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SUBJECT: Provides info re status of Reg Guide 1.97, Rev 3 compliance at plant. Responses to questions raised by EG&G Idaho re instrument ranges & monitoring/analysis capabilities encl. Deviations requested from Reg Guide 1.97 listed.
SEE Rcpts.

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June 29, 1987
AEP:NRC:0773S

Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
ADDITIONAL INFORMATION ON AND REQUESTS FOR DEVIATIONS FROM REGULATORY GUIDE 1.97, REV. 3 RECOMMENDATIONS

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

Attn: T. E. Murley

Dear Dr. Murley:

The purpose of this letter is to provide information regarding the status of Regulatory Guide 1.97, Rev. 3 compliance at the Donald C. Cook Nuclear Plant Unit Nos. 1 and 2. Discussions with your staff have indicated that in many areas we would be permitted deviations from the literal recommendations of the Regulatory Guide. We have reviewed previous information supplied to you, and based on that information and suggestions you have made in your evaluation, we are requesting the deviations presented below. At the request of the NRC, our attorneys have reviewed this submittal and have addressed the issue of whether "deviations" or "exemptions" from the Regulatory Guide 1.97, Rev. 3 recommendations should be requested. It is the opinion of our attorneys that "deviation" is the appropriate term; therefore, this is the term used throughout this submittal.

Attachment 1 provides responses to questions raised by EG&G Idaho, Inc. as a result of their evaluation of our original submittal concerning Regulatory Guide 1.97, Rev. 3 compliance at the Cook Plant (AEP:NRC:07730, dated October 15, 1985). The Attachment 1 responses contain clarifications requested by EG&G (e.g., instrument ranges and monitoring/analysis capabilities) and identify areas of deviation from the Regulatory Guide 1.97, Rev. 3 recommendations. Specifically, we have requested deviations from the Regulatory Guide 1.97, Rev. 3 recommendations for the following:

- o lower limit for monitoring reactor coolant boron concentration (Item 3.3.2)
- o provision of Category 1 instrumentation for monitoring degrees of subcooling (Item 3.3.3)

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- radiation level in circulating primary coolant (Item 3.3.5)
- quench tank level monitoring range (Item 3.3.15)
- provision of Category 1 wide-range steam generator level indication (Item 3.3.16)
- containment spray flow indication (Item 3.3.17)
- volume control tank level indication range (Item 3.3.19)
- instrumentation range for noble gas measurement in the condenser air removal system exhaust (Item 3.3.21)
- upper limit for measurement of radioactivity at the vent from steam generator safety relief valves (Item 3.3.22)
- lower limit for chloride content in primary coolant (Item 3.3.24)
- oxygen sampling of containment air (Item 3.3.24)

In those cases where a deviation is identified, justification for the deviation is also provided.

Attachment 2 contains a request for and justification of a deviation from the Regulatory Guide 1.97, Rev. 3 recommendations concerning physical separation of the Post Accident Monitoring (PAM) electrical signal cabling and readout devices. This information was discussed with your staff in November 1986, and is intended to supplement information contained in our original October 1985 submittal referenced above. As indicated in Attachment 2, the redundant PAM signal cables in the cable vault area and in the control room are not physically separated, nor are the redundant PAM readout devices, as recommended in Regulatory Guide 1.97, Rev. 3 for Category 1 instrumentation. It should also be noted that the design configuration discussed in Attachment 2 is consistent with our previously licensed control room design, and also represents the methods by which we intend to begin modifications associated with Regulatory Guide 1.97 at our next refueling outage. For this reason we are requesting preliminary staff comment on the Attachment 2 deviation by July 15, 1987. Further detail regarding this deviation request is contained in the attachment.

Attachment 3 contains information on instrumentation with regard to which I&MECo has revised its position relative to Regulatory Guide 1.97, Rev. 3 since the original October 1985 submittal. Specifically, justification for deviation from the Regulatory Guide 1.97, Rev. 3 recommendations is provided for condensate storage tank level indication, centrifugal charging pump flow indication, safety injection pump flow indication, and wide-range containment pressure indication. In addition, a revised date for reactor coolant system temperature instrumentation upgrading is provided. We also provide information regarding the fact that we no longer consider steam generator blowdown radiation to be a Type A variable and therefore provision of Category 1 instrumentation for this parameter is not necessary. A correction to the instrument and display location contained in our original submittal for containment effluent radioactivity--noble gases from identified release points is also provided.

Attachment 4 contains various correspondence that was used as a basis for the responses in Attachment 1 and the information contained in Attachments 2 and 3.

The scheduled dates for completion of Regulatory Guide 1.97 items for Unit 2 in the attachments and earlier documentation on this subject are based on the assumption that the steam generator repair outage would begin in 1989. We are now evaluating the feasibility of accelerating this schedule. Depending on the results of this evaluation, some of the schedule dates given in the attachments and in previous documentation associated with Regulatory Guide 1.97 may require revision. We will notify you of any changes necessary in the schedule for completion of work associated with Regulatory Guide 1.97, Rev. 3 when they are finalized. No change in the Unit 1 schedule is anticipated.

Pursuant to 10 CFR 170.12(f), we have enclosed an application fee of $150.00 for the NRC processing of the aforementioned request.

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

Very truly yours,

M. P. Alexich
Vice President

cm

Attachments

cc: John E. Dolan
W. G. Smith, Jr. - Bridgman
R. C. Callen
G. Charnoff
G. Bruchmann
NRC Resident Inspector - Bridgman
A. B. Davis - Bridgman

The scheduled dates for completion of Regulatory Guide 1.97 items for Unit 2 in the attachments and earlier documentation on this subject are based on the assumption that the steam generator repair outage would begin in 1989. We are now evaluating the feasibility of accelerating this schedule. Depending on the results of this evaluation, some of the schedule dates given in the attachments and in previous documentation associated with Regulatory Guide 1.97 may require revision. We will notify you of any changes necessary in the schedule for completion of work associated with Regulatory Guide 1.97, Rev. 3 when they are finalized. No change in the Unit 1 schedule is anticipated.

Pursuant to 10 CFR 170.12(f), we have enclosed an application fee of $150.00 for the NRC processing of the aforementioned request.

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Attachment 1 to AEP:NRC:0773S

I&MECo Responses to EG&G Idaho, Inc.
Evaluation of Regulatory Guide 1.97, Rev. 3
Compliance at the D. C. Cook Nuclear Plant
Unit Nos. 1 and 2

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3.3.1* NEUTRON FLUX

EG&G Evaluation

"Regulatory Guide 1.97 recommends Category 1 instrumentation to monitor this variable in post-accident conditions. Thus, this instrumentation should be environmentally qualified. The licensee's instrumentation is not environmentally qualified. The licensee states that this instrumentation is not needed for mitigation of loss of coolant accidents or high energy line breaks. The reactor shutdown is accomplished by the reactor SCRAM and by boric acid injection, and is verified by Category 3 instrumentation for control rod position and analysis of reactor coolant system grab samples. We find this position unacceptable. The neutron flux instrumentation is necessary to observe inadvertent reactivity additions and in monitoring anticipated transients without scram (ATWS) events.

"Environmental qualification has been clarified by the Environmental Qualification Rule, 10 CFR 50.49. The licensee should therefore provide instrumentation that is environmentally qualified in accordance with the provisions of 10 CFR 50.49 and Regulatory Guide 1.97."

