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PROPOSED MINUTES OF THE
WPPSS-2 SUBCOMMITTEE MEETING

Richland, Washington - September 2-3, 1982

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The purpose of the meeting was to discuss the WPPSS-2 Operating License Application. The meeting was preceeded by a site visit. Representatives of the Washington Public Power Supply System (Supply System), NRR and I&E participated in the discussion. There were no written or oral statements submitted by members of the public.

Principal Attendees

M. Plesset, Chairman
J. Ebersole, Member
J. J. Ray, Member
C. Mark, Member
G. Quittschreiber, Staff
J. M. Griesmeyer, Staff
W. Lipinski, Consultant
I. Catton, Consultant
R. Auluck, NRR
R. T. Dodds, I&E
A. Schwencer, NRR

R. Nelson, WPPSS
D. W. Mazor, WPPSS
R. G. Matlock, WPPSS
W. C. Bibb, WPPSS
J. R. Honekamp, WPPSS
J. D. Martin, WPPSS
J. V. Everett, WPPSS
D. L. Renberger, WPPSS
J. E. Rhoads, WPPSS
R. L. Corcoran, WPPSS
C. M. Powers, WPPSS
D. T. Evans, WPPSS
E. A. Fredenburg, WPPSS

NRC Presentation

1. R. Auluck of NRR gave a summary of the licensing status of Washington Public Power Supply System Nuclear Project No. 2 (WNP2). Of the previously reviewed plants, WNP2 is most similar to the LaSalle Nuclear Power Plant (NPP). It was pointed out that the table in the SER comparing WNP2 with other NPPs had some errors. Between the issuance of the SER in April and the Subcommittee meeting, 14 outstanding issues had been resolved leaving 17 open issues.

DESIGNATED ORIGINAL

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With regard to electrical equipment qualification, I. Catton asked whether a walk through of the plant had been done to see if some equipment might be vulnerable to environmental effects such as moisture resulting from equipment or piping failure in adjacent compartments. He thought more was needed than the normal autoclaving of electrical EQ at pressure temperature and humidity. J. Ebersole was concerned that type testing of equipment may not be adequate because in the plant you might not get a perfectly replicated product.

The approach to dealing with unfavorable orientation of the turbine places emphasis on inspection to ensure that cracks are detected and procedures to prevent overspeed.

Regarding control systems failures, J. C. Ebersole noted that in addition common cause failure of control systems one should consider the failure of a sensing line that effects both the control system and a safety system.

I. Catton questioned the late date (March 1983) of submittal by the applicant of control room design information for review until after much of the construction is already complete. R. Nelson of the Supply System said that they were actively participating with the Owner's Group and the NRC Staff on the development of guides and criteria so that no unexpected problems should arise.

2. R. Dodds of Region V gave the I&E report summary. A. Roth discussed quality assurance and D. Willett discussed the operation portion of the review. Construction is about 91% complete and Electrical installation is greater than

90% complete. However, installation practices do not always follow Reg. Guide 1.75 with deviations in the area of physical separation, electrical isolation and the identification of Class 1E and associated circuits. They were hopeful that the matter will soon be resolved. In mid 1976, problems were observed in the performance of the Supply Systems quality assurance program. These and further problems persisted until, in June of 1980, the Supply System stopped work to regroup. On June 17, 1980 the NRC started enforcement actions. On July 17, 1980, the Supply System submitted its corrective action plan that was to identify the problems, correct existing defects, and prevent future ones. The NRC concurred with a limited restart of work on January 20, 1981 and the general release of work was issued on May 31, 1981.

On June 1, 1981, the Supply System implemented a major corrective action in the designation of Bechtel as the completion contractor and construction manager. The NRC has not fully assessed the effectiveness of the Supply System corrective actions. The Supply System has brought in experienced management that has resulted in substantial improvement in the licensee's project management teams, management controls and in the attitude of the project personnel toward quality.

