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July 21, 1994

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of GEORGIA POWER COMPANY, et al. (Vogtle Electric Generating Plant, Units 1 and 2)	Docket Nos. 50-424-OLA-3 50-425-OLA-3 Re: License Amendment (Transfer to Southern Nuclear) ASLBP No. 93-671-01-OLA-3

GEORGIA POWER COMPANY'S ANSWER TO INTERVENOR'S MOTION TO ACCEPT ADDITIONAL FACTUAL BASES IN SUPPORT OF THE ADMITTED CONTENTION

I. Introduction

Georgia Power Company ("GPC") hereby answers and opposes Intervenor's Motion to Accept Additional Factual Basis in Support of the Admitted Contention (July 6, 1994) (hereinafter "Intervenor's Motion"). The additional basis (in effect a new contention) being advanced by Intervenor is untimely and unsupported, and it should be rejected.

At the outset, GPC observes that Intervenor has known of the additional basis for over four years. Intervenor could have raised this issue in December 1992, when he filed his original contention, but he chose not to. Now, as a very lengthy period of discovery is finally drawing to a close, Intervenor files this last-minute allegation which, if admitted for litigation, would necessitate a whole new round of discovery and result in a

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substantial delay. Such a delay would be extremely prejudicial to GPC, and Intervenor's tactic of delay should not be tolerated.

Intervenor's additional basis also fails to satisfy the threshold for admissibility. Intervenor inaccurately characterizes the Vogtle Technical Specifications, fails to discuss or address NRC's interpretation of the Technical Specifications, and provides no meaningful support for any of his assertions. The two-page transcript, which is attached to Intervenor's motion and appears to be the only information on which Intervenor is relying, does not establish any wrongdoing.

II. The Expanded Basis Does Not Satisfy Pleading Standards

The Commission's Rules of Practice, at 10 C.F.R. § 2.714, set forth the requirements for the admission of contentions. A contention must consist of a specific statement of law or fact to be raised or controverted. It must be supported by a statement of the alleged facts or expert opinions on which Intervenor intends to rely in proving the contention at hearing, together with references to the specific sources and documents of which Intervenor is aware and on which he intends to rely to establish those facts or expert opinions. The supporting information must be sufficient to establish the existence of a "genuine" dispute

on a "material" issue of law of fact. 10 C.F.R. § 2.714(b), (d).[1/]

The 1989 amendments to the NRC's Rules of Practice, which promulgated the current pleading standards, were intended to raise the threshold for the admission of contentions. 54 Fed. Reg. 33,168 (1989). See Arizona Public Service Co. (Palo Verde Nuclear Generating Station, Units 1, 2, and 3), CLI-91-12, 34 N.R.C. 149, 155-56 (1991); Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), LBP-91-35, 34 N.R.C. 163, 167 (1991). These standards are to be enforced rigorously. A Board should not overlook any deficiencies in a contention or assume the existence of missing information. Palo Verde, CLI-91-12, 34 N.R.C. at 155-56; Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), LBP-91-39, 34 N.R.C. 273, 279 (1991).

As explained when these current pleading standards were promulgated, a contention should not be admitted "where an intervenor has no facts to support its position and where the intervenor contemplates using discovery or cross-examination as a fishing expedition which might produce relevant supporting facts." 54 Fed. Reg. at 33,171. Admission of a contention may be refused if its appears unlikely that the Intervenor can prove a set of facts in support of its contention. Id. at 33,168.

1/ These requirements were summarized in the Federal Register notice commencing this proceeding. 57 Fed. Reg. 47,127 (1992).

The additional basis proposed by Intervenor does not satisfy these pleading standards. Intervenor makes only conclusory allegations and provides no real support to demonstrate that a genuine dispute exists.

Intervenor's proposed additional basis can be broken down into several allegations, not one of which is properly supported. These allegations are that (1) the opening of the containment hatch on the evening of March 20, 1990, without operable diesel generators, violated Technical Specification 3.9.8.2 and 3.8.1.2; (2) the opening of the containment hatch on the evening of March 20, 1990, without operable diesel generators, breached a commitment to the NRC Staff; (3) these alleged violations were committed knowingly and intentionally by line management up through and including the Executive Vice President and placed the plant in a less safe condition in order minimize outage time; and (4) a subsequent waiver of a technical specification was intended to cover up the violations. See Intervenor's Motion at 1-4. None of these issues is shown by Intervenor to be genuine.

A. Alleged Violation of Technical Specifications

Intervenor does not identify any evidence supporting the allegation that opening the containment hatch violated technical specifications. Intervenor identifies no facts, expert opinion, documents or other sources that would support this claim. He

does not meaningfully discuss TS 3.8 1.2 and 3.9.8.2 -- the two technical specifications which he states were violated.

TS 3.8.1.2 established A.C. electrical power systems limiting conditions for operation applicable to the refueling and cold shutdown modes. It required one off-site power source and one diesel generator to be operable in these modes. With less than these minimum requirements, certain operations (such as those involving core alterations) were prohibited, and certain corrective actions were required. TS 3.8.1.2, however, imposed no action regarding the containment hatch. See Enclosure 1 to the attached Exhibit A, at 3/4 8-10.

TS 3.9.8.2 established a limiting condition for operation applicable to the refueling mode when water level was less than 23 feet above the top of the reactor vessel flange. It required two independent residual heat removal (RHR) trains to be operable and at least one RHR train to be in operation. With less than the required RHR trains operable, actions were required as soon as possible to restore the operability of the RHR trains or establish reactor vessel water level at least 23 feet above the vessel flange. With no RHR "in operation," certain additional actions were required, including closing all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within four hours. See id. at 3/4 9-9.

Intervenor states that the inoperability of the two diesel generators on the evening of March 20 made both trains of the RHR inoperable. Intervenor's Motion at 2. This statement is inaccurate and unsupported. The definition of operability in the technical specifications did not require emergency power to be available.[2/] As discussed in an August 16, 1991 Memorandum from C. Rossi to W. Russell, "RHR Operability Requirements During Shutdown" (Exhibit A hereto), an NRC letter dated June 11, 1980, instructing all PWRs to amend plant technical specifications regarding decay heat removal, had included a model technical specification stating, "The normal or emergency power source may be inoperable for each RHR loop." Further, in 1981, the NRC had revised the standard technical specifications to eliminate the reference to emergency electrical power from the definition of operability. See Exhibit A at 2. This led to an NRC interpretation that both trains of RHR would be operable if they received power from their respective safety electrical buses.[3/] Id.

2/ Definition 1.20 stated, "A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function(s)." Exhibit A, Enclosure 1, at 1-4.

3/ This interpretation was not uniformly accepted by all offices in the NRC and led to a differing professional opinion with regard to whether Vogtle met the RHR operability

Footnote continued on next page.

Based on this interpretation, both trains of RHR were operable when the containment hatch was open. The reserve auxiliary transformer (RAT) supplying offsite power to one safety electrical bus was available at approximately 11:30 a.m. after the event, and a second RAT supplying offsite power (independent from the other source) was restored at approximately 6:40 p.m. on the same day. Therefore, at approximately 6:40 p.m. on March 20, 1990, each train of RHR was receiving power from its respective, independent safety electrical buses and was thus operable. Moreover, one train of RHR was in operation. Consequently, there was no violation of TS 3.9.8.2 when the containment hatch was later opened.

Because these matters were discussed when Intervenor was employed at Vogtle, Intervenor must have been aware of the NRC interpretation of TS 3.9.8.2 and the resolution of the issue. Yet he makes no reference to August 16, 1991 memorandum and provides no explanation why, in light of the determination reflected in this memorandum, Vogtle should be accused of violating technical specifications. In sum, Intervenor does not meaningfully

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Footnote continued from previous page.

requirements at the time of the March 20, 1990 event. Exhibit A addressed the differing professional opinion and concluded that Vogtle met its Technical Specification requirements for operability at the time the March 20 event occurred. At the time the event occurred, the plant had one operable offsite power source and one operable diesel generator.

address the NRC documents related to this matter and hence provides no basis for his allegation.[4/]

B. Alleged Breach of Commitments

Intervenor also provides no meaningful support for his assertion that "commitments were made to the NRC in a meeting on or about the evening of March 20, not to open the containment hatch until the diesel and the RAT . . . were operable." See Intervenor's Motion at 2. Intervenor does not allege that he has any first hand knowledge of such a meeting, or that any such commitment was memorialized.

The only purported basis for this allegation is rather confusing double hearsay in a two-page transcript of a conversation between Intervenor and George Frederick. As transcribed by Intervenor, Mr. Frederick is alleged to have said,

> And basically, at the meeting I thought that the final discussion that I got from George [Bockhold] and Skip [Kitchens], because they said it 4 times for clarification, I remember it had to be said four times before everybody understood, that we wouldn't reopen the hatch until we had the diesel and the RAT.

4/ Intervenor has "an ironclad obligation to examine publicly available documentary material pertaining to the facility in question with sufficient care to enable it to uncover any information that could serve as the foundation for a specific contention." Duke Power Co. (Catawba Nuclear Station, Units 1 & 2), ALAB-687, 16 N.R.C. 460, 468 (1982), vacated in part on other grounds, CLI-83-19, 17 N.R.C. 1041 (1983).

Frederick, however, does not state that this was a "commitment" to the NRC.[5/]

Further, even if there was a commitment, it is not clear what the precise commitment was. It is unclear what was meant or understood by the statement that the hatch should not be reopened until GPC "had" the diesel and the RAT (or even whether Frederick was accurately paraphrasing earlier statements). As discussed earlier, two RATS, providing independent offsite power supply, had been restored by approximately 6:40 p.m. on March 20. In addition, prior to opening the containment hatch on the evening of March 20, Diesel Generator 1A was successfully started three times. The first start ran the diesel at nearly full load for about three quarters of an hour. At that point, the diesel was intentionally tripped and restarted two more times. Thus, at the time the containment hatch was opened, in addition to the two independent sources of offsite power, the plant staff had also demonstrated that emergency diesel generator power would be available if needed. Intervenor does not address any of this

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5/ In the time allowed to prepare this response, we have not been able to determine that any commitment was made. The recollections of individuals more than four years after the event are too vague, and no document memorializing any such commitment has been identified. This difficultly in addressing Intervenor's allegation demonstrates the prejudice that results when an Intervenor hoards an allegation, revealing it only at the eleventh hour. In light of this prejudice, any uncertainty should be resolved against Intervenor.

information, which is all readily ascertainable from documents produced in discovery.

In short, Intervenor provides insufficient information to establish that a genuine dispute exists on a material issue. He has not demonstrated that any commitment was in fact made to the NRC, let alone established with any precision the terms of that commitment. Even if some oral commitment relating to power supply was made, it may well have been satisfied by GPC's actions to re-energize two RATs, thereby providing independent sources of power to each train of RHR, and to test the diesels, thereby showing that a source of emergency power would be available if needed. Intervenor provides no evidence to the contrary. Presumably, if GPC had violated some oral commitment to the NRC, the NRC would have said something about it long ago.

C. Alleged Willfulness

Intervenor has not established that any violation of technical specifications or commitments occurred, and therefore has equally failed to establish that there was any willful wrongdoing. Intervenor states that "The above actions involved the deliberate and knowing violations of tech. specs. by SRO licensed personnel including Lackey, Beasely, Kitchens and line management up to and including R.P. McDonald" (Intervenor's Motion at 4), but there is not one whit of information to even suggest that any of these individuals acted improperly. With respect to the

interpretation of TS 3.9.8.2, it is clear from the NRC's analysis that differing, reasonable interpretations applied, and GPC's position was in fact in keeping with earlier NRC guidance. Thus, even if one were to interpret the technical specification differently, one could not deny that GPC's position was supportable. In this light, Intervenor's claim that named individuals committed deliberate and knowing violations of technical specification is baseless.

Intervenor allegations concerning improper motivation are similarly unsupported concoctions. Intervenor asserts, for example,

> The motivation for taking this action [opening the containment hatch] stems from the fact that containment integrity (required while the plant was at mid-loop with no OPERABLE RHR Systems) was blocking critical outage progress and slowing down SONOPCO's planned outage schedule. Without regard to prior commitments made to the NRC or the precarious condition of having no OPERABLE emergency AC power, Plant Vogtle was intentionally placed in a less safe condition by removing the containment equipment access hatch.

