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W3F1-97-0073
A4.05
PR

April 11, 1997

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

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Technical Specification Change Request NPF-38-195

Gentlemen:

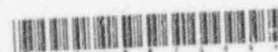
The attached description and safety analysis support a change to the Waterford 3 Technical Specifications (TS). The proposed change modifies TS 3.3.3.7.3 and Surveillance Requirement 4.3.3.7.3 for the broad range gas detection system. A change to the Technical Specification Basis 3/4.3.3.7.3 has been included to support this change. This change to the Technical Specifications is necessary for the installation of a new, more reliable broad range gas detection system.

This proposed change has been evaluated in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c), and it has been determined that this request involves no significant hazards consideration.

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The circumstances surrounding this change do not meet the NRC's criteria for exigent or emergency review. However, due to reliability concerns with our currently installed broad range gas detection system, we respectfully request an expeditious review. Entergy Operations requests the effective date for this change be within 60 days of approval.

Should you have any questions or comments concerning this request, please contact Mr. Early Ewing at (504) 739-6242.

Very truly yours,



C.M. Dugger
Vice President, Operations
Waterford 3

CMD/CWT/ssf

Attachment: Affidavit
NPF-38-195

cc: E.W. Merschoff, NRC Region IV
C.P. Patel, NRC-NRR
R.B. McGehee
N.S. Reynolds
NRC Resident Inspectors Office
Administrators Radiation Protection Division
(State of Louisiana)
American Nuclear Insurers

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

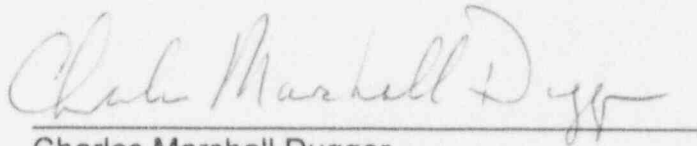
In the matter of)

Entergy Operations, Incorporated)
Waterford 3 Steam Electric Station)

Docket No. 50-382

AFFIDAVIT

Charles Marshall Dugger, being duly sworn, hereby deposes and says that he is Vice President Operations - Waterford 3 of Entergy Operations, Incorporated; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached Technical Specification Change Request NPF-38-195; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.




Charles Marshall Dugger
Vice President Operations - Waterford 3

STATE OF LOUISIANA)

) ss

PARISH OF ST. CHARLES)

Subscribed and sworn to before me, a Notary Public in and for the Parish and State above named this 11th day of April, 1997.


Notary Public

My Commission expires at death.

DESCRIPTION AND SAFETY ANALYSIS OF PROPOSED CHANGE NPF-38-195

The proposed change requests a change to Technical Specification 3.3.3.7.3, its ACTION and Surveillance Requirement 4.3.3.7.3 for the broad range gas detection system. A change to the Technical Specification Basis 3/4.3.3.7.3 has been included to support this change.

Existing Specification

See Attachment A

Proposed Specification

See Attachment B

Background

Waterford 3 is situated in a highly industrialized area. Since the transportation and use of materials present the potential for release of toxic gases, Waterford 3 was evaluated to ensure appropriate design considerations. The main control room design and administrative procedures prevent the incapacitation of control room operators during postulated toxic gas events.

In addition to specific detectors to monitor for chlorine, the design of Waterford 3 included broad range toxic gas monitors. A broad range gas detection system which continuously monitors incoming control room air for the presence of a large variety of toxic gasses is installed in the control room air intake duct. If toxic gas relative concentration equals or exceeds the high setting, the detector system sounds an alarm and automatically isolates the control room before toxic levels can be reached.

The current installation of each broad range gas detection system consists of an analyzer panel that includes a photoionization detector, a local readout and alarm adjustments for the detection of toxic gases and isolation of the control room. Also included in the original design is a single gas chromatograph (which is no longer used) to aid the operator in determining the gas or gases that actuated the broad range monitor and has no automatic actuation features.

Due to the unreliability of the current monitoring system, Waterford 3 has purchased a new detection system. Excessive maintenance and calibration of our current system are required and there is reduced confidence that the units will be found in calibration. The system selected to replace the current system is more sensitive, has greater resolution, and is more stable. Replacing the existing broad range gas monitor system

will enhance the monitoring of toxic gasses and reduce the cost of maintenance and calibration.

The new monitors, known as Air Composition Monitors by the vendor, Telosense, Inc., utilize a Fourier Transform Infrared (FTIR) analysis technique. The FTIR broad range gas detector system utilizes microprocessor gas analysis based on infrared spectrum analysis, and is more accurate than the currently installed unit. Existing alarms and isolation signals will function as presently installed. The gas concentration setpoints presently used is a single quantity which is based on the worst case gas, which has the lowest Immediately Dangerous to Life or Health (IDLH) value. With the replacement units, setpoints may be made for each analyzed gas. The replacement system has the capability of measuring the concentration of all gases of concern to control room habitability except chlorine. The vendor will provide a backup chlorine monitor on the same skid but it will not be seismically qualified. The new chlorine monitor will, therefore, be a backup to the separate existing seismically qualified chlorine monitors, which will remain unchanged. In order for the new instrument to properly account for CO₂ and moisture in the air, it is necessary to periodically establish a baseline reference for the infrared spectrum. This is done by taking a background or reference spectrum. The spectrum must not contain any of the measured gases and should be free of infrared absorbing gases to the extent that is practical. Instrument air is used for this purpose. This function is an integral part of and is performed automatically by the instrument. The time period for this background check is typically every two hours, however the frequency can be adjusted from one to four hours. This normal mode of operation of the instrument takes approximately one minute. During this small period of time, the instrument is not capable of responding to a toxic gas condition. However, the other channel will be available to respond to a toxic gas and has full capabilities to isolate the control room in the event a toxic gas condition occurs during this one minute time period. The time at which the background/reference spectrum check occurs will be staggered such that both systems are not out of service simultaneously. In the event the redundant system is out of service, the control room will be without protection for a maximum of one minute per hour, which is less than the allowed outage time for in the current ACTIONS as required by Technical Specifications. However, this automatic background/reference spectrum feature, designed to enhance system performance, creates a problem with verbatim compliance with the Technical Specifications as currently written and necessitates a change to the Technical Specifications.

