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SUBJECT: Summarizes util concerns re accuracy of HVAC flow data that will become part of NUREG/CR on control room habitability.

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December 23, 1987
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Docket No. 50-397

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: NUCLEAR PLANT NO. 2
OPERATING LICENSE NPF-21
COMMENTS ON ARGONNE NATIONAL LABORATORY (ANL)
TABLES/FIGURES TO BE INCLUDED IN NUREG ON
CONTROL ROOM HABITABILITY SURVEY

Reference: IOM, Hays to Samworth dated 7/31/87,
EGG-CS-7643 Appendix B

WNP-2 has reviewed some tables and figures that will become part of a NUREG/CR on the Control Room Habitability Survey. These were provided to WNP-2 by J.W. Driscoll of Argonne National Laboratory (ANL) (referenced IOM). In discussions with Mr. Driscoll and Mr. J. Hays (NRR), WNP-2 personnel have expressed many concerns over the accuracy of HVAC flow data obtained by ANL at WNP-2. These concerns are summarized below:

o The data used to generate the Measured Fresh Air Makeup (Table 5.1) contained a mathematical error. The first number, 553 did not take into account leakage thru the closed remote intakes 1 and 2. The second number, 909 did. In addition, these numbers were obtained from ANL data sets 1 and 2 for WNP-2 which contain unexplainable flow numbers. Data set 1 shows an intake flow of 600 scfm that increased at another point to 650 scfm and then decreased to 534 scfm. The only logical explanation for this is incorrect data at one or more points. Other branch duct flows measured by ANL cannot account for the flow changes. This section of the system is a totally enclosed, seal welded system. There are many other cases in the ANL data where numbers do not add up.

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- ANL did not take any data on a branch duct that goes from the WNP-2 remote intake header to the Technical Support Center. This was an omission by ANL that could have helped to resolve one or two of the discrepancies. ANL left this line off the WNP-2 flow diagram they generated although it was on all the drawings supplied them by WNP-2. This has yet to be referenced in any of the documents associated with this survey including the memo JJ Hays to RB Samworth dated 7/31/87.

- Data sets 3 and 4 were used to generate columns 2 and 4 of Table 5.1. Data set 3 is particularly bad. The table shows approximately 800 scfm enters the remote intakes, only 559 scfm comes out of the emergency filtration fan and 933 scfm is shown being added to the control room. 300 to 400 scfm is not accounted for and cannot be explained by ANL. The 559 scfm is probably a bad data point and yet it is the one chosen for Table 5.1 column 4. Data set 4 has a similar problem.

- The data shown in Table 5.1 column 2 is titled "Emergency Filter Train Fresh Air Makeup" and yet the WNP-2 system was not tested by ANL when aligned to the normal intake. The data recorded in column 2 is with the normal intake closed and both remote intakes open.

- Table 5.1 column 4 data could be off by 80% as confirmed by ANL. Both numbers are about 300 scfm below what they should be. (See comments above concerning data set 3 and 4).

- Looking at Table 5.1 it appears the WNP-2 Emergency Filtration System will not flow 1000 scfm. The design maximum flow is 1000 $\pm$10% scfm. However, due to the leak tightness of the control room, actual flow is lower. When placed in the recirculation mode, flow is approximately 960 scfm. This should be noted in the table or the design flow recorded as 1000 maximum.

- Data points used by ANL were in error. Flows were measured in elbows, near turns, and in high turbulence areas, leading to very inaccurate data. In one 12"X12" duct, velocities from 75ft/min. to 200 ft/min. (data set 4, point 11A) were recorded.

- It was recommended that ANL record some static pressures and velocity directions to confirm some designed-in features. One in particular is the inability to bypass the emergency filtration system through dampers 54A-2, 51A-1, 54B-2, 51B-1 due to static pressure ΔP across the potential bypass dampers. This is something that was measured at startup and at 18 month intervals, yet the survey team did not take the time to confirm it and now won't accept it's existence. The result is an implied potential bypass path, which it is not.

COMMENTS ON ARGONNE NATIONAL LABORATORY (ANL) TABLES/FIGURES TO BE INCLUDED IN NUREG ON CONTROL ROOM HABITABILITY SURVEY

- ANL did not reflect the proper location of some of their data points on the flow diagram. WNP-2 has forwarded a marked up version of the flow diagram showing the accurate location of the data points to ANL.