I&MECo Response

We will provide Neutron Flux Instrumentation that meets Regulatory Guide 1.97, Rev. 3 Category 1 requirements including environmental qualification. The schedule for providing this equipment is as follows:

Unit 1 - Completion by the end of the refueling outage presently scheduled for 1989.

Unit 2 - Completion by the end of the refueling outage presently scheduled for 1989.

3.3.2 REACTOR COOLANT SYSTEM SOLUBLE BORON CONCENTRATION

EG&G Evaluation

"Regulatory Guide 1.97 recommends instrumentation for this variable with a range of 0 to 6000 parts per million. The licensee identifies the post-accident sampling system as fulfilling this recommendation. The licensee did not provide the range of the instrumentation as required by Section 6.2 of NUREG-0737, Supplement No. 1.

* Item numbers in this attachment correspond to the item numbers in the EG&G evaluation (Wigginton, NRC, to Dolan, AEP, dated July 24, 1986) of the I&MECo original submittal regarding Regulatory Guide 1.97, Rev. 3 compliance (AEP:NRC:07730, dated October 15, 1985).

"The licensee should provide the required information, identify any deviation from Regulatory Guide 1.97 and provide supporting justification or alternatives for those deviations."

I&MECo Response

The PASS has been verified to produce reliable measurement of primary coolant boron concentration for diluted reactor coolant grab samples in a range of 375 ppm to 10,000 ppm. The low end of this range is based on PASS reactor coolant samples with a 1:1000 dilution.

Use of the PASS would only be required during and following loss-of-coolant accidents. In the event of a LOCA, emergency boration and injection from the refueling water storage tank would occur and we would therefore expect a reactor coolant boron concentration substantially in excess of the low range of our PASS sample measurement capability (375 ppm). For any other type of event, we would expect to take undiluted reactor coolant samples from the normal sampling system. Undiluted samples can be analyzed for a boron concentration as low as 0.375 ppm.

On the basis of the above, we request a deviation from the Regulatory Guide 1.97, Rev. 3 recommendation to provide the capability to measure boron concentration in PASS samples to the lower limit of 0 ppm.

3.3.3 DEGREES OF SUBCOOLING

EG&G Evaluation

"The licensee has identified this as a Type A variable; as such, Category 1 recommendations are required. The licensee's instrumentation does not have the seismic qualification recommended nor does it meet the single failure criteria. The licensee states that this is acceptable because these recommendations are not required by NUREG-0737.

"We find these deviations unacceptable for Type A variables. NUREG-0737 does not require this instrumentation to be Type A. The licensee has determined that this instrumentation is Type A. Therefore, the licensee should provide Category 1 channels of instrumentation for this variable."

I&MECo Response

The saturation meter equipment was originally installed in accordance with the requirements of NUREG-0578. In an SER dated March 20, 1980, the equipment installed to monitor degrees of subcooling was found to be acceptable (NRC letter, A. Schwencer to John E. Dolan, dated March 20, 1980). As noted in that correspondence, the device installed was a discrete digital monitor, and the plant process computer was used in conjunction

with this monitor to provide subcooling margin. Additionally, as part of the NUREG-0737 Supplement 1 requirements, a subcooling margin curve is provided by our Technical Support Center computer. We believe that these three instrument systems, which have been installed to be consistent with the requirements of their appropriate documents, are reliable. As a result, we believe it is unlikely that they would not be available if needed to monitor the course of an accident. Further, since we believe that neither NUREG-0578, nor subsequently, NUREG-0737 require seismic qualification or redundancy for this instrumentation, it would place an unnecessary burden on our ratepayers if we were required to replace this instrumentation because of changing regulatory requirements in this area.

It should be noted that our original submittal providing status of Regulatory Guide 1.97, Rev. 3 compliance (AEP:NRC:07730, dated October 15, 1985) was intended to identify instrumentation currently in compliance with the Regulatory Guide; instrumentation not in compliance for which upgrading to the Regulatory Guide recommendations was planned; and instrumentation not in compliance for which justification for a deviation from the Regulatory Guide recommendations was provided. The instrumentation for monitoring degrees of subcooling falls into the latter category.

Based on the above information and justification, we again request a deviation from the Regulatory Guide 1.97, Rev. 3 recommendation to provide Category 1 instrumentation for monitoring degrees of subcooling. We request that the NRC staff consider this deviation request under the provisions of the backfit rule (10 CFR 50.109), since we have installed instrumentation of the type necessary to fulfill an earlier requirement and without this deviation we would have to upgrade the previously installed instrumentation to meet new regulatory guidance.

3.3.4 CONTAINMENT ISOLATION VALVE POSITION

EG&G Evaluation

"Regulatory Guide 1.97 recommends Category 1 instrumentation for this variable. Thus, this instrumentation should be environmentally qualified. The licensee identifies valves VCR-11, VCR-21, and QCM-250 as being inside containment and not qualified for a design basis event. The licensee states that the position indication for the redundant valves (VCR-10, VCR-20 and QCM-350 respectively) can be used to verify the isolation function as these are located in an accessible mild environment. An operator can verify the valve position of any of these three redundant valves (VCR-10, VCR-20 and QCM-350); however, QCM-350 does have the appropriate indication in the control room. We find this unacceptable. Should a single failure occur, the operator could not verify containment isolation.

"Environmental qualification has been clarified by the Environmental Qualification Rule, 10 CFR 50.49. The licensee

should therefore provide instrumentation for this variable that is environmentally qualified in accordance with the provisions of 10 CFR 50.49 and Regulatory Guide 1.97."

I&MECo Response

We will upgrade the valve position limit switches on valves VCR-11 and VCR-21 to meet the environmental qualification requirements of 10 CFR 50.49 and Regulatory Guide 1.97, Rev. 3 recommendations.

The valve position limit switches for valve QCM-250, as well as the associated cable and terminations, are qualified in accordance with 10 CFR 50.49(k) except that they have not been qualified for submergence. The QCM-250 position indication limit switch is located below maximum flood level. Although this is not completely consistent with the actual Regulatory Guide 1.97, Rev. 3 recommendations for equipment qualification, we do not believe any upgrading of the position indication limit switch is necessary.

This is due to the fact that QCM-250 is designed to close within 15 seconds of a containment isolation signal, which means that the valve will not become submerged before it performs its safety function. In addition, once the valve is closed, it is extremely unlikely that it would change position due to its submergence.

Given these considerations, we believe that QCM-250 in its present status, without upgrading, adequately meets the intent of Regulatory Guide 1.97, Rev. 3 recommendations for achieving verifiable containment isolation.

The planned schedule for upgrading VCR-11 and VCR-21 to meet 10 CFR 50.49 requirements calls for this work to be completed in both units by the end of the refueling outages presently scheduled for 1989.

3.3.5 RADIATION LEVEL IN CIRCULATING PRIMARY COOLANT

EG&G Evaluation

"The licensee indicates that radiation level measurements to indicate fuel cladding failure are provided by the post-accident sampling system, which is being reviewed by the NRC as part of their review of NUREG-0737, Item II.B.3.

"The licensee has not identified the range of this alternate instrumentation as required by Section 6.2 of Supplement No. 1 of NUREG-0737.

"The licensee should provide the required information, identify any deviation from Regulatory Guide 1.97 and provide supporting justification or alternatives for that deviation."