Intervenor's Motion at 2-3. Intervenor does not identify a single fact, document, or reference to support this claim. In contrast, opening the hatch was important to support expeditious work to tension the reactor vessel head, fill and vent the RCS system to increase inventory, and make the steam generators available for heat removal should they be required. As indicated in the GPC's March 22, 1990 letter following up on a waiver of compliance (Exhibit B), this activity improved the plant's margin of safety. Intervenor ignores this legitimate, documented

purpose and substitutes his own theory, manufactured out of whole cloth. Intervenor's conjecture and innuendo is clearly insufficient to support his attacks on the integrity of individuals.

D. Alleged Cover Up

Intervenor does not allege any evidence at all supporting his assertion that the waiver of technical specifications was intended to cover up violations of the technical specifications. First, as previously discussed, opening the containment hatch did not violate any technical specification. Second, the waiver later obtained by GPC did not relate to the hatch. Instead, a waiver was obtained from TS 3.0.4, which would otherwise have prohibited Vogtle from making a change from Mode 6 to Mode 5 (i.e., changing from a refueling mode to a cold shutdown mode) without verification of diesel generator operability. See Exhibit B. The request for waiver did nothing to change or conceal the opening of the hatch on March 20, and there is nothing but Intervenor's fanciful and unsupported conjecture to the contrary.

III. Intervenor's Late-Filing Is Unjustified

As discussed above, Intervenor's new allegations are unsupported and fail to satisfy pleading requirements. They are also untimely and fail to satisfy standards for late filing.

Under the Commission's Rules of Practice, untimely contentions are not entertained unless the Intervenor demonstrates that admission of the late-filed issue is justified by a balancing of five factors. The five factors are:

> (i) Good cause, if any, for failure to file on time;
>
> (ii) The availability of other means whereby [Intervenor's] interest will be protected;
>
> (iii) The extent to which [Intervenor's] participation may reasonably be expected to assist in developing a sound record;
>
> (iv) The extent to which [Intervenor's] interest will be represented by existing parties; and
>
> (v) The extent to which [Intervenor's] participation will broaden the issues or delay the proceeding.

10 C.F.R. § 2.714(a)(1).

These five factors are not weighed equally. Of the five, good cause is the most important. Detroit Edison Co. (Enrico Fermi Atomic Power Plant, Unit 2), ALAB-707, 16 N.R.C. 1760, 1765 (1982). Good cause for an amendment must be established by showing that the new information appears in previously unavailable documents and that the request to amend, being otherwise proper, is expeditiously presented. Northern States Power Co. (Monticello Nuclear Generating Station, Unit 1), LBP-75-45, 2 N.R.C. 263, 268 (1975).

The lack of good cause for Intervenor's late filing is made evident by the very transcript that Intervenor attaches to his motion. That transcript, dated March 30, 1990, demonstrates that

Intervenor was aware over four years ago of the issue he now seeks to raise. In fact, the four year old conversation is the only source of purported support for Intervenor's allegation. Thus, Intervenor could have raised this issue in its December 1992 contentions and simply chose not to do so.

Intervenor attempts to explain away its lateness by arguing that the Commission's Rules of Practice are ambiguous as to whether an intervenor is required to submit all known factual bases at the time an intervenor seeks to admit a contention. Intervenor's Motion at 5. This argument is tantamount to an admission that Intervenor could have raised this issue and apparently chose not to, perhaps to gain some strategic advantage through non-disclosure. In any event, the rule is not ambiguous. 10 C.F.R. § 2.714(b)(2) requires an intervenor to identify the facts and expert opinion on which he intends to rely to prove his contentions, as well as the specific sources and documents of which he is aware and on which he intends to rely to establish those facts or expert opinion. This regulation does not allow a petitioner to plead some of the facts on which he intends to rely, while omitting others of which he is perfectly aware. To the contrary, as explained by the Commission when it promulgated the 1989 amendments, the current regulation requires disclosure of "facts or expert opinion, be it one fact or many, of which [intervenor] is aware at that point in time which provide the basis for its contention." 54 Fed. Reg. at 33,170.

Further, even if one accepts for argument's sake Intervenor's suggestion that he was confused when he filed his December 1992 contentions, no such confusion could have existed after the Licensing Board's September 24, 1993 Memorandum and Order, LBP-93-21, 38 N.R.C. 143. There, the Board ruled that Intervenor had voluntarily excluded from the scope of this proceeding those allegations of which Intervenor was aware and did not discuss in his petition. Id. at 148. Intervenor provides absolutely no explanation why it waited another ten months to raise his additional allegations. Given the scheduled closure of discovery, this delay is particularly egregious and prejudicial.

Intervenor also attempts to explain away his lateness by arguing that he did not possess enough facts to file the instant allegations until the "War Room" log became publicly available to show the date and time the containment hatch was opened. This argument also lacks merit. The transcript attached to Intervenor's Motion shows that Intervenor was aware that the containment hatch was opened on either the evening of March 20 or the morning of March 21, 1991, and the exact time in this general time frame appears irrelevant to Intervenor's allegations. Moreover, the particular log to which Intervenor alludes was made available to Intervenor on November 1, 1993, when it was produced by GPC in response to Intervenor's first document request. See letter from J. Lamberski to M. Kohn (Nov. 1, 1993).

Having failed to show good cause for its late-filing, Intervenor must make a compelling showing on the other four factors. Fermi, supra, ALAB-707, 16 N.R.C. at 1765. Intervenor has not done so.

Most importantly, the fifth factor (the extent of potential delay) strongly militates against admitting Intervenor's additional and untimely allegation. Although Intervenor asserts that "[a]dmitting the new factual basis will not broaden or delay the proceeding" (Intervenor's Motion at 8), he provides no credible basis for the assertion. Intervenor remarks that discovery could be completed within the allotted discovery time period if it could "immediately commence." Id. This remark is meaningless and misleading. Presumably, Intervenor means that if discovery on this allegation had started on July 6 (the date of Intervenor's Motion), before the scheduled depositions on diesel generator issues, an extension of Intervenor's discovery might not have been necessary. Intervenor offers no meaningful projection of the amount of discovery that would be necessary if the new allegation were admitted after the current depositions on diesel generator issues are conducted. Given Intervenor's insistence in this proceeding on deposing dozens of individuals on every issue, coupled with multiple written discovery requests, GPC believes that admission of an additional allegation might in fact delay completion of discovery by months, with an attendant or greater delay in summary disposition and hearing schedules.

Intervenor's conclusory discussion of the other factors is equally unconvincing. With respect to the second factor, Intervenor claims that no other party will have the ability or standing to adjudicate this issue before a licensing board. Intervenor's Motion at 5-6. The test is not whether the issue will be litigated before the Board, but whether there are other means whereby Intervenor's interest will be protected. Intervenor has apparently referred this allegation to the Office of Investigations, and OI and the NRC Staff are certainly able to address it.

With respect to the third factor, Intervenor argues that admitting the additional factual basis will develop a more complete record on the issue of character. Intervenor's Motion at 7. Intervenor, however, makes no showing that he has anything in particular to offer on this particular allegation. As discussed above, Intervenor has mischaracterized the particular technical specification he claims was violated, and appears to have no first hand knowledge of the commitment he claims was breached. He has offered no reliable evidence of any wrongdoing, and absolutely nothing to its claim of a "cover-up involving the entire chain of management up to and including the Executive Vice President" (see id.).

In addressing the extent to which he can assist in developing a sound record, Intervenor should set forth with as much particularity as possible the precise issues he plans to cover,

identify the prospective witnesses, and summarize their proposed testimony. Vague assertions regarding an intervenor's ability or resources are insufficient. Fermi, supra, ALAB-707, 16 N.R.C. at 1766; Mississippi Power & Light Co. (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-704, 16 N.R.C. 1725, 1730 (1982). Here, Intervenor has not shown even the slightest ability to support its reckless allegations.

With respect to the fourth factor, Intervenor states that NRC Staff has already indicated that it is not interested in pursuing this issue. Intervenor's Motion at 8. The NRC Staff has not communicated such a position, and GPC is not certain how Intervenor may be privy to the Staff's internal deliberations. Nevertheless, even if accepted, Intervenor's assertion merely indicates that the Staff has indeed considered the allegation and found it lacking. If the Staff, which is the party with the most expertise in interpreting technical specifications and the greatest understanding of the commitments it expected to be honored, has concluded that this additional allegation is not worthy of any further consideration, it is very unlikely that the allegation is significant enough to warrant expansion and substantial delay of this proceeding.

III. Conclusion

In summary, Intervenor's late-filed allegations are unsupported and unjustified. For all of the reasons stated above, Intervenor's motion should be denied. This proceeding has already consumed an inordinate amount of time and resources, and Intervenor's attempt to further expand and delay it is inappropriate.

Respectfully submitted,

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Dated: July 21, 1994

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of GEORGIA POWER COMPANY, et al. (Vogtle Electric Generating Plant, Units 1 and 2)	Docket Nos. 50-424-OLA-3 50-425-OLA-3 Re: License Amendment (Transfer to Southern Nuclear) ASLBP No. 93-671-01-OLA-3

CERTIFICATE OF SERVICE

I hereby certify that copies of "Georgia Power Company's Answer to Intervenor's Motion to Accept Additional Factual Basis in Support of the Admitted Contention," dated July 21, 1994, were served by deposit in the U.S. Mail, first class, postage prepaid, upon the persons listed on the attached service list, this 21st day of July, 1994.

[signature]

David Lewis

Dated: July 21, 1994

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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Before the Atomic Safety and Licensing Board

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UNITED STATES
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WASHINGTON, D. C. 20555

August 16, 1991

MEMORANDUM FOR: William T. Russell
Associate Director for Inspection
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Office of Nuclear Reactor Regulation

FROM: Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

SUBJECT: RHR OPERABILITY REQUIREMENTS DURING SHUTDOWN

As you requested in your memorandum dated July 19, 1991, this memorandum provides DOEA's comments on the Differing Professional View (DPV) regarding TS requirements for RHR systems during shutdown as reflected in the conclusions of the Vogtle IIT. DST will respond to your request separately. The central issue of the DPV is the relationship between the operability requirements for the RHR system and diesel generators during operation with reduced RCS inventory. Overall, there is a substantial inconsistency within the NRC on this issue because there are two interpretations of the TS requirements.

Vogtle has Standard Technical Specifications (STS) and the Vogtle TS (Enclosure 1) require that two trains of RHR be operable in operation with reduced RCS inventory. Operation with reduced RCS inventory occurs when the plant is shutdown (Modes 5 and 6) with less than 23 feet of water above the reactor vessel flange. The TS also explicitly require the operability of one offsite power source and one diesel generator in Modes 5 and 6. In addition, the definition of OPERABILITY in the TS requires systems which support the RHR to be capable of providing the necessary support. The definition of OPERABILITY specifically includes electrical power as a necessary support. The interpretation of the words "electrical power" in this definition is the source of the inconsistency. The DPV is based on the interpretation that "electrical power" means both normal and emergency electrical power. This interpretation makes the operability of an RHR train contingent on the operability of (1) the safety electrical bus supplying power to the RHR train and (2) the diesel generator aligned to that bus. Using this interpretation, the DPV concludes that Vogtle was not in compliance with the plant TS requirements for operability of the RHR when the event occurred on March 20, 1990.

In a letter from D. G. Eisenhut dated April 10, 1980 (Enclosure 2), the NRC instructed all power reactor licensees to incorporate the definition of OPERABILITY into plant TS. That definition was incorporated into the STS and included the words "normal and emergency electrical power." LCO 3.0.5 was implemented along with the definition. LCO 3.0.5 clearly stated that a system did not have to be declared inoperable solely because its emergency power source (usually, the associated diesel generator) was inoperable provided certain conditions were met. The normal power source had to remain operable and the redundant system had to remain operable. LCO 3.0.5 further stated that it was not applicable in Cold Shutdown or Refueling. LCO 3.0.5 was meaningless in those Modes because only one offsite A.C. source and one onsite A.C. source were required in those Modes.

