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Licensee: Washington Public Power Supply System
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Facility Name: Washington Nuclear Project No. 2 (WNP-2)

Inspection at: WNP-2 Site, Benton County, Washington

Inspection conducted: March 25-29, 1985

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Summary:

Inspection on March 25-29, 1985 (Report No. 50-397/85-10)

Areas Inspected: An announced appraisal of the Emergency Response Facilities (ERFs) was conducted using draft Revision 5 of IE Inspection Procedure 82212 to determine if the licensee has successfully implemented the requirements in Supplement 1 to NUREG-0737 and the regulations. The appraisal covered the Technical Support Center (TSC), Control Room Response, Operational Support Center (OSC), Emergency Operations Facility (EOF) and alternate EOF, as well as the instrumentation, supplies and equipment for these facilities. The appraisal involved approximately 396 inspector hours onsite by eight (8) NRC inspectors and two (2) contractor team members.

Results: No deficiencies or violations of NRC requirements were identified. A number of items for improving the licensee's program have been identified in the report.

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DETAILED ERF EVALUATION

1.0 Technical Support Center (TSC)

1.1 Physical Facilities

1.1.1 Design, Location and Structure

The Washington Nuclear Project Unit 2 (WNP-2) TSC is located within the restricted area in a structure attached to the Radwaste Building. The location is within a 2 minute walk of the Control Room (CR) and there are no major security barriers between the TSC and CR. The TSC was built in accordance with the State of Washington Uniform Building Code which is comparable to NRC Seismic Category II requirements. The TSC was designed to accommodate a minimum of 25 people. Useable floor space was estimated by the licensee to be about 3,100 square feet. Based on a visual inspection, the size of the TSC appeared adequate to accommodate the 30-35 people assigned to the facility during periods of activation.

The TSC has been designed to have the same habitability as the CR under accident conditions. TSC personnel are protected from gamma radiological hazards by eighteen inch concrete walls and ceilings. In an emergency, the normal TSC air inlet isolates and make-up air is drawn from the CR remote air intake system. This change in mode of operation, which also directs the TSC air through high-efficiency particulate air (HEPA) and charcoal filters, is actuated by the signal(s) that activate the CR emergency ventilation system. In addition the CR can manually change the operational mode of the TSC ventilation system. The air supply is monitored for iodine, particulates and noble gases; however, this monitor was inoperable due to calibration difficulties. The Region intends to follow-up on the licensee's actions concerning the monitors not being operable (open item, 85-10-01). An audio signal alarm has been installed in the TSC to alert personnel of adverse conditions. A portable airborne radiation monitor is also available for use in the TSC. The appraisal disclosed that two permanently installed area radiation monitors, described in Section 4 of Appendix B of the Final Safety Analysis Report (FSAR) and in a June 17, 1982 letter from G. D. Bouchey to A. Schwencer, have not been installed. During an April 16, 1985 telephone discussion, the NRC Appraisal Team was informed that, as a result of a mid-1983 design change, these two monitors were deemed unnecessary and therefore would not be installed. The FSAR had not yet been amended to reflect this change. Radiological protection of TSC personnel during an emergency is to be accomplished by portable monitoring equipment. The health physics (HP) technician who is assigned to the TSC is responsible for making periodic

(approximately every 15 minutes) surveys. Procedure 13.14.3 provides the guidance necessary to make these surveys. Dedicated instruments are available in the TSC emergency kit for this purpose.

1.1.2 Layout

The layout of the TSC was designed without benefit of a task analysis or information flow analysis. However, users were involved early in the design and any deficiencies or recommendations that arose during drills and exercises were formally reported and factored into the design. In addition, the licensee compared the WNP-2 design with the design of other licensee's ERFs to identify whether any important design aspect had been overlooked. One of the suggestions made by the NRC after the licensee's last emergency preparedness exercise was that the operation of the TSC might benefit from a human factors evaluation. It should be noted that some modifications to the TSC layout have been made since the exercise. Based on visual inspection and the licensee's ongoing deficiency reporting system, the appraisal staff judged the layout of the TSC to be adequate to support its function.

1.1.3 Equipment and Supplies

All of the records, drawings and document support equipment provided in the TSC are located in a records room, immediately adjacent to the decision center discussion area. Documents available to TSC personnel include Technical Specifications, FSAR, Emergency Plan (EP), Emergency Plan Implementing Procedures (EPIPs), and microfiche/hardcopy piping and instrument drawings (P&IDs). This documentation was readily available and complete.

Various radiological equipment and supplies are maintained in a locked emergency protection cabinet in the TSC. The radiation instrumentation, which is operated by a HP technician, provides a capability to monitor TSC dose rates, radionuclide concentrations in air and levels of personnel and surface contamination. The appraisal disclosed that the monitoring equipment was within the calibration period and tests showed the portable monitors' batteries were in good condition. Supplies of direct reading dosimeters and a dosimeter charger were available. The licensee has a procedure for checking the inventory of the emergency cabinet on a quarterly basis. The responsible person stated that these inventories actually consist only of checking the instruments for operability and calibration. The task sheets associated with these inventories do not completely list the tasks to be performed. An inventory conducted at the time of the

appraisal revealed a shortage of personnel dosimeters. Since discrepancies of this type were also discovered in field team kits and decontamination kits, it is suggested that the inventory be performed using the contents list from the aforementioned procedure and/or post an inventory list inside the cabinet. A person assigned to the emergency preparedness group said he felt it was a training problem. He noted that the related procedure was being revised. As an additional suggestion, the quantity of paper/protective clothing in the decontamination kit located at the primary decontamination facility (487' level of the Radwaste Building) should be evaluated to determine if it is adequate to accommodate TSC and OSC personnel during an emergency.

The availability of other necessary supplies to support TSC functions were also considered. Maps, steam tables, drawings, forms, hand held calculators and other similar supplies and equipment were available. Although no formal system to maintain supplies of pencils, paper, grease pencils and other consumable supplies was available, the necessary supplies were readily available in ample quantity.

1.1.4 Communication Systems

The licensee has developed multiple and redundant emergency communication systems for transmitting and receiving information between the ERFs and offsite agencies. These communication systems have been described in Section 8 of the licensee's EP. In addition, the licensee's communications capabilities were examined during the preoperational emergency preparedness inspection conducted June 20 - July 1, 1983 and documented in Inspection Report No. 50-397/83-23. These communication systems and their capabilities were verified during this appraisal. It should be noted that since the preoperational inspection, the Response Agency Network (CRASH), which connects the licensee's ERFs and the State and local Emergency Operation Centers (EOCs), has been made operational. The Headquarters Communication Center System (HCCS) in Richland is no longer manned 24 hours a day. The communication center located within the Emergency Operations Facility (EOF) portion of the Plant Support Facility (PSF) is still manned 24 hours a day and functions as a hub for communications during an emergency. Communication capabilities during an accident involving a total loss of AC power would not be severely impacted because 16 dedicated lines, including all CRASH telephones, would survive via an uninterruptible power supply (UPS). The inspector verified that tests of the communication systems had been completed in accordance with EPIP 13.14.4, Revision 2, "Emergency Equipment".

