

ENCLOSURE 1

PROPOSED TECHNICAL SPECIFICATION CHANGE

(TVA-BFN-TS-317T)

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LIST OF EFFECTIVE PAGES

TVA BFN TS-317T

UNIT 1

NA

UNIT 2

3.2/4.2-26
3.5/4.5-19
3.2/4.2-68

UNIT 3

NA

Note: This Amendment is effective only for unit 2 cycle 6.



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NOTES FOR TABLE 3.2.C

1. The minimum number of OPERABLE channels for each trip function is detailed for the STARTUP and RUN positions of the reactor mode selector switch. The SRM, IRM, and APRM (STARTUP mode), blocks need not be OPERABLE in "RUN" mode, and the APRM (flow biased) rod blocks need not be OPERABLE in "STARTUP" mode.

With the number of OPERABLE channels less than required by the minimum OPERABLE channels per trip function requirement, place at least one inoperable channel in the tripped condition within one hour.

2. W is the recirculation loop flow in percent of design. Trip level setting is in percent of rated power (3293 Mwt).
3. IRM downscale is bypassed when it is on its lowest range.
4. SRMs A and C downscale functions are bypassed when IRMs A, C, E, and G are above range 2. SRMs B and D downscale function is bypassed when IRMs B, D, F, and H are above range 2.

SRM detector not in startup position is bypassed when the count rate is ≥ 100 CPS or the above condition is satisfied.

5. During repair or calibration of equipment, not more than one SRM or RBM channel nor more than two APRM or IRM channels may be bypassed. Bypassed channels are not counted as OPERABLE channels to meet the minimum OPERABLE channel requirements. Refer to section 3.10.B for SRM requirements during core alterations.
6. IRM channels A, E, C, G all in range 8 or above bypasses SRM channels A and C functions.

IRM channels B, F, D, H all in range 8 or above bypasses SRM channels B and D functions.

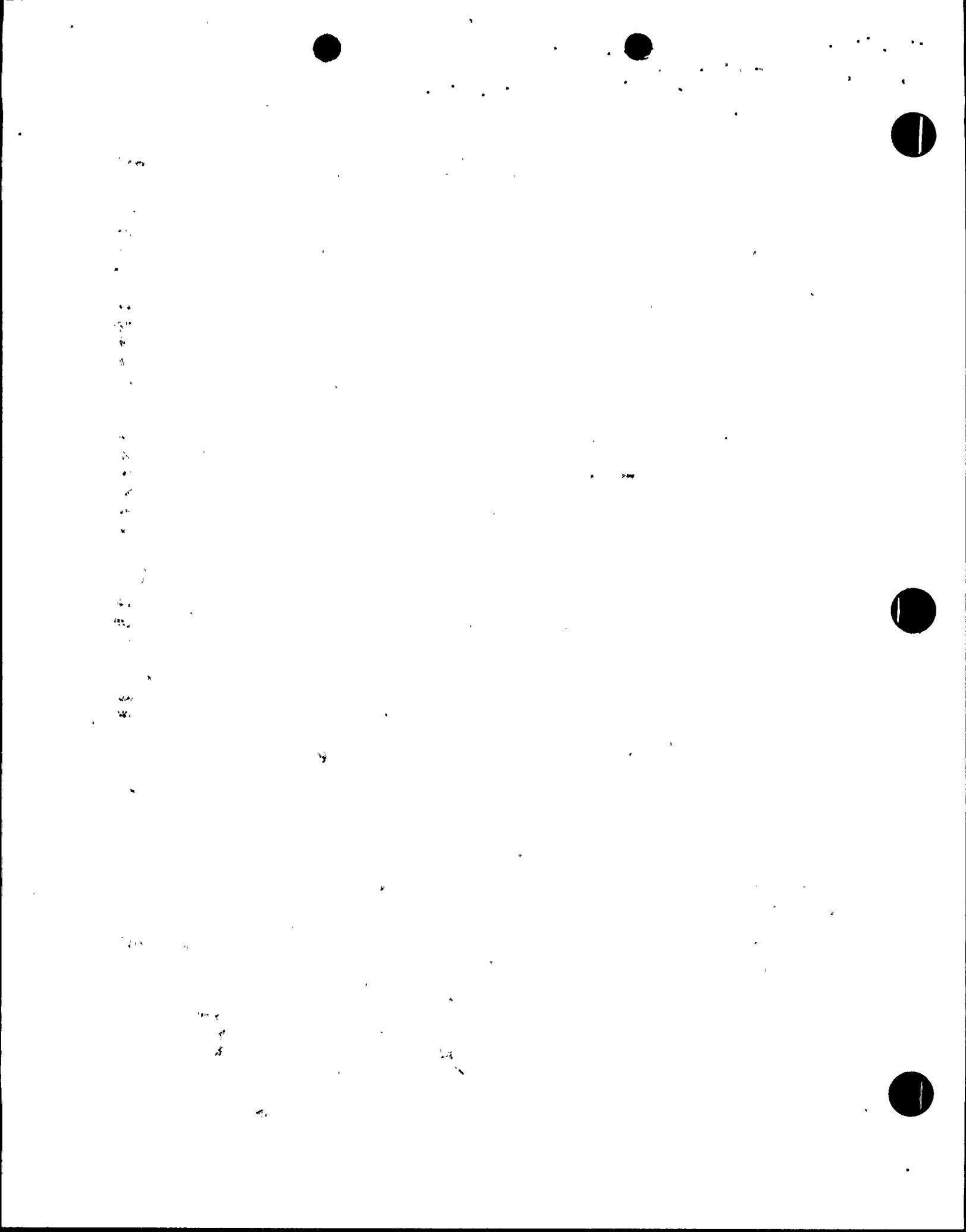
7. The following operational restraints apply to the RBM only.
 - a. Both RBM channels are bypassed when reactor power is ≤ 30 percent or when a peripheral (edge) control rod is selected.
 - b. The RBM need not be OPERABLE in the "startup" position of the reactor mode selector switch.
 - c. Two RBM channels are provided and only one of these may be bypassed with the console selector. The other channel may also be defeated only if the conditions of "e" or "f" are met. If the inoperable channel cannot be restored within 24 hours, and the conditions of "e" or "f" are not met, the inoperable channel shall be placed in the tripped condition within one hour.
 - d. With both RBM channels inoperable, and the conditions of "e" or "f" not met, place at least one inoperable rod block monitor channel in the tripped condition within one hour.



