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AmerGen
An Exelon Company

10 CFR 50.90

2130-06-20350
September 28, 2006

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Oyster Creek Nuclear Generating Station
Facility Operating License No. DPR-16
NRC Docket No. 50-219

Subject: Technical Specification Change Request No. 339 – License Amendment Request to Revise Technical Specification Definitions of Channel Calibration, Channel Check and Channel Test

Pursuant to 10 CFR 50.90, "Application for amendment of license or construction permit," AmerGen Energy Company, LLC (AmerGen), hereby requests the following amendment to the Technical Specifications (TS), Appendix A of Operating License No. DPR-16 for Oyster Creek Nuclear Generating Station (OCNGS).

The proposed changes revise the definitions of Channel Calibration, Channel Check and Channel Test in accordance with the BWR/4 Standard Technical Specifications (STS), NUREG-1433, Rev 3.0. This license amendment request proposes to adopt the aforementioned TS definitions contained in NUREG-1433, without deviation.

Attachment 1 to this letter provides the evaluation of the proposed changes and the no significant hazards consideration determination. Attachment 2 provides the existing TS pages marked-up to show the proposed changes. Attachment 3 provides the TS Bases changes, which are provided for information only, and do not require NRC approval.

AmerGen requests approval of the proposed amendment by September 28, 2007. Once approved, the amendment shall be implemented within 60 days of issuance.

These proposed changes have been reviewed by the OCNGS Plant Operations Review Committee, and approved by the Nuclear Safety Review Board in accordance with Section 6.5 of the OCNGS Technical Specifications.

AmerGen has concluded that the proposed changes present no significant hazards consideration under the standards set forth in 10CFR 50.92.

No new regulatory commitments are established by this submittal.

Pursuant to 10 CFR 50.91(b)(1), "Notice for public comment; State consultation," paragraph (b), AmerGen Energy Company, LLC is notifying the State of New Jersey of this application for changes to the TS by transmitting a copy of this letter and its attachments to the designated State Official.

If you have any questions or require additional information, please contact Mr. Frank Mascitelli at (610) 765-5512.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 28th day of September 2006.

Respectfully,

Pamela B. Cowan
Director - Licensing & Regulatory Affairs
AmerGen Energy Company, LLC

Attachments: 1) Oyster Creek Technical Specification Change Request No. 339, Evaluation of Proposed Changes
2) Oyster Creek Technical Specification Change Request No. 339, Proposed Technical Specification (Marked-Up Pages)
3) Oyster Creek Technical Specification Change Request No. 339, Proposed Technical Specification Bases (Marked-Up Pages)

cc: S. J. Collins, Administrator, Region I, USNRC
M. S. Ferdas, USNRC Senior Resident Inspector, Oyster Creek
G. E. Miller, USNRC Project Manager, Oyster Creek
P. Baldauf, Assistant Director, Bureau of Nuclear Engineering, New Jersey Department of Environmental Protection
File No. 06034

Attachment 1

Oyster Creek Nuclear Generating Station

Docket No. 50-219

License No. DPR-16

Technical Specification Change Request No. 339

"Revise Technical Specification Definitions of Channel Calibration, Channel Check and Channel Test"

Evaluation of Proposed Changes

1.0 DESCRIPTION

AmerGen Energy Company, LLC, (AmerGen) licensee under Facility Operating License No. DPR-16 for Oyster Creek Nuclear Generating Station (OCNGS), requests that the Technical Specifications (TS) contained in Appendix A to the Operating License be amended as proposed herein to permit changes to the definitions of Channel Check, Channel Calibration and Channel Test. The changes will allow for overlapping/ sequential testing of the Reactor Protection System (RPS) logic.

This proposed License Amendment Request (LAR) involves revising TS Section 1.19, Instrumentation Surveillance Definitions, capitalizing the definitions in applicable TS sections, and revising the associated TS Bases section 4.1, Protective Instrumentation, to allow for overlapping/sequential testing in a manner typically performed at other Exelon BWR sites.

These proposed definition changes are identical to the current definitions contained in the latest approved version of the BWR/4 Standard Technical Specifications (STS), NUREG-1433, Rev 3.0. The meanings of the definitions are not changed by the proposed revisions.

This LAR provides a discussion and description of the proposed TS changes, a safety assessment of the proposed TS changes, information supporting a finding of No Significant Hazards Consideration, and information supporting an Environmental Assessment.

2.0 PROPOSED CHANGE

Proposed Change 1: In TS section 1.19 revise the Channel Check definition to read as follows:

> "A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter."

Proposed Change 2: In TS section 1.19 rename the Channel Test to Channel Functional Test. The revised definition is to read as follows:

> "A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps."

Proposed Change 3: In TS section 1.19 revise the Channel Calibration definition to read as follows:

> "A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY and the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance

temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps."