As part of this appraisal, the inspector verified that physical and administrative notification systems for augmenting the onshift emergency organization during emergencies was available and effective. The inspector reviewed the licensee's records of a drill that was performed on March 20, 1984 to verify augmentation times. Based on the results of this drill, the inspector concluded that an augmentation goal of 60 minutes could be met.

1.1.5 Power Supplies

With the exception of some wall outlets, all TSC electrical loads are powered from class 1E division 1 critical sources. During normal operations, power to division 1 is supplied from the main turbine generator auxiliary power output. During periods when power from the turbine generator is not available, power is obtained from offsite sources through the ASHE substation north or south busses, each of which has multiple grid feeds. If the main generator and all of the grid power sources were lost, the power sequencing and load shedding network would seek 230 kv power from a separate ASHE feed, if available, or 115 kv backup power, which bypasses ASHE entirely. Failing all of these alternatives, power would be supplied from the division 1 diesel generator.

The plant's main frame (PRIME) computer is located within the CR, with colorgraphics terminals (RAMTEK) located in the TSC and EOF. The PRIME computer has been provided with a backup UPS. Although the PRIME system would survive a total AC power outage, access to the PRIME would be lost in the TSC because power would not be supplied to the terminals. The PRIME system would continue to service the CR. It should be noted that UPS life would be degraded if the main frame were forced to serve a multi-user environment (e.g., TSC, EOF and CR).

During a complete loss of AC power, emergency lighting would be supplied by battery powered relay activated spotlight units. Licensee personnel stated that emergency lighting would last approximately 90 minutes. Information obtained at the time of the appraisal indicated that during a loss of AC power, power to the water pump servicing the TSC would be lost, thus eliminating the supply of potable water, as well as the water supply to the restroom facilities. During an April 17, 1985 telephone discussion, a licensee representative reported that potable water to the entire site would be lost (i.e., TSC, OSC and CR). Since the licensee has estimated that a loss of offsite power would only last about 2 hours, supplies of bottled water are not normally kept at the site. Non-potable water could be provided from the fire protection water supply. Additionally, the licensee has

the means and capabilities to supply alternate (portable) power supplies which could be connected to operate the water pump. As a suggestion, the licensee might wish to review this situation to determine if there is a need to store supplies of bottled water.

1.1.6 Conclusion

Based on the findings in Section 1.1, this portion of the licensee's program meets the requirements of Supplement 1 to NUREG-0737. However, the following items are suggested for improving the program.

(1) Review the procedure for inventorying the emergency kits and the actual implementation of this procedure to assure that problems described in Secton 1.1.3 do not persist.

(2) Review the decision not to store supplies of bottled water for use when there is a loss of potable water resulting from the loss of AC power (see previous paragraph).

(3) Review quantities of paper/protective clothing maintained at primary decontamination facility (487' level of Radwaste Building) to assure they are adequate for emergencies.

1.2 Information Management

1.2.1 Variables, Parameters and Display Interfaces

The overall safety status of WNP-2 is well supported by a data acquisition and display computer based system. This system consists of two central processing units (CPUs) located in the CR: A DEC PDP 11-44 front-end processor which gathers data from some 1452 analog (range) and digital (two state)sensors (optically isolated) and transmits it continuously to a PRIME 750 and, on operator request, stores it on high density magnetic tape; and a PRIME 750 computer which provides user reports, graphics, computation, and disk and tape storage. The CR PRIME 750 system includes user interactive terminals and colorgraphic cathode ray tubes (CRTs) in the CR, TSC, and EOF. The PRIME 750 has four megabytes of read/write memory, three 300 megabyte disk units, magnetic tape capability, two matrix printers, colorgraphics terminals, monochrome CRTs and printer/plotter devices. Sensors are sampled 500 times per second (full 1,452 sensor sample sets/second) by the PDP 11-44 and written directly to shared access memory in the PRIME 750. Full sample sets are stored in two rotary disk files: A 24-hour file (sample sets taken every 8 seconds) and; A two-week file (sample sets taken once every minute).

Software residing in the PRIME 750 allows recall of the stored information for trend display or printed sensor reports. As previously discussed, the PRIME 750 is supplied with a two-hour UPS system. CPU and ERF peripheral devices (terminals) are hard wired serial data lines and can support data transmissions from 300 baud to 9600 baud (most ERF devices were operating at 4800 baud).

Four primary software options are available through the PRIME 750, however, only the Graphics Display System (GDS) and Emergency Dose Projection System (EDPS) will be discussed in this report (EDPS is discussed in Sections 1.2.3 and 4.2.3.3).

The GDS software package provides the capability to report Regulatory Guide (RG) 1.97, Revision 2, variables, as well as other utility selected sensors. The appraisal disclosed that the essential RG 1.97, Revision 2 variables have been provided to the CR, TSC and EOF by accessing the GDS software stored in the PRIME 750. Final determination with respect to meeting the RG 1.97 variables required by Supplement 1 to NUREG-0737 is being addressed by the Office of Nuclear Reactor Regulation (NRR). Contrary to prescribed readout standards, the appraisal staff discovered that the GDS software permitted test data to be stored with operational data, resulting in anomalous indications. Upon investigation, it was determined that test data could not be distinguished from actual data in the historical data base.

In addition to this problem, terminals in the CR, TSC and EOF were observed to occasionally become "locked-up"[1]. The issues involved in this problem are: (1) computer response times are variable and often very slow; (2) no feedback is provided to tell the user that a command has been received and/or the computer is working on the command; (3) the system "stacks" commands and works on them sequentially, and (4) the system provides no meaningful error messages and has no "HELP" function. Because the response time of the computer is variable, users have no consistent time constant by which to judge whether the computer is responding normally. Because response times are sometimes very long (greater than 30 seconds), the user cannot quickly discriminate between a slow response and no response. In addition, the users are generally provided with no feedback messages that could alleviate the problems of slow and variable response

1) "Lock-up" is a condition in which the computer will not allow the operator to communicate and execute software commands. The operator cannot escape or interrupt the program to start over.

(i.e., visual or audible indications that a command has been received and is being executed).

Given the above situation, the appraisal staff observed that users had difficulty determining whether a program was executing properly. A common user response was to hit a function button repeatedly after 5-10 seconds, then to variously hit the "break" key, the "return" key, and/or a control character string. If none of those actions elicited a response, the user would assume that the terminal was "locked-up" and the user would either reset or turn off the terminal and attempt to reload the program using control character commands. If unsuccessful, the user would then call a computer professional for help. The staff noted that even if a program was executing correctly (albeit slowly), after 5-10 seconds users tended to assume that the command was not being executed and would start entering new commands. Since the computer "stacks" commands, the likelihood of sequencing errors is increased and may, in fact, account for some of the "lock-up" problems being experienced. The situation is further exacerbated by the lack of meaningful error messages and the lack of a "HELP" function. The appraisal staff also noted that "lock-up" would occur if the monochrome CRTs (Perkin Elmer 1200) terminals were used to execute graphical display commands.

