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SUBJECT: Application for amends to Licenses DPR-58 & DPR-74,modifying "Control Room Emergency Ventilation Sys" & associated bases.

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AEP:NRC:0398R

Donald C. Cook Nuclear Plant Units 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
CONTROL ROOM VENTILATION TECHNICAL SPECIFICATIONS

U.S. Nuclear Regulatory Commission
Attn: T. E. Murley
Washington, D.C. 20555

Attn: T. E. Murley

June 29, 1989

Dear Dr. Murley:

This letter and its attachments constitute an application for amendment to the Technical Specifications (T/Ss) for the Donald C. Cook Nuclear Plant Units 1 and 2. Specifically, we propose to modify T/S 3/4.7.5.1 ("Control Room Emergency Ventilation System") and its associated Bases section. The changes are designed to address control room habitability concerns related to NUREG-0737 Item III.D.3.4. The reasons for the proposed changes and our analyses concerning significant hazards considerations are contained in Attachment 1 to this letter. The proposed revised T/S pages are contained in Attachment 2.

We believe that the proposed changes will not result in (1) a significant change in the types of effluents or a significant increase in the amounts of any effluent that may be released offsite, or (2) a significant increase in individual or cumulative occupational radiation exposure.

These changes have been reviewed by the Plant Nuclear Safety Review Committee and will be reviewed by the Nuclear Safety and Design Review Committee at their next regularly scheduled meeting.

In compliance with the requirements of 10 CFR 50.91(b)(1), copies of this letter and its attachments have been transmitted to Mr. R. C. Callen of the Michigan Public Service Commission and to the Michigan Department of Public Health.

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1/1

This document has been prepared following Corporate procedures that incorporate a reasonable set of controls to ensure its accuracy and completeness prior to signature by the undersigned.

Sincerely,

M. P. Alexich
Vice President

ldp

Attachments

cc: D. H. Williams, Jr.
W. G. Smith, Jr. - Bridgman
R. C. Callen
G. Charnoff
A. B. Davis
NRC Resident Inspector - Bridgman
NFEM Section Chief

ATTACHMENT 1 TO AEP:NRC:0398R

REASONS AND 10 CFR 50.92 ANALYSES FOR CHANGES TO THE
DONALD C. COOK NUCLEAR PLANT UNIT NOS. 1 AND 2
TECHNICAL SPECIFICATIONS

I. INTRODUCTION AND BACKGROUND

This license amendment request proposes to modify T/S 3/4.7.5.1 (control room emergency ventilation system) and the accompanying Bases section. The proposed changes are intended to address control room habitability issues related to NUREG-0737 Item III.D.3.4 and Generic Letter 83-37. Additionally, the changes clarify several aspects of control room ventilation system operability requirements.

A previous version of this amendment request was submitted in a letter dated July 10, 1986 (ref. AEP:NRC:08560). Subsequent to the submittal, the Cook Nuclear Plant control room ventilation system was reviewed by an inspection team from the office of Nuclear Reactor Regulation (NRR) and by Region III staff. The inspectors found problems with our Technical Specification (T/S) submittal, and with the control room habitability analyses that supported the changes. As a result, we withdrew our proposed T/S changes by letter dated April 29, 1988 (ref. AEP:NRC:0398P). By letter dated October 11, 1988 (ref. AEP:NRC:03980), we provided revised control room habitability analyses, and committed to providing T/S changes by June 30, 1989. The control room habitability analyses were later revised to correct an error made in the previous submittal and to incorporate enhancements to the analytical technique that was used for control room thyroid dose calculations (ref. AEP:NRC:0914E dated December 29, 1988).

II. DESCRIPTION OF CONTROL ROOM VENTILATION SYSTEM

The control room ventilation system is designed to maintain the control room habitable following design basis accident conditions.

Figure 1 is a simplified flow diagram of the control room ventilation system. Figure 1 also shows the layout of the various rooms that are served by the control room ventilation systems. These rooms include the control room itself, the HVAC machine room (which houses the various ventilation equipment), and the P-250 computer room.

1. Normal Operation

During normal operation of the control room HVAC system, outdoor air is drawn into the system through the normal intake damper. The HVAC system supplies air to the P-250 computer room and to the control room. Air from the

computer room flows to the machine room through a transfer grill. Air returns to the HVAC system from the control room and the machine room. The emergency intake damper and the toilet room exhaust damper are normally open. The recirculation damper will be maintained open in the future to provide protection against its failing to open if it should be closed.

2. Radiological Mode

In the event of a safety injection signal from either unit or a high radiation signal from the control room's area radiation monitor, the system would automatically be realigned in the recirculation/cleanup mode. In this mode, the normal intake damper and the toilet exhaust damper would automatically close to prevent unfiltered air from being drawn into the system. The recirculation damper would automatically open (if closed) to provide recirculation capability, and both pressurization fans would automatically start, drawing air through the filter unit. The operator would then turn off one of the redundant fans to ensure that air velocity through the filter unit will provide a minimum iodine residence time of approximately 0.25 seconds. The filter unit includes roughing filters, high efficiency particulate air (HEPA) filters and charcoal absorbers enclosed in a filter housing.

In the radiological mode, the system is designed to provide a flow rate through the filter unit of 6000 cfm $\pm$ 10%. This flow rate is a combination of air recirculated through the recirculation damper and drawn from the outside through the emergency intake damper. Pressurization of the control room envelope is provided by this outdoor air drawn by the pressurization fans. The design of the system is such that a minimum 1/16-inch water gauge (W.G.) pressure would be maintained in the control room. Since the computer room and equipment rooms would see little or no personnel ingress and egress under accident conditions, they are designed to provide a pressure greater than ambient, but potentially lower than the control room itself.