Proposed Change 4: Perform administrative changes to applicable sections of Technical Specifications to capitalize new definitions:

1. Change "Channel Functional Test" to "CHANNEL FUNCTIONAL TEST" in note 'ee' of Table 3.1.1.
2. Change "Channel Test" to "CHANNEL FUNCTIONAL TEST" in note 'a' of Table 4.1.1.
3. Change "channel calibration" to "CHANNEL CALIBRATION" in H.3 on page 4.3-2.
4. Change "Check, Calibrate, Test" to "CHANNEL CHECK, CHANNEL CALIBRATION, CHANNEL FUNCTIONAL TEST" in 4.4.A.5 on page 4.4-1.
5. Change "channel check and channel calibration" to "CHANNEL CHECK and CHANNEL CALIBRATION" in 4.12 Specification on page 4.12-1.
6. Change "Channel Check" and "Channel Calibration" column titles to "CHANNEL CHECK" and "CHANNEL CALIBRATION" in Table 4.12-1 on page 4.12-2.
7. Change "Channel Check" and "Channel Calibration" in 4.13 Specifications A, B, C, E and F to "CHANNEL CHECK" and "CHANNEL CALIBRATION" on page 4.13-1.
8. Change "CHECK" and "CALIBRATION" column titles in TABLE 4.13-1 to "CHANNEL CHECK" and "CHANNEL CALIBRATION" on page 4.13-2.
9. Change "Channel calibration" in reference note *** to "CHANNEL CALIBRATION" on page 4.13-2.
10. Change "FUNCTIONAL TEST" column title in Table 4.15.2 to "CHANNEL FUNCTIONAL TEST" on page 4.15-2.

Proposed Change 5: Revise applicable TS Bases 4.1, Protective Instrumentation, page 4.1-2, to read as follows:

Insert new paragraph:

"The CHANNEL FUNCTIONAL TEST verifies instrument channel operability. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change in state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST or CHANNEL CALIBRATION of a relay. This is acceptable because all the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specification tests."

Revise the following paragraph, page 4.1-2 to reads as follows:

"The logic of the instrument safety systems in Table 4.1.1 is such that testing the instrument channels trips the trip system to verify that it is OPERABLE. The testing may be performed by means of any series of sequential, overlapping, or total channel steps. However, certain systems require coincident instrument channel trips to completely test their trip systems. Therefore, Table 4.1.2 specifies the minimum trip system test frequency for these tripped systems. This assures that all trip systems for protective instrumentation are adequately tested, from sensors through the trip system."

Revise the following sentence, page 4.1-3 to read as follows:

"The test of the automatic scram contactors can be performed as part of the CHANNEL CALIBRATION or CHANNEL FUNCTIONAL TEST of Scram Functions or by use of the subchannel test switches."

3.0 BACKGROUND

Exelon BWRs have significantly reduced the vulnerabilities associated with causing a scram event during surveillance testing of the RPS systems. The possibility of scram events was reduced by limiting the number and duration of channel half-scram conditions that the previous testing methodology caused. The previous testing methodology tested the entire channel during required channel functional tests and calibrations. The new testing methodology tests and calibrates the entire channel by means of any series of sequential, overlapping, or total channel steps. This testing methodology allows for the entire channel to be tested and calibrated under required surveillance frequencies, but minimizes the number and duration of time the RPS system is in a half-scram condition. Minimizing the time and duration of half-scram conditions during surveillances, in turn, reduces the possibility of receiving a full-scram due to spurious half-scram signals from the non-tested channel.

The improved testing methodology has not been implemented at OCNGS because of the current Technical Specification definition of channel calibration. The definition states, in part, that the calibration shall encompass the entire channel, including equipment action, alarm or trip. Literal interpretation means that every calibration must include the trip, resulting in a half-scram condition.

This LAR proposes to adopt the standard BWR/4 STS instrument definitions. This will allow OCNGS the option of implementing the improved testing methodology by means of any series of sequential, overlapping, or total channel steps.

The revised definitions of the INSTRUMENTATION SURVEILLANCE DEFINITIONS eliminate a current ambiguity and possible misinterpretation of Channel Check, Channel Calibration and Channel Functional Test. The current definitions use phrases "alarm, trip initiating action, equipment actuation, alarm or trip." There is ambiguity in the application of these phrases and whether the list is inclusive or representative. Therefore, this list has been replaced with the phrase "all devices in the channel required for channel OPERABILITY." This phrase clarifies that the components that are required to be checked, calibrated or tested are only those that are necessary for the channel to perform its safety function. The list of components is eliminated from the definition. These changes will clarify the requirements and allow for consistent application of the definitions, tests, and calibrations.

The revised definitions delete the statement at the end of the Channel Calibration definition stating, "Calibration shall encompass the entire channel, including equipment actuation, alarm or trip." This deletion will remove the conflict between the verbatim reading of the definitions where it is stated "... of all devices in the channel required for channel OPERABILITY... " and the flexibility of testing permitting a successful test to be the verification of the change of state of relays/contacts required for operability.

The revised definition of Channel Functional Test allows for the actual injection of a signal to take advantage of an actual initiating signal and actual performance of the instrument channel to fulfill surveillance requirements.