Later, in a letter from D. G. Eisenhut dated June 11, 1980 (Enclosure 3), the NRC instructed all PWRs to amend plant TS regarding decay heat removal capability. This generic letter included model STS pages with this footnote on the RHR LCO for operation with reduced RCS inventory: "The normal or emergency power source may be inoperable for each RHR loop." Again, the NRC guidance said that a system is not inoperable solely because its associated diesel generator is inoperable.

In 1981, the STS were revised (1) to eliminate the words "normal and emergency" from the definition of OPERABILITY, (2) to eliminate LCO 3.0.5, and (3) to put the conditions from LCO 3.0.5 into the LCO's for A.C. Sources - Operating. This is the version of the definition in the Vogtle TS. This revision placed all the required Actions for inoperability of an A.C. source in the LCO for A.C. Sources - Operating. This also clarified the requirements for A.C. power in the Cold Shutdown and Refueling Modes. A plant could meet its TS requirements for operation with reduced RCS inventory with one operable offsite power source and one operable diesel generator as long as power was supplied to both safety buses. Both trains of RHR would be operable, receiving power from their respective safety electrical buses. Based on this interpretation of the definition of OPERABILITY, the IIT concluded that Vogtle was in compliance with the TS requirements for operability of the RHR when the event occurred.

This is the interpretation of the definition of OPERABILITY which is used by the Reactor Systems Branch (RSXB) and the Technical Specifications Branch (OTSB). This is the interpretation that has been used by Vogtle since licensing. The NRC has never told Vogtle that this interpretation is incorrect. Many plants use this interpretation and have never been told by NRC that there is anything wrong with this interpretation. Other plants have the original version of the definition of OPERABILITY, use the DPV interpretation, and have been told by NRC that the DPV interpretation is correct.

In a memorandum from F. Rosa to E. Butcher dated February 2, 1989, (Enclosure 4), the Electrical Systems Branch (SELB) recommended that the current definition of OPERABILITY in the STS be revised to read "offsite and emergency electrical power." SELB made this recommendation because the current definition does "not clearly convey that both offsite and onsite electric power are necessary for operability." OTSB informed SELB that this interpretation is inconsistent with the position of OTSB and SRXB.

Based on the above analysis, DOEA agrees with the IIT conclusion that Vogtle met its TS requirements for RHR operability at the time of the event. However, there is substantial inconsistency in the TS requirements for diesel generator operability to support the RHR in operation with reduced RCS inventory. DOEA agrees that these requirements need to be clarified to achieve consistent application at all plants. The guidance on operability which has been proposed for inclusion in Section 9900 of the Inspection Manual is a start. The implementation of the new STS and the recommendations of the shutdown risk study will complete the clarification. In OTSB's view, the preliminary information from the shutdown study strongly suggests that the electrical source configuration allowed by the STS in operation with reduced RCS inventory should be strengthened. Therefore, OTSB is eagerly awaiting the opportunity to implement the recommendations of the study when they are finalized.

Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Enclosures:
1. Vogtle TS; def. of OPER
   LCO 3.8.1.1
   LCO 3.8.1.2
   LCO 3.9.8.2
2. 4/10/80 generic letter which includes original def. of OPER and 3.0.5
3. 6/11/80 generic letter
4. 2/2/89 memo Rosa to Butcher
5. 1/6/89 memo Rosa to Virgilio
6. 4/10/83 memo Eisenhut to Norelius

ENCLOSURE 1

MEMBER(S) OF THE PUBLIC

1.18 MEMBER(S) OF THE PUBLIC shall include all persons who are not occupationally associated with the plant. This category does not include employees of the licensee, its contractors, or vendors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries. This category does include persons who use portions of the site for recreational, occupational, or other purposes not associated with the plant.

OFFSITE DOSE CALCULATION MANUAL

1.19 The OFFSITE DOSE CALCULATION MANUAL (ODCM) shall contain the methodology and parameters used in the calculation of offsite doses due to radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring Alarm/Trip Setpoints, and in the conduct of the Environmental Radiological Monitoring Program.

OPERABLE - OPERABILITY

1.20 A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function(s).

OPERATIONAL MODE - MODE

1.21 An OPERATIONAL MODE (i.e., MODE) shall correspond to any one inclusive combination of core reactivity condition, power level, and average reactor coolant temperature specified in Table 1.2.

PHYSICS TESTS

1.22 PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation: (1) described in Chapter 14.0 of the FSAR, (2) authorized under the provisions of 10 CFR 50.59, or (3) otherwise approved by the Commission.

PRESSURE BOUNDARY LEAKAGE

1.23 PRESSURE BOUNDARY LEAKAGE shall be leakage (except steam generator tube leakage) through a nonisolable fault in a Reactor Coolant System component body, pipe wall, or vessel wall.

PROCESS CONTROL PROGRAM

1.24 The PROCESS CONTROL PROGRAM (PCP) shall contain the current formulas, sampling, analyses, tests, and determinations to be made to ensure that processing and packaging of solid radioactive wastes based on demonstrated processing of actual or simulated wet solid wastes will be accomplished in such a way as to assure compliance with 10 CFR Parts 20, 61, and 71 and Federal and State

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E Distribution System, and

b. Two separate and independent diesel generators, each with:

1) A day tank containing a minimum volume of 650 gallons of fuel (52% of instrument span) (LI-9018, LI-9019),

2) A separate Fuel Storage System containing a minimum volume of 68,000 gallons of fuel (76% of instrument span) (LI-9024, LI-9025), and

3) A separate fuel transfer pump,

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With one offsite circuit of the above-required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If either diesel generator has not been successfully tested within the past 24 hours, demonstrate its OPERABILITY by performing Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 for each such diesel generator, separately, within 24 hours unless the diesel generator is already operating. Restore the offsite circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With either diesel generator inoperable, demonstrate the OPERABILITY of the above required A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If the diesel generator became inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 within 24 hours*#. Restore the inoperable diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

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*This test is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY.

#The diesel shall not be rendered inoperable by activities performed to support testing pursuant to the ACTION Statement (e.g., an air roll).

LIMITING CONDITION FOR OPERATION

ACTION (Continued)

c. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite source by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter, and, if the diesel generator became inoperable due to any cause other than preplanned preventative maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 within 8 hours*, unless the OPERABLE diesel generator is already operating#. Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore the other A.C. power source (offsite circuit or diesel generator) to OPERABLE status in accordance with the provisions of 3.8.1.1, ACTION Statement a or b, as appropriate, with the time requirement of that ACTION Statement based on the time of initial loss of the remaining inoperable A.C. power source. A successful test of diesel generator OPERABILITY per Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 performed under the ACTION Statement for an OPERABLE diesel generator or a restored to OPERABLE diesel generator satisfies the diesel generator test requirement of ACTION Statement a or b.

d. With one diesel generator inoperable in addition to ACTION b. or c. above, verify that:

   1. All required systems, subsystems, trains, components, and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and

   2. When in MODE 1, 2, or 3, the steam-driven auxiliary feedwater pump is OPERABLE.

   If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators separately by performing the requirements of Specification 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 within 8 hours#, unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. Following restoration of one offsite source, follow ACTION Statement a with the time requirement of that ACTION Statement based

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*This test is required to be completed regardless of when the inoperable EDG is restored to OPERABILITY.

#The diesel shall not be rendered inoperable by activities performed to support testing pursuant to the ACTION Statement (e.g., an air roll).

LIMITING CONDITION FOR OPERATION

ACTION (Continued)

on the time of the initial loss of the remaining inoperable offsite a.c. circuit. A successful test(s) of diesel OPERABILITY per Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 performed under this ACTION Statement for the OPERABLE diesels satisfies the diesel generator test requirement for ACTION Statement a.

f. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing the requirements of Specification 4.8.1.1.1.a. within 1 hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Following restoration of one diesel generator unit, follow ACTION Statement b with the time requirement of that ACTION Statement based on the time of initial loss of the remaining inoperable diesel generator. A successful test of diesel OPERABILITY per Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 performed under this ACTION Statement for a restored to OPERABLE diesel satisfies the diesel generator test requirements of ACTION Statement b.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the Onsite Class 1E Distribution System shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, and indicated power availability.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:

   1) Verifying the fuel level in the day tank (LI-9018, LI-9019),

   2) Verifying the fuel level in the fuel storage tank (LI-9024, LI-9025),

   3) Verifying the fuel transfer pump starts and transfers fuel from the storage system to the day tank,

   4) Verifying the diesel starts and that the generator voltage and frequency are 4160 + 170, -135 volts and 60 + 1.2 Hz within 11.4 seconds* after the start signal. The diesel generator shall be started for this test by using one of the following signals:

*All diesel generator starts for the purpose of surveillance testing as required by Specification 4.8.1.1.2 may be preceded by an engine prelube period as recommended by the manufacturer so that the mechanical stress and wear on the diesel engine is minimized.

a) Manual, or

b) Simulated loss-of-offsite power by itself, or

c) Simulated loss-of-offsite power in conjunction with an ESF Actuation test signal, or

d) An ESF Actuation test signal by itself.

5) Verifying the generator is synchronized, loaded to an indicated 6800-7000 kW*#, and operates at this loaded condition for at least 60 minutes, and

6) Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

7) Verifying the pressure in at least one diesel generator airstart receiver (PI-9060, PI-9061, PI-9064, PI-9065) to be greater than or equal to 210 psig.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day fuel tank;

c. At least once per 31 days by checking for and removing accumulated water from the fuel oil storage tanks;

d. By sampling new fuel oil in accordance with ASTM-D4057 prior to addition to storage tanks and:

1) By verifying in accordance with the tests specified in ASTM-D975-81 prior to addition to the storage tanks that the sample has:

a) An API Gravity of within 0.3 degrees at 60°F, or a specific gravity of within 0.0016 at 60/60°F, when compared to the supplier's certificate or an absolute specific gravity at 60/60°F of greater than or equal to 0.83 but less than or equal to 0.89, or an API gravity of greater than or equal to 27 degrees but less than or equal to 39 degrees;

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*This band is meant as guidance to avoid routine overloading of the diesel generator. Loads in excess of the band or momentary variations due to changing bus loads shall not invalidate the test.

#All diesel generator starts for the purpose of surveillance testing as required by Specification 4.8.1.1.2 may be preceded by an engine prelube period as recommended by the manufacturer so that the mechanical stress and wear on the diesel engine is minimized.

b) A kinematic viscosity at 40°C of greater than or equal to 1.9 centistokes, but less than or equal to 4.1 centistokes, if gravity was not determined by comparison with supplier's certification;

c) A flash point equal to or greater than 125°F; and

d) A clear and bright appearance with proper color when tested in accordance with ASTM-D4176-82.

2) By verifying within 30 days of obtaining the sample that the other properties specified in Table 1 of ASTM-D975-81 are met when tested in accordance with ASTM-D975-81 except that the analysis for sulfur may be performed in accordance with ASTM-D1552-79 or ASTM-D2622-82.

e. At least once every 31 days by obtaining a sample of fuel oil in accordance with ASTM-D2276-78, and verifying that total particulate contamination is less than 10 mg/liter when checked in accordance with ASTM-D2276-78, Method A;

f. At least once per 92 days and from new fuel prior to addition to the storage tank obtain a sample and verify that the neutralization number is less than 0.2 and the mercaptan content is less than 0.01% #.

g. At least once per 184 days by:

1) Verifying the diesel starts* from ambient conditions and the generator voltage and frequency are 4160 + 170, -135 volts and 60 ± 1.2 Hz within 11.4 seconds after the start signal. The diesel generator shall be started for this test by using one of the signals listed in Surveillance Requirement 4.8.1.1.2.a.4. This test, if it is performed so it concides with the testing required by Surveillance Requirement 4.8.1.1.2.a.4, may also serve to concurrently meet those requirements as well.

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*All engine starts for the purpose of surveillance testing as required by Specification 4.8.1.1.2 may be preceded by an engine prelube period as recommended by the manufacturer to minimize mechanical stress on the diesel engine.

#Mercaptan content shall not be required to be verified within specification for new fuel prior to its addition, for up to 15,000 gallons of fuel added to the tank, if the last tank sample had a mercaptan content of less than 0.007%. All subsequent new fuel addition will require mercaptan content verification prior to its addition until the tank contents are verified to be less than 0.007%.