- NRR was concerned that when testing the Control Room Emergency Filtration Train the electric heaters should not be allowed to cycle according to humidity and be required to be on continuously. The Technical Specification requires the heaters to be operable during the test. Many components are not required to be actually running to be operable and it would be inconsistent to require operability (in this case) to mean on. The WNP-2 surveillance procedures verify the heaters will produce the required wattage, actuate on 70% RH and the I&C calibration procedures verify proper actuation at 70% RH. No problems with our current procedures or the way the heaters are operated/tested is evident.

- The survey team has recommended Technical Specification revision to test carbon at 30°C per ASTM D3803-1979. At present the NRC is implying test per Appendix B of EGG-CS-7643, a draft D3803, which is not approved by or incorporated in the latest ANSI/ASTM Standards. Until the Standards are approved and/or solid founded information on charcoal testing begins to come from the NRC, WNP-2 will continue to test as required by the WNP-2 Technical Specifications.

- The survey team obviously did not fully understand the operation of the Control Room Cooling Systems. The reference indicates emergency chiller CCH-CR-1A auto starts on F, A or Z signals. The unit is normally isolated. CCH-CR-1B is the only chiller that will auto start. The DIV. I cooling system is normally lined up to standby service water and it (SW) will auto start.

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- The survey team also appears to be unfamiliar with in place testing of filtration trains. The reference indicates a heavy reliance on the visual inspections of ANSI N510-1975. This is a generic inspection and includes several items that are not designed into the WNP-2 system. It is unrealistic and not recommended by testing companies to pull the HEPA's out and inspect the gaskets when the HEPA's are not being inspected. Per ANSI N510-1975, the visual inspection is only to identify problems that may cause failure of the in place tests. WNP-2 does in place tests every time visual inspections are performed. In addition NRC was concerned about bypass testing and stated (reference) that the WNP-2 procedures did not do it. This is in error, testing is done if a bypass path exists. If system pressures indicate no bypass is possible then the test is not required.

- This survey was performed at a time when all the air cleaning system procedures were being reviewed and finalized by the WNP-2 Ventilation Engineers. Most of these procedures were Revision 0 that had never been run. WNP-2 was reviewing all the procedures prior to performing them, several of which were available to the survey team. Most of the problems identified by the survey team were already being corrected by the Ventilation Engineers. The reference should have noted the fact that many of the procedures they reviewed had never been used and were in the review process.

- The reference stated the Emergency Filtration System (EFS) functions as an integral part of the normal air handler. This is incorrect. The EFS can be run by itself.

- The reference also addresses "temporary patching material" and states that WNP-2 uses these materials. This is also wrong. Any sealant used was meant to be permanent and was approved for use (i.e. handcast materials).

- The reference stated WNP-2 does not have adequate test points to measure system performance. In fact NRC personnel requested WNP-2 to add test ports for the survey team. WNP-2 does not foresee using these test ports again due to their location. These ports may eventually be seal welded shut. Other test ports installed during startup are adequate to assure compliance with technical specifications, measure system performance, and will give WNP-2 indication of system deterioration.

- The reference is inaccurate when it states that there are insufficient number of test ports to have shown the integrity of the system. WNP-2 utilized a Balancing Contract for initial start-up balancing and for verification of the survey data. In addition, the Balancing Contractor considered the test points used for the NRC survey to be inappropriate. Additional equipment (flow hoods, pitot tubes velocity (Δ P) measuring devices), had they been used, could have obtained the same objective with more accurate data.

- The reference also stated WNP-2 recognized the benefit of additional test ports. This also is in error. The HVAC engineers do not foresee using the test ports installed for the NRC survey team except perhaps for static pressure measurements which the survey team did not take.

Given the above concerns, caution should be exercised prior to drawing any conclusions from the ANL report. Additionally the Supply System considers that any action taken as a result of the report could be misguided and would request that any contemplated action be discussed with our plant staff prior to implementation.

Should you have any questions, please contact Mr. P. L. Powell, Manager, WNP-2 Licensing.

Very truly yours,

G. C. Sorensen, Manager
Regulatory Programs

MDK/bk

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