The revised definition of Channel Functional Test adds a clarifying statement involving the calibration of resistance temperature detector (RTD) and thermocouple (TC) sensors to the instrument channel calibration definition. The revised definition permits an in-place qualitative assessment of the sensor behavior and to allow for a signal to be injected downstream of the RTD or TC sensor for the purpose of calibrating the remainder of the channel.

In the Bases of the Protective Instrumentation Surveillance Requirements a discussion statement is added to indicate that, "A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what constitutes an acceptable channel functional test or channel calibration of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specification tests." This statement is necessary to clarify what verification is required to support a successful test. This Bases statement to address the specifics of how the tests as defined may be performed is appropriate and acceptable because: 1) the entire scope of the required test is still being performed - only the acceptance criteria is modified to require verification of a certain portion of the instrument channel functions to have a successful test, 2) all the devices of the channel required for OPERABILITY are being tested, and 3) there is provision for the acceptance of the verification of change of state of a single contact of the relay.

4.0 TECHNICAL ANALYSIS

OCNGS is proposing to revise the channel check, channel calibration and channel test definitions by (1) deleting the list of specific devices required to be included in the calibration and functional test definitions, (2) replacing the list of devices with a statement that the calibration or test is to encompass all devices in the channel required for OPERABILITY, (3) deleting the phrase that the entire channel is calibrated or tested, (4) allowing the injection of an actual signal in lieu of a simulated signal for functional testing, (5) allowing for in place qualitative assessments of non-adjustable RTD and TC sensors, and (6) properly capitalizing these definitions in applicable TS sections, in accordance with administrative requirements of writing standard technical specification definitions.

The proposed definitions eliminate the current ambiguity and possible misinterpretation of the existing definitions of channel check, channel calibration and channel test. The ambiguity being eliminated is in the application of the list of components used in the definitions. Replacing this list with the phrase "all devices in the channel required for channel OPERABILITY" clarifies that the components that are required to be calibrated or tested are only those that are necessary for the channel to perform its safety function. In addition, the ambiguity of whether or not the entire channel test or calibration must include the actuating trip device each time the test or calibration is performed is removed by allowing the entire channel to be tested by means of any sequential, overlapping of total channel steps.

OCNGS is a custom Technical Specifications BWR/2 plant. The proposed standard definitions are derived from the Standard Technical Specification BWR/4 plants. All applicable Technical Specifications instrument sections referencing and or using the instrument terms “check”, “test”,

"functional test" and "calibrate/calibration" terms were reviewed in context of using the proposed standard instrument definitions of "CHANNEL CHECK", "CHANNEL CALIBRATION" and "CHANNEL FUNCTIONAL TEST." The review concluded that differences in the current definitions and proposed new definitions did not conflict with and were consistent with the existing TS requirements for checking, testing and calibrating instrument channels as envisioned for a BWR/2 designed plant. The change in definitions allows for an alternate, improved testing methodology and does not change the performance requirements of the instrumentation or their existing surveillance frequencies.

With respect to surveillance of the RPS, the alternate testing methodology verifies the half-scram contactors are operable and verifies end-of-channel trip relay contacts change state without causing as many half-scrams as the current methodology. Thus, the entire channel is verified operable by means of a series of sequential, overlapping channel tests. Currently, at OCNGS, each individual channel signal results in a half-scram because the current definitions require that channel calibrations encompass the entire channel from sensor to actuating trip equipment.

The NUREG-1433, Rev 3, BWR/4 STS definition of CHANNEL FUNCTIONAL TEST allows for an actual input signal in lieu of a simulated input signal to verify instrument channel operability. A plant condition that initiates a signal into the instrument channel is at least equal to, if not better than, a simulated input signal. This change allows the plant to take credit for the successful performance of an instrument channel under actual plant conditions to fulfill a required surveillance.

The proposed definitions will allow for a qualitative verification of RTDs and TCs. Most instrument channels contain an adjustable transmitter (sensor) that is subject to drift. For most channels, instrument channel calibration includes adjustments to the sensor to establish proper input/output relationships. However, RTDs and TCs, by their design, construction, and application exhibit an inherent resistance to drift. These types of sensors are designed such that they have a fixed input/output response that cannot be adjusted or changed once installed; therefore, it is unnecessary to test them in the same manner as the other sensors to demonstrate proper instrument channel operation. In-place verification, on a qualitative basis, can accomplish the same finding of sensor functionality.

The changes in the instrument definitions will cause a number of TS administrative changes. In keeping with the STS definition protocol, references to the instrument definitions, when applicable and appropriate, have been capitalized in other TS sections. These changes are administrative in nature and are being proposed to assure consistent interpretation of the proposed definitions when checking, testing and calibrating protective instruments identified in TS Tables 4.1.1 and 4.1.2. However, a number of references to check, calibrate and test in TS 4.1 are not being capitalized due to the statement in TS 4.1, Protective Instrumentation, Specification that states clearly that " Instrumentation shall be checked, tested, and calibrated as indicated in Tables 4.1.1 and 4.1.2 using the definitions given in Section 1." Section 1 will contain the new proposed definitions so it is clear that terms "checked, tested and calibrated"-refer to "CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION."

