to account for the uncertainty associated with the discrepancy in the reported southerly wind direction frequency distributions between the 1971-1975 and the 2000-2003 meteorological data sets.

a) Please provide a site plan for the Farley Nuclear Plant showing the locations of the reactor building complex, cooling towers, and primary and backup meteorological towers. Please also provide a description of the primary and backup meteorological tower structures (e.g., structure type and dimensions, instrumentation boom length and direction, etc).

SNC Response 1.a)

Figure 1 contains an excerpt of FNP FSAR Figure 2.3-27, "Plan Showing Site Topography and Plant Structures." The containment buildings, cooling towers, and meteorological towers, are identified on this drawing. Pictures and descriptions of the primary and backup meteorological tower structures (e.g., structure type and dimensions, instrumentation boom length and direction) are provided in Figure 2.

Figure 1

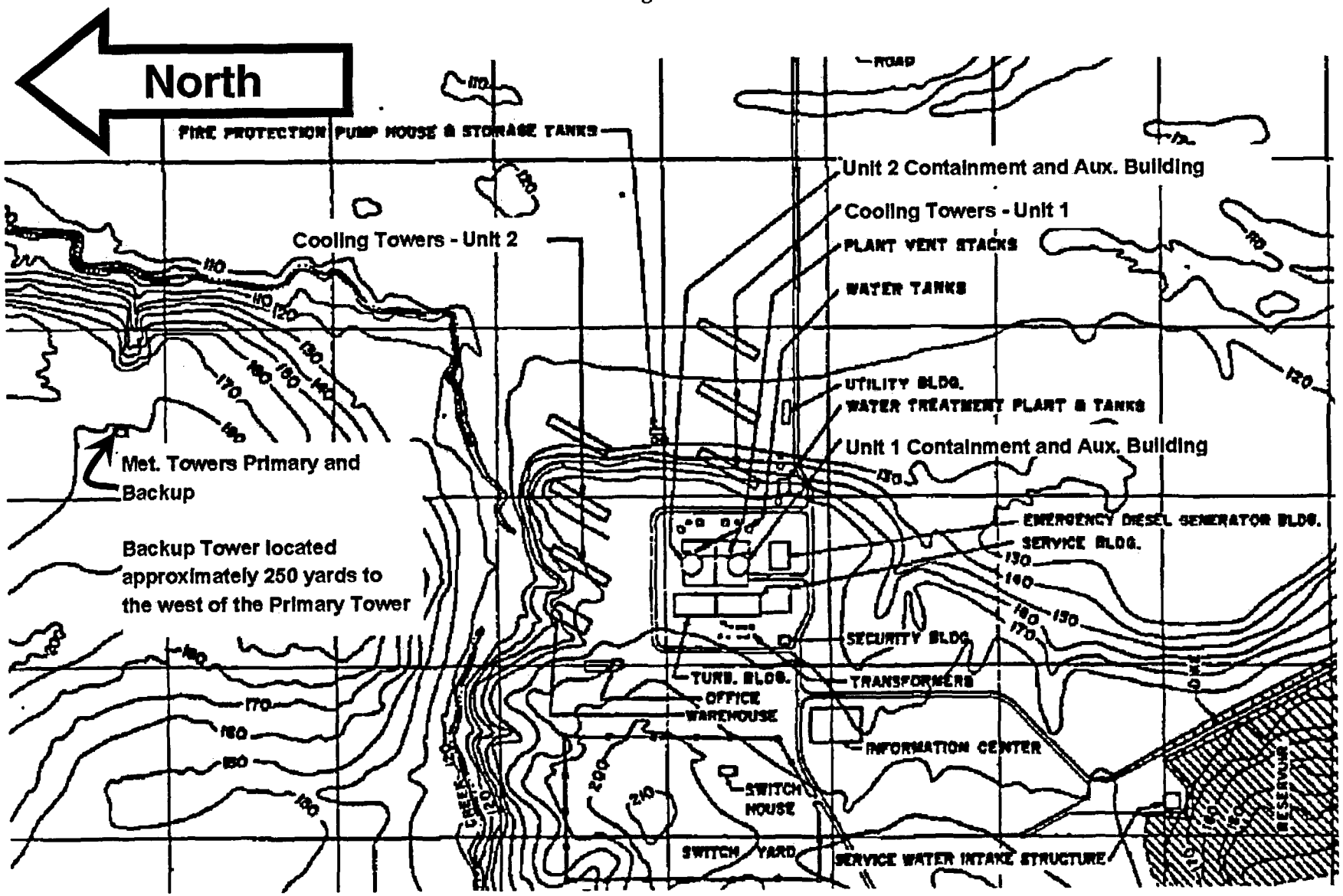
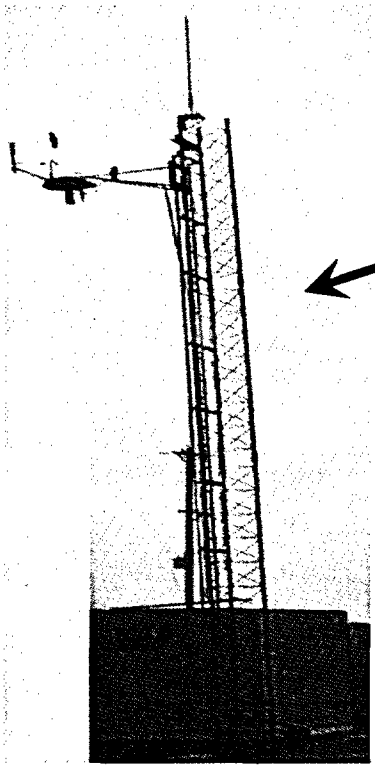
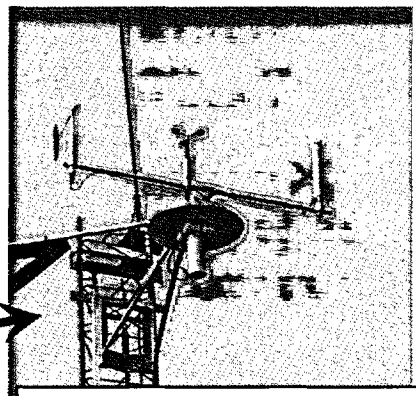