I&MECo Response

As stated in our original submittal (AEP:NRC:07730, dated October 15, 1985) the primary coolant system radioactivity is not continuously monitored by in-line instrumentation. Rather, periodic analysis of reactor coolant grab samples is provided to detect deterioration of fuel cladding. Our post-accident sampling system provides a diluted grab sample which is analyzed by the gamma spectrum analyzer. See our response to Item 3.3.6 below for the range of our gamma spectrum analyzer. On the basis of the sampling capability described in Item 3.3.6 we request a deviation from the Regulatory Guide 1.97, Rev. 3 recommendation for continuous monitoring of radioactivity in the reactor coolant system.

3.3.6 ANALYSIS OF PRIMARY COOLANT

EG&G Evaluation

"Regulatory Guide 1.97 recommends instrumentation for this variable capable of a gamma spectrum with a range of 10^{-6} to 10 Ci/ml. The licensee has not identified the range of this instrumentation as required by Section 6.2 of Supplement No. 1 of NUREG-0737.

"The licensee should provide the required information, identify any deviation from Regulatory Guide 1.97 and provide supporting justification or alternatives for that deviation."

I&MECo Response

We believe the EG&G evaluation should have cited a range of 10 uCi/ml to 10 Ci/ml for this variable as per Table 3 of Regulatory Guide 1.97, Rev. 3. Our range of measurement for gamma spectrum analysis of the diluted post-accident system grab samples of primary coolant is 10 uCi/ml to 10 Ci/ml. This complies with the Regulatory Guide 1.97, Rev. 3 recommended range.

3.3.7 CONTAINMENT AREA RADIATION - HIGH RANGE

EG&G Evaluation

"Regulatory Guide 1.97 recommends Category 1 instrumentation for this variable. In addition, the licensee has determined that this is a Type A variable; thus Category 1 instrumentation is required. Category 1 instrumentation is to be seismically qualified.

"The licensee's instrumentation is not seismically qualified. The licensee justifies this deviation by stating that seismic qualification is not a NUREG-0737 requirement for this instrumentation.

"The licensee's justification for this deviation is not acceptable. The licensee should provide seismic qualification for this Type A instrumentation in accordance with the plant's seismic design criteria."

I&MECo Response

We did not take credit in our original submittal for the seismic qualification of the high-range in-containment area monitors, since we did not believe that seismic qualification was required by NUREG-0737 for these instruments. Our original submittal should be revised to indicate that the high-range in-containment area monitors (VRA-1310, 1410, 2310, 2410) listed in that submittal are seismically qualified. This qualification applies to the detectors, readout modules, signal isolators, and interconnecting cables and terminations required for Regulatory Guide 1.97, Rev. 3.

3.3.8 CONTAINMENT HYDROGEN CONCENTRATION

EG&G Evaluation

"Regulatory Guide 1.97 recommends instrumentation for this variable with a range of 0 to 30 percent for Cook's ice condenser containment. The licensee has not identified the range of the instrumentation provided for this variable.

"The NRC reviewed the acceptability of this variable as part of their review of NUREG-0737, Item II.F.1.6 and found it acceptable; however, the licensee should identify the range of this instrumentation as required by Section 6.2 of Supplement No. 1 of NUREG-0737."

I&MECo Response

The range of the instrumentation for measurement of hydrogen concentration in the containment air volume is 0 to 30 volume percent.

3.3.9 RADIATION EXPOSURE RATE

EG&G Evaluation

"Regulatory Guide 1.97 recommends instrumentation for this variable with a range of 10^{-1} to 10^{4} R/hr. The licensee's instrumentation for this variable has a range of 10^{-1} to 10^{4} mR/hr. The licensee states that this range is adequate to monitor plant operation.

"The licensee has not shown an analysis of radiation levels expected for the monitor locations. The licensee should show that the radiation exposure rate monitors have ranges that encompass the expected radiation levels in their locations."

I&MECo Response

An analysis previously performed for one of the radiation exposure rate monitors (VRC-301) listed in our original submittal (AEP:NRC:07730, dated October 15, 1985) showed that the exposure

rate range of 10^{-1} mR/hr to 10^{4} mR/hr was adequate to monitor plant operation in the area in which this monitor is installed.

As part of a general upgrade of area radiation monitors at the D. C. Cook Plant, monitor numbers NRA-340 and RRA-322 will be replaced. Concurrent with this activity, analyses of the type mentioned above will be performed to determine what range of exposure rate measurement is appropriate for the monitors in the areas where they are installed. Although our calculations have not yet been completed, we expect that the analyses will show that a range less than that recommended by Regulatory Guide 1.97, Rev. 3 will be adequate to safely monitor plant operations in the areas where these monitors are installed. The upgrading program and associated analyses are scheduled for completion at both Unit 1 and Unit 2 by the end of the presently scheduled 1989 refueling outage. We will notify you of the results of the analyses, identify the range requirements we establish and justify any deviations from the Regulatory Guide 1.97, Rev. 3 recommendations at that time.

3.3.10 RHR HEAT EXCHANGER OUTLET TEMPERATURE

EG&G Evaluation

"Regulatory Guide 1.97 recommends instrumentation for this variable with a range of 40 to 350°F. The instrumentation provided by the licensee has a range of 50 to 400°F. Thus, the range does not meet the recommended lower limit.

"The deviation is 2.5 percent of the maximum range. Considering instrument accuracy and overall range, we consider this deviation minor and, therefore, acceptable."

I&MECo Response

The deviation as submitted was found to be acceptable by EG & G. However, we incorrectly identified the instruments as ITR-311 and 321. These are actually the RHR heat exchanger inlet temperature devices. The outlet instrumentation tag numbers are ITI-310 and 320. These devices have a range of 0-400°F and indicate locally and in the Technical Support Center computer terminal located in the Technical Support Center and the control room. We believe this instrumentation meets the Regulatory Guide 1.97 recommendations for RHR heat exchanger outlet temperature measurement range.

3.3.11 ACCUMULATOR TANK LEVEL AND PRESSURE

EG&G Evaluation

"Regulatory Guide 1.97 recommends level instrumentation for this variable with a range from 10 to 90 percent of the tank volume. The licensee has both narrow range (105.8 to 121.7 inches) and wide range (0 to 133 inches) instrumentation. The wide range

instruments, which will be environmentally qualified, cover 52 percent of the tank volume. The licensee states that this is adequate to monitor the accumulator operation. The water level is maintained within the range of the narrow range instruments and additional reactor coolant is excluded from the accumulators by check valves.

"Because the wide range instrumentation covers the entire range of water level from 0 through the normally maintained level, we find that the range of the instrumentation supplied for this variable is adequate to determine that the accumulators have discharged. Therefore, this instrumentation is acceptable for this variable."

I&MECo Response

The deviation identified in our original submittal was found acceptable by EG&G. However, additional review of the information previously submitted has identified some areas where clarification of our original submittal for this item might be necessary. I&MECo is currently evaluating this issue; we do not believe that any substantive change to the conclusions drawn from the information previously submitted will result. We will inform you through a separate submittal of the results of this evaluation.

3.3.12 ACCUMULATOR ISOLATION VALVE POSITION

EG&G Evaluation

"Regulatory Guide 1.97 recommends Category 2 instrumentation for this variable. The licensee's instrumentation is Category 3. The licensee states that these motor operated valves are normally left in the open position. The circuit breakers are racked out and the valves cannot change position.

"Based on the licensee's justification that these valves are open and cannot change position during or following an accident, we consider the instrumentation for this variable acceptable."