NOTES FOR TABLE 3.2.C (Cont'd)

7. (Continued)

- e. The RBM need not be OPERABLE when reactor power is ≥ 90 percent and MCPR is ≥ 1.40 .
 - f. The RBM need not be OPERABLE when reactor power is < 90 percent and MCPR is ≥ 1.70 .
8. This function is bypassed when the mode switch is placed in RUN.
9. This function is only active when the mode switch is in RUN. This function is automatically bypassed when the IRM instrumentation is OPERABLE and not high.
10. The inoperative trips are produced by the following functions:
- a. SRM and IRM
 - (1) Local "operate-calibrate" switch not in operate.
 - (2) Power supply voltage low.
 - (3) Circuit boards not in circuit.
 - b. APRM
 - (1) Local "operate-calibrate" switch not in operate.
 - (2) Less than 14 LPRM inputs.
 - (3) Circuit boards not in circuit.
 - c. RBM
 - (1) Local "operate-calibrate" switch not in operate.
 - (2) Circuit boards not in circuit.
 - (3) RBM fails to null.
 - (4) Less than required number of LPRM inputs for rod selected.
11. Detector traverse is adjusted to 114 ± 2 inches, placing the detector lower position 24 inches below the lower core plate.
12. This function may be bypassed in the SHUTDOWN or REFUEL mode. If this function is inoperable at a time when OPERABILITY is required the channel shall be tripped or administrative controls shall be immediately imposed to prevent control rod withdrawal.
13. RBM upscale flow-biased setpoint clipped at 106 percent rated reactor power.



3.2 BASES (Cont'd)

The instrumentation which initiates CSCS action is arranged in a dual bus system. As for other vital instrumentation arranged in this fashion, the specification preserves the effectiveness of the system even during periods when maintenance or testing is being performed. An exception to this is when logic functional testing is being performed.

The control rod block functions are provided to prevent excessive control rod withdrawal so that MCPR does not decrease to 1.07. The trip logic for this function is 1-out-of-n: e.g., any trip on one of six APRMs, eight IRMs, or four SRMs will result in a rod block.