North
FIRE PROTECTION PUMP HOUSE & STORAGE TANKS
Unit 2 Containment and Aux. Building
Cooling Towers - Unit 1
Cooling Towers - Unit 2
PLANT VENT STACKS
WATER TANKS
UTILITY BLDG.
WATER TREATMENT PLANT & TANKS
Unit 1 Containment and Aux. Building
Met. Towers Primary and Backup
Backup Tower located approximately 250 yards to the west of the Primary Tower
EMERGENCY DIESEL GENERATOR BLDG.
SERVICE BLDG.
SECURITY BLDG.
TURB. BLDG.
OFFICE
WAREHOUSE
TRANSFORMERS
INFORMATION CENTER
SWITCH HOUSE
SWITCH YARD
SERVICE WATER INTAKE STRUCTURE

Figure 2



Back-up Met Tower

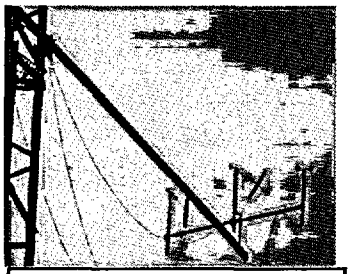
35' Tall



Back-up Met Tower

At 35'
- Wind Speed
- Wind Direction
- Temperature

- Boom Length Approximately 15'
- Boom Points North



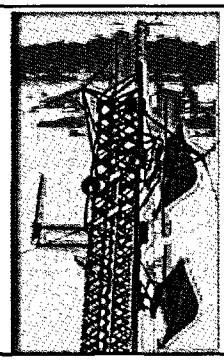
Primary Met Tower

At 150'
- Wind Speed
- Direction
- Boom Length Approximately 15'
- Boom Points South

At 35'
- Wind Speed
- Direction
- Delta Temperature
- Boom Length Approximately 15'
- Boom Points South

Primary Met Tower

200' Tall



Primary Met Tower

At 200'
Delta Temperature

NRC Question 1.b)

The response to RAI 13(f) needs further discussion and clarification. In particular, the resulting χ/Q values used in the CR dose analyses need to account for the uncertainty associated with the discrepancy in the reported southerly wind direction frequency distributions between the 1971-1975 and the 2000-2003 meteorological data sets.

b) The RAI response suggests that the cooling towers, which were not operating in 1971-1975, may be influencing local on-site flow from the southerly directions. Please provide a description of these towers. Please also describe when these towers are operational, including frequency, duration, total number of hours per year, etc. If feasible, generate wind roses comparing wind direction frequency distributions for when the towers are operational versus for when the towers are not operational.