Applicant Presentation

1. Corporate Organization and Management

Corporate Organization and Management was discussed by W. Bibb, Director of Supply System Power Generation Unit. He mentioned that the Supply System is a municipal corporation of the State of Washington, which has 19 public utility

districts and 4 municipal power systems as its members. It is vertually an all nuclear company without marketing or distribution responsibilities. He described the responsibilities of the various people and sections of the managing organization. Mr. Ferguson is the managing director of the Supply System and reorganized the system when he came on-board to straighten out the construction problems.

Mr. Bibb described the sequence of actions used by the Supply System to resolve the problems that had resulted in the stop work of June 1980. After detailed review of much documentation to identify the problems, Bechtel replaced the construction contractor. In addition, all installation packages were reviewed.

R. Matlock, the construction manager, described his responsibility as the management of construction completion and the assurance of a smooth transition to the operating organization. He outlined the method for addressing past quality problems. The recovery process had two parts. The first involved a great deal of internal scrubbing and reordering of the project so that they could assure themselves and the NRC that the rest of the construction would be done well. The second part was the quality verification program on at previous construction. Some one hundred man years were involved in this program. On May 31, 1982 some work was restarted with each package approved by Matlock or Bibb until they had experience with the new procedures.

When the previous mechanical contractor was terminated a year ago last summer, a detailed and complete review of all Section 3 ASME code paper was done because code responsibilities changed. The documentation was not well organized, but when subsequently organized, it generally was acceptable with minimal hardware impacts.

J. Honekamp described the reverification program. The intent of the acceptance review process was to assure a well documented basis for acceptance of the plant and its readiness to operate, and to address the problems that were encounted at that time at WNP-2. That is, to assure that construction quality deficiencies that could significantly affect safety or performance would be identified and corrected.

Honekamp focused design reverification. The basic evidence that the plant is designed correctly comes from two things: the design process itself and a requirement for design reverification that is going on now by independent people who were not envolved in the original design.

J. Martin, the plant manager, said that his responsibility during the construction phase has been in parallel to develop an operations staff that would be ready when the plant is ready. He discussed the nuclear experience of onsite personnel. 240 people will be the normal operating staff, 239 of which are already on board. The opening is as the Assistant Plant Manager.

Several hundred others, possibly contractors will be available for support during the power program. At fuel reloads more will also be needed which may rotate between Supply System plants when the other plants come on-line.

The department managers are members of the plant operation review committee that is the in-house plant safety review committee required by the technical specifications. They are responsible to the corporate nuclear safety review board. Martin receives a daily accounting of significant events in the industry.

The Supply System has written all of their own plant maintenance and operating procedures (about 1350) with only 137 left to write. They have used LaSalle, Brown's Ferry, Peach Bottom, and other BWR operating procedures as guides.

2. Emergency Planning

V. Everett, manager for Emergency Preparedness for the Supply System, described the program and covered the plans for the 10 mile and 50 mile planning zones. 1300 people live within the 10 mile zone which includes Benton and Franklin counties. FEMA did an interim finding on the 10 mile plan and found some deficiencies related to items that were not completed as yet. The 50 mile zone includes 10 counties including two in Oregon.

The Emergency Organization for the Supply System consists of groups located in three areas. The first area is onsite and managed by the plant emergency director. The second area is the near-site emergency operations facility

for which the recovery manager and his staff are responsible, and the third is the headquarters building in North Richland which includes the managing director and the public information responsibilities. A technical support center and operations support center are both onsite. The emergency operations facility is part of the plant support facility.

Mr. Everett noted that in emergencies, communications usually present problems and the Supply System has concentrated on solving these problems. Public information will go to the press from the emergency public information director at the headquarters building.

The early warning system consists of two systems; sirens for transients and tone activated radios for residents within the 10 mile area.