A General Electric study, GE-NE-770-06-0392 shows for the Unit 2 cycle 6 core that if the initial MCPR is as specified in item 7e or 7f of Table 3.2.C, then no single rod withdrawal error can cause the MCPR to decrease below the MCPR safety limit. When core operating conditions have been verified to be within the limits of items 7e or 7f of Table 3.2.C, the RBM is not required. When the RBM is required, the minimum instrument channel requirements apply. These requirements assure sufficient instrumentation to assure the single failure criteria is met. The minimum instrument channel requirements for the RBM may be reduced by one for maintenance, testing, or calibration. This does not significantly increase the risk of an inadvertent control rod withdrawal, as the other channel is available, and the RBM is a backup system to the written sequence for withdrawal of control rods.

The APRM rod block function is flow biased and prevents a significant reduction in MCPR, especially during operation at reduced flow. The APRM provides gross core protection; i.e., limits the gross core power increase from withdrawal of control rods in the normal withdrawal sequence. The trips are set so that MCPR is maintained greater than 1.07.

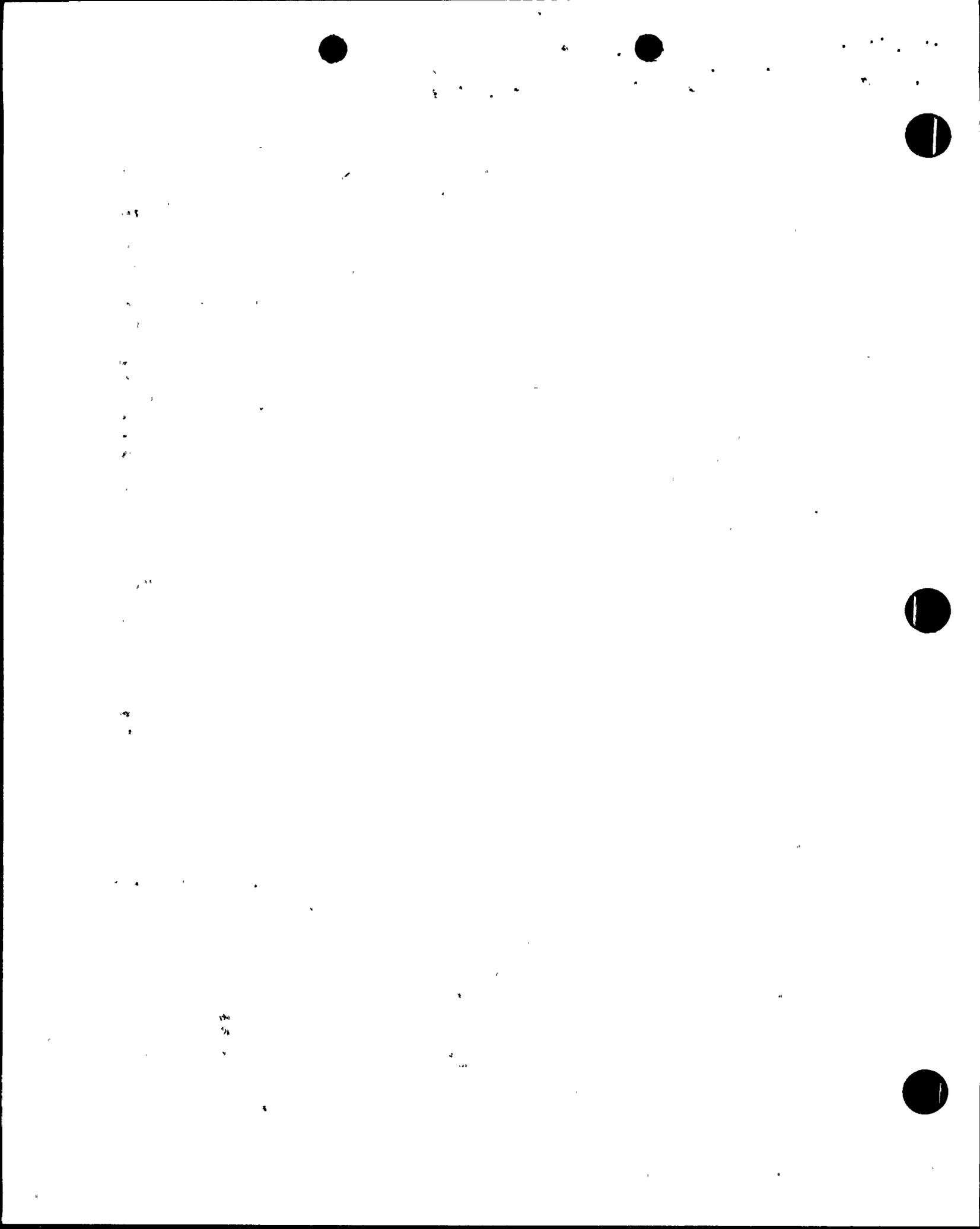
The RBM rod block function provides local protection of the core; i.e., the prevention of critical power in a local region of the core, for a single rod withdrawal error from a limiting control rod pattern.