SNC Response 1.b)

The cooling towers are generally described in FSAR section 10.4.5, and operate whenever the condenser requires cooling. They consist of three towers per unit, cooling the circulating water flowing from the main condenser before returning it to the circulating water pump suction. The circulating water, forced to the top of each cooling tower, is distributed along the tower's full length. The fans on top of each tower pull air upward past the water droplets, removing heat from the water by evaporation. The heated air is discharged from the top of the towers. Because FNP does not schedule dual unit shutdowns, there are no significant periods when at least one set of towers is not operating.

It is not feasible for SNC to generate wind roses comparing wind direction frequency distributions for when the towers are operational versus for when the towers are not operational for the years 2000 to 2003, because FNP does not schedule dual unit shutdowns, there are no significant periods when at least one set of towers is not operating.

NRC Question 1.c)

The response to RAI 13(f) needs further discussion and clarification. In particular, the resulting χ/Q values used in the CR dose analyses need to account for the uncertainty associated with the discrepancy in the reported southerly wind direction frequency distributions between the 1971-1975 and the 2000-2003 meteorological data sets.

c) The RAI response discusses the results of a study that attempted to quantify the potential impact of the apparent lack of southerly winds in the 2000-2003 data set on the CR χ/Q values. The RAI response states that the χ/Q values for the Unit 1 *reactor release* to the CR air intake could be expected to increase slightly but would still be bounded by the Unit 2 *reactor release* CR χ/Q values. However, the CR χ/Q values being used to support this licensing amendment request are the χ/Q values associated with *containment hatch door releases*, not *reactor releases*. The bounding *containment hatch door release* 0-2 hr χ/Q value (which is the Unit 1 *containment hatch door release* to the Unit 1 CR emergency air intake) is likely

to show an increase when attempting to quantify the potential impact of the apparent lack of southerly winds in the 2000-2003 data set.

SNC Response 1.c)

The χ/Q calculation is intended to estimate χ/Qs not only for the Fuel Handling Accident (FHA) releases from the equipment hatch, but also for the LOCA releases from the containment which are much more restrictive for control room inleakage. The study was intended to provide information on the potential impact of increased representation of the southerly winds, so the more limiting case of reactor containment χ/Q was chosen. The results of the study indicated a small increase (approximately 1% for 0-2 hours) in reactor containment to control room intake χ/Q and a similar increase might reasonably be expected for the equipment hatch releases. Even with such an increase, the FHA control room dose is well within the acceptance criteria and is bounded by the LOCA results. For other accidents with releases modeled from the containment, the inclusion of additional southerly data does not adversely impact the most limiting χ/Q (Unit 2 reactor containment to Unit 1 control room intake). Therefore, the differences between the1971-1975 and the 2000-2003 meteorological data sets are not significant.

NRC Question 2

The 0-2 hr and 2-8 hr CR χ/Q values presented in Table 1 of SNC Revised Response to NRC Request for Additional Information, Enclosure 1 to Southern Company Letter NL-04-0979 dated June 10, 2004, are 8.39×10^{-4} sec/m^3 and 5.10×10^{-4} sec/m^3, respectively. These χ/Q values represent Unit 1 containment hatch door releases to the Unit 1 CR emergency air intakes and are identified as the most limiting values for releases from each of the two (Unit 1 and 2) containment hatch door releases to each of the two (Unit 1 and 2) CR emergency air intakes. However, Attachment C to Southern Nuclear Design Calculation BM-03-0018-001, "Control Room and Technical Support Center Air Intake χ/Q Estimates", Enclosure 3 to Southern Company Letter NL-04-0780 dated May 5, 2004, shows a higher 2-8 hr χ/Q value for Unit 2 containment hatch door releases to the Unit 2 CR emergency air intakes (i.e., 0-2 hr and 2-8 hr χ/Q values of 8.23×10^{-4} sec/m^3 and 6.95×10^{-4} sec/m^3, respectively). Please verify that the estimated control room doses derived using the former set of χ/Q values bound the CR dose estimates derived using the latter set of χ/Q values.