3. Toxic Gas Mode

A chlorine gas detector is located in the normal air inlet duct. In the event that chlorine is detected, the ventilation system would be manually realigned from the control room in the isolation mode of operation. This is accomplished by closing the normal intake and the toilet exhaust dampers. The control room pressurization fans are not run, thereby limiting the amount of contaminated

outdoor air that can enter the control room. The emergency intake damper cannot be closed from the control room beyond the setting for the recirculation/cleanup mode. Without the pressurization fans running, air entering through the emergency intake damper is limited to that amount driven by the small differential pressure that may exist between the control room and adjoining areas and the outside atmosphere.

III. CONTROL ROOM HABITABILITY ANALYSES

The control room habitability analyses submitted in our letters AEP:NRC:03980 and AEP:NRC:0914E involved a toxic gas study and control room dose calculations. For the toxic gas portion, a probabilistic study was performed that demonstrated the potential for a toxic gas release having the potential for causing an accident leading to the release of significant quantities of radioactive fission products was less than the 10^{-6}/year guideline of Standard Review Plan 2.2.3 entitled, "Evaluation of Potential Accidents." For this reason, no T/S changes regarding toxic gas are proposed in this submittal.

With regard to control room dose consequences, the analyses accounted for the effects of single failures in the control room ventilation system, and worst-case meteorology conditions per the Murphy-Campe report cited by NUREG-0737 and the Standard Review Plan. Relevant to the proposed T/S changes, iodine removal efficiencies of 95% for charcoal and 99% for the HEPA filters were assumed in the analyses.

Appendix A to 10 CFR 50, General Design Criteria 19, requires that doses to control room operators be limited to 5 rem whole body, or its equivalent to other parts of the body. The whole body dose results demonstrated compliance with the 5 rem limit for all conceivable amounts of air inleakage into the control room. For skin dose, the results were within the 50 rem limit recommendation of ICRP Publications 26 and 30 for all conceivable inleakage rates. For thyroid dose, adherence to the 50 rem dose limit of ICRP 26 and 30 is established as a function of the combination of filtered and unfiltered inleakage into the control room. For example, a filtered intake rate of 1000 cfm coupled with an unfiltered inleakage rate of 20 cfm results in a dose of 43.8 rem, which is within the 50 rem limit.

IV. TECHNICAL SPECIFICATION CHANGES

The proposed changes to T/S 3/4.7.5.1 and the associated Bases are described in the following section. To facilitate review, the changes are organized into ten categories.

1) Adoption of the 1980 version of ANSI N510

The proposed change consists of replacing reference to the 1975 version of the ANSI N510 Standard with reference to the 1980 version, in T/S 4.7.5.1. At the Cook Nuclear Plant, our control room ventilation systems are not of ANSI N509-1976 design. Additionally, the units were operational before the issuance of ANSI N510-1975. Thus, literal compliance with all requirements of ANSI N510-1975 cannot be achieved. The 1980 version of ANSI N510-1975 recognizes that all ventilation systems are not of ANSI N509-1976 design. Section 1.2 of ANSI N510-1980 states:

> It is the intent of this standard that it be rigorously applied only to systems designed and built to ANSI N509; however, sections of this standard may be used for technical guidance for testing of non-N509 systems.

ANSI N510 (1975 and 1980) requires that an air-aerosol mixing uniformity test be performed upon completion of initial system installation. ANSI N510 specifies the uniformity test as a prerequisite to T/S required in-place leak testing of charcoal and HEPA filters. The purpose of the test is to verify that tracer injection and sample ports are located so as to provide proper mixing of the tracer in the air approaching the component stage to be tested. Although air-aerosol mixing uniformity testing was performed at the time of installation, the documentation was not detailed enough to permit repetition of the test, or verification that the sample points currently used are the same points qualified by the pre-operational tests. Thus, in early 1985 we decided to repeat the testing since it is required for literal compliance with ANSI N510-1975. A program was instituted beginning in July 1985 to perform the testing. The testing is described in our letter AEP:NRC:0959, dated May 28, 1987, which proposed adoption of the 1980 version of ANSI N510 for the ESF and spent fuel pool ventilation units. The testing showed that the control room units did not meet the acceptance criteria of ANSI N510-1975 or 1980. For this reason, we have been applying a statistical correction factor to our measured in-place charcoal and HEPA leak test results. For the control room units, the measured in-place leak test results are being multiplied by 1.9 for Unit 1, and 1.5 for Unit 2. (The development of the correction factors was discussed in AEP:NRC:0959.)

We are proposing elsewhere in this letter to decrease the allowable penetration to 0.2% for the charcoal, and 0.1% for the HEPAs, versus the present requirement of 1%. This change is in the conservative direction, and we believe

bounds any error introduced by not correcting the measured penetrations by the statistical correction factors. It is therefore our intent to discontinue use of the correction factors upon implementation of the more stringent penetration requirements.

To address the issue of literal compliance with the T/Ss described above, we propose to adopt the 1980 version of ANSI N510 and to modify the Bases to state that, since the units pre-date ANSI N509, literal compliance with ANSI N510 cannot be achieved. Our comparison of the 1975 to the 1980 version of ANSI N510 has determined that the differences discussed above were the only ones of major significance, with the exception of requirements related to the methyl iodide lab testing standard which is discussed below. Several minor changes related to penetrometer sensitivity, adsorber residence time calculations and background dust testing were also made in the 1980 edition, but our review determined these to be either more restrictive or to have minimal impact on safety.

Laboratory Testing of Adsorbent

Other issues related to the 1980 version of ANSI N510 involves the temperature used during the laboratory test of charcoal samples required by T/Ss and the minimum efficiency required by the T/Ss (T/S 4.7.5.1.c.3 and 4.7.5.1.d.2). These tests verify charcoal adsorber removal efficiency for methyl iodides. We presently test to the RDT M 16-1T-1973 standard, which is referenced by ANSI N510-1975. This test specified test conditions of 130°C and 95% relative humidity, which have been included in our present T/Ss. The 1980 version of ANSI N510, which we are proposing to adopt, specifies ASTM D3803-1979 as the testing standard, and states that test conditions shall be in accordance with plant T/Ss.