If the IRM channels are in the worst condition of allowed bypass, the sealing arrangement is such that for unbypassed IRM channels, a rod block signal is generated before the detected neutrons flux has increased by more than a factor of 10.

A downscale indication is an indication the instrument has failed or the instrument is not sensitive enough. In either case the instrument will not respond to changes in control rod motion and thus, control rod motion is prevented.

The refueling interlocks also operate one logic channel, and are required for safety only when the mode switch is in the refueling position.

For effective emergency core cooling for small pipe breaks, the HPCI system must function since reactor pressure does not decrease rapid enough to allow either core spray or LPCI to operate in time. The automatic pressure relief function is provided as a backup to the HPCI in the event the HPCI does not operate. The arrangement of the tripping contacts is such as to provide this function when necessary and minimize spurious operation. The trip settings given in the specification are



LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

3.5.K Minimum Critical Power Ratio (MCPR)

Except when the provisions of Note 7 of Table 3.2.C are being employed due to the inoperability of the Rod Block Monitor, the minimum critical power ratio (MCPR) as a function of scram time and core flow, shall be equal to or greater than shown in Figure 3.5.K-1 multiplied by the K_f shown in Figure 3.5.2, where:

$$\gamma = 0 \text{ or } \frac{\tau_{ave} - \tau_B}{\tau_A - \tau_B}, \text{ whichever is greater}$$

$$\tau_A = 0.90 \text{ sec (Specification 3.3.C.1 scram time limit to 20\% insertion from fully withdrawn)}$$

$$\tau_B = 0.710 + 1.65 \left[\frac{N}{n} \right]^{\frac{1}{2}} (0.053) \text{ [Ref.2]}$$

$$\tau_{ave} = \frac{\sum_{i=1}^n \tau_i}{n}$$

n = number of surveillance rod tests performed to date in cycle (including BOC test).

τ_i = Scram time to 20% insertion from fully withdrawn of the i^{th} rod.

N = total number of active rods measured in Specification 4.3.C.1 at BOC.

If at any time during steady-state operation it is determined by normal surveillance that the limiting value for MCPR is being exceeded, action shall be initiated within 15 minutes to restore operation to within the prescribed limits. If the steady-state MCPR is not returned to within the prescribed limits within two (2) hours, the reactor shall be brought to the Cold Shutdown condition within 36 hours, surveillance and corresponding action shall continue until reactor operation is within the prescribed limits.

4.5.K Minimum Critical Power Ratio (MCPR)

1. MCPR shall be determined daily during reactor power operation at $\geq 25\%$ rated thermal power and following any change in power level or distribution that would cause operation with a limiting control rod pattern as described in the bases for Specification 3.3.

2. Except as provided by Note 7 of Table 3.2.C, the MCPR limit shall be determined for each fuel type 8X8, 8X8R, P8X8R, from Figure 3.5.K-1, respectively, using:

- a. $\gamma = 0.0$ prior to initial scram time measurements for the cycle, performed in accordance with Specification 4.3.C.1.
- b. γ as defined in Specification 3.5.K following the conclusion of each scram-time surveillance test required by Specifications 4.3.C.1 and 4.3.C.2.

The determination of the limit must be completed within 72 hours of each scram-time surveillance required by Specification 4.3.C.