In conclusion, the proposed definition changes do not involve any physical changes to the plant or plant design and do not change any performance criterion of existing instrument channels. The instrument channels perform the same safety functions. As a result of implementing the proposed instrument definitions, optional alternate testing and calibrating methodologies may be

employed to allow the use of actual signals, allow for the in-place qualitative verifications of RTDs and TCs, and allow for the entire instrument channel to be tested and calibrated by a means of any series of sequential, overlapping or total channel steps.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

AmerGen Energy Company, LLC, (AmerGen) has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

1. Will operation of the facility in accordance with the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The definitions of Channel Check, Channel Calibration and Channel Functional Test specified in Technical Specifications (TS) provide basic information regarding what the test involves, the components involved in the test, and general information regarding how the test is to be performed. Instrument channel checking, calibrating, and testing are not initiators of any accident previously evaluated. Furthermore, the proposed changes will not affect the ability of the channel being checked, calibrated or tested to respond as assumed in any accident previously evaluated. Therefore, these revised definitions result in no increase in the probability of an accident previously evaluated.

The proposed revisions of these definitions, corresponding administrative changes (capitalization of definitions), and the proposed alternate testing and calibrating methodology using sequential, overlapping testing, and/or actual channel input signals and/or in place qualitative assessments of resistance temperature detectors (RTD's) and thermocouples (TC's) involve no changes to plant design, equipment, or operation related to mitigation of accidents. The qualitative evaluation of sensor behavior for non-adjustable sensors will provide an accurate indication of sensor operation and will assure that portion of the channel is operating properly, ensuring that the consequences of an accident will remain as previously evaluated. Therefore, these revised definitions result in no increase in the consequences of an accident previously identified.

Based on the above, AmerGen concludes that the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Will operation of the facility in accordance with the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed revisions of the instrument surveillance definitions, corresponding administrative changes (capitalization of definitions), and the proposed alternate testing and calibrating methodology using sequential, overlapping testing, and/or actual channel input signals and/or in place qualitative assessments of RTD's and TC's do not involve a physical alteration of the plant or a change in the methods governing normal plant operation. No new or different type of equipment will be installed. The proposed changes also do not adversely affect the operation or operability of existing plant equipment. The proposed revisions will allow a change in testing and calibrating methodology. Allowing an alternate testing and calibrating methodology will not change how the plant is operated. Each instrument channel will be tested one sub channel at a time, as is currently performed, and will not create the possibility of a new or different kind of accident.

Based on the above discussion, AmerGen concludes that the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Will operation of the facility in accordance with the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

The affected definitions involve checking, calibrating and testing of instrumentation used in the mitigation of accidents to ensure that the instrumentation will perform as assumed in safety analyses. The proposed revisions of these definitions, corresponding administrative changes (capitalization of definitions), and the proposed alternate testing and calibrating methodology using sequential, overlapping testing, and/or actual channel input signals and/or in place qualitative assessments of RTD's and TC's does not alter the ability of the instrument channel to respond as designed or assumed in the safety analyses. As a result the ability of the plant to respond to and mitigate accidents is unchanged by the revised definitions. Therefore, this change does not involve a significant reduction in a margin of safety.

Based on the above, AmerGen concludes that the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above evaluation of the three criteria, AmerGen concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

10CFR 50.36, Technical specifications

> 10 CFR 50.36, "Technical specifications," provides the regulatory requirements for the content required in a licensee's TS. 10 CFR 50.36(c)(3). *Surveillance requirements*, states: Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that the facility operation will be within safety limits, and that the limiting conditions for operation will be met.

10CFR 50 Appendix A General Design Criterion 21, Protection System Reliability and Testability

> The protection system shall be designed for high functional reliability and in-service testability commensurate with the safety function to be performed. Redundancy and independence designed into the protection system shall be sufficient to assure that (1) no single failure results in loss of the protection function and (2) removal from service of any component or channel does not result in loss of the required minimum redundancy unless the acceptable reliability of operation of the protection system can otherwise be demonstrated. The protection system shall be designed to permit periodic testing of its functioning when the reactor is in operation, including a capability to test channels independently to determine failures and losses of redundancy that may have occurred.

UFSAR Section 3.1.17, Criterion 21 - Protection System Reliability and Testability Criterion

> The protection system shall be designed for high functional reliability and in-service testability commensurate with the safety functions to be performed. Redundancy and independence designed into the protection system shall be sufficient to assure that (1) no single failure results in loss of the protection function, (2) removal from service of any component or channel does not result in loss of the required minimum redundancy unless the acceptable reliability of operation of the protection system can be otherwise demonstrated. The protection system shall be designed to permit periodic testing of its functioning when the reactor is in operation, including a capability to test channels independently to determine failures and losses of redundancy that may have occurred.