The NRR inspection team's report recommended that the T/Ss explicitly state that testing would be to the ASTM D-3803 standard. The report also recommended that the test temperature be 30°C versus the present requirement of 130°C, since the 130°C test was not representative of plant conditions and may actually regenerate the charcoal being tested by boiling off volatiles in the sample. We accept both of these recommendations, and have incorporated them into our proposed T/S change. We will be proposing similar changes for the ESF and spent fuel pool ventilation system T/Ss in a future submittal.

IE Information Notice 87-32 referenced a lab testing protocol developed by EG&G Idaho, Inc. It is our understanding that the ASTM Standards Board is considering

the protocol for inclusion in a revised version of ASTM D-3803. In a recent NRC Region III inspection, we were requested to consider incorporation of the EG&G protocol for inclusion in this submittal. We have reviewed this request, and believe it is premature to incorporate it into our T/Ss at this time. We are proposing to incorporate the ASTM D3803-1979 standard, which is the present industry standard. We do not feel our T/S requirements should be based on a testing protocol which has not been recognized as acceptable by the appropriate standards committee. The protocol is very stringent, and would be difficult for all but new charcoal to meet for efficiencies required by the control room habitability analyses. The reason for this is that only new charcoal can withstand the moisture of the 20-hour presoak which the protocol requires. We believe the ASTM D-3803-1979 test is adequate for the Cook Nuclear Plant. The humidity the charcoal is exposed to will be less than 70%, since the charcoal adsorbers are located in a room served by the Seismic Class I control room air conditioning units and due to the high percentage of heat in the control room areas that is sensible heat. The test is made somewhat conservative by the T/S requirement to test at 95% relative humidity.

Since the EG&G protocol may be included in a future version of ASTM D-3803, we plan to conduct testing to assess its adequacy and impact on the Cook Nuclear Plant. We are planning to conduct parallel testing, when possible, to compare the ASTM D-3803 test results to the EG&G protocol results. We are planning to consider testing with the protocol at a relative humidity of 95% and 70%. However, filter train operability determinations will be based on the T/S requirements in place when the testing is performed.

With regards to the acceptance criteria for the laboratory test, we are proposing to increase the required efficiency from its present value of 95% to 97%. The increase is in the conservative direction. The control room dose analyses submitted in AEP:NRC:03980 assumed 95% efficiency for the charcoal filters. Although the present T/S value is consistent with this assumption, the T/S does not allow any room for degradation of the charcoal from the T/S value. We believe our proposed acceptance criteria of 97% will provide adequate margin. In the event that surveillance testing demonstrates that the charcoal that has been in service does not comply with the 97% efficiency requirement, we will not consider the condition as a T/S violation for reportability purposes unless the efficiency is below the 95% analysis value.

In the NRR inspection report, it was recommended that an acceptance criteria of 99.3% efficiency be specified in the

T/Ss in order to claim 95% efficiency in the dose analyses. We believe this recommendation to be excessive and have chosen not to incorporate it into our proposed T/S changes. ANSI N509-1980 specifies that new charcoal can allow a penetration of 3%, when tested at 30°C and 95% relative humidity. We currently buy charcoal which meets 99% efficiency at those conditions, which is already significantly above the ANSI N509 requirements. As discussed above, our control room humidity is controlled to humidity levels of 70% or less, yet we test the charcoal at 95% relative humidity. This is an extra measure of conservatism already imposed upon the charcoal. We note also that the laboratory test is only for methyl iodines. The charcoal filters are expected to be much more efficient for elemental iodine than for organic varieties of iodine. Despite this, the accident analyses conservatively assumed 95% efficiency for both elemental and organic forms of iodine.

Per 10 CFR 50.92, a proposed amendment will not involve a significant hazards consideration if the proposed amendment does not:

(1) involve a significant increase in the probability or consequences of an accident previously evaluated.

(2) create the possibility of a new or different kind of accident from any accident previously analyzed or evaluated, or

(3) involve a significant reduction in a margin of safety.

Criterion 1

The change to the 1980 version of the ANSI N510 testing standard will update our T/Ss to currently acceptable testing standards. Since the 1980 version corresponds more closely to the Cook Nuclear Plant ventilation system design and since the changes to the 30°C lab test temperature and the 97% filter efficiency are clearly in the conservative direction, we believe the changes do not involve a significant increase in the probability or consequences of a previously analyzed accident.

Criterion 2

The change only involves our testing methods to verify ventilation system operability. As this change does not involve modifications to the plant or changes in operation of the systems involved, we believe it will not create the possibility of a new or different kind of accident from any previously analyzed or evaluated.

Criterion 3

We are proposing to test our ventilation systems in a manner which corresponds more closely to the system design. Since the 1980 version of the code is the current industry standard, and since the changes to the 30°C lab test temperature and the 97% filter efficiency are clearly in the conservative direction, we believe that no reduction in a margin of safety will occur.

Lastly, we note that the Commission has provided guidance concerning the determination of significant hazards by providing examples (48 FR 14870) of amendments considered not likely to involve significant hazards consideration. The second of these examples refers to changes which constitute additional limitations, restrictions, or controls not presently included in the T/Ss. This example is applicable to the changes to the 30°C test temperature and the 97% filter efficiency since these changes will make it more difficult to meet the T/S requirements. The sixth example refers to changes which may result in some increase to the probability or consequences of an accident but the results of which are within limits established as acceptable. Since the 1980 version of ANSI N510 involves certain relaxations of requirements contained in the 1975 version, this change may be perceived as involving an increase in the probability or consequences of an accident or a reduction in a margin of safety. The 1980 version, however, represents the version considered current by the industry and corresponds more closely to the Cook Nuclear Plant ventilation system design. For these reasons, we believe the examples cited are relevant and conclude that the changes should not require significant hazards consideration.