2) Verifying the generator is synchronized, loaded to an indicated value of 6100 - 7000 kW*** in less than or equal to 60 seconds, and operates with a load of 6800-7000 kW*** for at least 60 minutes. This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.5, may also serve to concurrently meet those requirements as well.

h. At least once per 18 months,** during shutdown, by:

1) Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturers' recommendations for this class of standby service;

2) Verifying the diesel generator capability to reject a load of greater than or equal to 671 kW (motor-driven auxiliary feedwater pump) while maintaining voltage at 4160 + 240, -410 volts and speed of less than 484 rpm (less than nominal speed plus 75% of the difference between nominal speed and the Overspeed Trip Setpoint); and recovering voltage to within 4160 + 170, -410 volts within 3 seconds.

3) Verifying the diesel generator capability to reject a load of 7000 kW without tripping. The generator voltage shall not exceed 5000 volts during and following the load rejection;

4) Simulating a loss-of-offsite power by itself, and:

a) Verifying deenergization of the emergency busses and load shedding from the emergency busses, and

b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 11.5 seconds,* energizes the auto-connected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 +170, -410 volts and 60 ± 1.2 Hz during this test.

5) Verifying that on an ESF Actuation test signal, without loss-of-offsite power, the diesel generator starts* on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The generator voltage and frequency shall be 4160 +170, -135 volts and 60 ± 1.2 Hz within 11.4 seconds after the

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*All engine starts for the purpose of surveillance testing as required by Specification 4.8.1.1.2 may be preceded by an engine prelube period as recommended by the manufacturer to minimize mechanical stress and wear on the diesel engine.

**For any start of a diesel, the diesel must be operated with a load in accordance with the manufacturer's recommendations.

***This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band or momentary variations due to changing bus loads shall not invalidate this test.

auto-start signal; the steady-state generator voltage and frequency shall be maintained within these limits during this test;

6) Simulating a loss-of-offsite power in conjunction with an ESF Actuation test signal, and:

   a) Verifying deenergization of the emergency busses and load shedding from the emergency busses;

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 11.5 seconds,* energizes the auto-connected emergency (accident) loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 +170, -410 volts and 60 ± 1.2 Hz during this test; and

   c) Verifying that all automatic diesel generator trips, except engine overspeed, low lube oil pressure, high jacket water temperatures### and generator differential, are automatically bypassed upon loss of voltage on the emergency bus concurrent with a Safety Injection Actuation signal.

7) Verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to an indicated 7600 to 7700 kW,** and during the remaining 22 hours of this test, the diesel generator shall be loaded to an indicated 6800-7000 kW.** The generator voltage and frequency shall be 4160 + 170, - 135 volts and 60 ± 1.2 Hz within 11.4 seconds after the start signal; the steady-state generator voltage and frequency shall be 4160 + 170, -410 volts and 60 ± 1.2 Hz during this test.# Within 5 minutes after completing this 24-hour test, perform Specification 4.8.1.1.2h.6)b);##

8) Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 7000 kW;

9) Verifying the diesel generator's capability to:

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*All engines starts for the purpose of surveillance testing as required by Specification 4.8.1.1.2 may be preceded by an engine prelube period as recommended by the manufacturer to minimize mechanical stress and wear on the diesel engine.

**This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band or momentary variations due to changing bus loads shall not invalidate the test.

#Failure to maintain voltage and frequency requirements due to grid disturbances does not render a 24-hour test as a failure.

##If Specification 4.8.1.1.2h.6)b) is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated at the load required by Surveillance Requirement 4.8.1.1.2.a5 kW for 1 hour or until operating temperature has stabilized.

###The high jacket water temperature trip may be bypassed.

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

b) Transfer its loads to the offsite power source, and

c) Be restored to its standby status.

10) Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated Safety Injection signal overrides the test mode by: (1) returning the diesel generator to standby operation, and (2) automatically energizing the emergency loads with offsite power;

11) Verifying that the fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross-connection lines;

12) Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within ± 10% of its design interval;

i. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to at least 440 rpm in less than or equal to 11.4 seconds; and

j. At least once per 10 years by:

1) Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution, or equivalent, and

2) Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110% of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or nonvalid, shall be reported to the Commission in a Special Report pursuant to Specification 6.8.2 within 30 days. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests on a per nuclear unit basis is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures in Last 20 Valid Tests*	Number of Failures in Last 100 Valid Tests*	Test Frequency
≤ 1	≤ 4	Once per 31 days
≥ 2**	≥ 5	Once per 7 days

*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, but determined on a per diesel generator basis.

For the purposes of determining the required test frequency, the previous test failure count may be reduced to zero if a complete diesel overhaul to like-new condition is completed, provided that the overhaul, including appropriate post-maintenance operation and testing, is specifically approved by the manufacturer and if acceptable reliability has been demonstrated. The reliability criterion shall be the successful completion of 14 consecutive tests in a single series. Ten of these tests shall be in accordance with the routine Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 and four tests in accordance with the 184-day testing requirement of Surveillance Requirement 4.8.1.1.2.f. If this criterion is not satisfied during the first series of tests, any alternate criterion to be used to transvalue the failure count to zero requires NRC approval.

**The associated test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to one.

ELECTRICAL POWER SYSTEMS

A.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and the Onsite Class 1E Distribution System, and

b. One diesel generator with:

   1) A day tank containing a minimum volume of 650 gallons (52% of instrument span) (LI-9018, LI-9019) of fuel,

   2) A fuel storage system containing a minimum volume of 68,000 gallons of fuel (76% of instrument span) (LI-9024, LI-9025), and

   3) A fuel transfer pump.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes, movement of irradiated fuel, or crane operation with loads over the fuel storage pool, and provide relief capability for the Reactor Coolant System in accordance with Specification 3.4.9.3. In addition, when in MODE 5 with the reactor coolant loops not filled, or in MODE 6 with the water level less than 23 feet above the reactor vessel flange, immediately initiate corrective action to restore the required sources to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the requirements of Specifications 4.8.1.1.1, 4.8.1.1.2 (except for Specification 4.8.1.1.2a.5), and 4.8.1.1.3.

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent residual heat removal (RHR) trains shall be OPERABLE, and at least one RHR train shall be in operation.*

APPLICABILITY: MODE 6, when the water level above the top of the reactor vessel flange is less than 23 feet.

ACTION:

a. With less than the required RHR trains OPERABLE, immediately initiate corrective action to return the required RHR trains to OPERABLE status, or to establish greater than or equal to 23 feet of water above the reactor vessel flange, as soon as possible.

b. With no RHR train in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR train to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.2 At least one RHR train shall be verified in operation and circulating reactor coolant at a flow rate (FIC-0618A, FIC-0619A) of greater than or equal to 3000 gpm at least once per 12 hours.

*Prior to initial criticality, the RHR train may be removed from operation for up to 1 hour per 2-hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor vessel hot legs.

ENCLOSURE 2

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

April 10, 1980

ALL POWER REACTOR LICENSEES

Gentlemen:

It has recently come to our attention that there may be some misunderstanding regarding the use of the term OPERABLE as it applies to the single failure criterion for safety systems in power reactors. The purpose of this letter is to clarify the meaning of this term and to request licensees to take specific actions to assure that it is appropriately applied at their facilities. IE Information Notice No. 79-35, "Control of Maintenance and Essential Equipment" also contained information on this subject.

The NRC's Standard Technical Specifications (STS) were formulated to preserve the single failure criterion for systems that are relied upon in the safety analysis report. By and large, the single failure criterion is preserved by specifying Limiting Conditions for Operation (LCOs) that require all redundant components of safety related systems to be OPERABLE. When the required redundancy is not maintained, either due to equipment failure or maintenance outage, action is required, within a specified time, to change the operating mode of the plant to place it in a safe condition. The specified time to take action, usually called the equipment out-of-service time, is a temporary relaxation of the single failure criterion, which, consistent with overall system reliability considerations, provides a limited time to fix equipment or otherwise make it OPERABLE. If equipment can be returned to OPERABLE status within the specified time, plant shutdown is not required.

LCOs are specified for each safety related system in the plant, and with few exceptions, the ACTION statements address single outages of components, trains or subsystems. For any particular system, the LCO does not address multiple outages of redundant components, nor does it address the effects of outages of any support systems - such as electrical power or cooling water - that are relied upon to maintain the OPERABILITY of the particular system. This is because of the large number of combinations of these types of outages that are possible. Instead, the STS employ general specifications and an explicit definition of the term OPERABLE to encompass all such cases. These provisions have been formulated to assure that no set of equipment outages would be allowed to persist that would result in the facility being in an unprotected condition. These specifications are contained in the enclosed Model Technical Specifications. Illustrative examples of how these specifications apply are contained in the associated Bases.

2pp.

Because of the importance of assuring safety system availability, the staff has concluded that all facility technical specifications should contain these requirements, and that appropriate procedures should be implemented to assure that the necessary records, such as plant logs or similar documents, are reviewed to determine compliance with these specifications (1) promptly upon discovering a component, train, or subsystem to be inoperable, and (2) prior to removing a component from service.

Therefore, we request that you (1) submit proposed changes to your technical specifications, within 30 days, that incorporate the requirements of the enclosed Model Technical Specifications, and (2) implement the above described procedures to assure compliance with your proposed changes within 30 days thereafter.

With regard to technical specification changes, we recognize that the terminology used in the enclosed Model Technical Specifications may not directly apply to plants without STS, therefore the OPERATIONAL MODE or CONDITION definitions are also included in the enclosure. If you do not have STS you should modify the terminology to make it consistent with your particular facility technical specifications.

If you have any questions, please contact us.

Sincerely,

Darrell G. Eisenhut, Acting Director
Division of Operating Reactors
Office of Nuclear Reactor Regulation

Enclosure:
Model Technical Specifications

MODEL TECHNICAL SPECIFICATIONS

PRESSURIZED WATER REACTORS

1.0 DEFINITIONS

OPERABLE - OPERABILITY

1.6 A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s). Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal and emergency electrical power sources, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are also capable of performing their related support function(s).

3/4 LIMITING CONDITIONS FOR OPERATION (GENERAL)

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.3 In the event a Limiting Condition for Operation and/or associated ACTION requirements cannot be satisfied because of circumstances in excess of those addressed in the specification, the unit shall be placed in at least HOT STANDBY within 1 hour, in at least HOT SHUTDOWN within the next 6 hours, and in at least COLD SHUTDOWN within the following 30 hours unless corrective measures are completed that permit operation under the permissible ACTION statements for the specified time interval as measured from initial discovery or until the reactor is placed in a MODE in which the specification is not applicable. Exceptions to these requirements shall be stated in the individual specifications.

3.0.5 When a system, subsystem, train, component or device is determined to be inoperable soley because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this specification. Unless both conditions (1) and (2) are satisfied, the unit shall be placed in at least HOT STANDBY within 1 hour, in at least HOT SHUTDOWN within the next 6 hours, and in at least COLD SHUTDOWN within the following 30 hours. This specification is not applicable in MODES 5 or 6.

3/4.0 APPLICABILITY

BASES

3.0.3 This specification delineates the ACTION to be taken for circumstances not directly provided for in the ACTION statements and whose occurrence would violate the intent of the specification. For example, Specification 3.5.1 requires each Reactor Coolant System accumulator to be OPERABLE and provides explicit ACTION requirements if one accumulator is inoperable. Under the terms of Specification 3.0.3, if more than one accumulator is inoperable, the unit is required to be in at least HOT STANDBY within 1 hour and in at least HOT SHUTDOWN within the following 6 hours. As a further example, Specification 3.6.2.1 requires two Containment Spray Systems to be OPERABLE and provides explicit ACTION requirements if one spray system is inoperable. Under the terms of Specification 3.0.3, if both of the required Containment Spray Systems are inoperable, the unit is required to be in at least HOT STANDBY within 1 hour, in at least HOT SHUTDOWN within the following 6 hours and in at least COLD SHUTDOWN in the next 30 hours. It is assumed that the unit is brought to the required MODE within the required times by promptly initiating and carrying out the appropriate ACTION statement.

3.0.5 This specification delineates what additional conditions must be satisfied to permit operation to continue, consistent with the ACTION statements for power sources, when a normal or emergency power source is not OPERABLE. It specifically prohibits operation when one division is inoperable because its normal or emergency power source is inoperable and a system, subsystem, train, component or device in another division is inoperable for another reason.