I&MECo Response

To clarify our initial response, these motor-operated valves are normally left in the open position when the plant is operating in Mode 1 and Mode 2. The circuit breakers are racked out and the valves cannot, therefore, spuriously change position. They can change position only as the result of deliberate operator action.

3.3.13 PRESSURIZER LEVEL

EG&G Evaluation

"Regulatory Guide 1.97 recommends instrumentation for this variable with a range of top to bottom. The licensee's instrumentation measures over 96 percent of the total pressurizer volume, not indicating the volume in the hemispherical ends of the vessel. The level indication covers the entire cylindrical portion of the pressurizer.

"Outside of the supplied instrument range, in the hemispherical vessel ends, the volume to level ratio is not linear (approximately 4 percent of the total volume). We find this deviation minor and, therefore, acceptable."

I&MECo Response

The deviation as submitted was found to be acceptable by EG & G. No response by I&MECo is required.

3.3.14 PRESSURIZER HEATER STATUS

EG&G Evaluation

"Regulatory Guide 1.97 recommends monitoring the pressurizer heater current with Category 2 instrumentation. The licensee monitors the heater circuit breaker position.

"Section II.E.3.1 of NUREG-0737 requires a number of the pressurizer heaters to have the capability of being powered by the emergency power sources. Instrumentation is to be provided to prevent overloading an emergency power source. Also, technical specification [sic] are to be changed accordingly. The Standard Technical Specifications for Westinghouse reactors, Section 4.4.3.2, require that the emergency pressurizer heater current be measured quarterly. These emergency power supplied heaters should have the current instrumentation recommended by Regulatory Guide 1.97 or an alternate means of determining the current being drawn by the pressurizer heaters."

I&MECo Response

We presently have instrumentation installed that we believe meets Regulatory Guide 1.97, Rev. 3 recommendations. Pressurizer heater current can be monitored by observing ammeters located on the pressurizer control panel in the control room. The range is 0-200 amps. The pressurizer heaters are powered from the safety buses and therefore have the capability of being powered by the emergency power sources. Automatic shedding of the pressurizer heaters following a blackout is provided to prevent overloading of the emergency power sources. The operator can afterwards, at his discretion, manually energize the pressurizer heaters, taking care not to overload the emergency power sources.

3.3.15 QUENCH TANK LEVEL

EG&G Evaluation

"Regulatory Guide 1.97 recommends instrumentation for this variable with a range from the top to the bottom of the tank. The licensee's instrumentation covers 74 percent of the total tank volume, stating that this is adequate to safely monitor the operation of this tank.

"The licensee did not relate the existing range to the range that needs to be available in the post-accident condition. The range should be adequate (1) to ensure that the sparger is covered and that sufficient fluid volume exists to quench a design basis pressurizer release, (2) to show that sufficient gas volume exists to accept a pressurizer release without becoming overpressurized, and (3) to indicate in-leakage from the relief discharge system. The licensee should show that the existing quench tank level instrumentation will adequately cover the maximum expected range, or provide instrumentation with the range recommended by Regulatory Guide 1.97."

I&MECo Response

We do not rely on the quench tank to perform any post-pressurizer release function. However, we are providing the following information in response to the EG&G evaluation. The range of 74% of total tank volume originally submitted was not accurately stated to show the adequacy of the existing installation. The correct range should have been stated as being from 7 inches above the tank bottom to 7 inches below the tank top. This range includes coverage of the sparger. With regard to the ability to quench a "design-basis" pressurizer release, as noted above we do not rely on the quench tank to perform this function. The quench tank is used during normal plant operation to contain pressurizer releases from routine pressurizer pressure adjustments and valve leakage. In the case of a design-basis event that causes the PORVs and safety relief valves to lift, two rupture disks will burst upon reaching the quench tank design pressure of 100 psi. Subsequently discharge through the quench tank into the containment sump will occur.

With regard to overpressurization, we do not understand the basis for the EG&G position that sufficient gas volume exists to accept pressurizer release without becoming overpressurized. As noted above, overpressurization will not occur, because rupture discs will burst and discharge into the containment upon reaching the tank design pressure of 100 psig.

Normal water level is kept at between 80% and 84% of the instrument range with a high alarm at 84% and a low alarm at 79%. As such, in-leakage from the relief discharge system can be

adequately monitored. We therefore request a deviation from the Regulatory Guide 1.97 recommendation to monitor quench tank level from top to bottom of tank.

3.3.16 STEAM GENERATOR LEVEL

EG&G Evaluation

"Regulatory Guide 1.97 recommends Category 1 wide range instrumentation for this variable with a range from the tube sheet to the separators. Category 1 instrumentation requires Class 1E power and environmental qualification. The licensee's instrumentation has a range from 12 inches above the tube sheet to the separators. Non-Class 1E power is used. Environmental qualification is not provided.

"At 12 inches above the tube sheet, the steam generator is essentially empty. Therefore, this deviation is minor with respect to the overall range and system accuracy. The existing range is adequate to monitor this variable during all accident and post-accident conditions.

"The licensee states that this instrumentation was addressed in a NRC Safety Evaluation Report (SER) dated June 16, 1981 (Reference 7). This SER evaluation concludes that steam generator level instrumentation must be supplied and implemented in accordance with Regulatory Guide 1.97. The Technical Evaluation Report attached to the SER indicates that Class 1E power is used for the wide range channels. The licensee should verify that Class 1E power is used.

"Environmental qualification has been clarified by the Environmental Qualification Rule, 10 CFR 50.49. The licensee should therefore provide instrumentation for this variable that is environmentally qualified in accordance with the provisions of 10 CFR 50.49 and Regulatory Guide 1.97 and verify that Class 1E power is used in accordance with the recommendations of Regulatory Guide 1.97."

I&MECo Response

On August 21, 1981 we submitted a letter (AEP:NRC:0300G) that documented discussions with NRR staff clarifying certain portions of an NRC SER (June 16, 1981) of the D. C. Cook Plant auxiliary feedwater system. In that letter it was confirmed that Regulatory Guide 1.97 recommendations for steam generator level instrumentation did not have to be implemented at that time, but that implementation would be addressed at some time in the future through the Regulatory Guide 1.97 compliance/commitment process.

The steam generator wide-range level indication is not required for post-accident monitoring and in fact has been deleted from our Technical Specifications on Units 1 and 2. This was stated in our

December 10, 1980 letter, which submitted a proposed amendment to our Technical Specifications (AEP:NRC:0449). As stated in that letter, the reasons for deletion of steam generator wide-range level indication from the Technical Specifications are: (1) the S/G wide-range level indication does not perform any safety-related function and is not assumed operable in the various plant safety analyses; and (2) the S/G narrow-range instrumentation, which we believe fulfills post-accident monitoring requirements, is environmentally and seismically qualified, powered from a Class 1E source and has three redundant channels per S/G. The S/G level indication is backed up by auxiliary feedwater flow instrumentation.

The S/G wide-range level instrumentation is powered from a Class 1E source, but all four channels are powered by the same source. Since this is not in compliance with the Regulatory Guide 1.97, Rev. 3 recommendation, and based on the information given above, we request a deviation from the Regulatory Guide 1.97, Rev. 3 recommendation for S/G level instrumentation.

3.3.17 CONTAINMENT SPRAY FLOW

EG&G Evaluation

"Regulatory Guide 1.97 recommends instrumentation for this variable with a range of 0 to 110 percent of design flow. The Cook station has upper containment spray flow instrumentation, however, the licensee monitors the spray pump discharge pressure and the containment pressure, stating that with this instrumentation, the operator will be able to determine adverse containment conditions.