The above regulatory requirements have been reviewed and it has been determined that the proposed changes to the definitions of Channel Calibration, Channel Check and Channel Test and the manner in which the RPS system will be tested does not change existing regulatory commitments. All instrument channel components required for channel operability will be tested by a series of overlapping, sequential or total channel steps. The only change is that each individual channel input trip signal will not result in a half-scram. Currently each individual channel signal results in a half-scram condition because the current definitions require that channel calibrations encompass the entire channel from sensor to actuating trip equipment.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

The proposed amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10CFR Part 20 and changes surveillance requirements. The proposed amendment revises Technical Specification definitions that will allow for an improved testing and calibrating methodology for the Reactor Protection System. The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational

radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 PRECEDENT

- Similar amendments were approved for Nine Mile Point Nuclear Station, Unit 1-Amendment No.187, February 17, 2005 (TAC No. MC4753) and Cooper Nuclear Station Amendment No. 217, March 10, 2006 (TAC No. MC8230).

8.0 REFERENCES

1. NUREG-1433, Rev 3.0, Standard Technical Specifications, General Electric Plants, BWR/4

ATTACHMENT 2

Oyster Creek Nuclear Generating Station

Docket No. 50-219

License No. DPR-16

Technical Specification Change Request No. 339

"Revise Technical Specification Definitions of Channel Calibration, Channel Check and Channel Test"

Proposed Technical Specification (Marked-Up Pages)

The pages included in this attachment are:

PAGES

Page 1.0-4
Page 3.1-19
Page 4.1-9
Page 4.3-2
Page 4.4-1
Page 4.12-1
Page 4.12-2
Page 4.13-1
Page 4.13-2
Page 4.15-2

1.19 INSTRUMENTATION SURVEILLANCE DEFINITIONS

A. Channel Check

~~A qualitative determination of acceptable operability by observation of channel behavior during operation. This determination shall include, where possible, comparison of the channel with other independent channels measuring the same variable.~~

A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.

~~B. Channel Test~~ Channel Functional Test

~~Injection of a simulated signal into the channel to verify its proper response including, where applicable, alarm and/or trip initiating action.~~

A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps.

C. Channel Calibration

~~Adjustment of channel output such that it responds, with acceptable range and accuracy, to known values of the parameter which the channel measures. Calibration shall encompass the entire channel, including equipment actuation, alarm or trip.~~

A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY and the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps.

D. Source Check

A SOURCE CHECK is the qualitative assessment of channel response when the channel sensor is exposed to a source of radioactivity.

1.20 FDSAR

Oyster Creek Unit No. 1 Facility Description and Safety Analysis Report as amended by revised pages and figure changes contained in Amendments 14, 31 and 45* and continuing through Amendment 79.

1.21 CORE ALTERATION

A core alteration is the addition, removal, relocation or other manual movement of fuel or controls in the reactor core.
Control rod movement with the control rod drive hydraulic system is not defined as a core alteration.

1.22 CRITICAL POWER RATIO

The critical power ratio is the ratio of that power in a fuel assembly which is calculated, by application of an NRC approved CPR correlation, to cause some point in that assembly to experience boiling transition divided by the actual assembly operating power.

1.23 STAGGERED TEST BASIS

A Staggered Test Basis shall consist of:

A. A test schedule for n systems, subsystems, trains or other designated components obtained by dividing the specified test interval into n equal subintervals.

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*Per Erata dtd. 4-9-69

dd. If any isolation condenser inlet (steam side) isolation valve becomes or is made inoperable in the open position during the RUN MODE comply with Specification 3.8.E. If an AC motor-operated outlet (condensate return) isolation valve becomes or is made inoperable in the open position during the RUN MODE comply with Specification 3.8.F.

ee. With the number of OPERABLE channels one less than the Minimum Number of OPERABLE Instrument Channels per OPERABLE Trip System, operation may proceed until performance of the next required ~~Channel Functional Test~~ provided the inoperable channel is placed in the tripped condition within 1 hour.

ff. This function is not required to be OPERABLE when the associated safety bus is not required to be energized or fully OPERABLE as per applicable sections of these Technical Specifications.

gg. Deleted

hh. The high flow trip function for "B" Isolation Condenser is bypassed upon initiation of the alternate shutdown panel. This prevents a spurious trip of the IsolationCondenser in the event of fire induced circuit damage.

ii. Instrument shall be OPERABLE during main condenser air ejector operation except that a channel may be taken out-of-service for the purpose of a check, calibration, test, or maintenance without declaring it inoperable.

jj. With no channel OPERABLE, main condenser offgas may be released to the environment for as long as 72 hours provided the stack radioactive noble gas monitor is OPERABLE. Otherwise, be in at least SHUTDOWN CONDITION within 24 hours.

kk. One channel may be placed in an inoperable status for up to two hours for required surveillance without placing the trip system in the tripped condition.

ll. This function not required to be OPERABLE with the reactor vessel head removed or unbolted.

mm. "Instrument Channel" in this case refers to the bellows which sense vacuum in each of the three condensers (A, B, and C), and "Trip System" refers to vacuum trip systems 1 and 2.