The provisions of this specification permit the ACTION statements associated with individual systems, subsystems, trains, components, or devices to be consistent with the ACTION statements of the associated electrical power source. It allows operation to be governed by the time limits of the ACTION statement associated with the Limiting Condition for Operation for the normal or emergency power source, not the individual ACTION statements for each system, subsystem, train, component or device that is determined to be inoperable solely because of the inoperability of its normal or emergency power source.

For example, Specification 3.8.1.1 requires in part that two emergency diesel generators be OPERABLE. The ACTION statement provides for a 72 hour out-of-service time when one emergency diesel generator is not OPERABLE. If the definition of OPERABLE were applied without consideration of Specification 3.0.5, all systems, subsystems, trains, components and devices supplied by the inoperable emergency power source would also be inoperable. This would dictate invoking the applicable ACTION statements for each of the applicable Limiting Conditions for Operation. However, the provisions of Specification 3.0.5 permit the time limits for continued operation to be consistent with the ACTION statement for the inoperable

emergency diesel generator instead, provided the other specified conditions are satisfied. In this case, this would mean that the corresponding normal power source must be OPERABLE, and all redundant systems, subsystems, trains, components, and devices must be OPERABLE, or otherwise satisfy Specification 3.0.5 (i.e., be capable of performing their design function and have at least one normal or one emergency power source OPERABLE). If they are not satisfied, shutdown is required in accordance with this specification.

As a further example, Specification 3.8.1.1 requires in part that two physically independent circuits between the offsite transmission network and the onsite Class IE distribution system be OPERABLE. The ACTION statement provides a 24 hour out-of-service time when both required offsite circuits are not OPERABLE. If the definition of OPERABLE were applied without consideration of Specification 3.0.5, all systems, subsystems, trains, components and devices supplied by the inoperable normal power sources, both of the offsite circuits, would also be inoperable. This would dictate invoking the applicable ACTION statements for each of the applicable LCOs. However, the provisions of Specification 3.0.5 permit the time limits for continued operation to be consistent with the ACTION statement for the inoperable normal power sources instead, provided the other specified conditions are satisfied. In this case, this would mean that for one division the emergency power source must be OPERABLE (as must be the components supplied by the emergency power source) and all redundant systems, subsystems, trains, components and devices in the other division must be OPERABLE, or likewise satisfy Specification 3.0.5 (i.e., be capable of performing their design functions and have an emergency power source OPERABLE). In other words, both emergency power sources must be OPERABLE and all redundant systems, subsystems, trains, components and devices in both divisions must also be OPERABLE. If these conditions are not satisfied, shutdown is required in accordance with this specification.

In MODES 5 or 6 Specification 3.0.5 is not applicable, and thus the individual ACTION statements for each applicable Limiting Condition for Operation in these MODES must be adhered to.

DEFINITION OF WESTINGHOUSE PWR

OPERATIONAL MODES

MODE	REACTIVITY CONDITION, K_{eff}	% RATED THERMAL POWER*	AVERAGE COOLANT TEMPERATURE
1. POWER OPERATION	$\geq$ 0.99	> 5%	$\geq$ 350°F
2. STARTUP	$\geq$ 0.99	< 5%	$\geq$ 350°F
3. HOT STANDBY	< 0.99	0	$\geq$ 350°F
4. HOT SHUTDOWN	< 0.99	0	350°F > T_{avg} > 200°F
5. COLD SHUTDOWN	< 0.99	0	$\leq$ 200°F
6. REFUELING**	$\leq$ 0.95	0	$\leq$ 140°F

* Excluding decay heat.

**Reactor vessel head unbolted or removed and fuel in the vessel.

ENCLOSURE 3

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

June 11, 1980

TO ALL OPERATING PRESSURIZED WATER REACTORS (PWR'S)

Gentlemen:

This letter transmits the request that you amend the Technical Specifications (TSs) for your facility with respect to reactor decay heat removal capability. The basis for our request is founded in a number of events that have occurred at operating PWR facilities where decay heat removal capability has been seriously degraded due to inadequate administrative controls utilized when the plants were in shutdown modes of operation. One of these events occurred at the Davis-Besse, Unit No. 1 plant on April 19, 1980, which was described in IE Information Notice 80-20 dated May 8, 1980. In IE Bulletin 80-12 dated May 9, 1980, you were requested to immediately implement administrative controls which would ensure that proper means are available to provide redundant methods of decay heat removal. While the function of the bulletin was to effect immediate action with regard to this problem, we consider it necessary that an amendment of your license be made to provide for permanent long term assurance that redundancy in decay heat removal capability will be maintained.

You are requested to propose TS changes for your facility that provide for redundancy in decay heat removal capability for your plant(s) in all modes of operation. To assist you in preparing your submittal, we have enclosed a copy of Model TSs which would provide an acceptable resolution of our concern. Your proposal should use the enclosure as a guide and should include an appropriate Safety Analysis as a basis.

It is requested that you submit your proposed TSs with the basis within 120 days of receipt of this letter. If you have any questions about this matter, please contact your Project Manager.

Sincerely,

Darrell G. Eisenhut

Darrell G. Eisenhut, Director
Division of Licensing

Enclosure: Model TSs
concerning Decay Heat
Removal Capability

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Sincerely,

Darrell G. Eisenhut, Director
Division of Licensing

Enclosure: Model TSs
concerning Decay Heat
Removal Capability

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DATE						

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

June 11, 1980

MEMORANDUM FOR: Thomas M. Novak, Assistant Director for Operating Reactors
Division of License, NRR

Gus C. Lainas, Assistant Director for Safety Assessment
Division of Licensing, NRR

FROM: Darrell G. Eisenhut, Director
Division of Licensing, NRR

SUBJECT: GENERIC LETTER CONCERNING DECAY HEAT REMOVAL CAPABILITY

Attached is a generic letter to all operating PWR's which requests licensees to amend the Technical Specifications (TS) for their facilities concerning decay heat removal capability. Also attached are model TSs for each of the three PWR vendor types of plants. The letter, with the appropriata version of the model TSs should be sent to licensees by each Operating Reactor Branch within the next week.

The estimated total manpower expenditure for review of submitted TSs is 0.1 manyear per reactor site or about 5.0 manyears. The lead engineer assigned is Daniel Garner, (Room 334, ext. 27435). He will initiate TACS for all facilities and will forward sheets to the Project Managers for completion.

Darrell G. Eisenhut, Director
Division of Licensing, NRR

Attachments: As stated

JUNE 1 1980

Distribution:
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MEMORANDUM FOR: Thomas M. Novak, Assistant Director for Operating Reactors
Division of Licensing, NRR

Gus C. Lainas, Assistant Director for Safety Assessment
Division of Licensing, NRR

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Original Signed By

Darrell G. Eisenhut, Director
Division of Licensing, NRR

Attachments: As stated

AD-OR:DL	AD-SE:DL	D:DST	D:DST	
TNovak	GLainas	DRoss	RMattson	
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SURNAME	DGarner:kb	RReid	DEisenhut	EGCase	HRDenton
DATE	05/ /80	05/ /80	06/ /80	05/ /80	05/ /80

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3/4.4 REACTOR COOLANT SYSTEM

3/4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION

STARTUP AND POWER OPERATION

LIMITING CONDITION FOR OPERATION

3.4.1.1 Both reactor coolant loops and both reactor coolant pumps in each loop shall be in operation.

APPLICABILITY: MODES 1 and 2*.

ACTION:

With one reactor coolant pump not in operation, STARTUP and POWER OPERATION may be initiated and may proceed provided THERMAL POWER is restricted to less than ( )% of RATED THERMAL POWER and within 4 hours the setpoints for the following trips have been reduced to the values specified in Specification 2.2.1 for operation with three reactor coolant pumps operating:

1. (Nuclear Overpower).
2. (Nuclear Overpower based on RCS flow and AXIAL POWER IMBALANCE).
3. (Nuclear Overpower based on pump monitors).

SURVEILLANCE REQUIREMENTS

4.4.1.1 The above required reactor coolant loops shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

4.4.1.2 The Reactor Protective Instrumentation channels specified in the applicable ACTION statement above shall be verified to have had their trip setpoints changed to the values specified in Specification 2.2.1 for the applicable number of reactor coolant pumps operating either:

a. Within 4 hours after switching to a different pump combination if the switch is made while operating, or

b. Prior to reactor criticality if the switch is made while shutdown.

*See Special Test Exception 3.10.4.

3/4.4 REACTOR COOLANT SYSTEM

HOT STANDBY

LIMITING CONDITION FOR OPERATION

3.4.1.2 a. The reactor coolant loops listed below shall be OPERABLE:

1. Reactor Coolant Loop (A) and at least one associated reactor coolant pump.

2. Reactor Coolant Loop (B) and at least one associated reactor coolant pump.

b. At least one of the above Reactor Coolant Loops shall be in operation*.

APPLICABILITY: MODE 3

ACTION:

a. With less than the above required reactor coolant loops OPERABLE, restore the required loops to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

b. With no reactor coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate action to return the required coolant loop to operation.

SURVEILLANCE REQUIREMENTS

4.4.1.2.1 At least the above required reactor coolant pumps, if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

4.4.1.2.2 At least one cooling loop shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

*All reactor coolant pumps may be de-energized for up to 1 hour provided (1) no operations are permitted that would cause dilution of the reactor coolant system boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.1.3 a. At least two of the coolant loops listed below shall be OPERABLE:

1. Reactor Coolant Loop (A) and its associated steam generator and at least one associated reactor coolant pump,

2. Reactor Coolant Loop (B) and its associated steam generator and at least one associated reactor coolant pump,

3. Decay Heat Removal Loop (A),*

4. Decay Heat Removal Loop (B),*

b. At least one of the above coolant loops shall be in operation.**

APPLICABILITY: MODES 4 and 5

ACTION:

a. With less than the above required coolant loops OPERABLE, immediately initiate corrective action to return the required coolant loops to OPERABLE status as soon as possible; be in COLD SHUTDOWN within 20 hours.

b. With no coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required coolant loop to operation.

SURVEILLANCE REQUIREMENTS

4.4.1.3.1 The required decay heat removal loop(s) shall be determined OPERABLE per Specification 4.0.5.

4.4.1.3.2 The required reactor coolant pump(s), if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

4.4.1.3.3 The required steam generator(s) shall be determined OPERABLE by verifying secondary side level to be greater than or equal to ( )%.

4.4.1.3.4 At least one coolant loop shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

*The normal or emergency power source may be inoperable in MODE 5.

**All reactor coolant pumps and decay heat removal pumps may be de-energized for up to 1 hour provided (1) no operations are permitted that would cause dilution of the reactor coolant system boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent DHR loops shall be OPERABLE.*

APPLICABILITY: MODE 6 when the water level above the top of the irradiated fuel assemblies seated within the reactor pressure vessel is less than 23 feet.

ACTION:

a. With less than the required DHR loops OPERABLE, immediately initiate corrective action to return the required loops to OPERABLE status as soon as possible.

b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.8.2 The required DHR loops shall be determined OPERABLE per Specification 4.0.5.

*The normal or emergency power source may be inoperable for each DHR loop.

BASES

3/4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION

The plant is designed to operate with both reactor coolant loops in operation, and maintain DNBR above (1.32/1.30) during all normal operations and anticipated transients. With one reactor coolant pump not in operation in one loop, THERMAL POWER is restricted by the Nuclear Overpower Based on RCS Flow and AXIAL POWER IMBALANCE and the Nuclear Overpower Based on Pump Monitors trip, ensuring that the DNBR will be maintained above (1.32/1.30) at the maximum possible THERMAL POWER for the number of reactor coolant pumps in operation or the local quality at the point of minimum DNBR equal to (22/15)%, whichever is more restrictive.

In MODE 3, a single reactor coolant loop provides sufficient heat removal capability for removing decay heat; however, single failure considerations require that two loops be OPERABLE.

In MODES 4 and 5, a single reactor coolant loop or DHR loop provides sufficient heat removal capability for removing decay heat; but single failure considerations require that at least two loops be OPERABLE. Thus, if the reactor coolant loops are not OPERABLE, this specification requires two DHR loops to be OPERABLE.