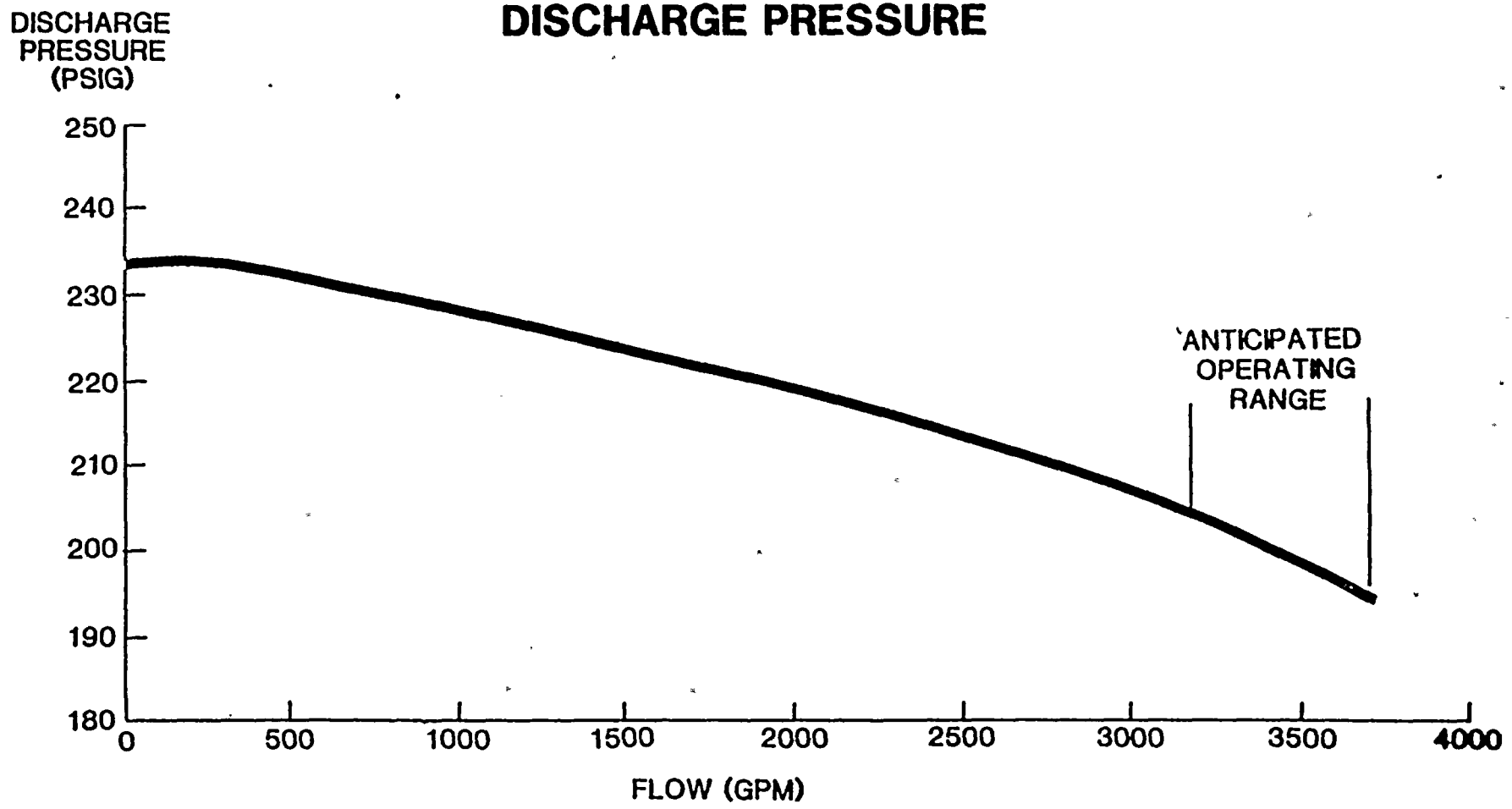
"The alternate instrumentation provided by the licensee sounds like a reasonable approach; however, the licensee should provide the NRC with the relationship between the pump discharge pressure and the pump flow rate as a basis for this deviation."

I&MECo Response

When operating normally, each containment spray pump will deliver 3200 gpm (design flow) at 490 ft. TDH. As requested by EG&G we have attached to this response a curve showing containment spray pump flow as a function of pump discharge pressure (drawing No. HXP87055JW-1).

The attached curve indicates the expected range of operation for the containment spray pumps. This operating range stems from consideration of pump suction head, containment pressure, and pump operating characteristics. Routine surveillance of spray pump operation is performed to ensure that, if containment spray is required, the pumps will operate in the indicated area of the flow curve and hence provide the necessary flow to the containment spray system. The reactor operators can, therefore, verify proper

CONTAINMENT SPRAY PUMP FLOW VS. DISCHARGE PRESSURE



HXP870515JW-1

containment spray flow by monitoring spray pump discharge pressure to confirm that it is within the expected range.

It should be noted that the upper containment spray flow instrumentation cited in our original submittal (AEP:NRC:07730, dated October 15, 1985 [IFI-330 and -331]) measures only the flow provided by the RHR pumps to the upper containment spray, not the flow from the containment spray pumps. However, the containment spray pumps, not the RHR pumps, are normally used to supply containment spray flow. Also, please note that the flow range of 0-200 gpm for IFI-330 and -331 (for measurement of RHR pump flow to the upper containment spray) given in that submittal is incorrect. The correct range is 0-2500 gpm.

Based on the above, we request a deviation from the Regulatory Guide 1.97, Rev. 3 recommendation for containment spray flow instrumentation.

3.3.18 CONTAINMENT SUMP WATER TEMPERATURE

EG&G Evaluation

"Regulatory Guide 1.97 recommends Category 2 instrumentation for this variable with a range of 50 to 250°F. The licensee does not have instrumentation for this variable, saying it would give no information relative to mitigating or determining the consequences of an accident. Containment sump level, containment atmosphere temperature and containment pressure are used by the operator to determine containment conditions. However, these will not provide a quantitative measure of heat removal from containment.

"This is insufficient justification for this exception. The licensee should provide the recommended instrumentation for the functions outlined in the Regulatory Guide 1.97 or identify other instruments that provide the same information (such as the Residual Heat Removal heat exchanger inlet temperature) and satisfy the regulatory guide."

I&MECo Response

The RHR heat exchanger inlet temperature instrumentation will be upgraded to meet the intent of Regulatory Guide 1.97 Rev. 3 recommendations. This work will be scheduled as follows:

Unit 1 - Completion by the end of the refueling outage presently scheduled for 1989.

Unit 2 - Completion by the end of the refueling outage presently scheduled for 1989.

3.3.19 VOLUME CONTROL TANK LEVEL

EG&G Evaluation

"Regulatory Guide 1.97 recommends instrumentation for this variable with a range of top to bottom. The licensee's instrumentation has a range of 0 to 70 inches, which is stated to cover approximately 65 percent of the total tank volume. The licensee states that this range is adequate to safely monitor the operation of this tank.

"The licensee has not indicated that this instrumentation will remain on scale for all accident and post-accident conditions. Therefore, the deviation in range is not acceptable. The licensee should either expand the range to that recommended by Regulatory Guide 1.97 or provide additional justification for this deviation."