Another observation by the appraisal staff was that TSC and EOF terminals could affect the "Emergency Classification" status bar on the GDS in the CR without the knowledge or consent of the CR operators. This status bar is on all of the top-level or current conditions display pages. It is intended to alert the CR, TSC, and EOF personnel to possible changes in Emergency Classification Levels (i.e., Unusual Event, Alert, Site Area Emergency, General Emergency). The bar is normally green but changes to yellow, red, and magenta as the event classification escalates. The inputs determining the classification level are provided by a software routine that takes into account plant symptoms and radiological release data. The staff found that the Emergency Classification bar could be put into an alerting state from the EOF by doing dose projections on another software subsystem that feeds a calculated value to the Emergency Classification routine in GDS. Although the staff does not believe that this problem will compromise the function of the TSC or EOF, it is a disrupting influence and should be examined. Confirmatory prompts could be added so that the user knows that he is about to change emergency levels (e.g., "Based on plant conditions, your current projection of dose rate will change the Emergency Classification Level to (Unusual Event, etc.). Do you want to do this? If so, call the control room, x   , and the TSC, x   ; inform them of the change in status, they type YES, and

press return. If not, press 'F17' to return to the menu."). Such prompting would minimize inadvertent changes to the GDS displays.

The final observation regarding the TSC computer-based displays was that there was extreme glare on the CRT screens that affected the readability of the displays. Of particular concern was the poor readability of the "slave" monitor in the center of the TSC which is intended for use by the Plant Emergency Director and his technical staff. There are several economical methods for reducing CRT glare, such as CRT hoods or egg-crate diffusers for overhead lighting. The licensee should investigate some of these alternatives.

1.2.2 Manual Information Systems

The licensee uses some manual methods to display information in the TSC. These non-computer based displays include plant status boards, accountability logs, significant event logs, historical event records (hand-written Vu-graphs) and printed output from the facsimile copier. The staff found these displays to be readable, understandable, and adequate to support TSC functions.

1.2.3 Dose Assessment

Dose assessment capabilities in the TSC, EOF, and CR are provided through the EDPS. The EDPS consists of effluent monitors, meteorological monitors, a computer and a set of computerized models that may be used to calculate radiation doses from radioactive materials released in gaseous effluents during an accident. Doses to the whole body from plume exposure, to the thyroid from inhalation of radioiodines, and to internal organs from ingestion of contaminated food are available. In the TSC two of the computerized models are available, a main computer system that calculates whole body and thyroid doses, and a backup, battery-powered microcomputer system (Radio Shack TRS-80) that performs similar calculations. Calculations of the whole body and the thyroid doses at the Exclusion Area Boundary (EAB) are continuously made by the main EDPS without intervention and are indirectly displayed on the GDS as an indicator that classifies an emergency.

As source term input to the EDPS, monitors provide a real-time indication of radioactive effluents. Monitors are located in the reactor, turbine, and radwaste building ventilation exhausts to measure airborne activity escaping directly to the atmosphere. Noble gases, radioiodines, and particulates are monitored in this fashion. The monitors have appropriate sensitivity and range to function properly during an accident. These monitors also

have high range capabilities to ensure onscale measurements during a severe accident. In addition, high range containment monitors indicate exposure rates inside primary containment. The monitors have detector capabilities up to 1E07 r/hr. Backup primary containment radiation monitors are available with a range up to 1E04 r/hr. The monitors will be used to determine the extent of core damage during a severe accident. Finally, the post accident sampling system (PASS) provides additional means for determining source terms after an accident has begun. The PASS has the capability to monitor air samples from primary or secondary containment, coolant samples, and samples from sumps located in the reactor building. All of the above monitors are part of the GDS. During an emergency the data from these monitors is input directly into EDPS.

Meteorological data are directly available to the EDPS from the primary tower as wind direction, wind speed and sigma theta at the 10 and 75 meter levels, vertical temperature difference between the 10 and 75 meter levels, dry bulb temperature and dew point temperature at the 10 meter level, and precipitation near ground level. Also, data for wind direction, wind speed and sigma theta at the 23 meter level and dry bulb temperature and dew point temperature at the 10 meter level are directly available to the EDPS from a backup tower. Redundant and/or backup power is available to both towers. All of the onsite meteorological data are available from the GDS. In the event that site meteorological data are not available, EPIP 13.8.2, Revision 2, "Manual Offsite Dose Calculations", instructs that weather information can be obtained from the Pacific Northwest Laboratories (PNL) Weather Forecaster at the Hanford Reservation and from the National Weather Service Forecaster at Portland, Oregon.

The meteorological data presented during the appraisal for the calendar year 1984, which showed the joint data recovery of wind direction, wind speed, and vertical temperature difference from the primary tower was 88%, indicated that a historically reliable indication of meteorological variables may be marginal. However, due to the fact that the licensee has an acceptable instrument surveillance and calibration program and the capability to utilize an equally reliable backup measurements systems, the reliability of obtaining onsite meteorological data is acceptable. An inspection of the meteorological tower during the appraisal revealed that the temperature aspirator shield openings are pointed toward the west. According to ANSI/ANS 2.5-1984, Standard for Determining Meteorological Information at Nuclear Power Sites, the openings should point toward the north to minimize the chance of reflected sunlight influence on the temperature sensors.

During an emergency the EDPS is used by TSC and CR personnel only for a short period of time. The EOF is staffed during an emergency at about the same time as the TSC and has the primary responsibility for assessing doses and recommending protective actions during an emergency. Thus the dose assessment functions will quickly transfer to personnel in the EOF. For this reason specific EDPS capabilities, including a detailed discussion of source terms and meteorology, are described in Section 4.2.3.

Although the use of the EDPS in the TSC and the CR is limited, the NRC Appraisal Team did find that the dose assessment capability at the TSC and CR is generally adequate to respond to an accident. The NRC Appraisal Team noted two areas for improvement. First, there is no direct display of maximum integrated dose or dose rate at the EAB (1.2 mile site boundary). Since this value may affect emergency action levels, and since it is already automatically calculated and is an input to the GDS Emergency Classification status bar algorithms, it should be displayed or changes made to easily display it. Currently, to estimate doses at the site boundary, personnel in the TSC and CR must correctly interpret values from grid map displays which are difficult to read (data is printed in yellow). TSC personnel were observed to have some difficulty interpreting the EAB doses from the 1 square mile grid map. Some further training and/or modification of the output is recommended.

The second area for improvement involves the main computer system. In several instances abnormal termination of program execution (lockup) was observed. This condition was apparently caused in part by the use of incompatible input data (e.g., use of predictive effluent data and actual meteorological data). The abnormal termination necessitated the assistance of a second party to reset the system. This need for second party assistance may adversely affect TSC and/or CR response during an emergency when the EDPS is used. We understand that the problem has been identified and is being corrected. It is recommended that high priority be given to correcting the problem as quickly as possible.