The operation of one Reactor Coolant Pump or one DHR pump provides adequate flow to ensure mixing, prevent stratification and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. The reactivity change rate associated with boron reduction will, therefore, be within the capability of operator recognition and control.

BASES

3/4.9.8 DECAY HEAT REMOVAL AND COOLANT CIRCULATION

The requirement that at least one DHR loop be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effect of a boron dilution incident and prevent boron stratification.

The requirement to have two DHR loops OPERABLE when there is less than 23 feet of water above the core ensures that a single failure of the operating DHR loop will not result in a complete loss of decay heat removal capability. With the reactor vessel head removed and 23 feet of water above the core, a large heat sink is available for core cooling. Thus, in the event of a failure of the operating DHR loop, adequate time is provided to initiate emergency procedures to cool the core.

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REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

AND POWER OPERATION

G CONDITION FOR OPERATION

Both reactor coolant loops and both reactor coolant pumps in each loop e in operation.

BILITY: MODES 1 and 2*.

With one reactor coolant pump not in operation, STARTUP and POWER OPERATION may be initiated and may proceed provided THERMAL POWER is restricted to less than ( )% of RATED THERMAL POWER and within 4 hours the setpoints for the following trips have been reduced to the values specified in Specification 2.2.1 for operation with three reactor coolant pumps operating:

1. (Nuclear Overpower).
2. (Nuclear Overpower based on RCS flow and AXIAL POWER IMBALANCE).
3. (Nuclear Overpower based on pump monitors).

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NCE REQUIREMENTS

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The above required reactor coolant loops shall be verified to be in and circulating reactor coolant at least once per 12 hours.

The Reactor Protective Instrumentation channels specified in the applicable statement above shall be verified to have had their trip setpoints changed s specified in Specification 2.2.1 for the applicable number of reactor s operating either:

Within 4 hours after switching to a different pump combination if the switch is made while operating, or

Prior to reactor criticality if the switch is made while shutdown.

al Test Exception 3.10.4.

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* EISENHUT MEMO TO NOVAK/LAINAS

3/4.9.8 DECAY HEAT REMOVAL AND COOLANT RECIRCULATION

ALL WATER LEVELS

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one decay heat removal (DHR) loop shall be in operation.

APPLICABILITY: MODE 6.

ACTION:

a. With less than one DHR loop in operation, except as provided in b below, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

b. The DHR loop may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel (hot) legs.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.8.1 At least one DHR loop shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to (2800) gpm at least once per 4 hours.

3/4.9.8 DECAY HEAT REMOVAL AND COOLANT CIRCULATION

The requirement that at least one DHR loop be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effect of a boron dilution incident and prevent boron stratification.

The requirement to have two DHR loops OPERABLE when there is less than 23 feet of water above the core ensures that a single failure of the operating DHR loop will not result in a complete loss of decay heat removal capability. With the reactor vessel head removed and 23 feet of water above the core, a large heat sink is available for core cooling. Thus, in the event of a failure of the operating DHR loop, adequate time is provided to initiate emergency procedures to cool the core.

DEFINITION OF BABCOCK & WILCOX PWR

OPERATIONAL MODES

OPERATIONAL MODE	REACTIVITY CONDITION, K_{eff}	% OF RATED THERMAL POWER*	AVERAGE COOLANT TEMPERATURE
1. POWER OPERATION	≥ 0.99	> 5%	≥ (305)°F
2. STARTUP	≥ 0.99	≤ 5%	≥ (305)°F
3. HOT STANDBY	< 0.99	0	≥ (305)°F
. HOT SHUTDOWN	< 0.99	0	(305)°F > T_{avg} > 200°F
5. COLD SHUTDOWN	< 0.99	0	≤ 200°F
6. REFUELING**	≤ 0.95	0	≤ 140°F

* Excluding decay heat.

**Reactor vessel head unbolted or removed and fuel in the vessel.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION

STARTUP AND POWER OPERATION

LIMITING CONDITION FOR OPERATION

3.4.1.1 Both reactor coolant loops and both reactor coolant pumps in each loop shall be in operation.

APPLICABILITY: 1 and 2.*

ACTION:

With less than the above required reactor coolant pumps in operation, be in at least HOT STANDBY within 1 hour.

SURVEILLANCE REQUIREMENTS

4.4.1.1 The above required reactor coolant loops shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

*See Special Test Exception 3.10.3.

HOT STANDBY

LIMITING CONDITION FOR OPERATION

3.4.1.2 a. The reactor coolant loops listed below shall be OPERABLE:

1. Reactor Coolant Loop (A) and at least one associated reactor coolant pump.

2. Reactor Coolant Loop (B) and at least one associated reactor coolant pump.

b. At least one of the above Reactor Coolant Loops shall be in operation*.

APPLICABILITY: MODE 3

ACTION:

a. With less than the above required reactor coolant loops operable, restore the required loops to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

b. With no reactor coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required loop to operation.

SURVEILLANCE REQUIREMENTS

4.4.1.2.1 At least the above required reactor coolant pumps, if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

4.4.1.2.2 At least one cooling loop shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

*All reactor coolant pumps may be de-energized for up to 1 hour provided (1) no operations are permitted that would cause dilution of the reactor coolant system boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

REACTOR COOLANT SYSTEM

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.1.3 a. At least two of the coolant loops listed below shall be OPERABLE:

1. Reactor Coolant Loop (A) and its associated steam generator and at least one associated reactor coolant pump.
2. Reactor Coolant Loop (B) and its associated steam generator and at least one associated reactor coolant pump.
3. Shutdown Cooling Loop (A)#
4. Shutdown Cooling Loop (B)#

b. At least one of the above coolant loops shall be in operation*.

APPLICABILITY: MODES 4** and 5**

ACTION:

a. With less than the above required coolant loops OPERABLE, immediately initiate corrective action to return the required coolant loops to OPERABLE status as soon as possible; be in COLD SHUTDOWN within 20 hours.

b. With no coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required coolant loop to operation.

SURVEILLANCE REQUIREMENTS

4.4.1.3.1 The required shutdown cooling loop(s) shall be determined OPERABLE per Specification 4.0.5.

4.4.1.3.2 The required reactor coolant pump(s), if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

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*All reactor coolant pumps and decay heat removal pumps may be de-energized for up to 1 hour provided (1) no opeartions are permitted that would causedilution of the reactor coolant system boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

**A reactor coolant pump shall not be started with one or more of the RCS cold leg temperatures less than or equal to (275)°F unless 1) the pressurizer water volume is less than (900) cubic feet or 2) the secondary water temperature of each steam generator is less than (45)°F above each of the RCS cold leg temperatures.

#The normal or emergency power source may be inoperable in MODE 5.

SURVEILLANCE REQUIREMENTS (Continued)

4.4.1.3.2 The required steam generator(s) shall be determined OPERABLE by verifying the secondary side water level to be ≥ ________ at least once per 12 hours.

4.4.1.3.4 At least one coolant loop shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION

ALL WATER LEVELS

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one shutdown cooling loop shall be in operation.

APPLICABILITY: MODE 6

ACTION:

a. With less than one shutdown cooling loop in operation, except as provided in b. below, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

b. The shutdown cooling loop may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.8.1 At least one shutdown cooling loop shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to (3000) gpm at least once per 4 hours.

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent shutdown cooling loops shall be OPERABLE.*

APPLICABILITY: MODE 6 when the water level above the top of the irradiated fuel assemblies seated within the reactor pressure vessel is less than 23 feet.

ACTION:

a. With less than the required shutdown cooling loops OPERABLE, immediately initiate corrective action to return loops to OPERABLE status as soon as possible.

b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.8.2 The required shutdown cooling loops shall be determined OPERABLE per Specification 4.0.5.

*The normal or emergency power source may be inoperable for each shutdown cooling loop.

BASES

3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION

The plant is designed to operate with both reactor coolant loops and associated reactor coolant pumps in operation, and maintain DNBR above 1.30 during all normal operations and anticipated transients.

In MODE 3, a single reactor coolant loop provides sufficient heat removal capability for removing decay heat; however, single failure considerations require that two loops be OPERABLE.

In MODES 4 and 5, a single reactor coolant loop or shutdown cooling loop provides sufficient heat removal capability for removing decay heat; but single failure considerations require that at least two loops be OPERABLE. Thus, if the reactor coolant loops are not OPERABLE, this specification requires two shutdown cooling loops to be OPERABLE.

The operation of one Reactor Coolant Pump or one shutdown cooling pump provides adequate flow to ensure mixing, prevent stratification and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. The reactivity change rate associated with boron reductions will, therefore, be within the capability of operator recognition and control.

The restrictions on starting a Reactor Coolant Pump during MODES 4 and 5 with one or more RCS cold legs less than or equal to (275)°F are provided to prevent RCS pressure transients, caused by energy additions from the secondary system, which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by either (1) restricting the water volume in the pressurizer and thereby providing a volume for the primary coolant to expand into or (2) by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than (46)°F above each of the RCS cold leg temperatures.

BASES

3/4.9.8 COOLANT CIRCULATION

The requirement that at least one shutdown cooling loop be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification.

The requirement to have two shutdown cooling loops OPERABLE when there is less than 23 feet of water above the core, ensures that a single failure of the operating shutdown cooling loop will not result in a complete loss of decay heat removal capability. With the reactor vessel head removed and 23 feet of water above the core, a large heat sink is available for core cooling, thus in the event of a failure of the operating shutdown cooling loop, adequate time is provided to initiate emergency procedures to cool the core.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION

STARTUP AND POWER OPERATION

LIMITING CONDITION FOR OPERATION

3.4.1.1 All reactor coolant loops shall be in operation.

APPLICABILITY: MODES 1 and 2.*

ACTION:

With less than the above required reactor coolant loops in operation, be in at least HOT STANDBY within 1 hour.

SURVEILLANCE REQUIREMENT

4.4.1.1 The above required reactor coolant loops shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

*See Special Test Exception 3.10.4

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HOT STANDBY

LIMITING CONDITION FOR OPERATION

3.4.1.2 a. At least two of the reactor coolant loops listed below shall be OPERABLE:

1. Reactor Coolant Loop (A) and its associated steam generator and reactor coolant pump,
2. Reactor Coolant Loop (B) and its associated steam generator and reactor coolant pump,
3. Reactor Coolant Loop (C) and its associated steam generator and reactor coolant pump,
4. Reactor Coolant Loop (D) and its associated steam generator and reactor coolant pump.

b. At least one of the above coolant loops shall be in operation.*

APPLICABILITY: MODE 3

ACTION:

a. With less than the above required reactor coolant loops OPERABLE, restore the required loops to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

b. With no reactor coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required coolant loop to operation.

SURVEILLANCE REQUIREMENTS

4.4.1.2.1 At least the above required reactor coolant pumps, if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

4.4.1.2.2 At least one cooling loop shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

*All reactor coolant pumps may be de-energized for up to 1 hour provided (1) no operations are permitted that would cause dilution of the reactor coolant system boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.1.3 a. At least two of the coolant loops listed below shall be OPERABLE:

1. Reactor Coolant Loop (A) and its associated steam generator and reactor coolant pump,*
2. Reactor Coolant Loop (B) and its associated steam generator and reactor coolant pump,*
3. Reactor Coolant Loop (C) and its associated steam generator and reactor coolant pump,*
4. Reactor Coolant Loop (D) and its associated steam generator and reactor coolant pump,*
5. Residual Heat Removal Loop (A),**
6. Residual Heat Removal Loop (B).**

b. At least one of the above coolant loops shall be in operation.***

APPLICABILITY: MODES 4 and 5

ACTION:

a. With less than the above required loops OPERABLE, immediately initiate corrective action to return the required loops to OPERABLE status as soon as possible; be in COLD SHUTDOWN within 20 hours.

b. With no coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required coolant loop to operation.

*A reactor coolant pump shall not be started with one or more of the RCS cold leg temperatures less than or equal to (275)°F unless 1) the pressurizer water volume is less than ____ cubic feet or 2) the secondary water temperature of each steam generator is less than _____°F above each of the RCS cold leg temperatures.