ENCLOSURE 2

DESCRIPTION AND JUSTIFICATION
BROWNS FERRY NUCLEAR PLANT (BFN)

REASON FOR CHANGE:

The purpose for this change is to eliminate the requirement for the Rod Block Monitor (RBM) system when the Minimum Critical Power Ratio (MCPR) is within specified limits.

Description of Proposed TS Amendment:

The proposed amendment introduces changes to allow the RBM to be inoperable when the MCPR is within specified limits. The analysis which supports this change is applicable to the Unit 2 cycle 6 core design only. This change will expire at the end of the current fuel cycle.

Existing TSs:

The existing TSs state in note 7 to table 3.2.C:

7. The following operational restraints apply to the RBM only.
 - a. Both RBM channels are bypassed when reactor power is ≤ 30 percent and when a peripheral control rod is selected.
 - b. The RBM need not be OPERABLE in the "startup" position of the reactor mode selector switch.
 - c. Two RBM channels are provided and only one of these may be bypassed from the console. If the inoperable channel cannot be restored within 24 hours, the inoperable channel shall be placed in the tripped condition within one hour.
 - d. With both RBM channels inoperable, place at least one inoperable rod block monitor channel in the tripped condition within one hour.



ENCLOSURE 2 (CONTINUED)

DESCRIPTION AND JUSTIFICATION
BROWNS FERRY NUCLEAR PLANT (BFN)

The current Bases for 3.2 states:

The minimum instrument channel requirements assure sufficient instrumentation to assure the single failure criteria is met. The minimum instrument channel requirements for the RBM may be reduced by one for maintenance, testing, or calibration. This does not significantly increase the risk of an inadvertent control rod withdrawal, as the other channel is available, and the RBM is a backup system to the written sequence for withdrawal of control rods.

The existing TSS state for section 3.5.K:

The minimum critical power ratio (MCPR) as a function of scram time and core flow, shall be equal to or greater than shown in Figure 3.5.K-1 . . .

The existing TSS state for section 4.5.K.2:

2. The MCPR limit shall be determined for each fuel type 8X8, 8X8R, P8X8R, from Figure 3.5.K.1, respectively, using: . .

Proposed Change:

The proposed change would modify note 7 of table 3.2.C as follows:

7. The following operational restraints apply to the RBM only.
 - a. Both RBM channels are bypassed when reactor power is ≤ 30 percent or when a peripheral (edge) control rod is selected.
 - b. The RBM need not be OPERABLE in the "startup" position of the reactor mode selector switch.
 - c. Two RBM channels are provided and only one of these may be bypassed



ENCLOSURE 2 (CONTINUED)

DESCRIPTION AND JUSTIFICATION
BROWNS FERRY NUCLEAR PLANT (BFN)

with the console selector. The other channel may also be defeated only if the conditions of "e" or "f" are met. If the inoperable channel cannot be restored within 24 hours, and the conditions of "e" or "f" are not met, the inoperable channel shall be placed in the tripped condition within one hour.

- d. With both RBM channels inoperable, and the conditions of "e" or "f" not met, place at least one inoperable rod block monitor channel in the tripped condition within one hour.
- e. The RBM need not be OPERABLE when reactor power is ≥ 90 percent and MCPR is ≥ 1.40 .
- f. The RBM need not be OPERABLE when reactor power is < 90 percent and MCPR is ≥ 1.70 .

The Bases for 3.2 would be changed to:

A General Electric study, GE-NE-770-06-0392 shows for the Unit 2 cycle 6 core that if the initial MCPR is as specified in item 7e or 7f of table 3.2.C, then no single rod withdrawal error can cause the MCPR to decrease below the MCPR safety limit. When core operating conditions have been verified to be within the limits of items 7e or 7f of table 3.2.C, the RBM is not required. When the RBM is required, the minimum instrument channel requirements apply. These requirements assure sufficient instrumentation to assure the single failure criteria is met. The minimum instrument channel requirements for the RBM may be reduced by one for maintenance, testing, or calibration. This does not significantly increase the risk of an inadvertent control rod withdrawal, as the other channel



ENCLOSURE 2 (CONTINUED)

DESCRIPTION AND JUSTIFICATION
BROWNS FERRY NUCLEAR PLANT (BFN)

will be available when the RBM is required, and the RBM is a backup system to the written sequence for withdrawal of control rods.