1.2.4 Conclusion

Based on the findings in Section 1.2, this portion of the licensee's program meets the requirements in Supplement 1 to NUREG-0737. However, the following items need licensee action and will be classified as "open" items which will be tracked by the Region.

a. The data collection, storage and display system, (GDS and EDPS) did not appear to provide an acceptable level of reliability because (1) the data acquisition

software did not exclude test data and projections from the operational data, (2) did not provide confirmatory prompts and user assists to help prevent "lock up" and (3) permitted projection analyses to change the displayed classification status (Section 1.2.1) (85-10-02).

b. Modify the EDPS software to allow correction of the inadvertent input of incompatible data without termination of the program execution (Section 1.2.3) (85-10-03).

The following items are suggested for improving your program.

(1) Eliminate the glare on the TSC CRTs.

(2) Reorient the temperature aspirator shield openings on the meteorological tower to point north instead of west.

(3) Modify the GDS to include a display of the calculated doses at the EAB.

(4) Provide additional training on the use of the main EDPS program to TSC personnel.

1.3 Functional Capability

1.3.1 Operations and Control Room Support

The functional capability of the TSC was evaluated by presenting a NRC developed accident scenario to key members of the licensee's staff normally assigned to the facility during an emergency. Licensee personnel responded to the postulated circumstances by describing their actions and how the equipment and supplies available in the TSC would be used. The evaluation showed that the TSC would be adequately staffed and capable of performing the assigned functions. The responsibilities for dose projections (assessments), licensee protective action recommendations and offsite notifications (except to NRC) transfer to the EOF.

1.3.2 Conclusion

Based on the findings in Section 1.3, this portion of the licensee's program meets the requirements of Supplement 1 to NUREG-0737.

2.0 Control Room Response

2.1 Staffing

There are sufficient onshift personnel to perform the functions identified in Table 2 of Supplement 1 to NUREG-0737 (Table B-1 of NUREG-0654, Revision 1). The Shift Technical Advisor (STA) performs the required dose projections before the TSC is manned. Onshift personnel complete notification forms and verbally transmit this information to the EOF communication center for dissemination. Firefighting, rescue and first aid capabilities are provided by the onshift Plant Emergency Team.

2.2 Manual Dose Assessment

During the appraisal, personnel in the CR were observed in their use of the backup, battery-powered microcomputer as described in EPIP 13.8.2. A problem was presented to one of the licensee's STAs and he was asked to make a whole body and thyroid dose calculation at the EAB.

EPIP 13.8.2 provides procedures for obtaining meteorological data for insertion into the backup EDPS computer program on the TRS-80 microcomputer. The procedure states that data can be obtained from the GDS, or by telephone from the PNL Weather Forecaster or the National Weather Service Forecaster in Portland. The use of strip charts indicating meteorological parameters measured at the primary tower in the CR is not addressed in the procedure. Since it is likely that information from the strip charts will be used for manual calculations, the procedure could be improved by including a methodology for reading average (e.g., 15 minute) conditions from these charts, the units of measurements, and any conversion factors. Also, consideration should be given to installation of strip chart recording of meteorological parameters from the backup tower.

For the observation in the CR no GDS displays were allowed to be used. It was observed that CR personnel retrieved the appropriate information from other CR indicators for source term and meteorological data for input into the backup computer program and performed the necessary calculation with little trouble. The appraisal staff observed that in general, the licensee has the capability for providing rapid dose calculations with minimal interference in the response to an accident, and this capability is adequate to scope the magnitude of the potential impacts.

2.3 Conclusion

Based on the findings in Section 2.0, this portion of the licensee's program meets the requirements of Supplement 1 to NUREG-0737. However, the following items are suggested for improving the program.

(1) Include in EPIP 13.8.2, "Manual Offsite Dose Calculations", a methodology for reading average (e.g., 15 minute) conditions from the strip charts indicating meteorological parameters.

(2) Install strip chart recorders in the CR for meteorological parameters from the backup tower.

3.0 Operational Support Center (OSC)

3.1 Physical Facilities

3.1.1 Design, Location and Habitability

The OSC is located in the General Service (GS) Building lunchroom at grade level. This area as well as the nearby lobby, conference room, access control and machine shop are considered to be part of the OSC and are used as an assembly area for plant personnel. Accountability is conducted in the lunchroom prior to dispatching personnel to other areas of the GS Building. The OSC does not have special shielding or ventilation systems, however, a portable air sampler is used to monitor habitability in the OSC. Emergency power will maintain airborne radioactivity monitoring and emergency lighting in case of a loss of offsite power. Periodic surveys are conducted by a HP technician to monitor direct radiation levels. If radiological or other conditions necessitate the abandonment of the OSC, the licensee has identified the Cold Chemistry Room, located in the basement level of the GS Building, as an alternate OSC.

The size and layout of the OSC and alternate OSC appeared adequate as assembly points for plant operation support personnel. The nearby areas would provide temporary space during accountability activities. The OSC layout has a designated staging area for operations personnel briefing and dispatch. Prior to performing their tasks, operations teams dress out and receive dosimetry at access control and then report to the lunchroom for briefing. Based on NRC comments made after the licensee's previous emergency exercise, the operation of the OSC could be improved by providing a separate briefing/debriefing area. The appraisal disclosed that the licensee intends to remove the freezers which are currently located in the lunchroom. This should help to decrease congestion and noise levels, as well as provide additional space for briefing/debriefing purposes.

3.1.2 Equipment and Supplies

The OSC has been supplied with appropriate equipment, some of which has been stored in emergency cabinets located in the OSC. Radiological equipment and personnel dosimetry for teams entering the plant are available at access control. Dedicated respiratory protection equipment, protective clothing, potassium iodide and EPIPs have been stored in the OSC emergency cabinets. Separate cabinets are maintained for fire protection equipment. Plant diagrams and drawings can be obtained from the upper level of the GS Building. Status boards, which are permanently posted in the OSC, are used to post plant status

information, area radiation levels and environmental data. Overhead projections are also used to display information during periods of OSC activation.

3.1.3 Communications

The communication systems existing in the OSC have been described in Paragraph 1.1.4 above. Since the OSC is normally the lunch room, telephones are not usually kept connected. These telephones are normally stored in locked cabinets and connected only during periods of activation and for testing purposes. The OSC is equipped with an emergency page override, portable telephones that can be tied into the plant telephone system and hand-held radios. Special respiratory protection masks (Loud-Mouth) equipped with speakers are available for field team use. These masks allow verbal communications between team members without having to remove the mask.

3.1.4 Conclusion

Based on the findings in Section 3.1, this portion of the licensee's program meets the requirements of Supplement 1 to NUREG-0737.

3.2 Functional Capability

3.2.1 Staffing

The OSC is activated at the Alert level by onshift emergency personnel (Plant Emergency Team). The onshift emergency personnel consist of two electricians, two equipment operators, a radwaste operator and a HP technician. Set-up of the OSC takes approximately 10 minutes. Coincident with the notification of the onshift emergency personnel, the OSC Director and Lead OSC HP Support individual are notified via pagers. These two individuals implement telephone trees to recall the balance of the OSC staff.