3. Geology and Seismic Issues

Mr. Renberger, Deputy Director of Technology, spoke on Geology and Seismic issues for the Supply System. He said that these issues have been resolved with the NRC Staff and that the SER was delayed while the review was completed. They commissioned a probabilistic seismic exposure analysis which indicated that the probability of exceeding the .25G design is 1.1×10^{-4}. He displayed a curve that showed the estimated recurrence interval for other size earthquakes. The slope of the most conservative curve was based on assumptions that they say have since been disproven, so the real curve would be lower. When questioned about the seismic safety margins, they indicated that this last fact and conservatism in design should provide adequate margin.

J. Kimball of the NRC Staff cautioned that although the exposure analysis is state-of-the-art for earthquakes that are associated with a known geologic structures, the largest historical earthquake in the tectonic province has not been definitively associated with a particular structure. It is typical of Central and Eastern U.S. sites and the NRC views it as a tectonic province earthquake. While they agree that earthquakes are associated with geological structures, the random earthquake assumption is a way of dealing with earthquakes of unknown structure.

4. Equipment Qualification

J. Rhoads, program manager for equipment qualification stated that their primary objectives were to confirm that the WNP2 safety related equipment can perform safety functions under all postulated incidents and conditions, and, where documentation is deficient, to establish confirmtion and take needed corrective action. They also want to establish the resource and expertise within the Supply System to carry on the work throughout the life of the plant.

One part of the work is to establish evaluation criteria. They disagreed with the NRC on some points and EPRI has commissioned some studies to be done as an industry group. Another part of the work is to define the accident environments. The third part of the program is establishing definitive lists of equipment to be qualified. The fourth point is to perform the evaluation to the documentation and to the criteria. The final portion of the program is to take corrective action when documentation deficiencies are found.

Their first submittal to the NRC was provided to the Staff in January 1982 and the next submittal is due in the middle of September 1982. It will provide a justification for interim operation while corrective action is completed (by the end of the first fuel reload).

5. Selected Plant Systems

R. Corcoran, plant operations manager gave the presentation on control room habitability, control of human factors, decay heat removal and emergency operating procedures. The control room is designed to ensure habitability through all the normal and abnormal operating conditions. He discussed two types of situations: the loss of coolant accident and the release of hazardous chemicals in the event of a break in the fluoridation system.

W. Lipinski inquired about the possible allergic reaction of operators to the off gasing vapors from plastic in closed control room and its ventilation system. Nelson of the Supply System said that they had not heard of such problems, but that their general feeling was that it would not be a particular problem.

With regard to control of human factors, they used a dual approach: in-house review task force and participation in the BWR's Owner's Group. Major improvements as a result of the in-house review were in the areas of control display improvements, the application of mimicking and demarcation of controls and redesign of the annunciator system from 2 tones to 3.

Mr. Corcoran went over the decay heat removal system operation for several cases: under normal conditions, when the RPV is isolated from the main condensor, and when the RHR shutdown cooling mode is unavailable.

Mr. Corcoran said that the emergency operating procedures represent a shift in philosophy from situation specific procedures to the maintenance of vital safety functions. They were developed from the BWR Owner's Group generic emergency procedure guidelines, which are symtom based guidelines using parameters such as low water levels or high dry well pressure which are symtomatic of both emergencies and events which may degrade into emergencies. The emergency operating procedures will be plant specific.

6. Several Specific Issues

C. Powers addressed several questions that arose during earlier discussions. The first dealt with the natural circulation power level and core stability when the level recirculation pumps are tripped from 100% power. C. Powers said that the resulting power level would be 47% based upon their analysis for the power ascension program. W. Lipinski noted that this was different than he had heard for BWR's after recirculation pump trip in the ATWS scenario. J. C. Ebersole pointed out that for ATWS, the recirculation pump trip was intended to buy time while alternate shutdown of the reactor could be achieved possibly by boration. If the power is 47%, the time will be too short to do any good. This question will be looked into and resolve by the Power System in time for the ACRS full Committee discussion of WNP2.

Another question dealt with the differences between the LaSalle and the WNP2 core design. Powers said that they were able to increase core flow which leads in a 2% flattening of the power distribution and results in a higher average heat rating for the fuel pins. It was again pointed out that there were inconsistencies in the comparison table in the WNP2 SER.