**The normal or emergency power source may be inoperable in MODE 5.

***All reactor coolant pumps and decay heat removal pumps may be de-energized for up to 1 hour provided 1) no operations are permitted that would cause dilution of the reactor coolant system boron concentration, and 2) core outlet temperature is maintained at least 10°F below saturation temperature.

SURVEILLANCE REQUIREMENTS

4.4.1.3.1 The required residual heat removal loop(s) shall be determined OPERABLE per Specification 4.0.5.

4.4.1.3.2 The required reactor coolant pump(s), if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

4.4.1.3.3 The required steam generator(s) shall be determined OPERABLE by verifying secondary side level to be greater than or equal to (   )% at least once per 12 hours.

4.4.1.3.4 At least one coolant loop shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

ALL WATER LEVELS

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one residual heat removal (RHR) loop shall be in operation.

APPLICABILITY: MODE 6

ACTION:

a. With less than one residual heat removal loop in operation, except as provided in b below, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

b. The residual heat removal loop may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel (hot) legs.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.8.1 At least one residual heat removal loop shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to (2300) gpm at least once per 4 hours.

REFUELING OPERATIONS

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

ALL WATER LEVELS

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one residual heat removal (RHR) loop shall be in operation.

APPLICABILITY: MODE 6

ACTION:

a. With less than one residual heat removal loop in operation, except as provided in b below, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

b. The residual heat removal loop may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel (hot) legs.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.8.1 At least one residual heat removal loop shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to (2800) gpm at least once per 4 hours.

REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent Residual Heat Removal (RHR) loops shall be OPERABLE.*

APPLICABILITY: MODE 6 when the water level above the top of the irradiated fuel assemblies seated within the reactor pressure vessel is less than 23 feet.

ACTION:

a. With less than the required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status as soon as possible.

b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.[illegible] The required Residual Heat Removal loops shall be determined OPERABLE per Specification 4.0.5.

*The normal or emergency power source may be inoperable for each RH[illegible] loop.

BASES

3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION

The plant is designed to operate with all reactor coolant loops in operation, and maintain DNBR above 1.30 during all normal operations and anticipated transients. In MODES 1 and 2 with one reactor coolant loop not in operation this specification requires that the plant be in at least HOT STANDBY within 1 hour.

In MODE 3, a single reactor coolant loop provides sufficient heat removal capability for removing decay heat; however, single failure considerations require that two loops be OPERABLE.

In MODES 4 and 5, a single reactor coolant loop or RHR loop provides sufficient heat removal capability for removing decay heat; but single failure considerations require that at least two loops be OPERABLE. Thus, if the reactor coolant loops are not OPERABLE, this specification requires two RHR loops to be OPERABLE.

The operation of one Reactor Coolant Pump or one RHR pump provides adequate flow to ensure mixing, prevent stratification and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. The reactivity change rate associated with boron reduction will, therefore, be within the capability of operator recognition and control.

The restrictions on starting a Reactor Coolant Pump with one or more RCS cold legs less than or equal to (275)°F are provided to prevent RCS pressure transients, caused by energy additions from the secondary system, which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by either (1) restricting the water volume in the pressurizer and thereby providing a volume for the primary coolant to expand into, or (2) by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than (   )°F above each of the RCS cold leg temperatures.

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

The requirement that at least one residual heat removal (RHR) loop be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140 F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effect of a boron dilution incident and prevent boron stratification.

The requirement to have two RHR loops OPERABLE when there is less than 23 feet of water above the core ensures that a single failure of the operating RHR loop will not result in a complete loss of residual heat removal capability. With the reactor vessel head removed and 23 feet of water above the core, a large heat sink is available for core cooling. Thus, in the event of a failure of the operating RHR loop, adequate time is provided to initiate emergency procedures to cool the core.

ENCLOSURE 4

FEB 2 1989

MEMORANDUM FOR: Edward J. Butcher, Chief
Technical Specification Branch
Division of Operational Events Assessment

FROM: Faust Rosa, Chief
Electrical Systems Branch
Division of Engineering & Systems Technology

SUBJECT: REVIEW OF NEW STANDARD TECHNICAL SPECIFICATIONS (STS)

References:

1. Memorandum from C. E. Rossi to L. Shao (and others), this subject, dated November 23, 1988.

2. Memorandum from F. Rosa to E. Butcher, this subject, dated December 27, 1988.

3. Memorandum from F. Rosa to M. Virgilio concerning Review of Fermi 2 Unit 2 Technical Specification dated January 6, 1989.

As a result of our recent acceptance of the industry owners group proposed new Standard Technical Specification (STS) definition for Operable-Operability (Ref. 2) and our subsequent recommendation that a different definition be considered in the development of STS (Ref. 3), Millard Wohl of your staff requested clarification as to our position on the definition that should be included in the new STS.

The definition for Operable-Operability as stated in the current STS for GE, CE, and B&W is as follows:

OPERABLE - OPERABILITY

A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all necessary attendant instrumentation, controls, normal and emergency electric power sources, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function(s).

Contact:
J. Knox, SELB/DEST
X23285

The definition stated in the current STS for W is as follows:

OPERABLE - OPERABILITY

A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function(s).

In regard to the terminology "...all necessary attendant...normal and emergency electric power sources..." and "all attendant...electric power," underlined in the above definitions, the industry owners group (Ref. 1) proposed that the terminology be changed to "...all necessary attendant...electrical power sources...". In our review of Fermi Technical Specification (Ref. 3), we concluded that the terminology did not clearly convey that both offsite and onsite electric power are necessary for operability. We thus recommended that the terminology be changed to "...all necessary attendant...offsite and emergency electrical power...". Therefore, we recommend that this terminology be included in the new STS.

*Original Signed By:
Faust Rosa*

Faust Rosa, Chief
Electrical Systems Branch
Division of Engineering & Systems Technology

cc: C. E. Rossi
L. Shao
A. Thadani
M. Wohl

Distribution:
Central Files
SELB Rdg.
J. Knox (PF)(2)
J. E. Knight
F. Rosa

:E PREVIOUS CONCURRENCE

.	:SELB/DEST*	:SC/SELB/DEST*	:BC/SELB/DEST	:	:	:	:
1E	:JKnox:ct	:JEKnight	:FRosa FR	:	:	:	:
'E	: 2 /1 /89	: 2 / 1 /89	:2/ 2 /89	:	:	:	:

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The definition stated in the current STS for W is as follows:

OPERABLE - OPERABILITY

A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function(s).

In regard to the terminology "...all necessary attendant...normal and emergency electric power sources..." and "all attendant...electric power," underlined in the above definitions, the industry owners group (Ref. 1) proposed that the terminology be changed to "...all necessary attendant...electrical power sources...". In our review of Fermi Technical Specification (Ref. 3), we concluded that the terminology did not clearly convey that both offsite and onsite electric power are necessary for operability. We thus recommended that the terminology be changed to "...all necessary attendant...offsite and emergency electrical power...".

Based on the above considerations, it is the SELB position that the definition proposed by the industry owners group for Operable-Operability in the new STS is not clear as to what is meant by necessary electric power sources. The meaning of the term "necessary" needs further clarification. We recommend that the industry owners groups be requested to provide this clarification.

Faust Rosa, Chief
Electrical Systems Branch
Division of Engineering & Systems Technology

cc: C. E. Rossi
L. Shao
A. Thadani
M. Wohl

Distribution:
Central Files
SELB Rdg.
J. Knox (PF)(2)
J. E. Knight
F. Rosa

:LB/DEST	:SC/SELB/DEST	:BC/SELB/DEST:	:	:	:
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1/89	: 2/1/89	: / /89	:	:	:

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ENCLOSURE 5

OPERABILITY

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Docket No.: 50-341 JAN 6 1989

MEMORANDUM FOR: Martin J. Virgilio, Project Director
Project Directorate III-1
Division of Reactor Projects III/IV/V & Special Projects

FROM: Faust Rosa, Chief
Electrical Systems Branch
Division of Engineering & Systems Technology

SUBJECT: FERMI UNIT 2 - TIA REVIEW OF TECHNICAL SPECIFICATIONS WHICH ALLOWED ELECTRICAL CONFIGURATION SUPPLYING POWER TO THE OPERABLE ECCS PUMPS IN COLD SHUTDOWN

Plant Name:	Fermi Unit 2
Utility:	Detroit Edison Company
Docket No.:	50-341
TAC No.:	71089 TIA
Resp. Directorate:	PD III-1/DRP
Project Manager:	John Stang
Review Branch:	SELB/DEST
Review Status:	Complete

By Memo from W. Rogers, RI/RIII to R. Cooper, SC/RIII dated October 19, 1988, Region III (Under TIA) requested NRR to review Fermi Unit 2 Technical Specification (T/S) 3.8.1.2 to determine whether it should be further clarified to indicate that the operable (not on maintenance) ECCS subsystem "be powered by the operable onsite A.C. electrical power source" in Modes 4 and 5. (We interpret the quoted portion to mean that the operable onsite AC source should be available to the operable ECCS subsystems, not actually powering the systems.)

The Electrical Systems Branch (SELB) reviewed the referenced T/S provision for the operability requirement of A.C. electrical power with respect to the ECCS subsystems and concurs that the operable ECCS subsystems should have available an operable onsite A.C. electrical power source (as well as an offsite source) in all modes. We also agree that the T/S are not clear in this regard unless the Operable-Operability definition (T/S 1.25) is interpreted accordingly, as it should be. Therefore, we recommend that this definition be revised as follows (revision is underlined).

OPERABLE - OPERABILITY

1.25 A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s) and when all necessary attendant instrumentation, controls, offsite and emergency

Contact:
D. Tondi, SC/SELB/DEST
X20804

> electrical power, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are also capable of performing their related support function(s).

No other clarifications to the T/S are necessary. In the Fermi 2 design, both 4.16Kv safety buses of both Division I and Division II can be connected to either of the two offsite power circuits. Therefore, T/S 3.5.2 and T/S 3.8.1.2 can be satisfied by any two of the four subsystems (2 Core Spray and 2 Low Pressure Coolant Injection) that are powered from either division, provided both safety buses of that division are connected to an operable offsite power circuit and their dedicated diesel generators are operable and available in event of loss of the offsite circuit. Also, T/S 3.5.2 does not preclude operation of either or both buses from their dedicated diesel generators provided an operable offsite circuit is available in event of loss of the diesel.

The revised definition (T/S 1.25) also applies for meeting the requirements of T/S 3.4.9.2. That is, the shutdown cooling mode loops of the Residual Heat Removal System that are required to be operable must meet the same offsite/onsite power requirements cited in the above paragraph, regardless of whether credit is taken for an alternate decay heat removal method.

In summary, we recommend revision of the definition of Operable-Operability as indicated above. It is noted that this revision is already incorporated in some Technical Specifications, e.g., LaSalle and North Anna.

By copy of this memorandum this recommendation is also transmitted to the Technical Specifications Branch (E. Butcher) for their consideration in development of Standard Technical Specifications.

Faust Rosa

Faust Rosa, Chief
Electrical Systems Branch
Division of Engineering & Systems Technology

cc: L. Shao
C. E. Rossi
A. Thadani
E. Butcher
W. Rodgers (RIII)
J. Stang
R. Cooper (RIII)
T. Quay

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

J. Stang
NRR

OCT 27 1988

TAC# 71089

MEMORANDUM FOR: M. J. Virgilio, Acting Assistant Director for Regions III and V, NRR

FROM: E. G. Greenman, Director, Division of Reactor Projects Region III

SUBJECT: REQUEST FOR TECHNICAL ASSISTANCE - TECHNICAL SPECIFICATION INTERPRETATIONS - (AIT #0384)

During inspection activities at the Fermi 2 site, the resident inspectors have encountered several issues associated with Technical Specifications interpretations for which we are requesting NRR input. To a limited extent, these issues have been discussed previously between the resident staff and NRR staff members. The issues are fully discussed in the attachments to this memorandum and include questions on the operability of RHR/LPCI pumps, lack of use and proceduralization of backup manual scram breakers by the licensee, and a deficiency in the Technical Specifications that does not require operable ECCS pumps to be powered by the operable A.C. electrical power source while in cold shutdown.

Your efforts and clarification will be appreciated. If there are any questions, please contact Mr. W. G. Rogers, Senior Resident Inspector, Fermi 2, at (313) 586-2798.