3.2.2 Operations

The functional capability of the OSC was evaluated by presenting a NRC developed accident scenario to key members of the licensee's staff normally assigned to the facility during an emergency. Licensee personnel responded to the postulated circumstances by describing the actions that would be taken and by demonstrating how the equipment and supplies available in the OSC would be used. The evaluation showed that the OSC would be adequately staffed and capable of performing the assigned functions.

3.2.3 Conclusion

Based on the findings in Section 3.2, this portion of the licensee's program meets the requirements of Supplement 1 to NUREG-0737.

4.0 Emergency Operations Facility (EOF)

4.1 Physical Facilities

4.1.1 Design, Location and Habitability

The EOF is located in the shielded lower level of the PSF. The PSF is located 0.75 miles southwest of WNP-2. The facility has been built in accordance with the State of Washington Uniform Building code and will withstand adverse conditions of high wind and floods. The EOF was designed using the guidance of NUREG-0696, "Functional Criteria for Emergency Response Facilities", and NUREG-0654 as criteria for size. The useable area is estimated to be 20,000 square feet and the design assumption for number of personnel is 50. Generally, all work space is considered to be multipurpose. Most of the work areas are used as offices and classrooms during normal operations and would be converted during emergencies. The appraisal staff concluded that the EOF was amply sized and would accommodate more than 50 people. During the initial design development, design guidelines were established for necessary room adjacencies and separations. The appraisal staff identified no obvious problem in the present arrangement, however, the staff suggests that the licensee consider moving the "Decision Center" to a more central location.

The EOF has 2 feet thick concrete walls and ceiling separating it from the remainder of the PSF. The EOF is also partially underground. The protection factor calculated using the class 9 reactor accidents from WASH-1400 is 4000. The PSF ventilation system is comprised of three subsystems: one for the upper floor, one for the lower floor and one for the EOF. The first two have outside air intakes and exhausts and operate in this manner during the normal mode of operation. The lower floor subsystem, which includes a HEPA filter as well as heating and cooling, is the source of air for the EOF. Therefore, all air supplied to the EOF is HEPA filtered. There are three (3) emergency modes of operation for the ventilation system. Emergency Mode 1 consists of closing the intake and exhaust dampers for the upper and lower floor subsystems which places these subsystems in a recirculation mode and isolates the PSF/EOF from the outside air. Mode 1 operation is actuated by a reading of 100 mr/hr on a radiation detector in the intake air to the lower floor subsystem. Emergency Mode 2, actuated by a 50 mr/hr reading on the radiation monitor in the return duct of the lower floor subsystem,

isolates the EOF from the remainder of the PSF by actuating the EOF recirculation subsystem. The EOF subsystem includes a HEPA filter. Mode 2 also stops the operation of the upper and lower floor subsystems. The licensee has not evaluated the effect of inleakage (e.g. under the doors to the EOF) into the EOF on its habitability for all emergency situations. Emergency Mode 3, actuated by a 50 mr/hr reading on the radiation detector in the EOF subsystem, consists of stopping the operation of all three subsystems.

According to the licensee and observations of the appraisal team members all filters (pre and HEPA) are monitored by differential pressure measuring devices. These devices are connected to a computer system, whose terminal is located in the EOF, that provides an ability to determine actual readings as well as receive an alarm signal when the maximum allowable reading is reached. A person is assigned to this computer area when the EOF is activated.

The EOF includes a laboratory to be used as a backup for analysis of Postaccident Sample System (PASS) samples. Use of the fume hoods in the laboratory will be required to analyze the PASS samples. At the present time the above described emergency modes of operation of the PSF/EOF ventilation system does not allow operation of the fume hoods because of an inadequate source of air. Recognizing the potential need for the fume hoods, the licensee initiated a Design Change Package (DCP) which will alter the operation of the PSF/EOF ventilation system. The changes consist of (1) providing 1200 cubic feet per minute (cfm) of outside (intake) air into the upper floor subsystem and actuation of the fume hood exhaust fan(s) and (2) continuing the operation of the upper and lower floor subsystems during Emergency Mode 2 operation. This will provide a HEPA filtered source of air for operation of the fume hoods because air flow from the upper floor subsystem passes through the lower floor subsystem before it goes to the EOF. The Region intends to follow-up on the changes to the PSF/EOF ventilation system made in connection with the DCP (85-10-04).

4.1.2 Design and Location of the Alternate EOF

The licensee has identified their WPPSS Headquarters in Richland, Washington as their alternate location. This facility was approved because of the high protection factor provided by the EOF; and its location, 9.5 miles from the WNP-2 site, was approved by the Commission (SECY-83-361). Adequate space is provided at this facility to accommodate individuals unable to reach the EOF because of high radiation dose rates caused by severe accidents and has adequate communications with the TSC and

EOF. The licensee stated that although the communications console is not normally manned, communications tests are performed monthly.

4.1.3 Equipment and Supplies

Records and drawings available to EOF personnel are identical to those supplied to the TSC (see Section 1.1.3 above). These documents are maintained in the records room of the EOF. Vendor manuals are not on file within the EOF, however, they can be identified via computer and obtained from Building 81, located immediately outside the restricted area fence, or from the maintenance offices in the GS Building. The TSC obtains vendor manuals in the same manner.

The EOF is equipped with sufficient radiological monitoring equipment to measure radiation levels under accident conditions. The nearby laundry facility and a calibration laboratory located within the PSF can provide additional equipment. Three portable air monitors with audio and visual alarms are positioned throughout the EOF. An area radiation monitor is located in the Meteorological and Unified Dose Assessment Center. At the time of the appraisal the alarm set point for this monitor had not been established. Portable survey instrumentation for use in the EOF is available. Sufficient portable equipment is available to support in-plant and offsite monitoring team activities. Laboratory and counting facilities are available in the EOF to analyze air and swipe samples.

The plant dosimetry laboratory is located in the EOF. Personnel dosimeters and thermoluminescent dosimeters (TLDs) are available in sufficient number and appropriate operating ranges for all EOF personnel and plant support personnel. The appraisal disclosed that there was some confusion regarding the handling of TLDs during accident (Site Area Emergency or General Emergency) situations. The issue centered around the TLDs not in use and their transport from security access to the Health Physics Center Coordinator at the EOF. The licensee is currently revising the applicable procedures to clarify this situation.

Various other additional supplies necessary for the functions performed by the EOF are also available. The ambulance bay area contains a permanent decontamination facility capable of handling contaminated offsite teams and samples. In addition, a mobile decontamination trailer is available.

4.1.4 Communications

The communications systems existing in the EOF have been addressed in Section 1.1.4 above. Notification and manning of the EOF is conducted by alerting key individuals by pager from the communications center in the EOF. Some of these key individuals make subsequent notifications by initiating a call tree. The communications center is manned 24 hours per day by security personnel. Upon declaration of an emergency, a second security officer reports to the communications center to assist in the notification process. The console has been designed such that notifications can be conducted simultaneously from two separate console locations.