Description

The proposed change to Technical Specification 3.3.3.7.3 annotates the Specification and ACTIONS that the out of service condition for automatic background/reference spectrum check is not considered to constitute a condition of inoperability of the detection system if both trains are operable and both channels are not performing the check simultaneously. This change is being made to ensure that verbatim compliance with the Technical Specification can be achieved without entering the ACTION every

time the automatic self check takes place. This is necessary to reduce operator burden by removing the requirement of entering an equipment out of service with associated paperwork each time a broad range gas detection system performs its automatic background/reference spectrum, which can occur as often as once per hour per detector. The automatic background/reference spectrum is set for a frequency of once per hour to once per four hours. The exact frequency of occurrence of the automatic background/reference spectrum will be based on operating experience with the instrument. Additionally, the Surveillance Requirements are being revised consistent with the new detection system.

During the time that the automatic background/reference spectrum check is taking place (which will be less than one minute), the channel will not perform the function of isolation of the control room. Analysis has shown that the impact on operator incapacitation and subsequent core damage risk of this background check is negligible. With both channels operable, the other system will be available to perform the control room isolation function in the event of a toxic gas incident. With one channel taken out of service (e.g., for maintenance), when the second channel performs the automatic background check, both channels will be unable to perform the function of isolating the control room for the short time of the background check. Analysis has shown that the impact on operator incapacitation and subsequent core damage risk of the background checks while one monitor is out of service for its 7 day allowed outage time is negligible.

Additionally, the new detection system performs the calibration check in a different manner from the present detection system. While the old system required a manual adjustment of instrument sensitivity based on the relationship of the standard gas to the calibration gas, the new system automatically shifts the air sample source from the control room inlet plenum to air inside the system cabinet. The cabinet is continuously supplied with instrument air, which in effect performs a purge of the cabinet. Should instrument air be lost, the control room ventilation system goes into the recirculation mode and isolates from the outside atmosphere. This is due to the fail position of the control room dampers on loss of instrument air. The system uses this air to perform a self-check and reestablishes the gas baseline for monitoring. As this channel background/reference spectrum check occurs automatically on a preset schedule at a maximum of once per four hour period, the currently required manual calibration at a frequency of once per seven days is being deleted. This change is more conservative than the current requirement of once per seven days. Introduction of a standard gas, which was part of the calibration, will become part of the CHANNEL FUNCTIONAL TEST, consistent with the requirements of the new system.

For consistency, the CHANNEL CHECK, performed on a 12 hour frequency, will be performed using the display of the specific standard gas used for the CHANNEL FUNCTIONAL TEST in addition to CO₂ and water. This is consistent with the vendor recommendations for this system. The CHANNEL FUNCTIONAL TEST will be expanded to require introduction of a standard gas and ensuring that the time of

occurrence of the background/reference check is set such that both channels are not out of service simultaneously.

The Bases for the Chemical Detection Systems is being changed to reflect the new system. Verbiage is being added for the annotated LCO as to operability and entry into the ACTIONS. The broad range gas detection system description is being modified to reflect the new principle of operation. Additionally, the term IDLH is being spelled out as "Immediately Dangerous to Life or Health" in the LCO and Bases. An explanation of the Surveillance Testing is being included consistent with the Bases for similar systems in NUREG 1432, "Standard Technical Specifications, Combustion Engineering Plants".

Safety Analysis

The proposed change described above shall be deemed to involve a significant hazards consideration if there is a positive finding in any of the following areas:

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

Response: No

The broad range gas detection system has no effect on the accidents analyzed in Chapter 15 of the Final Safety Analysis Report. It's only effect is on habitability of the control room, which will be enhanced by installation of the new monitoring system and this change to the Technical Specifications. Analysis has shown that the impact on operator incapacitation and subsequent core damage risk of this background check is negligible.

Therefore, the proposed change will not involve a significant increase in the probability or consequences of any accident previously evaluated.

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

Response: No.

The proposed Technical Specification change in itself does not change the design or configuration of the plant. The new system for broad range toxic gas monitoring performs the same function as the old system, but it accomplishes this with a more sophisticated system that increases reliability.

Therefore, the proposed change will 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 this proposed change involve a significant reduction in a margin of safety?

Response: No

The broad range gas detection system has no effect on a margin of safety as defined by Section 2 of the Technical Specifications. It's only effect is on habitability of the control room, which will be enhanced by installation of the new monitoring system and this change to the Technical Specifications.

Therefore, the proposed change will not involve a significant reduction in a margin of safety.

Safety and Significant Hazards Determination

Based on the above safety analysis, it is concluded that: (1) the proposed change does not constitute a significant hazards consideration as defined by 10CFR50.92; and (2) there is a reasonable assurance that the health and safety of the public will not be endangered by the proposed change; and (3) this action will not result in a condition which significantly alters the impact of the station on the environment as described in the NRC final environmental statement.