2) Control Room Pressure Boundary

T/S 4.7.5.1.e requires the control room emergency ventilation system to be capable of maintaining the control room at a positive pressure of at least 1/16-inch W.G. relative to the outside atmosphere. The action statements of T/S 3.7.5.1 address the heating and cooling systems, the pressurization fans, and the filter train. They do not, however, specifically address the pressure boundary. The purpose of this proposed change is to clarify the T/S pressurization requirements, since the 1/16-inch W.G. requirement is limited to the control room, and does not include the machine room and P-250 computer room, as described in the introduction to this attachment below.

Our interpretation of our present T/S 3/4.7.5.1 is that the pressure boundary is a part of the filter train, and thus falls under the action statements associated with it. We do not interpret the pressurization fan action statement as applicable, because it addresses inoperability of one of the two redundant fans, whereas the pressure boundary, like the filter train, is not redundant. Our interpretation has been discussed with the NRR inspection team leader during the April 1986 visit to the Cook Nuclear plant and has been documented in our letter AEP:NRC:0975B dated April 8, 1986.

Because the pressure boundary is an integral part of the control room emergency ventilation system, necessary to limit amounts of unfiltered inleakage to within analyzed limits, we propose to define it as a subsystem of the control room ventilation system. We have added an action statement (d) which allows the same inoperability time as for the filter train in Modes 1 through 4, consistent with the interpretation described previously. We have also included pressure boundary requirements in action statement (e), which we are proposing to add to address control room habitability requirements in Modes 5 and 6. Requirements for this action statement were made consistent with with those proposed for the filter train in Modes 5 and 6. Further details on the addition of Mode 5 and 6 requirements will be provided later.

We have also added a surveillance requirement for the pressure in the HVAC machine room and P-250 computer room. Under accident conditions, these rooms would be at pressures above ambient, but most likely less than

the 1/16-inches W.G. required for the control room proper. The HVAC machine room and the P-250 room would not be expected to be entered or exited very frequently in the event of an accident, as would be expected for the control room itself. We are therefore proposing a pressure requirement for these rooms of 1/25-inches W.G. We note that air is supplied directly to the P-250 computer room, and then transfers to the machine room via transfer grills located in the wall between the rooms. Pressure in the P-250 computer room would always be slightly higher than the machine room because of the small pressure drop associated with air passage through the transfer openings. Therefore, measurements need not be taken in the P-250 room if they are taken in the machine room.

We have also clarified the control room pressurization test requirement to indicate that the test must be performed with the ventilation system in the recirculation/cleanup mode of operation. This change is administrative in nature.

In the NRR report, it was recommended that the pressure requirement for the control room, machine room, and P-250 room be 1/8-inches W.G., as specified in the Standard Review Plan. We have not adopted this recommendation since it is inconsistent with the Cook Nuclear Plant design basis, and cannot reliably be met with our ventilation system. Achieving a pressure that high is especially difficult in the machine rooms and P-250 computer rooms, since they were designed to be at pressures only slightly above ambient. Higher pressurization of those areas could be achieved through balancing of the airflows, but would be at the expense of reduced pressure in the control room or the need to bring in greater amounts of contaminated outside air.

The Standard Review Plan specifies that the control room habitability analyses should account for a nominal 10 CFM of unfiltered inleakage for plants which pressurize to 1/8-inches W.G. The nominal inleakage value accounts for loss of pressurization due to ingress to and egress from the control room pressure boundary. Since we cannot meet the 1/8-inches W.G., we are proposing to account for a nominal 15 cfm unfiltered inleakage, as well as accounting for the amount of inleakage measured to leak by the closed isolation damper HV-ACRDA-1. (Limits on inleakage will be discussed later in this attachment.)

Per 10 CFR 50.92, a proposed amendment will not involve a

significant hazards consideration if the proposed amendment does not:

(1) involve a significant increase in the probability or consequences of an accident previously evaluated,

(2) create the possibility of a new or different kind of accident from any previously analyzed or evaluated, or

(3) involved a significant reduction in a margin of safety.

Criterion 1

The purpose of this group of changes is to formalize in our T/Ss our interpretation of the relation of the control room pressure boundary to the control room emergency ventilation system. This interpretation has previously been discussed with the NRC and has been documented in our letter AEP:NRC:0975B. Therefore, this portion of the change is administrative in nature. The change also creates additional surveillance requirements, and therefore would not be expected to result in a significant increase in the probability or consequences of a previously evaluated accident.

Criterion 2

The change will not result in any physical modifications to the plant. The additional testing requirements will use standard equipment and standard testing procedures. Thus, it is not anticipated that these changes will create the possibility of a new or different kind of accident from any previously analyzed or evaluated.

Criterion 3

These changes do not delete or reduce in any way previous requirements for safety. Thus, they should not reduce previous margins of safety.

Lastly, we note that the Commission has provided guidance concerning the determination of significant hazards by providing examples (48 FR 14870) of amendments considered not likely to involve significant hazards consideration. The first of these examples refers to changes which are purely administrative in nature. This example is applicable to the interpretation of the control room pressure boundary as a part of the filter train, with equivalent action requirements. The second example refers to changes which constitute additional limitations, restrictions, or controls not included in the T/Ss. This example is applicable to the additional pressure boundary requirements we have proposed. We therefore conclude that the examples cited are relevant, and that the changes do not involve significant hazards consideration.