4.1.5 Power Supply

Emergency power is supplied to the EOF by a diesel generator. During a loss of offsite power, critical functions in the EOF would continue, however, lighting would be lost in certain areas (e.g., restrooms, showers, whole body counting areas and adjacent computer areas). Although the diesel generator provides emergency power to the dosimetry laboratory, the appraisal disclosed that the TLD readers cannot be connected to the emergency power supply. The licensee should consider whether installation of emergency lighting in some of these areas is appropriate. A 20,000 gallon emergency potable water source is located in a storage tank at the laundry facility. This facility is located adjacent to the PSF. Water is supplied to the EOF by booster pumps which are powered by the emergency diesel generator.

4.1.6 EOF Security

The licensee has provided the EOF with an industrial level of security. Visitors are to go to the front of the PSF. The receptionist will sign the visitors in and issue them an appropriate badge that is to be worn in a visible location. The EOF is also used on a day to day basis for office space and training rooms. Persons working in the EOF at times other then during an emergency are expected to wear their identificatic badges. During the hours of about 5:30 a.m. to 7:00 p.m. the PSF is open with visitor control provided by the receptionist. During the other periods the PSF is locked and entrance is controlled by security personnel. Access to the EOF during its emergency activation is controlled by security. During the appraisal period persons were observed in the EOF without visible identification badges. The second floor and first floor side doors, the latter providing direct access to the EOF, were unlocked and unguarded during the normal work hours. The GDS and EDPS terminals are located in the Technical Data Center and the Meteorological and Unified Dose Assessment Center (MUDAC) respectively. An operating manual for the EDPS was located near the

terminal in the MUDAC. To the appraisal team members it appeared that there was uncontrolled access to these terminals.

4.1.7 Conclusion

Based on the findings in Section 4.1, this portion of the licensee's program meets the requirements of Supplement 1 to NUREG-0737. However, the following items are suggested for improving the program.

(1) Consider moving the "Decision Center" to a more central location.

(2) Review possible sources of (HEPA) unfiltered air (e.g. leakage under the doors to the EOF) into the EOF and evaluate their impact on the habitability of the EOF during an emergency.

(3) Establish the alarm set point for the area monitor located in MUDAC so it can be declared operational.

(4) Evaluate the need for additional emergency lighting when there is a loss of offsite power.

(5) Review Procedure 13.11.7, other applicable procedures and training to assure that dosimeters not being used are returned to the EOF as required by Item 5 in Attachment E to Procedure 13.11.7.

(6) Evaluate the need for altering the electrical leads to the TLD readers so they can be connected to the emergency power when the need arises.

(7) Review the security of the GDS and EDPS terminals in the EOF to assure that only authorized persons have uncontrolled access to them.

4.2 Information Management

4.2.1 Variables, Parameters and Display Interfaces

The variabies, parameters and display interfaces in the EOF are the same as for the TSC, see Section 1.2.1 above.

4.2.2 Manual Information Systems

Manual methods for displaying information in the EOF are consistent with those in the TSC and OSC. The appraisal staff found these display methods to be easy to read and understand, and appropriately located.

4.2.3 Dose Assessment

The EOF dose assessment procedures are described in EPIP 13.11.14, Revision 1, "MUDAC Operations". This center is used by the Supply System and offsite authorities to coordinate field team operations, project doses and dose rates, and determine protective actions. As with the TSC, the EOF uses the EDPS for dose assessment during an emergency, (described in EPIP 13.8.1, Revision 1, "Computerized Emergency Dose Projection System Operations", and EPIP 13.8.2). The EDPS is a system of computer programs and effluent monitor and meteorological instrumentation inputs used to determine radiation exposure from gaseous effluents during an emergency. For the purposes of this section, only the dose assessment capabilities as embodied in the computer programs of the system were examined.

The EDPS has 3 computer codes available. The first main computer program is used to calculate external whole body and thyroid inhalation doses. This program may use either real time data from effluent and meteorological monitors in the automatic/manual mode or projected data in the predictive mode. The second main computer program is a code consisting of two combined computer codes; MESOI, a variable trajectory dispersion model, and GASPAR, a dose calculation program using meteorology input from MESOI and manually input source terms. The MESOI/GASPAR program calculates doses from ingestion of contaminated food. The third program is the backup, battery-powered microcomputer used in the event that the main computer programs are unavailable. Like the first main computer program, the backup program calculates external whole body and thyroid inhalation doses. The following paragraphs summarize some of the features of these programs and appraisal staff comments in the three major technical areas.

4.2.3.1 Source Terms

Leakage of radionuclides to the environment can take place mainly from the Reactor Building, the Turbine Building, and the Radwaste Building. The Reactor Building has high, intermediate and low range gas monitors, and normal and high activity particulate and iodine samplers. The building ventilation flow rates are 97,000 CFM for normal operations for the Reactor Building (4,000 CFM when the Standby Gas Treatment System (SGTS) is in use), 260,000 CFM for the Turbine Building, and 84,000 CFM for the Radwaste Building. The source terms in curies per second (Ci/sec) are computed by coupling the appropriate instrument reading (r/hr) to the instrument response factor (Ci/m^3 per r/hr) and the flow rate to the environment (CFM) with filtration factors where appropriate.

Source terms may also be determined, in the event of failure of building effluent monitors, from grab samples of the gaseous effluent streams. Constituent radionuclide determinations of these samples may be performed either in-plant or at the EOF, using an Intrinsic Germanium Detector and a Nuclear Data (ND) 66 computer terminal coupled to a ND 6680 mainframe computer. This system identifies gamma peaks in the 70 Kev to 2 Mev energy range with high resolution. Results of the laboratory analyses are stated as individual isotopic concentrations or as I-131 and Xe-133-equivalent concentrations. Coupling these radionuclide concentrations with the building ventilation flow rates, the source term release rates are computed. Additionally, dose calculations may be made based on samples taken by licensee and Department of Energy (DOE) monitoring teams in the field. For purposes of data reduction for monitoring team data, a mobile van equipped with a Davidson 1024 Multichannel Analyzer with Sodium Iodide (NaI) detectors is available. Alternatively, samples may be analyzed in the EOF as discussed above. Also available in the field are 12 permanent airborne particulate and iodine environmental monitors, 56 TLDs and 3 Pressurized Ionization Chambers (PICs) to measure environmental radiation.