SNC Response 2

As shown in Southern Nuclear Design Calculation SM-96-1064-001, "Fuel Handling Accident Doses," Enclosure 2 to Southern Company Letter NL-04-0979 dated June 10, 2004, (page 14 of 252), release of activity from the containment is essentially complete at two hours (LPZ thyroid dose at two hours is 0.07367 REM vs. 0.07368 REM at 24 hours). Thus the value of the χ/Q beyond two hours has no impact on the results and use of the Unit 1 values is bounding. Therefore, the estimated control room doses derived using the former set of χ/Q values bound the CR dose estimates derived using the latter set of χ/Q values.

NRC Question 3

Please identify the basis and time periods associated with the χ/Q values of 8.49×10^{-4}, 6.51×10^{-4}, and 3.21×10^{-4} sec/m^3 used on page 17 of Southern Nuclear Design Calculation SM-96-1064-001, "Fuel Handling Accident Doses," Enclosure 2 to Southern Company Letter NL-04-0979 dated June 10, 2004, to calculate the direct transfer of radio nuclides from the containment via the environment to the control room.

SNC Response 3

These were preliminary χ/Q values from an earlier version of Southern Nuclear Design Calculation BM-03-0018-001, "Control Room and Technical Support Center Air Intake χ/Q Estimates", Enclosure 3 to Southern Company Letter NL-04-0780 dated May 5, 2004, corresponding to 0-2 hours, 2-8 hours, and 8-24 hours. Since they are slightly conservative compared to the current version of BM-03-0018-001, they were not updated. The Checkers Note immediately below the χ/Q values on page 17 of SM-96-1064-001 provides this information.

NRC Question 4

Page 2 of SNC Revised Response to NRC Request for Additional Information, Enclosure 1 to Southern Company Letter NL-04-0979 dated June 10, 2004, states that the positive pressure in the control room is maintained by providing 1350 cfm of air from the computer room to the control room. It also states for conservatism 3000 cfm of 100% outside air is assumed. Later the inleakage into the control room is modeled assuming all the inleakage comes from the environment. Given the large potential for air from other sources (other than the outside air) justify why not modeling other sources of air (such as from adjacent buildings) is conservative. Your description should consider: (a) the potential that radioactive concentrations in adjacent buildings may result in higher concentrations of radioactivity than those in the outside air; and (b) the potential for radioactivity leaked from containment through adjacent buildings to the control room. Justify why these pathways are not considered.

SNC Response 4

(a) The control room envelope is surrounded by areas which are served by seven non-safety related HVAC systems (whose outside air intakes are shown in Figure 1 which was provided on page 19 of Enclosure 1 to Southern Company Letter NL-04-0780 dated May 5, 2004) and the unventilated mechanical equipment room (MER) above the control room. As described in (b) below, there are no leakage pathways between the containment and auxiliary buildings. Adjacent area non-safety HVAC intake air will be initially mixed, diluted, and held up with the pre-accident, non-contaminated air. After initial mixing, the adjacent areas around the control room will have transient concentrations consistent with or less than the concentrations in the environment since the ventilation systems have high exhaust rates. The most probable leakage location is the negative pressure duct in the MER in close proximity to the HVAC fans and not from other adjacent areas where there is less differential pressure across the boundary. The MER concentration levels

are driven by ambient wind loading which result in the MER concentration levels mimicking ambient outside air concentrations. Therefore, leakage from adjacent HVAC systems through the control room boundary will be insignificant.

(b) The release of activity into the containment will result in rapid isolation of the containment HVAC systems. There are no other normally open penetrations from the containment air into the auxiliary building. With the equipment hatch open, containment pressure will be nearly atmospheric; thus leakage directly from the containment into the auxiliary building is highly unlikely and with the starting of the Penetration Room Filtration system (PRF) any leakage from containment would be captured and routed out of the auxiliary building. The control room is within the auxiliary building which is adjacent to the containment buildings.

Since the most likely inleakage locations (which are located in the MER) are bounded by the environment-to-control room pathway, using inleakage from the environment and the control room χ/Q to model all of the FHA inleakage pathways is reasonable and conservative.