CHANNEL FUNCTIONAL TEST

CHANNEL FUNCTIONAL TEST

MINIMUM CHECK, CALIBRATION AND TEST FREQUENCY FOR PROTECTIVE INSTRUMENTATION

NOTE 1: Each automatic scram contactor is required to be tested at least once per week. When not tested by other means, the weekly test can be performed by using the subchannel test switches.

NOTE 2: At least daily during reactor POWER OPERATION, the reactor neutron flux peaking factor shall be estimated and flow-referenced APRM scram and rod block settings shall be adjusted, if necessary, as specified in Section 2.3 Specifications A.1 and A.2.

NOTE 3: Calibrate electronic bistable trips by injection of an external test current once per 3 months. Calibrate transmitters by application of test pressure once per 12 months.

NOTE 4: Perform LPRM detectors calibration every 1000 MWD/MT Average Core Exposure

The following notes are only for Item 15 of Table 4.1.1:

A channel may be taken out of service for the purpose of a check, calibration, test or maintenance without declaring the channel to be inoperable.

a. The ~~Channel Test~~ shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

1) Instrument indicates measured levels above the alarm setporint.
2) Instrument indicates a downscale failure.
3) Instrument controls not set in operate mode.
4) Instrument electrical power loss.

* G. Primary Coolant System Pressure Isolation Valves Specification:

1. Periodic leakage testing [a] on each valve listed in Table 4.3.1 shall be accomplished prior to exceeding 600 psig reactor pressure every time the plant is placed in the cold shutdown condition for refueling, each time the plant is placed in a cold shutdown condition for 72 hours if testing has not been accomplished in the preceding 9 months, whenever the valve is moved whether by manual actuation or due to flow conditions, and after returning the valve to service after maintenance, repair or replacement work is performed.

CHANNEL CALIBRATION

H. Reactor Coolant System Leakage

1. Unidentified leakage rate shall be calculated at least once every 4 hours.

2. Total leakage rate (identified and unidentified) shall be calculated at least once every 8 hours.

3. A ~~channel calibration~~ of the primary containment sump flow integrator and the primary containment equipment drain tank flow integrator shall be conducted at least once per 24 months.

I. An inservice inspection program for piping identified in NRC Generic Letter 88-01 shall be performed in accordance with the NRC staff positions on schedule, methods, personnel, and sample expansion included in the generic letter or in accordance with alternate measures approved by the NRC staff.

Bases:

Data is available relating neutron fluence (E>1.0MeV) and the change in the Reference Nil-Ductility Transition Temperature (RT_{NDT}). The pressure-temperature (P-T) operating curves A, B, and C in Figures 3.3.1, 3.3.2 and 3.3.3 were developed based on the results of testing and evaluation of specimens removed from the vessel after 8.38 EFPY of operation. Similar testing and analysis will be performed throughout vessel life to monitor the effects of neutron irradiation on the reactor vessel shell materials.

The inspection program will reveal problem areas should they occur, before a leak develops. In addition, extensive visual inspection for leaks will be made on critical systems. Oyster Creek was designed and constructed prior to

[a] To satisfy ALARA requirements, leakage may be measured indirectly (as from the performance of pressure indicators) if accomplished in accordance with approved procedures and supported by computations showing that the method is capable of demonstrating valve compliance with the leakage criteria.

* NRC Order dated April 20, 1981.

CHANNEL CHECK
CHANNEL CALIBRATION
CHANNEL FUNCTIONAL TEST

4.4 EMERGENCY COOLING

Applicability: Applies to surveillance requirements for the emergency cooling systems.

Objective: To verify the operability of the emergency cooling systems.

Specification: Surveillance of the emergency cooling systems shall be performed as follows:

Item	Frequency
A. Core Spray System	
1. Pump Operability	Once/3 months. Also after major maintenance and prior to startup following a refueling outage.
2. Motor operated valve operability	Once/3 months
3. Automatic actuation test	Every three months
4. Pump compartment water-tight doors closed	Once/week and after each entry
5. Core spray header ΔP instrumentation	
~~Check~~	Once/day
~~Calibrate~~	Once/3 months
~~Test~~	Once/3 months
B. Automatic Depressurization	
1. Valve operability	Once every 24 months*
2. Automatic actuation test	Every refueling outage
C. Containment Cooling System	
1. Pump Operability	Once/3 months. Also after major maintenance and prior to startup following a refueling outage.

*Valve operability shall be demonstrated at system operating pressure prior to exceeding 5 percent power, following a refueling outage.

4.12 Alternate Shutdown Monitoring Instrumentation

Applicability: Applies to the surveillance requirements of the alternate shutdown monitoring instrumentation.

Objective: To specify the minimum frequency and type of surveillance to be applied to the alternate shutdown monitoring instrumentation.