A method of estimating fission product release fractions from core damage evaluation estimates is embodied in the Plant Procedures Manual, Section 9.3.22, entitled "Core Damage Evaluation". Core damage evaluation by these procedures depends on several plant parameters, including reactor water level, containment atmosphere radiation levels, containment hydrogen concentrations, and fission product radionuclide concentrations in the reactor coolant and containment atmosphere. In this procedure core water level history is first noted. If the core has been uncovered, fuel or fuel cladding damage may exist. Containment atmosphere radiation levels are the quickest sources of data to estimate core damage in the event of a loss of coolant accident (LOCA). Containment atmosphere hydrogen concentration, resulting from the Zircaloy-water reaction, is an indicator of the extent of clad damage that has occurred. Water and gas samples of the reactor coolant and/or the containment atmosphere are analyzed for fission product and hydrogen concentration. The presence of

radioiodines and cesiums in the coolant and noble gases in the containment atmosphere is indicative of core damage. The presence of less volatile fission products such as barium, lanthanum, or strontium, indicates fuel melting. Additionally, the ratio of concentrations of short-lived noble gas isotopes to Xe-133 and iodine isotopes to I-131 helps in distinguishing between fuel assembly gap and plenum releases due to clad failure and releases from the core by fuel melt/degradation. The PASS is used to obtain the aforementioned reactor coolant and/or containment atmosphere samples. The appraisal staff identified an incorrect slope for the I-131 F-factor curve (Figure D-1) in procedure 9.3.22, and recommends that this be corrected.

Although the Reactor Bulding, Turbine Building, and Radwaste Building leakage pathways are very important, and may cover the majority of pathways from design basis accidents, there are other release pathways that could be postulated in both design basis and beyond-design-basis accidents. An example would be post-LOCA leakage through a partially failed-open main steam isolation valve. Other unexpected unmonitored release pathways may become manifest during the course of other accidents, such as primary and secondary containment penetration seal/integrity breach pathways. Methods for defining a number of representative plausible unmonitored release pathway source terms should be established, including possible means of estimating isotopic distribution and flow rate to the environment, along with recommendations for assuming ground level, elevated, or mixed-mode release. It is also recommended that a severe accident source term/dose assessment implementation capability be established. This capability should include assessment capabilities for the generation of offsite radiological consequence estimates for immersion, inhalation, ingestion, skyshine, and groundshine sources for Boiling Water Reactor (BWR) severe accident sequences. These types of analyses are important in generating real-time emergency response actions as described in NUREG-0396, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Lightwater Nuclear Power Plants", (e.g., Figure I-11) and in NUREG-0654.

Finally, the CR Steam Jet Air Ejector Condenser Outlet Radiation Monitor visual display has no physical units designated on it. Thus, the observer must know the units in order to make use of the readings.

4.2.3.2 Meteorology

Three atmospheric transport and diffusion models are used in the EDPS. The backup microcomputer EDPS uses a straightline Gaussian diffusion model for a ground level release. On the primary EDPS a straightline Gaussian diffusion model with provisions to consider elevated and mixed mode releases, and wet and dry deposition is available. Both of these models can be considered as Class A models, using the definition of models in Appendix 2 of NUREG-0654, Revision 1. These models are acceptable for use in the TSC, since only initial assessments primarily at the site boundary (1.2 miles) will be made from this location, before the enhanced assessment capability is activated at the EOF. However, both of these models could be improved by adding building wake mixing factors. The errors associated with the mixed mode effective plume height formulation for use during accidents can lead to large underestimates of doses and therefore should be deleted from the model. Atmospheric dispersion rates based on the experimental data from the Hanford Reservation (i.e., "desert sigmas") should be included in the model.

Capability exists to run a third atmospheric transport and diffusion model called MESOI, a variable trajectory Gaussian puff dispersion model, to estimate doses primarily through the ingestion pathway over longer time frames and larger distances than the straightline trajectory models. Currently, the licensee is evaluating whether the MESOI model is an adequate and cost effective approach to satisfying dispersion evaluation requirements.

During the course of an accident, the MUDAC will be staffed with a corporate meteorologist and will use the primary EDPS straightline model and the subjective climatological and terrain input of the corporate meteorologist. To satisfy the requirement of Supplement 1 to NUREG-0737 to represent conditions up to 10 miles from the plant site, the primary EDPS atmospheric

dispersion model should include the capability to calculate variable trajectories in time and space, to make diffusion estimates during calm wind conditions, to limit plume travel distance during given time intervals, and to accumulate doses. While it is recognized that the corporate meteorologist will subjectively accommodate this lack of computational capability on the computer, these capabilities should be implemented on the computer since the meteorologist may not be available at the time of an accident.

4.2.3.3 Computerized Dose Assessment

As previously indicated, the EDPS incorporates three dose assessment programs for use during an emergency. The main EDPS and backup EDPS programs calculate external whole body dose and thyroid inhalation doses from submersion in a radioactive gas cloud. A third program identified as MESOI/GASPAR calculates organ dose for 4 age groups from ingestion of contaminated foodstuffs within 50 miles of the plant.

The main EDPS program is used to project doses within 10 miles of the plant. This program accommodates 13 noble gases and 5 radioiodines. Source terms are provided by effluent monitors. Meteorology data is also provided by monitors. Doses and dose rates to the whole body are calculated using submersion dose factors from Table B-1 of RG 1.109. Thyroid inhalation doses assume the child to be the critical receptor. Inhalation dose factors from Table E-9 of RG 1.109 and the breathing rate from the International Council on Radiation Protection (ICRP) Publication 23, Reference Man, for the child are incorporated into the program. The results of these EDPS program calculations are presented on a computerized map of the area around WNP-2. This map is divided into a series of 1 mile square grids that are colored according to the radiation levels calculated at the center of each grid. In addition, barely readable values for the actual calculations are presented within each grid. Only individuals experienced in using this grid system program can extract doses at specific distances.

The backup computer program calculates doses in a manner similar to the main EDPS program. Like the more complex program, the backup program will accommodate 15 noble gases and 5

radioiodines. Source terms and meteorology data are entered manually. Unlike the main program, this program will calculate doses at a user-specified distance. Thus users should have little difficulty in using the information obtained from this program.

MESOI/GASPAR is used to calculate doses from food ingestion at specified locations in the environment. This program accommodates approximately 35 radionuclides including noble gases, radioiodines, particulates, tritium, and carbon-14. As with the other EDPS programs, MESOI/GASPAR calculates external whole body doses from noble gases and organ inhalation doses from submersion in a radioactive cloud. In addition, MESOI/GASPAR deposits radioactive materials to calculate external whole body dose from a contaminated ground plane and to calculate organ doses from various ingestion pathways, including cow-milk, goat-milk, beef, and vegetation consumption. Eight organs are incorporated into the code. This program as implemented at WNP-2 can be used to direct environmental teams to areas of substantial contamination. However, the use of this program to calculate doses is limited since no consideration of such factors as radionuclide decay and depletion of particulates in transport has been accommodated. For these reasons the actual environmental measurements more accurately assess the potential impacts of the radioactive plume. Thus it is recommended that MESOI/GASPAR be reviewed and modified as appropriate to support the Supply System's needs.

In reviewing the models it was noted that the verification of the programs was not well documented. Additionally, the backup EDPS program had not been subject to the same verification program as the main EDPS programs. As a result, during the appraisal, a flaw in the determination of the atmospheric stability in the backup system was identified. It is therefore recommended that the model in the backup program be verified and documented.