Joseph M. Farley Nuclear Plant Units 1 and 2
Response to Third Request for Additional Information Related to
Request to Revise Technical Specifications - Containment Equipment Hatch

Enclosure 2

Revised Response to RIA Question Number 18

Joseph M. Farley Nuclear Plant Units 1 and 2
Response to Third Request for Additional Information Related to
Request to Revise Technical Specifications - Containment Equipment Hatch

Enclosure 2

Revised Response to RIA Question Number 18

NRC Question 18:

For the emergency response action of closing the equipment hatch, describe the radiation protection job planning and job-site coverage and the radiation surveys, personal protection, and dose monitoring equipment that will be provided to the crew members. Describe the initial (and continuing) radiological training that will be provided, including whether the crew workers will be qualified and trained to use respiratory protection devices or other means to limit intake of radioactive materials (e.g., use of KI to minimize radioiodine uptake of the thyroid). Describe any mockup (or actual) training or practice that will be provide to the crew members that will be provided to the crew members that would minimize in-containment stay-time during the accident.

SNC Response to 18:

If any monitor alarms as a result of a fuel handling accident, Health Physics (HP) will perform the following:

1) Safely evacuate personnel,

2) Contact the control room and HP Supervision for additional actions,

3) Secure access to the area by non-essential personnel,

4) Conduct additional sampling as directed,

5) Provide dedicated HP support to the Designated Trained Hatch Closure Crew to include; escort to the work area, setting dose rates for the workers and escort out of CTMT.

Personnel will be required to wear an electronic dosimeter and TLD when entering an RCA in support of the equipment hatch closure. The TLD will have the Beta Window exposed. Protective clothing will be required to be worn in contaminated areas; authorization will be given to allow personnel to wear protective clothing over their personal clothing. Beta Eye protection will be required. If already in the RCA, the Designated Trained Hatch Closure Crew and their Health Physics Support will be permitted to remain logged onto the RWP they were already working while providing emergency response as long as they are not expected to exceed a dose or dose rate alarm set point.

Respirators will not be required for entries to provide emergency closure of the equipment hatch. In the event that contamination of personnel occurs, whole

body counts will be utilized to assess the radiological exposure. If additional assessments are required due to known or suspected intakes of radioactive material, follow-up bioassay sampling and analysis may be conducted.

A pre job brief will be performed with the Designated Trained Hatch Closure Crew prior to starting core altercations. The pre job brief will discuss: the requirements of the RWP or Health Physics Plan that will be used for the closure of the equipment hatch, expected radiological conditions, dress out requirements and actions to take if the Plant Emergency Alarm is used.

The radiological conditions at the equipment hatch will be assessed directly by Health Physics personnel providing support to the Designated Trained Hatch Closure Crew using, an instrument that can detect high levels of Beta radiation (RO-2A or equivalent) and through the air sampling program.

- A Continuous Air Monitor (CAM) will be in service inside containment on the 155' elevation and the area of the equipment hatch outside of containment any time the equipment hatch is open and fuel movement is in progress. Short interruption of monitoring to support response check of the instrument, filter change out or replacement of a malfunctioning instrument with one on standby, is expected.

- A Low Volume Air sampler will be running continuously inside containment on the 155' elevation and the area of the equipment hatch outside of containment any time the equipment hatch is open and fuel movement is in progress. Air sampling will be for particulate and iodine activity.

- If the situation warrants, noble gas samples will be taken.

Through General Employee Training, maintenance personnel are trained to use respiratory devices or other methods to limit the intake of radioactive material. There will be no additional training required to support closure activities. However, as noted above, respirators will not be required for the entries to provide emergency closure of the equipment hatch.

Although not anticipated, if a person were to be exposed to airborne radioactive iodine such that they would exceed 2000 Derived Air Concentration (DAC) - hours, the issuance of potassium iodide as a thyroid blocking agent would be considered. Procedures are in place to provide guidance for this activity should the need arise.

Maintenance personnel have procedural guidance for normal closure of the equipment hatch and perform the activity routinely during refueling outages. Training and actual performance or simulation of the equipment hatch closure is required of Mechanical Maintenance Journeymen.