I&MECo Response

Because of the following actions which apply for normal, accident, and post-accident conditions, we believe level indication beyond that currently provided is not required. Upon receiving a hi-level alarm, flow into the Volume Control Tank (VCT) is automatically fully diverted into the hold-up tanks. If a low-level alarm is reached, an alarm alerts the operator to restore level. In the event this effort fails, an emergency lo-lo level alarm is sounded and the refueling water sequence is automatically initiated. We believe that this range (0-70 inches) is adequate to safely monitor the operation of this tank. In the unlikely event that VCT level indication is lost and the VCT becomes completely full, a safety relief valve (set at 75 psig) will open and the excess water will be discharged into the hold-up tanks. We therefore request a deviation from the Regulatory Guide 1.97 recommendations to monitor Volume Control Tank level from top to bottom.

3.3.20 HIGH LEVEL RADIOACTIVE LIQUID TANK LEVEL

EG&G Evaluation

"Regulatory Guide 1.97 recommends instrumentation for this variable with a range of top to bottom. The licensee states the range covers 84 percent of the total volume and that this range is sufficient to monitor the operation of this tank.

"The range does not include the volume in the hemispherical ends of the vessel. Outside of the supplied instrument range, in the hemispherical ends, the volume to level ratio is not linear (16 percent of the total volume). We find this deviation minor and, therefore, acceptable."

I&MECo Response

The deviation as submitted was found to be acceptable by EG&G. No response by I&MECo is required.

3.3.21 CONDENSER AIR REMOVAL SYSTEM EXHAUST - NOBLE GASES

EG&G Evaluation

"Regulatory Guide 1.97 recommends instrumentation for this variable with a range of 10^{-6} to 10^{5} uCi/cc. The licensee's instrumentation has a range of 10^{-6} to 10^{3} uCi/cc. The licensee states that this range is adequate to monitor this exhaust stream. The licensee provided no basis for this statement.

"The justification provided by the licensee for this range deviation of 2 decades is not acceptable. The licensee should either expand the range to that recommended by the regulatory guide or show that the existing range will not be exceeded during accident and post-accident conditions."

I&MECo Response

This instrumentation was recently (1985) upgraded by the addition of a high-range noble gas detector. Based on our recent primary calibration analysis, the range of this instrumentation was determined to be 5.8×10^{-7} uCi/cc to 1.6×10^{4} uCi/cc Xenon-133 dose equivalent. On July 23, 1986 a letter was sent to the NRC (AEP:NRC:0678Y) in which we stated that post-accident conditions would not result in steam jet air ejector exhaust noble gas concentration greater than 2×10^{3} uCi/cc. On this basis we requested an exemption from the NUREG-0737, Section II.F.1-1 upper-range requirement of 10^{5} uCi/cc in favor of a more realistic upper range of 10^{4} uCi/cc. We therefore request a deviation from the Regulatory Guide 1.97, Rev. 3 recommendation for this parameter.

It should also be noted that the tag numbers SFR-1900 and SFR-2900 given in our original submittal are incorrect. The correct tag numbers are SRA-1900 and SRA-2900.

3.3.22 VENT FROM STEAM GENERATOR SAFETY RELIEF VALVES

EG&G Evaluation

"Regulatory Guide 1.97 recommends instrumentation for this variable with a range of 10^{-1} to 10^{5} uCi/cc. The licensee's instrumentation has a range of 3 to 20×10^{5} uCi/cc. The lower limit of the recommended range, 10^{-1} to 3 uCi/cc, is not detected by the instrumentation. The licensee provided no justification for this deviation from the recommended release assessment capabilities."

"The licensee should either expand the range to that recommended by the regulatory guide or show that the existing range is adequate during all accident and post-accident conditions."

I&MECo Response

The range of 3 uCi/cc to 20 x 10^5 uCi/cc as provided in our submittal was based solely on the monitor's response to Xe-133 and not to the anticipated mixture of radioisotopes following a steam generator tube rupture. The lower limit of 0.1 uCi/cc of Xe-133 equivalent mixture can be measured. As stated in our September 8, 1986 letter (AEP:NRC:0678Z), when the anticipated mixture of radioisotopes for a steam generator tube rupture is used, the maximum concentration is calculated to be 0.263 uCi/cc Xe-133 equivalent activity. With respect to this upper range limit, an exemption from the NUREG-0737 requirement of 1000 uCi/cc was requested in the September 8, 1986 letter and a 100 uCi/cc value proposed. No response to our request has been received at this writing. We request the same upper limit deviation from the Regulatory Guide 1.97, Rev. 3 guidelines.

3.3.23 PLANT AND ENVIRONS RADIOACTIVITY

EG&G Evaluation

"Regulatory Guide 1.97 recommends portable instrumentation for isotopic analysis for this variable. The licensee has not provided the information required by Section 6.2 of Supplement No. 1 of NUREG-0737.

"The licensee should provide the required information, identify any deviation from Regulatory Guide 1.97 and provide supporting justification or alternatives for those deviations."

I&MECo Response

We plan to have available by the end of 1988 a portable gamma-ray spectroscopy system providing the capability for field analysis of plant and environs radioactivity. Should any deviations from the recommendations of Regulatory Guide 1.97, Rev. 3 become necessary, they will be requested and justified as appropriate.

3.3.24 ACCIDENT SAMPLING (PRIMARY COOLANT, CONTAINMENT AIR AND SUMP)

EG&G Evaluation

"Regulatory Guide 1.97 recommends sampling and on-site analysis capability for the reactor coolant system, containment sump, emergency core cooling system pump room sumps, and other similar auxiliary building sump liquids and containment air. The licensee's post-accident sampling system provides sampling and analyses as recommended by the regulatory guide, except for the following deviations.

- o Gross activity - the range is not identified
- o Gamma spectrum - the range is not identified
- o Boron content - the range is not identified
- o Chloride content - capacity is not provided
- o pH - the range is 5 to 8 instead of 1 to 13
- o Containment air hydrogen content - capacity is not provided
- o Containment air oxygen content - capacity is not provided
- o Containment air gamma spectrum - capacity is not provided

"The licensee deviates from Regulatory Guide 1.97 with respect to post-accident sampling capabilities. This deviation goes beyond the scope of this review and is being addressed by the NRC as part of their review of NUREG-0737, Item II.B.3."

I&MECo Response

The following provides the requested information:

1. The capability to measure gross activity in the range of 1 uCi/ml - 10 Ci/ml is available; however, this measurement is not normally used to assess core damage. Rather, our initial core damage assessment is done through gamma spectrum analysis of primary coolant. This method provides an isotopic analysis as well as giving an indication of total primary coolant activity.

2. Gamma spectrum isotopic analysis is performed in a range of 0.050-2.05 MeV.

3. Boron content is measured in the range of 375-10,000 ppm (see Item 3.3.2).

4. Chloride content in undiluted samples 30 days after an accident is measured in a range of 0.01 to 20 ppm. For diluted samples taken within 4 days of an accident, the range of measurement is 10 to 20,000 ppm. We request a deviation from the Regulatory Guide 1.97, Rev. 3 lower limit of 0 ppm.

5. Our range of measurement of pH is 1 to 13. Our original submittal showed a range of 5 to 8 which we believed to be the range of interest for this parameter.

6. An exemption from the requirement for taking hydrogen grab samples of containment air was granted via letter from Youngblood (NRC) to Dolan (AEP) dated November 5, 1986. We do, however, perform continuous monitoring of containment air hydrogen content in the range of 0 to 30 volume percent (see Item 3.3.8).