Section 3.5.K would be changed as follows:

Except when the provisions of note 7 of table 3.2.C are being employed due to the inoperability of the Rod Block Monitor, the minimum critical power ratio (MCPR) as a function of scram time and core flow, shall be equal to or greater than shown in Figure 3.5.K-1 . . .

Section 4.5.K.2 is to be changed as follows:

2. Except as provided by note 7 of table 3.2.C, the MCPR limit shall be determined for each fuel type . . .

JUSTIFICATION FOR THE CHANGE:

The proposed amendment is beneficial in that it allows control rod withdrawal operations appropriate for proper core management at times when the RBM may be both inoperable and unneeded. The proposed amendment is safe because when there are no operable RBM channels, control rod withdrawal operations are limited to only those conditions where the MCPR is high enough that intervention by the RBM is not needed. The values of MCPR necessary to support rod withdrawal operation when RBM is inoperable are identified in study GE-NE-770-06-0392. The GE study is applicable to the Unit 2 cycle 6 core only. Maintenance of MCPR within limits was previously required by TSS. Changing the value of the required MCPR limits does not add any new administrative requirements.

Substitution of the word "or" for "and" and addition of "(edge)" in note 7a of table 3.2.C is appropriate to clarify the operation of the system. Also, to clarify system operation, the words "from the console" were changed to "with the console selector" in note 7c.

ENCLOSURE 3

PROPOSED DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION
BROWNS FERRY NUCLEAR PLANT (BFN)

Bases for the Proposed No Significant Hazards Consideration
Determination:

The NRC has provided standards in 10CFR50.92 (c) for determining when a significant hazards consideration is involved. A discussion of each of those standards is as follows:

1. The proposed amendment does not cause a significant increase in the probability or consequences of an accident previously evaluated.

The purpose of the Rod Block Monitor (RBM) system is to ensure that the Minimum Critical Power Ratio (MCPR) does not decrease below the fuel integrity safety limit during a rod withdrawal error event. The RBM accomplishes this by terminating an erroneous rod withdrawal event which could be in progress due to a human error. Since the RBM is designed to intervene after an error is already in progress, rather than to prevent the error, the probability of such an error being committed is not affected by this amendment. MCPR is required to be verified within the allowable range whenever reactor power is greater than or equal to 25% and following any change in power level or distribution which could cause operation on a thermal hydraulic limit. This amendment allows rod withdrawal operations with both RBM channels inoperable only when restrictive limits for MCPR are met. Since the proposed amendment only changes the range of allowable values for MCPR rather than changing the monitoring requirements, it does not increase the probability of an administrative error that could cause the MCPR to be violated. As shown by study GE-NE-770-06-0392, when the core is operated within the limits for MCPR specified in the proposed amendment, if an erroneous rod withdrawal were to occur, the MCPR would not decrease below the allowable safety limit even without the intervention of the RBM. The higher MCPR requirements specified by the proposed amendment for operations without an operable RBM are within previously analyzed operating MCPR limits and thus are conservative for all other analyzed accidents and transients as well. For the above reasons, this amendment will not cause a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.



ENCLOSURE 3

PROPOSED DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION
BROWNS FERRY NUCLEAR PLANT (BFN)

The proposed amendment substitutes more restrictive administrative MCPR limits during rod withdrawals when RBM is inoperable to ensure that the automatic function of the RBM will not be required. No single administrative error could lead to a failure to adequately monitor MCPR and also to a rod withdrawal error, therefore a new failure mode related to administrative requirements is not created. The proposed amendment does not cause or allow any alteration to any release barrier, protection system, or accident mitigation system other than the RBM as discussed above. The plant is not subjected to any new operating modes or environmental conditions as a result of the proposed amendment.

3. The proposed amendment does not involve a significant reduction in a margin of safety.

The RBM trip functions are designed to prevent local fuel damage as a result of a single rod withdrawal error. The proposed amendment allows the substitution of administrative limits for MCPR to ensure that rod motion will not have to be halted to prevent local fuel damage for a single rod withdrawal error. As shown by GE study GE-NE-770-06-0392, a postulated single rod withdrawal error under the provisions specified under this amendment would provide protection which is not significantly less than that which would be provided by the RBM. The MCPR requirements specified by the proposed amendment are within the allowable MCPR limits for normal plant operations therefore, analyses of events other than rod withdrawal errors are not adversely affected.