3) In-Place Leak Test for HEPA and Charcoal Adsorbers

T/Ss 4.7.5.1.c and 4.7.5.1.d require laboratory testing of charcoal samples to demonstrate adequate removal efficiencies for methyl iodides. The samples may be obtained from test canisters or from samples removed from the charcoal bed. To obtain a sample from the charcoal bed requires the removal of an adsorber tray. Prudence dictates that after the tray is replaced in the housing, a leak test should be performed on the charcoal adsorber unit to ensure that the gaskets remain intact and that excessive bypass leakage will not occur.

Leak testing of the charcoal adsorber bank after adsorber tray reinstallation is required by our T/S 4.7.5.1.d.2, and after complete or partial replacement of a charcoal adsorber bank by T/S 4.7.5.1.g. It is not, however, specifically required by T/s 4.7.5.1.c.3, even though this T/S also allows removal of a charcoal tray to obtain a sample. To achieve consistency throughout the T/S, we are proposing to add the leak testing requirement to T/S 4.7.5.1.c.3.

In addition to leak testing of the charcoal adsorbers, T/S 4.7.5.1.d.2 requires leak testing of the HEPA filters following reinstallation of the charcoal tray used to obtain a carbon sample. Charcoal trays and HEPA filters are located in different sections of the filter housing; reinstallation of a charcoal tray would not be expected to impact the leakage characteristics of the HEPA units. Leak testing of the HEPA units following charcoal tray installation is not a recommended test per Table 1 of ANSI N510-1980, nor is it recommended by Regulatory Position C.5 of Regulatory guide 1.52, Revision 2, March 1978. It is therefore our belief that this test requirement is an error in our present T/Ss. We have deleted the requirement in our proposed version of T/S 4.7.5.d.2.

We are also proposing to conservatively decrease our allowable filter penetration as measured by leak tests required by T/S 4.7.5.1.c.1, c.2, d.2, f and g. The presently allowed penetration is 1% for both the charcoal and HEPA filters. We are proposing to decrease the allowable penetration to 0.1% for the HEPAs, and 0.2% for the charcoal. The decrease in allowable penetration provides a tenfold decrease in the amount of flow which may bypass the HEPA filters, and a fivefold decrease in flow which may bypass the charcoal filters. We are proposing the change to provide additional protection for the charcoal and HEPA efficiencies assumed in the dose analyses. (The T/S-required charcoal efficiency was changed from 90% to 97%, as discussed previously.) The

lower value for allowed penetration (0.1%) is proposed for the HEPAs since the accident analysis assumes a relatively high removal efficiency of 99%. The proposed allowed penetration for charcoal, 0.2%, is slightly lower since the accident analysis only assumes 95% filter efficiency. The change also eliminates the need to apply a correction factor to the measured penetration, to account for our inability to meet the air-aerosol distribution test acceptance criteria of ANSI-N510 (see discussion in Section 1). We are presently applying a conservatively derived multiplication factor as high as 1.9 to the measured HEPA and charcoal penetration to compensate for the air-aerosol distribution test deficiency. This factor is easily bounded by the decrease in allowable penetration we are proposing.

In the NRR inspection report, it was recommended that penetration be limited to a maximum of 0.05% for both the charcoal and HEPA filters, based on the recommendations in Regulatory Guide 1.52. We believe this penetration limit is excessive for plants of the Cook Nuclear Plant's vintage, and therefore have not proposed the limit for inclusion in our proposed T/Ss. The Regulatory Guide 1.52 recommendations were based on plants which were designed in accordance with ANSI N509. As discussed in Part 1 of this attachment, the Cook Nuclear Plant ventilation units were installed prior to issuance of ANSI N509. Critical elements of ANSI N509 such as structural requirements for filter holding frames, gasket clamping pressure, housing leak tightness, and air-aerosol mixing uniformity were not part of our filtration system design. We do not believe our ventilation units, which are not of ANSI N509 design, are capable of reliably meeting the Regulatory Guide 1.52 penetration limit and for this reason have proposed the alternative penetration limits discussed above.

Per 10 CFR 50.92, a proposed amendment will not involve significant hazards consideration if the proposed amendment does not:

(1) involve a significant increase in the probability or consequences of an accident previously evaluated,

(2) create the possibility of a new or different kind of accident from any accident previously analyzed or evaluated, or

(3) involve a significant reduction in a margin of safety.

Criterion 1

The addition of testing requirements to T/S 4.7.5.1.c is made to achieve consistency throughout the T/Ss. The deletion of HEPA

testing requirements from T/S 4.7.5.1.d is intended to correct an error in our present T/Ss. Since testing requirements are being deleted, this change may be perceived to involve an increase in the probability or consequences of a previously evaluated accident or a reduction in a margin of safety. However, for reasons described previously, it is our belief that these would be insignificant. The change to the allowable charcoal and HEPA penetration is in the conservative direction, and would be expected to increase, rather than decrease safety.

Criterion 2

The accidents of concern for control room ventilation systems are generally considered to be fires, radiological releases, or toxic gas releases. Causes of these are not a function of testing requirements for the control room ventilation system. Therefore, we conclude that these changes will not create the possibility of a new or different kind of accident from any previously analyzed or evaluated.

Criterion 3

See Criterion 1, above.

4) Addition of Modes 5 and 6 Applicability and Actions

Generic Letter 83-37, which concerned NUREG-0737 Technical Specifications, stated that T/Ss should require that "two independent control room emergency air cleanup systems should be operable continuously during all modes of plant operation and capable of meeting design requirements." Because of this, we are proposing that T/S 3.7.5.1 for the control room emergency ventilation system be revised to include the requirement that this system be operable in all modes rather than just Modes 1 through 4. For inoperability of the filter train or the pressure boundary, or for the case of inoperability of both trains of redundant components, we propose suspension of all operations involving core alterations or positive reactivity changes. These changes represent additional restrictions required by NUREG-0737 and Generic Letter 83-37, and in no way reduce previous safety requirements.