Although some of the problems identified above may have a potential impact on protective action decision making, MUDAC personnel include a Health Physicist whose knowledge and experience will be used to review calculations prior to recommendations for protective actions.

Additionally, these calculations will be reviewed with offsite authorities, also stationed in the EOF, prior to issuance of any protective action recommendations. Consequently, the dose assessment methods are generally adequate to meet the needs of the center.

4.2.4 Conclusion

Based on the the findings in Section 4.2, this portion of the licensee's program meets the requirements of Supplement 1 to NUREG-0737. However, the following items appear to need licensee action and will be classified as "open" items which will be tracked by the Region.

(a) Establish a method(s) for defining plausible unmonitored release pathway source terms including possible means of estimating isotopic distribution and flow rate to the environment, along with recommendations for assuming ground level, elevated or mixed-mode releases for these pathways. (Section 4.2.3.1) (85-10-05)

(b) Improve the primary EDPS dispersion model to include calculation of variable trajectories in time and space, to make diffusion estimates during calm wind conditions, to limit plume travel during a given time interval, and to accumulate doses. (Section 4.2.3.2) (85-10-06)

(c) Review and modify MESOI/GASPAR to incorporate decay and depletion of radionuclide in transport from the release point to the receptor location. (Section 4.2.3.3) (85-10-07)

(d) Improve documentation of the verification of the main EDPS programs. (Section 4.2.3.3) (85-10-08)

(e) Provide systematic verification and documentation for the backup microcomputer program. (Section 4.2.3.3) (85-10-09)

In addition, the following items are suggested for improving your program.

(1) Correct the error in the F-factor curve for I-131 decay in Nuclear Performance Evaluation Procedure 9.3.22 (Figure D-1).

(2) Establish a severe accident source term/dose assessment implementation capability.

(3) Improve the primary and backup EDPS models by including the effect of building wake mixing, by deleting the mixed mode effective plume height formulation and by including atmospheric dispersion rates based on experimental data from the Hanford Reservation.

(4) Consider displaying the physical units (e.g. cpm or uCi/cc) on the CR Steam Jet Air Ejector Condenser Outlet Radiation Monitor visual display.

4.3 Functional Capability

4.3.1 Operations and TSC Support

The functional capability of the EOF was evaluated by presenting a NRC developed accident scenario to key members of the licensee's staff normally assigned to the facility during an emergency. The individuals responded to the postulated circumstances by describing the actions that would be taken and by demonstrating how the equipment and supplies available in the EOF would be used. The evaluation showed that the EOF would be adequately staffed and capable of performing the assigned functions.

4.3.2 Conclusion

Based on the findings in Section 4.3, this portion of the licensee's program meets the requirements of Supplement 1 to NUREG-0737.

5.0 Exit Interview

On March 29, 1985 an exit interview was held with the licensee for the purpose of discussing the preliminary findings of the appraisal. Those licensee personnel who attended the meeting have been identified in Attachment A to this report. In addition to the NRC Team Leader and team members, Mr. A. Toth, Senior Resident Inspector, was present. The licensee was informed that no deficiencies or violations of NRC requirements were identified during the appraisal.

The NRC Team Leader informed the licensee that recommendations for improving specific areas addressed during the appraisal were identified and would be documented in the appraisal report. The NRC Team Leader stated that no written response would be required, but that improvement items should be evaluated and corrected at the licensee's discretion.

With the exception of the recommended improvement associated with the validation and verification of the backup EDPS program used on the microcomputer, all of the improvement items discussed in this report were specifically mentioned during the meeting.

On July 2, 1985 F. Wenslawski, R. Fish and G. Temple of NRC Region V held a telephone discussion with D. Bouchey, R. Chitwood, P. Powell and others

of the licensee's organization. The items in Section 1.2.4 and 4.2.4 of this report were identified as being "open" items, which represented a change from the exit interview held on March 29, 1985. As documented in the letter transmitting this appraisal report, the licensee committed to examining our concerns described in Section 1.2.4 and taking appropriate corrective actions.

Attachment A

Persons Contacted

T. Albert, Nuclear Plant Maintenance Engineer
*D. Anderson, Supervisor, Mechanical Maintenance
R. Barbee, Supervisor, Plant Engineering
L. Barndt, Records Management Clerk
L. Berry, Supervisor, Health Physics
*D. Bouchey, Director, Support Services
*A. Brown, Systems Project Manager
*R. Chitwood, Manager, Emergency Planning and Environmental Programs
R. Corcoran, Operations Manager
*K. Cowan, Plant Technical Manager
G. Dockter, Principal Test Engineer
W. Downs, Lead Engineer, Telecommunications
C. Fies, Manager, Engineering Services
W. Flory, Foreman, Health Physics/Chemistry
D. Gano, Shift Technical Advisor
*G. Godfrey, Manager, Performance Evaluation
*R. Graybeal, Manager, Health Physics/Chemistry
S. Heath, Communications Engineer
J. Hendrick, Security Training Specialist
I. Jenkins, Principal Nuclear Engineer
D. Kidder, Plant Engineering Supervisor
*A. Klauss, Senior Emergency Planner
R. Kyle, Senior Nuclear Plant Engineer
J. Landon, Maintenance Manager
*D. Larson, Manager, Radiological Programs and Instrument Calibration
*D. Mannion, Senior Emergency Planner
*J. Martin, Plant Manager, WNP-2
R. Matthews, Principal Engineer
H. McCluer, Principal Engineer
T. Meade, Electrical Engineer
C. Mix, Instrument and Control Foreman
*R. Mogle, Senior Emergency Planner
*C. Noyes, Manager, Mechanical Systems
*G. Oldfield, Senior Health Physicist
*D. Ottley, Supervisor, Radiological Services
K. Parker, Technical Analyst
*J. Parry, Principal Health Physicist
*J. Peters, Manager, Plant Administration
*C. Powers, Assistant Plant Manager, WNP-2
D. Queen, Building Maintenance Manager
*F. Quinn, Principal Scientist
F. Rippee, Nuclear Plant Performance Engineer
V. Shockley, Health Physics/Chemistry Support Supervisor
*S. Telander, Manager, Security Programs
M. Terrass, Principal Training and Evaluation Specialist
D. Vorheis, Captain, Security
S. Washington, Shift Technical Advisor
M. Westergren, Senior Training Specialist
C. Whitcomb, WNP-2 Design Document Control Manager

*D. Whitcomb, Technical Specialist
W. Wolkenhauer, Principal Core Analysis Engineer
M. Wuestefeld, Supervisor, Reactor Engineering

*Denotes those present at exit interview on March 29, 1935.

Persons Present at March 29, 1985 Exit Interview Only

J. Baker, Operations Manager, WNP-1
D. Feldman, Manager, Plant Quality Assurance
V. Lee, Systems Analyst
D. McBeath, Computer Programmer Analyst
S. Regev, Health Physicist
G. Sorensen, Manager, Regulatory Programs
C. Van Hoff, Senior State Liaison Specialist
R. Wardlow, Health Physicist