7. NUREG-0737 does not require sampling of containment air oxygen content. As noted above, however, we do continuously monitor hydrogen content which makes containment air oxygen content of less concern from the standpoint of potential hydrogen flammability or deflagration. We therefore request a deviation from the Regulatory Guide 1.97, Rev. 3 recommendation to sample for containment air oxygen content.

8. We do not understand the EG&G request to provide containment air gamma spectrum "capacity." Regulatory Guide 1.97, Rev. 3 recommends that the capability be provided to perform an isotopic analysis of containment air. As recommended by Regulatory Guide 1.97, Rev. 3, gamma spectroscopy techniques are used to provide an isotopic analysis of noble gases in containment air. This gamma spectrum isotopic analysis is performed in a range of 0.050 to 2.05 MeV using a Canberra series 85 multichannel analyzer with a Digital PDP 11/24 computer and either a germanium (lithium-drifted) (Ge[Li]) or high-purity germanium (HPGe) detector.

Attachment 2 to AEP:NRC:0773S

Justification and Request for Deviation from Regulatory Guide 1.97, Rev. 3 Physical Separation Recommendations

The purpose of this attachment is to provide information concerning the physical separation of the Post Accident Monitoring (PAM) electrical signal cabling and readout devices at the D. C. Cook Plant Units 1 and 2 and to request certain deviations from the literal recommendations of Regulatory Guide 1.97. This information was discussed with your staff on November 13, 1986, and is intended to supplement information transmitted in our letter AEP:NRC:0773O, dated October 15, 1985.

We believe it is necessary to request a deviation from the physical separation recommendations of Regulatory Guide 1.97, Revision 3, dated May 1983 for Class 1E electrical systems. These separation recommendations apply to Category 1 instrumentation used for post-accident sampling and monitoring.

The attached figure is an electrical schematic that shows a typical cable and hardware configuration for redundant PAM channels. Other PAM channels may also feed the cable vault area and control room area but are not shown for the sake of clarity. This configuration reflects our originally licensed design. This design was completed prior to the issuance of the NRC guidance regarding physical independence of electrical systems (Regulatory Guide 1.75, September 1978) and the associated IEEE standard for separation of Class 1E equipment and circuits (IEEE standard 384-1974).

Physical separation (of both electrical cabling and hardware) is maintained between the redundant Reactor Protection Set Channels. Isolation between the Protection Set Channels and the Balance of Plant (BOP) cabling used by the PAM signals is achieved by means of signal isolators (I/I) located in most instances in the Reactor Protection Cabinets. These cabinets are located in the control room area. The BOP interconnecting cabling between these cabinets and the various PAM readout devices is routed through the cable vault area and then back to the control room. The redundant PAM signal cables in the cable vault area and in the control room are not physically separated. Also, the redundant PAM readout devices are not physically separated. There are also some cases of redundant PAM single cabling feeding a single readout device (recorder or computer).

At the request of NRC staff, an evaluation of the impact of this lack of physical separation in these areas was performed. This evaluation identified two events that had the potential for compromising the integrity of the PAM system as presently installed. These events were a fire in the cable vault area, or a severe natural phenomenon. In the case of a severe natural phenomenon, the only event of significance with regard to the cable would be an earthquake. Even in the unlikely event of a design-basis earthquake, the PAM system will continue to serve its intended function, after the appropriate system modifications have been completed. In the event of a fire in the cable vault area, we would not expect to need the PAM instruments to follow the course of another accident, and the ability to bring the plant to a safe configuration would not be compromised. We believe this position is consistent with actions we have taken to ensure compliance with Appendix R to 10 CFR 50, "Fire Protection Program for Nuclear Power Facilities Operating prior to January 1, 1979."

We therefore request a deviation from the physical separation and associated circuit recommendations (for both the signal cabling and readout devices) of Rev. 3 of Regulatory Guide 1.97, both for the PAM devices as presently installed and for future upgrades to this system.

We believe the above design configuration is consistent with our previously licensed control room design, and also represents the methods by which we intend to install future modifications associated with Regulatory guide 1.97. For this reason, we request preliminary staff comment on this request for deviation by July 15, 1987.

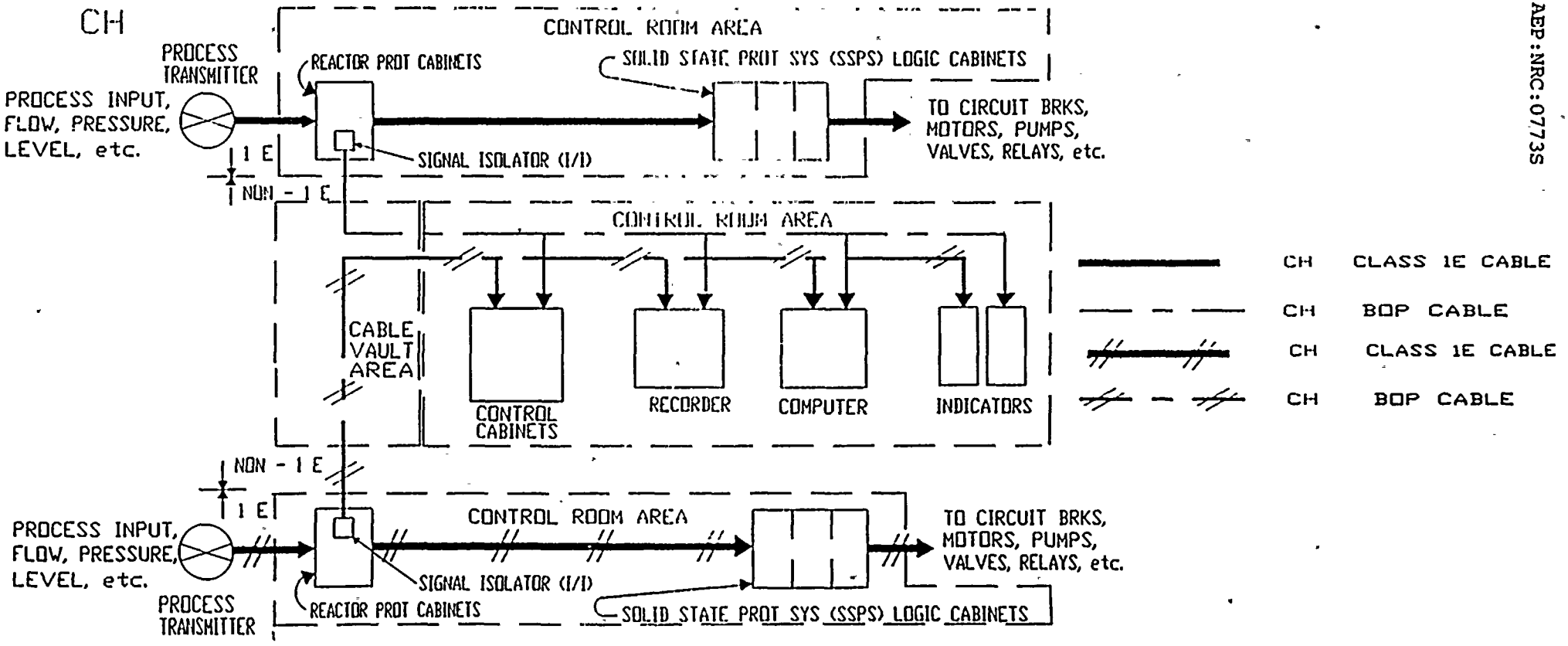


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FIG.1 - TYPICAL POST ACCIDENT MONITORING SIGNAL CABLING & HARDWARE LAYOUT

Attachment 3 to AEP:NRC:0773S

Revision to Information Contained
in the Final Status Report on Regulatory
Guide 1.97 Compliance (AEP:NRC:07730, dated October 15, 1985)

The purpose of this attachment is to provide revisions to certain information transmitted in our original submittal of October 15, 1985 on the status of compliance with Regulatory Guide 1.97 at the D. C. Cook Nuclear Plant Units 1 and 2. The revised information is contained in Items 1 through 7 below. For those items that represent a change in our position on Regulatory Guide 1.97 from that originally submitted, deviations are identified where appropriate, and justification for those deviations is provided.