Per 10 CFR 50.92, a proposed amendment will involve a no significant hazards consideration if the proposed amendment does not:

(1) involve a significant increase in the probability or consequences of an accident previously evaluated,

(2) create the possibility of a new or different kind of accident from any accident previously analyzed or evaluated, or

(3) involve a significant reduction in a margin of safety.

Criterion 1

These changes constitute additional restrictions on the plant in terms of T/S mode applicability and action statement requirements. Since none of these changes reduce in any way previous safety requirements, they would not be expected to result in an increase in the probability or consequences of a previously evaluated accident.

Criterion 2

No physical changes will be necessary to the plant as a result of this group of changes. Additionally, no new types of plant operation will be introduced; rather, present operating requirements will be extended to include additional modes.

Therefore, these changes should not create the possibility of a new or different kind of accident from any previously analyzed or evaluated.

Criterion 3

These changes add additional safety requirements and in no way reduce any existing requirements. Thus, no reduction in margin of safety should occur because of these changes.

Lastly, we note that the Commission has provided guidance concerning the determination of significant hazards by providing examples (48 FR 14870) of amendments considered not likely to involve significant hazards consideration. The second example refers to changes that constitute additional limitations, restrictions, or controls not presently included in the T/Ss. Since this change involves addition of requirements for modes of operation that previously had no requirements, we conclude that the example cited is applicable and that the change should not involve significant hazards consideration.

5) Limits on Outdoor Air Intake

In order to ensure that the control room is maintained habitable during a radiological-type accident, it is necessary to limit the amount of outdoor air that is brought into the control room for pressurization purposes or due to inleakage. Also, due to single failure considerations, it is necessary to limit the outdoor air intake for the normal air conditioning system. As presently written, T/S 3/4.7.5.1 does not establish limits on these airflows. The limits on airflow are necessary to protect the assumptions of the control room habitability analyses which were submitted in our letters AEP:NRC:03980 and AEP:NRC:0914E, and the dose limits of 10 CFR 50 Appendix A Criterion 19.

In order to address this problem with the present T/Ss, we are proposing to add surveillance requirements associated with the various flows. The new surveillances will require measuring the combination of filtered intake (through damper HV-ACRDA-2) and unfiltered inleakage (through damper HV-ACRDA-1). The testing is to be performed in conjunction with testing to ensure the ability to pressurize the control room, machine room, and P-250 computer room. The combination of the flow rates must be such that adherence to the acceptance criteria of 5 rem whole body, 50 rem skin and 50 rem thyroid is assured even when failure of the normal intake damper is considered. We are also proposing to add a surveillance requirement to verify that the flow through HV-ACRDA-1, while open, is less than the value assumed for single failure considerations in the control room habitability analysis. (However, we have added a footnote to this requirement which notes that the surveillance need not be performed if the normal intake is provided with a redundant isolation damper. This gives us the flexibility to add a redundant damper without needing a T/S change to realize its benefits.) The testing described above will be required at least once per 18 months.

The NRR report recommended that testing of the various flow rates should be done periodically, as well as when work is performed on the normal or emergency ventilation systems that could affect the integrity of the system or flow rates. We have proposed an 18 month schedule for the flow tests, but have not incorporated the suggestion for work-initiated surveillances. The type of work that could be expected to have the potential to degrade the system or flow rates is normally associated with refueling outages, and therefore would be covered by the 18 month requirement. Routine maintenance such as replacement of fire or door

seals, which may occur during plant operation, is controlled so that the pressure sealing capability is not degraded. We do not believe, therefore, that adding requirements to the T/S associated with maintenance activities is of practical value, and since it may add confusion to the T/S, we have chosen not to incorporate it.

The T/S surveillances we are adding do not provide absolute numbers or ranges of numbers for the various flow rates. Rather, the T/S refers to the Updated FSAR for determination of the limits. This gives us the flexibility to make changes to the analysis under the provisions of 10 CFR 50.59, when applicable, without needing a T/S change. For example, changes in fuel enrichment could cause an increase (or decrease) in the radiological source term. By having the T/S refer to the Updated FSAR, we eliminate the need to receive a T/S amendment on the control room ventilation system in order to accommodate the change.

Per 10 CFR 50.92, a proposed amendment will involve a no significant hazards consideration if the proposed amendment does not:

(1) involve a significant increase in the probability or consequences of an accident previously evaluated,

(2) create the possibility of a new or different kind of accident from any accident previously analyzed or evaluated, or

(3) involve a significant reduction in a margin of safety.

Criterion 1

Since the present T/Ss do not require testing for air inleakage, this change represents additional restrictions to the T/Ss that should enhance safety. We therefore believe that the change will not involve a significant increase in the probability or consequences of a previously evaluated accident or a significant reduction in the margin of safety.

Criterion 2

The change does not involve any new modes of plant operation or physical plant modifications. Therefore, we do not believe that the changes will create the possibility of a new or different kind of accident from any previously analyzed or evaluated.

Criterion 3

See Criterion 1 above.

Lastly, we note that the Commission has provided guidance concerning the determination of significant hazards by providing examples (48 FR 14870) of amendments considered not likely to involve significant hazards consideration. The second example refers to changes that constitute additional limitations, restrictions, or controls not presently included in the T/Ss. Since this change involves addition of requirements for measurement of flows, we conclude that the example cited is applicable and that the change should not involve significant hazards consideration.

6) Clarification of System Operation Description

The purpose of these changes is to clarify descriptions of control room ventilation system operation which are included in the T/Ss.

As presently written, T/S 4.7.5.1.e.2 instructs us to verify every 18 months that:

> On a safety injection signal from either Unit 1 or Unit 2, or on a containment phase A isolation signal, the system automatically diverts its inlet flow through the HEPA filters and charcoal adsorber bank and that either fan can then be manually started in the recirculation mode.