William L [signature]
for Edward G. Greenman, Director
Division of Reactor Projects

Attachments
1. Memorandum, W. Rogers to R. Cooper of 10/19/88, Operability of RHR/LPCI Pumps in Cold Shutdown (w/attachments 1-10)
2. Memorandum, W. Rogers to R. Cooper of 10/19/88, Use of the Backup Manual Scram Breaker (w/attachment 1)
3. Memorandum, W. Rogers to R. Cooper of 10/19/88, Technical Specification Allowed Electrical Configuration Supplying Power to the Operable ECCS Pumps in Cold Shutdown

See Attached Distribution

Distribution

cc w/attachments:
G. Holahan, NRR
T. Quay, NRR
J. Stang, NRR
H. Miller, RIII
W. Rogers, SRI Fermi

NRC FORM 557 (11-86)

U.S. NUCLEAR REGULATORY COMMISSION

TECHNICAL ASSIGNMENT CONTROL

OFFICE OF NUCLEAR REACTOR REGULATION

TAC NUMBER*: 71089

[X] NEW ASSIGNMENT
[ ] NEW INFORMATION

SECTION I. REQUEST DATA

PREPARED BY (Name)	John Stang
MAIL STOP	BH15
(AB) DATE PREPARED* (MONTH DAY YEAR)	11 7 86
(A) DOCKET NUMBER*	50-341
(AC)(A) FACILITY NAME AND ASSIGNMENT TITLE* (Limit to 120 characters)	Fermi-2 TIA TS Interpretations, ECCS pump not required to be powered by the operable A.C electrical power source while in cold shutdown
(AJ) PLANNED ACCOMPLISHMENT NUMBER*	1 53113
(AK) REQUESTING TARGET DATE (MONTH DAY YEAR)	02 28 87
ACCESSION NUMBER	
(AG) REQUEST CONTACT*	JohnStang
(AH) REQUESTER'S INITIALS*	SFJ
(AE) REQUESTING ORGANIZATION*	PD31
(AL) MULTIPLANT ACTION NUMBER	
(B) REVIEW BY REGION	1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]
[X] OR COPY OF INCOMING ATTACHED	

SECTION II. SYSTEMS CONTROL DATA

A. OPERATING REACTOR ACTIONS

PRIORITY*	1	[X] 2	3	N/A
(FB) FEE RECOVERABLE*		YES	[X] NO	
(FF) APPLICATION FEE RECEIVED*		YES	[X] NO	

(AR) APPLICATION DATE* (MONTH DAY YEAR): 10 27 86

B. TOPICAL REPORT REVIEWS

VENDOR & NAME	
REPORT IDENTIFICATION SYMBOL	
(DA) P—PROPRIETARY	
(EA) NP—NONPROPRIETARY VERSION	
(FA) NONPROPRIETARY REPORT	
(AR) REPORT DATE (MONTH DAY YEAR)	
(AS) ADDITIONAL INFORMATION REQUEST DATE (MONTH DAY YEAR)	
(AT) SUBMIT DATE (MONTH DAY YEAR)	
(AU) DATE LETTER TO VENDOR (MONTH DAY YEAR)	
STATUS	ACCEPTED / NOT ACCEPTED / WITHDRAWN

(AJ)(AK) REQUESTING REMARKS (Limit to 120 characters)

SECTION III. REVIEW DATA

REVIEWER'S SURNAME	(CA) REVIEWER'S INITIALS*	(CD) ESTIMATED HOURS	COMPLETION DATE (CE) ESTIMATED MONTH DAY YEAR	COMPLETION DATE (DD) ACTUAL MONTH DAY YEAR
	SFJ			

* REQUIRED ENTRIES

TAC # 71089

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

OCT 12 1988

MEMORANDUM FOR: Richard Cooper, Section Chief

FROM: Walt Rogers, Senior Resident Inspector

SUBJECT: TECHNICAL SPECIFICATION ALLOWED ELECTRICAL CONFIGURATION SUPPLYING POWER TO THE OPERABLE ECCS PUMPS IN COLD SHUTDOWN

The Technical Specification for Fermi 2 requires certain equipment while in cold shutdown. Technical Specification 3.5.2 requires two low pressure ECCS subsystems to be operable in Modes 4 and 5. This allows 2 core spray subsystems, 2 LPCI subsystems or 1 core spray/1 LPCI subsystem to be operable and comply with Technical Specification 3.5.2. Technical Specification 3.8.1.2 requires one division of onsite A.C. electrical power operable in Modes 4 and 5. However, the Technical Specifications do not require that at least one ECCS subsystem be powered by the operable onsite A.C. electrical power source.

In Inspection Report 87031, I identified that the licensee did in fact have this configuration. The situation was brought to license senior management attention, who indicated that they would try to minimize such a configuration. I pursued this matter with NRR (Marty Virgillo) who indicated that this was an oversight in the Technical Specifications.

I consider the onsite A.C. power source Technical Specification deficient for Modes 4 and 5 if it does not provide power to at least one subsystem of ECCS. I recommend that the NRC aggressively pursue a Technical Specification change to require such a tie between the ECCS and the onsite A.C. electrical power source.

Finally, I think the same consideration should be given RHR shutdown cooling when the licensee is exercising the action statement allowed under Technical Specification 3.4.9.2 to have alternate decay heat removal methods. Specifically, when an alternate decay heat removal method is taken credit for the other normal RHR shutdown cooling system should be powered from an operable onsite A.C. power source.

Sincerely,

R. W. Cooper, Jr. for

Walt Rogers

ENCLOSURE 6

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555
APR 10 1983

MEMORANDUM FOR: Charles E. Norelius, Director
Division of Project and Resident Programs

FROM: Darrell G. Eisenhut, Director
Division of Licensing

SUBJECT: NRR POSITION ON COMPONENT OPERABILITY WHEN A DIESEL GENERATOR IS INOPERABLE

REFERENCE: Memo from C. E. Norelius to D. G. Eisenhut, dated February 16, 1983; Subject: "Request for Technical Assistance - Technical Specification Interpretation".

Your memorandum to me dated February 16, 1983 (see reference) requested an interpretation by NRR on the subject of operability. The requested interpretation was whether the loss of emergency power to a system would render that system inoperable for the purpose of satisfying another system LCO. Your memorandum included a specific example dealing with the core spray system and the high pressure coolant injection system at the Duane Arnold facility.

It is our position that, in general, a system may be considered operable for the purpose of satisfying its own LCO and that of another system if only its emergency power supply is inoperable. This position assumes that all the provisions of Technical Specification 3.0.5 in Enclosure 1 of my April 10, 1980 letter to All Power Reactor Licensees are also satisfied, i.e., a system may be considered operable for the purpose of satisfying its applicable LCO when its emergency power source is inoperable provided the system's corresponding normal power source is operable, and its redundant train is also operable. These provisions have been incorporated into the Duane Arnold Technical Specifications as a clarification to the definition of Limiting Conditions for Operation. We realize that this position may result in a plant not being capable of fully satisfying the single failure criterion while operating in the degraded mode. However, we consider such operation to be acceptable since it would be of limited duration and the probability of an accident occurring with a concurrent failure of the remaining operable system is remote.

Contact: D. Brinkman, x24707

In your memorandum, you specifically asked: "With the Core Spray System degraded by loss of its emergency power source, is the Core Spray System to be considered operable to meet the High Pressure Coolant Injection System LCO?" Duane Arnold Technical Specification 3.5.D.2 is applicable to this example; it permits reactor operation to continue for up to seven days providing that during such seven days all active components of the ADS subsystem, the RCIC system, and LPCI subsystem and both core spray subsystems are operable. In accordance with our position, both core spray subsystems would be considered operable.

It should be noted, however, that our position is not intended to supersede the provisions of any technical specification which specifically requires the operability of diesel generators. For example, Duane Arnold Technical Specification 3.5.A.2 permits reactor operation to continue for up to seven days with one core spray subsystem inoperable provided the other core spray subsystem, the active components of the LPCI subsystem and the diesel generators are operable. Therefore, if one core spray subsystem and one diesel generator were inoperable, our position would not be applicable and continued operation would not be acceptable since Technical Specification 3.5.A.2 specifically requires the diesel generators to be operable.

Darrell G. Eisenhut, Director
Division of Licensing

Eisenhut
Miraglia-
Action

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

FEB 16 1983

MEMORANDUM FOR: D. G. Eisenhut, Director, Division of Licensing, NRR

FROM: C. E. Norelius, Director, Division of Project and Resident Programs

SUBJECT: REQUEST FOR TECHNICAL ASSISTANCE - TECHNICAL SPECIFICATION INTERPRETATION (AITS F03008283)

Attached is a memorandum from one of our Senior Resident Inspectors requesting a Technical Specification interpretation by NRR regarding the subject of operability. The purpose of my memorandum is to request that interpretation.

In your letter dated April 10, 1980, to "All Power Reactors", all licensees were requested to submit Technical Specification changes to change the definition of operable to read: "A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s). Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal and emergency electrical power sources, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are also capable of performing their related support function(s)".

The definition of operable was further clarified as follows: "When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and devices(s) are OPERABLE, or likewise satisfy the requirements of this specification". (emphasis added)

It is very clear from the above that system, subsystem, train, component or device is not inoperable for the purpose of satisfying the requirements of its LCO if the system, subsystem, etc., has merely lost its emergency power source. However, it is not clear to us whether the loss of emergency power to a system, subsystem, etc., would render that system, subsystem, etc., inoperable for the purpose of satisfying another system, subsystem, etc., LCO.

The attached memorandum addresses this specific example: With the Core Spray System degraded by loss of its emergency power source, is the Core Spray System to be considered operable to meet the High Pressure Coolant Injection System LCO?

We would appreciate a review of this issue by your staff and a response by April 15, 1983. Please contact Roger Walker of my staff on FTS 384-2565 if you have any questions regarding this matter.

C. E. Norelius

C. E. Norelius, Director
Division of Project and
Resident Programs

Attachment: As stated

cc: N. J. Chrissotimos, SRI
Quad Cities Station

R. P. McDonald

March 22, 1990

ELV-01469
0312

Docket No. 50-424

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

Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT
WAIVER OF COMPLIANCE

This letter is a follow-up written request for a waiver of compliance for Georgia Power Company's Vogtle Electric Generating Plant Unit 1. A one-time Technical Specification waiver of compliance was requested to make Technical Specification 3.0.4 not applicable to Technical Specification 3.8.1.2. This waiver was required to allow entry into Mode 5 with the operability of Diesel Generator 1A and its associated load sequencer unverified. The Plant Review Board has reviewed and approved this waiver.

This waiver was necessary because recent failures of the Unit 1, Train A Diesel Generator and its associated load sequencer rendered their operability questionable. Even though an extensive investigation is being conducted, the specific cause of the failure of this equipment has not been identified.

The current Reactor Coolant System water level is at mid-loop. This waiver allows tensioning of the Reactor Pressure Vessel head which also allows filling and venting of the Reactor Coolant System. Filling and venting the RCS will result in an increase in RCS water inventory and make the steam generators available for heat removal should they be required. As additional compensatory action, on-shift operators have been briefed on the condition of the equipment and how to respond by manually initiating a Diesel Generator emergency start should it be required.

This is a one-time request due to present plant conditions and equipment status.

Since Technical Specification 3.8.1.2 action requirements are the same for Modes 5 and 6 the probability of occurrence and consequences of an accident are not increased by this request and no significant safety hazards are involved. The additional inventory and addition of the steam generators as an available heat sink improves the margin of safety.

GeorgiaPower

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Since no change in plant design occurs as a result of this waiver of compliance and since the plant is being placed in an improved condition with respect to water inventory and available heat sinks, no adverse environmental effects are involved.

Sincerely,

R. P. McDonald

RPM/HWM/gm

xc: Georgia Power Company
Mr. C. K. McCoy
Mr. G. Bockhold, Jr.
Mr. R. M. Odom
Mr. P. D. Rushton
NORMS

U. S. Nuclear Regulatory Commission
Mr. S. D. Ebneter, Regional Administrator
Mr. T. A. Reed, Licensing Project Manager, NRR
Mr. R. F. Aiello, Senior Resident Inspector, Vogtle