Based on the above, this proposed amendment involves no significant hazards consideration.



ENCLOSURE 4

GENERAL ELECTRIC REPORT GE-NE-770-06-0392, MARCH 1992

AND

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION
FROM PUBLIC DISCLOSURE



General Electric Company

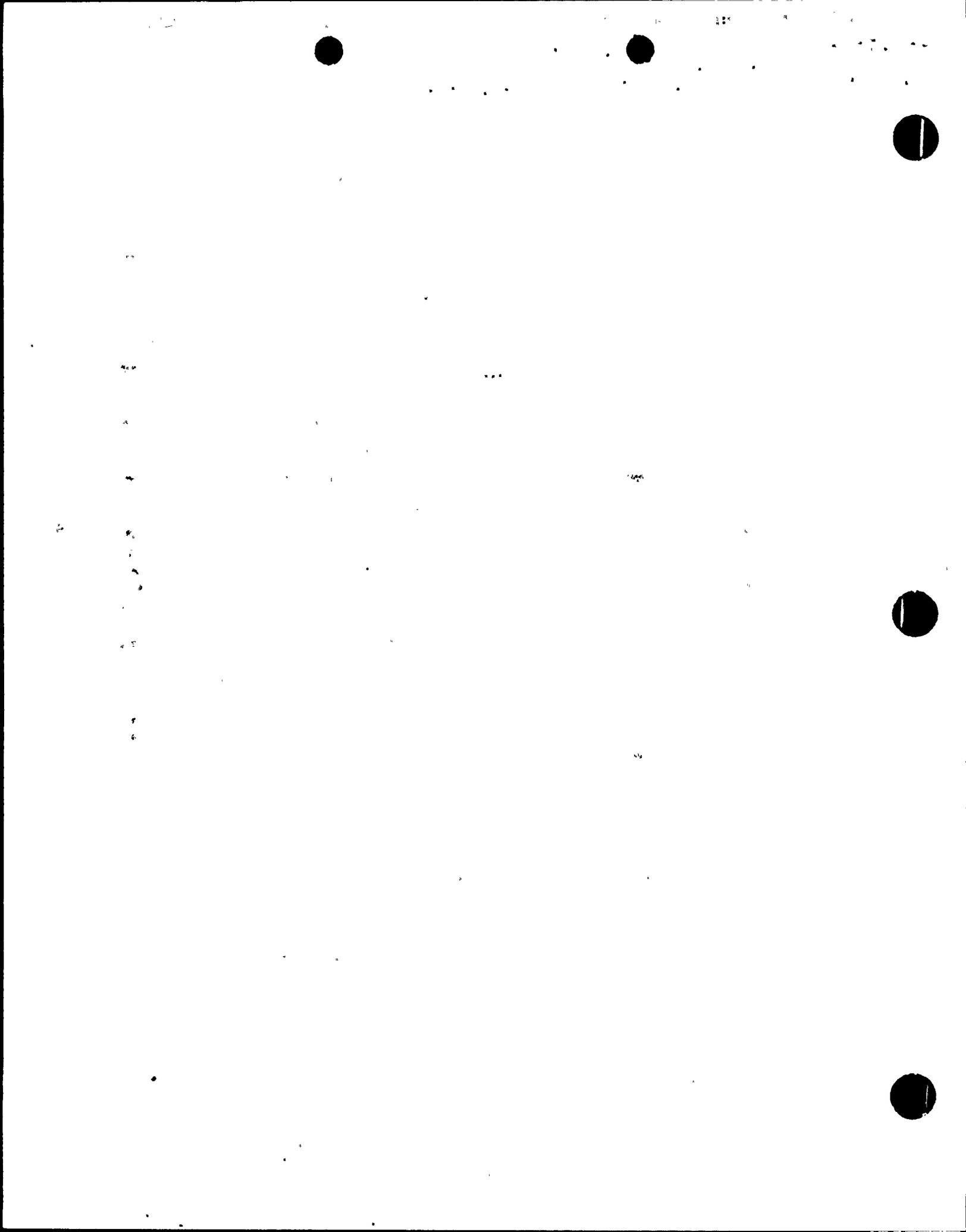
AFFIDAVIT

I, Robert C. Mitchell, being duly sworn, depose and state as follows:

1. I am Manager, Safety, Environmental & Quality Assurance, General Electric Company, and have been delegated the function of reviewing the information described in paragraph 2 which is sought to be withheld from public disclosure and have been authorized to apply for its withholding.
2. The information sought to be withheld is contained in a report to Tennessee Valley Authority, GE-NE-770-06-0392, March, 1992. The GE Proprietary portions are identifiable by the "GE Proprietary Information" designation at the top of the page.
3. In designating material as proprietary, General Electric utilizes the definition of proprietary information and trade secrets set forth in the American Law Institute's Restatement of Torts, Section 757. This definition provides:

"A trade secret may consist of any formula, pattern, device or compilation of information which is used in one's business and which gives him an opportunity to obtain an advantage over competitors who do not know or use it.... A substantial element of secrecy must exist, so that, except by the use of improper means, there would be difficulty in acquiring information.... Some factors to be considered in determining whether given information is one's trade secret are: (1) the extent to which the information is known outside of his business; (2) the extent to which it is known by employees and others involved in his business; (3) the extent of measures taken by him to guard the secrecy of the information; (4) the value of the information to him and to his competitors; (5) the amount of effort or money expended by him in developing the information; (6) the ease or difficulty with which the information could be properly acquired or duplicated by others."

4. Some examples of categories of information which fit into the definition of proprietary information are:
 - a. Information that disclosed a process, method or apparatus where prevention of its use by General Electric's competitors without license from General Electric constitutes a competitive economic advantage over other companies;
 - b. Information consisting of supporting data and analyses, including test data, relative to a process, method or apparatus, the application of which provide a competitive economic advantage, e.g., by optimization or improved marketability;
 - c. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality or licensing of a similar product;
 - d. Information which reveals cost or price information, production capacities, budget levels or commercial strategies of General Electric, its customers or suppliers;



Affidavit

- e. Information which reveals aspects of past, present or future General Electric customer-funded development plans and programs of potential commercial value to General Electric;
 - f. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection;
 - g. Information which General Electric must treat as proprietary according to agreements with other parties.
5. Initial approval of proprietary treatment of a document is typically made by the Subsection manager of the originating component, who is most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within the Company is limited on a "need to know" basis and such documents are clearly identified as proprietary.
 6. The procedure for approval of external release of such a document typically requires review by the Subsection Manager, Project manager, Principal Scientist or other equivalent authority, by the Subsection Manager of the cognizant Marketing function (or delegate) and by the Legal Operation for technical content, competitive effect and determination of the accuracy of the proprietary designation in accordance with the standards enumerated above. Disclosures outside General Electric are generally limited to regulatory bodies, customers and potential customers and their agents, suppliers and licensees, and then only with appropriate protection by applicable regulatory provisions or proprietary agreements.
 7. The document mentioned in paragraph 2 above has been evaluated in accordance with the above criteria and procedures and has been found to contain information which is proprietary and which is customarily held in confidence by General Electric.
 8. The information to the best of my knowledge and belief has consistently been held in confidence by the General Electric Company, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties have been made pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence.
 9. Public disclosure of the information sought to be withheld is likely to cause substantial harm to the competitive position of the General Electric Company and deprive or reduce the availability of profit making opportunities because it would provide other parties, including competitors, with valuable information.



Affidavit

STATE OF CALIFORNIA)
COUNTY OF SANTA CLARA) ss: v

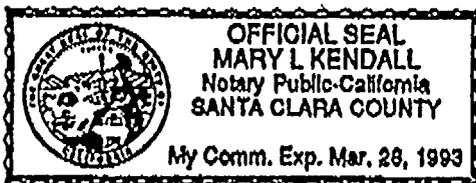
Robert C. Mitchell, being duly sworn, deposes and says:

That he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Executed at San Jose, California, this 12th day of MAY 1992.

Robert C. Mitchell
Robert C. Mitchell
General Electric Company

Subscribed and sworn before me this 12th day of May 1992.



Mary L. Kendall
Notary Public - California
Santa Clara County

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