This does not adequately describe the Cook Nuclear Plant system for the following reasons:

(1) Automatic system actuation occurs on a safety injection signal from either unit. The safety injection signal will also initiate the respective unit's phase A containment isolation. However, the containment phase A isolation signal will not itself initiate ventilation system actuation.

(2) In the event of a safety injection signal from either unit, both pressurization fans would automatically start. One would then be turned off by the operators to ensure adequate iodine residence times. The T/S as currently written implies that the fans must be turned on manually.

(3) Our units do not have HEPA or charcoal bypasses. Air is drawn through the HEPAs and charcoal whenever the pressurization fans are running. Therefore, air is not "diverted" through the HEPA, and charcoal, as stated in the present T/S.

To make the T/S more accurately reflect the Cook Nuclear Plant system, we propose to revise it to require verification that:

a) On a safety injection signal from Unit 1, the system automatically initiates operation in the recirculation/cleanup mode.

b) On a safety injection signal from Unit 2, the system automatically initiates operation in the recirculation/cleanup mode.

We have separated the testing requirements for the Unit 1 and Unit 2 signals to emphasize that the signal from both units must be tested, i.e., that either/or is not sufficient.

We also propose to modify T/Ss 4.7.5.1.c.4 and 4.7.5.1.e.3. These T/Ss were modified to reflect the fact that the design requirements of 6000 cfm $\pm$ 10% and 1/16-inch W.G. are for operation in the radiological, or recirculation/cleanup mode of operation.

The NRR inspection report had two recommendations regarding specification of equipment in the T/Ss. First, it was recommended that the radiation monitor which provides for actuation of the emergency air cleanup system be included in T/Ss. Second, it was recommended that the T/Ss specify the individual pieces which make up the normal and emergency portions of the ventilation systems. We have chosen not to incorporate these recommendations. With regards to the former, the radiation monitor is not safety grade equipment, nor is it assumed to function in the dose analysis which supports this T/S change submittal. We therefore do not believe it is appropriate to include the monitor in the T/Ss. Regarding the second recommendation, inclusion of a list of equipment comprising systems is not typically included in the T/S and is therefore inconsistent with the T/S format.

Per 10 CFR 50.92, a proposed amendment will involve a no significant hazards consideration if the proposed amendment does not:

(1) involve a significant increase in the probability or consequences of an accident previously evaluated,

(2) create the possibility of a new or different kind of accident from any accident previously analyzed or evaluated, or

(3) involve a significant reduction in a margin of safety.

Criterion 1

These changes are administrative in nature, intended primarily to correct errors in the T/S description of control room ventilation system operation. Since no changes in plant operations or physical changes to the plant will occur due to these changes, they do not involve a significant increase in the probability or consequences of a previously evaluated accident.

Criterion 2

Since no changes to the physical plant or plant operations will occur because of these changes, they should not create the possibility of a new or different kind of accident from any previously evaluated.

Criterion 3

These changes are administrative in nature, intended primarily to correct errors in the present T/Ss with regard to system operation descriptions. Thus, they should involve no reduction in margins of safety.

Lastly, we note that the Commission has provided guidance concerning the determination of significant hazards by providing certain examples (48 FR 14870) of amendments considered not likely to involve significant hazards consideration. The first of these examples refers to changes which are purely administrative in nature; for example, changes to achieve consistency throughout the T/Ss, correction of errors, or changes in nomenclature. As discussed above, these changes are intended to correct errors in the T/S description of the control room ventilation system operation. Therefore, we conclude that the example cited is applicable and that the changes should not involve significant hazards consideration.

7) Changes to Pressurization Fan Run Time Requirements

As presently written, T/S 4.7.5.1.b requires that the control room pressurization fans be run at least 15 minutes every 31 days on a staggered test basis. The NRR report recommended that the run time be increased to one hour to ensure that the system can function without an early trip. We concur with this recommendation and have included it in our proposed T/Ss.

Per 10 CFR 50.92, a proposed change will not involve a significant hazards consideration if the proposed amendment does not:

(1) involve a significant increase in the probability or consequences of an accident previously evaluated,

(2) create the possibility of a new or different kind of accident from any accident previously analyzed or evaluated, or

(3) involve a significant reduction in a margin of safety.

Criterion 1

We are proposing to increase the surveillance requirements on the control room pressurization fans by increasing their required run-times. This should provide additional protection against an early trip. We therefore expect the change to enhance, rather than decrease, plant safety.

Criterion 2

The change does not involve modifications to the plant or changes in operation configuration of the systems involved. Therefore, we believe the change will not create the possibility of a new or different kind of accident from any previously analyzed or evaluated.

Criterion 3

See Criterion 1 above.

Lastly, we note that the Commission has provided guidance concerning the determination of significant hazards by providing examples (48 FR 14870) of amendments considered not likely to involve significant hazards consideration. The second example refers to changes that constitute additional limitations, restrictions, or controls not presently included in the T/Ss. Since this change increases the required run-time of the fans,

without reducing any other requirements, we conclude that the example cited is applicable and that the change does not involve significant hazards consideration.

8) Changes to the Control Room Ventilation System Bases

We also propose to modify the Bases section for T/S 3/4.7.5.1. Our proposed changes include discussions of the following:

a. The use of the 1980 version of the ANSI N510 standard.

b. Analysis limits on air in-leakage.

c. Definition of the pressure boundary.

d. Reportability considerations for degraded charcoal.

9) Editorial Changes

In addition to the changes described previously, several editorial changes were made. These were changes to correct typographical errors in our present T/Ss, or changes that were necessary as a result of those changes described previously. These changes are described in Table 1 below. Because these changes are purely editorial, they do not reduce a margin of safety, do not increase the probability or consequences of a previously analyzed accident, and do not introduce the possibility of a new accident. Therefore, we believe these changes do not involve a significant hazards consideration as defined by 10 CFR 50.92.