Specification:

Each of the alternate shutdown monitoring channels shall be demonstrated operable by performance of the ~~channel check and channel calibration~~ operations at the frequencies shown in Table 4.12-1.

CHANNEL CHECK and CHANNEL CALIBRATION

Basis:

The operability of the alternate shutdown monitoring instrumentation ensures that sufficient capability is available to permit shutdown and maintenance of hot shutdown of the plant from locations outside of the control room. The type and frequency of surveillances required in Table 4.12-1 are consistent with or more conservative than the BWR Standard Technical Specifications.

CHANNEL CHECK

CHANNEL CALIBRATION

TABLE 4.12-1 ALTERNATE SHUTDOWN

MONITORING INSTRUMENTATION

Functional Limit	~~Channel Check~~	~~Channel Calibration~~
Reactor Pressure	M	Q
Reactor Water Level (fuel zone)	n/a	Q
Condensate Storage Tank Level	M	R
Service Water Pump Discharge Pressure	M	R
Control Rod Drive System Flowmeter	M	R
Shutdown Cooling System Flowmeter	n/a	R
Isolation Condenser "B" Shell Water Level	M	R
Reactor Building Closed Cooling Water Pump Discharge Pressure	M	R

M - Monthly

Q - Quarterly

R - Refueling Outage

CHANNEL CHECK and CHANNEL CALIBRATION

4.13 ACCIDENT MONITORING INSTRUMENTATION

Applicability: Applies to surveillance requirements for the accident monitoring instrumentation.

Objective: To verify the operability of the accident monitoring instrumentation.

Specification:

A. Safety & Relief Valve Position Indicators

Each accident monitoring instrumentation channel shall be demonstrated operable by performance of the ~~Channel Check and Channel Calibration~~ operations at the frequencies shown in Table 4.13-1.

B. Wide Range Drywell Pressure Monitor

Each accident monitoring instrumentation channel shall be demonstrated operable by performance of the ~~Channel Check and Channel Calibration~~ operations at the frequencies shown in Table 4.13-1.

C. Wide Range Torus Water Level Monitor

Each accident monitoring instrumentation channel shall be demonstrated operable by performance of the ~~Channel Check and Channel Calibration~~ operations at the frequencies shown in Table 4.13-1.

D. DELETED

E. Containment High-Range Radiation Monitor

Each accident monitoring instrumentation channel shall be demonstrated operable by performance of the ~~Channel Check and Channel Calibration~~ operations at the frequencies shown in Table 4.13-1.

F. High Range Radioactive Noble Gas Effluent Monitor

Each accident monitoring instrumentation channel shall be demonstrated operable by performance of the ~~Channel Check and Channel Calibration~~ operations at the frequencies shown in Table 4.13-1.

Bases:

The operability of the accident monitoring instrumentation ensures that sufficient information is available on selected plant parameters to monitor and assess these variables during and following an accident. This capability is consistent with NUREGs 0578 and 0737.

CHANNEL CHECK

CHANNEL CALIBRATION

TABLE 4.13-1

ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	~~CHECK~~	~~CALIBRATION~~
1. Primary and Safety Valve Position Indicator (Primary Detector*)	A	B
Relief and Safety Valve Position Indicator (Backup Indications**)	A	B
Relief Valve Position Indicator (Common Header Temperature Element**)	C	B
2. Wide Range Drywell Pressure Monitor (PT/PR 53 & 54)	A	D
3. Wide Range Torus Water Level Monitor (LT/LR 37 & 38)	A	D
4. DELETED		
5. Containment High Range Radiation Monitor	A	F***
6. High Range Radioactive Noble Gas Effluent Monitor		
a. Main Stack	A	G
b. Turbine Building Vent	A	G

Legend:
A = at least once per 31 days
B = at least once per 24 months
C = at least once per 15 days until channel calibration is performed and thence at least once per 31 days
D = at least once per 6 months
E = DELETED
F = each refueling outage
G = once per 20 months

CHANNEL CALIBRATION

* Acoustic Monitor
** Thermocouple
*** ~~Channel calibration~~ shall consist of electronic signal substitution of the channel, not including the detector, for all decades above 10R/hr and a one point calibration check of the detector at or below 10R/hr by means of a calibrated portable radiation source traceable to NBS.

CHANNEL FUNCTIONAL TEST

TABLE 4.15.2

EXPLOSIVE GAS MONITORING
INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION(f)	~~FUNCTIONAL TEST~~	CHANNEL SURVEILLANCE REQUIRED (a)
1. Main Condenser Offgas Treatment System Hydrogen Monitor	D	N/A	Q(g)	M	(c)

Legend: D = once per 24 hrs; M = once per 31 days; Q = once per 92 days;
N/A = Not Applicable

TABLE 4.15.2 NOTATIONS

(a) Instrumentation shall be OPERABLE and in service except that a channel may be taken out of services for the purpose of a check, calibration, test or maintenance without declaring it to be inoperable.

(c) During main condenser offgas treatment system operation.

(f) The CHANNEL CALIBRATION shall be performed according to established station calibration procedures.