Channel bowing was also discussed. Powers said that they planned to monitor bowing and use statistics to estimate when a bundle will reach an unacceptable amount of bowing. They intend to discharge the bundle before this. The criteria will not rely solely on friction measurements, but will be based upon degradation of scram speeds.

With regard to a cask drop accident, Powers said that they had analysed it from a radiological protection standpoint and were comfortable with their ability to control the consequences. However, they have not looked at the potential for damage to the fuel pool, their fundamental line of defense is prevention of a cask drop accident.

7. Electrical/I and C

C. Powers discussed the reliability of AC and DC power, the plant response to total loss of AC power and design modifications intended to make the remote shutdown systems more reliable.

During the description of the power distribution system, J. Ray noted that the bus in diagram indicated it was a straight bus, but was referred to by

Powers as a ring bus; Powers indicated he would clear-up the problem but that he thought the diagram was wrong and that they really did use a ring bus.

J. Ebersole asked why some of the plant auxilaries were run off the plant output. This would require that they be switched to offsite power during an accident. He suggested that they should be normally run from offsite power so that switching would not be required when they are needed most.

Mr. Ebersole also inquired whether there was a single vulnerable point (in the bus tie interlocking system which ties two breakers together and prevents non-synchronized inter-ties of the diesels) which could, upon failure, cause an out of synchronization closure with those breakers. Meade of the Supply System said that their is no way this could happen by a wire to wire fault.

C. Powers said that they have a priority agreement with the Bonneville Power Authority to restore power to WNP2 in the event of loss of offsite power.

Powers said that reliabilities of lossing all AC up to 20 minutes, longer than 20 minutes, longer than 60 minutes, and longer than 120 minutes, were 8.3×10^{-7}/year, 1.7×10^{-7}/year, 6.8×10^{-8}/year and 6.1×10^{-9}/year, respectively. J. Ebersole said that these figures obviously did not include common mode failures, and pointed out that the DBE was estimated to be 1.1×10^{-4} and most components of the power grid are not designed to withstand earthquakes of this size.

Powers indicated that without recharging, the batteries would be expected to last for more than two hours and, if non-critical loads shed, on the order of 8-10 hours.

8. Fire Protection

D. Evans, program manager for fire protection engineering for WNP2, discussed the fire protection program. They expect to close, in a site visit later this year, two NRC concerns that deal with the adequacy of unlabeled fire doors, and low fire loading in areas where automatic fire suppression systems are not installed for cable raceway protection in addition to one hour fire rated envelopes. The Supply System is requesting that committed standpipe changes be deferred until the end of first refueling outage while the NRC wants them completed before fuel load.

W. Lipinski inquired about the non-uniform spacing of spray heads in the cable spreading room. Evans said that a contractor had gone through the plant and determine the proper spacings and verified them after installation.

9. Containment Systems

E. Fredenburg, manager of WNP2 civil structural engineering, gave the presentation on containment systems. He concentrated on the issue of hydrodynamic loads and the modifications to reduce and accommodate them. There are currently no open issues between the Supply System and the NRC Staff on hydrodynamic loads. The features of WNP2 that differ from other Mark II plants are a free

standing steel containment, an inclined pool bottom and cross quencher devices on the end of the SRV discharge lines.

Fredenburg summarized some of the key elements of their unique SRV discharge and chugging load definitions. Because they have results from prototypical tests they do not plan to do any SRV in-plant tests to measure loads in the pool.

Closing Remarks by the Subcommittee Chairman

Dr. Plesset told the applicant that the felt that they had done very well and told them that they should shorten their presentations substantially for the full Committee meeting in October 1982, but be prepared to answer detailed questions.

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NOTE: Additional meeting details can be obtained from a transcript of this meeting available in the NRC Public Document Room, 1717-H Street, N.W., Washington, D.C. Or can be purchased from Alderson Reporting Company, Inc., 400 Virginia Ave., S.W., Washington, D.C. 20024, (202) 554-2345.