Table 1 Listing of Editorial Changes

Unit	T/S	Description
1	3/4.7.5.b, c	"and" moved from T/S 3.7.5.1.b to T/S 3.7.5.1.c
1	3.7.5.1	Applicability changed to "All MODES" because of the addition of action for Modes 5 and 6
1	3.7.5.1-Action	"MODES 1, 2, 3, and 4" added after "ACTION" because of the addition of action for Modes 5 and 6
1	4.7.5.1.d.2	"s" added to "demonstrate"
1	4.7.5.1.e.1	"(W.G.)" added after "Water Gauge"
2	LCO for T/S 3.7.5.1	"whall" changed to "shall"
2	3.7.5.1	Applicability changed to "All MODES" because of the addition of action for Modes 5 and 6

Unit	T/S	Description
2	3.7.5.1-Action	"MODES 1, 2, 3, and 4" added after "ACTION" because of the addition of action for Modes 5 and 6
2	4.7.5.1.d.2	"s" added to "demonstrate"
2	4.7.5.1.e.1	"(W.G.)" added after "Water Gauge"
2	Bases for 3/4.7.5	"EMERGENCY" changed to lower case letters

10) Other T/S Issues Raised in NRR Report

The NRR inspection report raised a concern regarding the control room temperature limit of 120°F, specified in T/S 4.7.5.1.a. The concern was that the temperature specified may not take into account actual equipment qualification temperature for control room instrumentation. We are currently researching this concern, to ensure that the 120°F temperature is adequate. We expect to complete this study by June 1990. If additional T/S changes are necessary due to the results of the study, we will propose the changes by September 1990.

Conclusion

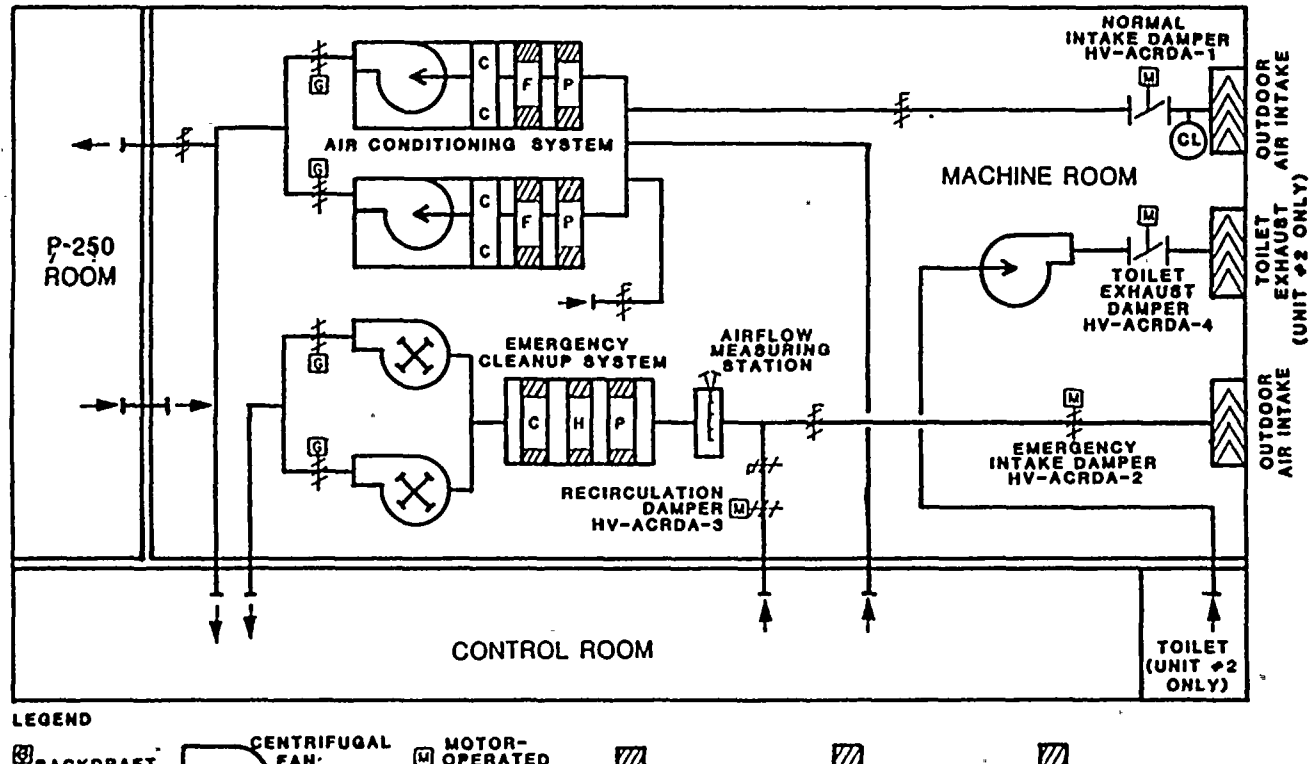
In conclusion, we believe that the proposed changes described in the first nine categories noted above do not involve significant hazards considerations because, as demonstrated in the previous discussion, operation of the Cook Nuclear Plant in accordance with the changes would not:

(1) involve a significant increase in the probability of occurrence or consequences of an accident previously analyzed,

(2) create the possibility of a new or different kind of accident from any accident previously evaluated, or

(3) involve a significant reduction in a margin of safety.

Figure 1 **CONTROL ROOM VENTILATION SYSTEM**



ATTACHMENT 2 TO AEP:NRC:0398R

PROPOSED CHANGES TO THE

DONALD C. COOK NUCLEAR PLANT

UNITS 1 AND 2

TECHNICAL SPECIFICATIONS