(g) A CHANNEL CALIBRATION shall include the use of at least two standard gas samples, each containing a known volume percent hydrogen in the range of the instrument, balance nitrogen.

ATTACHMENT 3

Oyster Creek Nuclear Generating Station

Docket No. 50-219

License No. DPR-16

Technical Specification Change Request No. 339

"Revise Technical Specification Definitions of Channel Calibration, Channel Check and Channel Test"

Proposed Technical Specification Bases (Marked-Up Pages)

The pages included in this attachment are:

PAGES

Page 4.1-2
Page 4.1-3

4.1 PROTECTIVE INSTRUMENTATION

Bases:

Surveillance intervals are based on reliability analyses and have been determined in accordance with General Electric Licensing Topical Reports given in References 1 through 5.

The functions listed in Table 4.1.1 logically divide into three groups:

a. On-off sensors that provide a scram function or some other equally important function.

b. Analog devices coupled with a bi-stable trip that provides a scram function or some other vitally important function.

c. Devices which only serve a useful function during some restricted mode of operation, such as startup or shutdown, or for which the only practical test is one that can be performed only at shutdown.

Group (b) devices utilize an analog sensor followed by an amplifier and bi-stable trip circuit. The sensor and amplifier are active components and a failure would generally result in an upscale signal, a downscale signal, or no signal. These conditions are alarmed so a failure would not go undetected. The bi-stable portion does need to be tested in order to prove that it will assume its tripped state when required.

Group (c) devices are active only during a given portion of the operational cycle. For example, the IRM is inactive during full-power operation and active during startup. Thus, the only test that is significant is the one performed just prior to shutdown and startup. The condenser Low Vacuum trip can only be tested during shutdown, and although it is connected into the reactor protection system, it is not required to protect the reactor. Testing at each REFUELING OUTAGE is adequate. The switches for the high temperature main steamline tunnel are not accessible during normal operation because of their location above the main steam lines. Therefore, after initial calibration and in-place OPERABILITY checks, they will not be tested between refueling shutdowns. Considering the physical arrangement of the piping which would allow a steam leak at any of the four sensing locations to affect the other locations, it is considered that the function is not jeopardized by limiting calibration and testing to refueling outages.

The CHANNEL FUNCTIONAL TEST verifies instrument channel operability. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change in state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST or CHANNEL CALIBRATION of a relay. This is acceptable because all the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specification tests."

The testing may be performed by means of any series of sequential, overlapping, or total channel steps.

The logic of the instrument safety systems in Table 4.1.1 is such that testing the instrument channels ~~also~~ trips the trip system to verify that it is OPERABLE. However, certain systems require coincident instrument channel trips to completely test their trip systems. Therefore, Table 4.1.2 specifies the minimum trip system test frequency for these tripped systems. This assures that all trip systems for protective instrumentation are adequately tested, from sensors through the trip system.

IRM calibration is to be performed during reactor startup. The calibration of the IRMs during startup will be significant since the IRMs will be relied on for neutron monitoring and reactor protection up to 38.4% of rated power during a reactor startup.

To ensure that the APRMs are accurately indicating the true core average power, the APRM are calibrated to the reactor power calculated from a heat balance. Limiting Safety System Settings (LSSS) 2.3.A.1 allows the APRMs to be reading greater than actual thermal power to compensate for localized power peaking. When this adjustment is made, the requirement for the absolute difference between the APRM channels and the calculated power to indicate within 2% RTP is modified to include any gain adjustments required by LSSS 2.3.A.1.

LPRM gain settings are determined from the local flux profiles measured by the Traversing Incore Probe (TIP) System. This establishes the relative local flux profile for appropriate representative input to the APRM System. The 1000 MWD/T Frequency is based on operating experience with LPRM sensitivity changes.

General Electric Licensing Topical Report NEDC-30851P-A (Reference 1), Section 5.7 indicates that the major contributor to reactor protection system unavailability is common cause failure of the automatic scram contactors. Analysis showed a weekly test interval to be optimum for scram contactors. The test of the automatic scram contactors can be performed as part of the ~~Channel Calibration or Test~~ of Scram Functions or by use of the subchannel test switches.

References:

(1) NEDC-30851P-A, "Technical Specification Improvement Analyses for BWR Reactor Protection System."

(2) NEDC-30936P-A, "BWR Owners' Group Technical Specification Improvement Methodology (With Demonstration for BWR ECCS Actuation Instrumentation)," Parts 1 and 2.

(3) NEDC-30851P-A, Supplement 1, "Technical Specification Improvement Analysis for BWR Control Rod Block Instrumentation."

(4) NEDC-30851P-A, Supplement 2, "Technical Specification Improvement Analysis for BWR Isolation Instrumentation Common to RPS and ECCS Instrumentation."

(5) NEDC-31677P-A, "Technical Specification Improvement Analysis for BWR Isolation Actuation Instrumentation."

CHANNEL CALIBRATION or CHANNEL FUNCTIONAL TEST