1. Condensate Storage Tank Level Indication

I&MECo currently provides condensate storage tank (CST) level indication in the control room through three highly reliable Category 3 level-measuring devices. One of these instruments is electrically operated, while the other two are pneumatic devices. In addition, CST level can be read at the local turbine-driven auxiliary feedwater pump control panel. I&MECo has also committed to provide additional CST level indication by adding a new instrument channel to meet Category 1 requirements. The new channel is planned for installation during the 1987 refueling outage at Unit 1 and the 1988 refueling outage at Unit 2.

The CST is the initial source of water for the auxiliary feedwater (AFW) system, and provides sufficient volume to maintain the reactor coolant system in a hot standby condition for 9 hours. In the event that sufficient water is not available from the CST in one unit, operating procedures call for a cross-tie valve to be opened to supply feedwater from the CST in the other unit.

In the unlikely event that neither CST can supply sufficient AFW, procedures require transferring the supply source to the essential service water system (ESWS). The water supply for the ESWS is Lake Michigan.

In view of the number and diversity of instrumentation available to provide CST level monitoring, and the ultimate availability of Lake Michigan as a source of auxiliary feedwater, we request a deviation from the Regulatory Guide 1.97 recommendation to provide more than one Category 1 level indication for the CST.

2. Centrifugal Charging Pump Flow Indication

Our original submittal identified both the centrifugal charging pump (CCP) flow and CCP motor breaker status as type A variables. This would require Category 1 instrumentation for monitoring these parameters. We are currently in the process of upgrading the CCP breaker status indication to meet the Regulatory Guide 1.97, Rev. 3 recommendations for Category 1 instrumentation.

With regard to the CCP flow indication, it should be noted that our Emergency Operating Procedures require manual operator action based on the breaker status indication, not flow, although the non-Category 1

CCP flow indication could serve as a backup. We therefore request a deviation from the Regulatory Guide 1.97, Rev. 3 recommendation to provide Category 1 instrumentation for CCP flow indication.

3. Safety Injection Pump Flow Indication

For similar reasons to those stated in 2 above, we request a deviation from the Regulatory Guide 1.97, Rev. 3 recommendation to provide Category 1 instrumentation for safety injection (SI) pump flow indication. The SI pump motor breaker status instrumentation is being upgraded to meet Category 1 requirements.

4. Containment Pressure (Wide-Range) Indication

Monitoring of containment pressure is currently provided by two Category 3 wide-range (-5 to 36 psig) instruments and four Category 3 narrow-range (-5 to 12 psig) instruments. The design pressure of the D. C. Cook containments is 12 psig. The four narrow-range instruments are scheduled to be upgraded to meet Category 1 requirements by the end of the 1987 refueling outage for Unit 1 and the end of the 1988 refueling outage for Unit 2.

The wide-range containment pressure instrumentation ranges were revised to meet the requirements of NUREG-0578 and NUREG-0737. These instruments are not powered by a Class 1E power source as recommended by Regulatory Guide 1.97, Rev. 3 for Category 1 instrumentation, and they do not meet the Category 1 separation criteria. The wide-range instrumentation is, however, highly reliable, and as a result we believe it is unlikely that it would not be available if needed to monitor the course of an accident. Further, it is our belief that for other than short-term individual compartment pressure peaks, the narrow-range instrumentation would span the range of pressure anticipated in our evaluation of loss-of-coolant-type accidents. We believe it would place an unnecessary burden on our ratepayers if we were required to replace this instrumentation in response to changing regulatory guidance in this area. On the above basis, we request a deviation from the Regulatory Guide 1.97, Rev. 3 recommendation to provide Category 1 wide-range containment pressure instrumentation. We request that the NRC staff consider this deviation request under the provisions of the backfit rule (10 CFR 50.109), since we have installed instrumentation of the type necessary to fulfill an earlier requirement and without this deviation we would have to upgrade the previously installed instrumentation to meet new regulatory guidance.

5. Reactor Coolant System Wide-Range Temperature Indication

Our original submittal indicated that we would replace the cold and hot leg RCS water temperature recorders with Category 1 instruments by the end of the 1987 refueling outages for Units 1 and 2. However, a more detailed review of our current design has resulted in the identification of additional work (e.g., control room equipment and cable relocation, and installation of new Class 1E power sources) that

needs to be performed beyond that identified at the time of our original submittal. We therefore request that the completion dates for upgrading the recorders to meet Category 1 requirements be changed to the 1989 refueling outages for both Units 1 and 2.

6. Steam Generator Blowdown Radiation Indication

Our original submittal identified the steam generator blowdown radiation indication as a Type A variable. However, because of changes in our Emergency Operating Procedures made subsequent to our original submittal, manual operator action is no longer based on this variable. We therefore request that steam generator blowdown radiation indication be deleted from our original list of Type A variables.

7. Containment Effluent Radioactivity--Noble Gases from Identified Release Points

The instrumentation identified for this parameter in our original submittal was incorrect. We initially identified our lower containment normal process radiation monitors (ERS-1300 and 1400 for Unit 1 and ERS-2300 and 2400 for Unit 2) for this parameter. The instruments used to monitor this parameter are the unit vent radiation monitors (VRS-1500 for Unit 1 and VRS-2500 for Unit 2). The display location for these instruments is the control room CT-1 control terminal, not panel WDG. All other information contained in our original submittal for this item remains the same.

Attachment 4 to AEP:NRC:0773S

Documents Used in Support of Information
Contained in Attachments 1, 2 and 3

The following documents are included in this attachment:

1. AEP:NRC:07730, dated October 15, 1985, "June 12, 1984 Confirmatory Order - Final Status Report on Regulatory Guide 1.97 Compliance" (referenced in Attachment 1, Items 3.3.3, 3.3.5, 3.3.9 and 3.3.17 and Attachment 2).

2. Letter, A. Schwencer (NRC) to John E. Dolan (AEP) dated March 20, 1980 (referenced in Attachment 1, Item 3.3.3).

3. Letter, Steven A. Varga (NRC) to John E. Dolan (AEP) dated June 16, 1981 (referenced in Attachment 1, Item 3.3.16).

4. AEP:NRC:0300G, dated August 21, 1981 (referenced in Attachment 1, Item 3.3.16).

5. AEP:NRC:0449, dated December 10, 1980 (referenced in Attachment 1, Item 3.3.16).

6. AEP:NRC:0678Y, dated July 23, 1986 (referenced in Attachment 1, Item 3.3.21).

7. AEP:NRC:0678Z, dated September 8, 1986 (referenced in Attachment 1, Item 3.3.22).

8. Letter, Youngblood (NRC) to Dolan (AEP) dated November 5, 1986 (referenced in Attachment 1, Item 3.3.24).