

INSTRUMENTATIONCHEMICAL DETECTION SYSTEMSBROAD RANGE GAS DETECTIONLIMITING CONDITION FOR OPERATION

3.3.3.7.3 Two independent broad range gas detection systems shall be OPERABLE with their alarm/trip setpoints adjusted to actuate at the lowest achievable IDLH gas concentration level of detectable toxic gases* providing reliable operation.

APPLICABILITY: ALL MODES.

ACTION:

- a. With one broad range gas detection system inoperable, restore the inoperable detection system to OPERABLE status within 7 days or within the next 6 hours initiate and maintain operation of the control room ventilation system in the isolate mode of operation.
- b. With no broad range gas detection system OPERABLE, within 1 hour initiate and maintain operation of the control room ventilation system in the isolate mode of operation.
- c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.7.3 Each broad range gas detection system shall be demonstrated OPERABLE by performance of a CHANNEL CHECK at least once per 12 hours, a CHANNEL FUNCTIONAL TEST at least once per 31 days, and a channel calibration at least once per 7 days. Calibration will consist of the introduction of a standard gas and adjusting the instrument sensitivity based on the calibration gas relationship of the standard gas to the calibrating gas.

*Including Ammonia

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monitoring instrumentation. Therefore, requiring restoration of one inoperable channel limits the risk that the variable will be in a degraded condition should an accident occur. If the 7 day requirement is not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 4 within 12 hours. The completion time is reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

TS 3/4.3.3.6 applies to the following instrumentation: ESFIP16750 A, ESFIPR6750 B, ESFIPR6755 A&B, RC IT10122 MA, RC IT10112 MB, RC IT10122 CA, RC IT10112 CB, RC IPI0102 A,B,C,&D, RC ILI0110 X&Y, SG ILI1113 A,B,C,&D, SG ILI1123 A,B,C,&D, SG ILI1115 A2&B2, SG ILI1125 A2&B2, SI ILI7145 A, SI ILR7145 B, all CET's, all Category 1 Containment Isolation Valve Position Indicators, EFWILI9013 A&B, HJTC's, and ENIIJ10001 C&D.

3/4.3.3.7 CHEMICAL DETECTION SYSTEMS

The chemical detection systems are the chlorine and broad range toxic gas detection systems.

The OPERABILITY of the chemical detection systems ensures that sufficient capability is available to promptly detect and initiate protective action in the event of an accidental chemical release.

The chemical detection systems provide prompt detection of toxic gas releases which could pose an actual threat to safety of the nuclear power plant or significantly hamper site personnel in performance of duties necessary for the safe operation of the plant.

The broad range toxic gas detection system operates on the principal of gas photoionization, and therefore, the system is sensitive to a broad range of gases.* The system is therefore sensitive to both atmospheric and chemical composition normal fluctuations affecting the Waterford 3 site. The setpoint for the system is thus based on testing and operating experience, and the setpoint is set at the lowest achievable IDLH gas concentration providing reliable operation and the optimum detection of toxic gases. The setpoint is therefore subject to change wherein necessitated by operating experience such as a result of changes in the Waterford 3 area chemical atmospheric profile. The setpoint is established and controlled by procedure.

3/4.3.3.8 This section deleted

3/4.3.3.9 This section deleted

*Including Amononia

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ATTACHMENT B

INSTRUMENTATIONCHEMICAL DETECTION SYSTEMSBROAD RANGE GAS DETECTIONLIMITING CONDITION FOR OPERATION

3.3.3.7.3 Two independent broad range gas detection systems shall be OPERABLE with their alarm/trip setpoints adjusted to actuate at the lowest achievable ~~IDH~~ gas concentration level of detectable toxic gases* providing reliable operation. **

Immediately Dangerous to Life or Health

APPLICABILITY: All MODES.

ACTION:

- a. With one broad range gas detection system inoperable, restore the inoperable detection system to OPERABLE status within 7 days or within the next 6 hours initiate and maintain operation of the control room ventilation system in the isolate mode of operation.
- b. With no broad range gas detection system OPERABLE, within 1 hour initiate and maintain operation of the control room ventilation system in the isolate mode of operation.
- c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.7.3 Each broad range gas detection system shall be demonstrated OPERABLE by performance of a CHANNEL CHECK at least once per 12 hours, ~~a CHANNEL FUNCTIONAL TEST at least once per 31 days, and a channel calibration at least once per 7 days. Calibration will consist of the introduction of a standard gas and adjusting the instrument sensitivity based on the calibration gas relationship of the standard gas to the calibrating gas.~~

INSERT 1

*Including Ammonia

** *INSERT 2*

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INSERT 1

and a CHANNEL FUNCTIONAL TEST at least once per 31 days. The CHANNEL FUNCTIONAL TEST will include the introduction of a standard gas.

INSERT 2

** The requirements of Technical Specification 3.0.1 do not apply during the time (two minutes or less) when the instrument automatic background/reference spectrum check renders the instrument(s) inoperable.

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monitoring instrumentation. Therefore, requiring restoration of one inoperable channel limits the risk that the variable will be in a degraded condition should an accident occur. If the 7 day requirement is not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 4 within 12 hours. The completion time is reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

TS 3/4.3.3.6 applies to the following instrumentation: ESFIPI6750 A, ESFIPI6750 B, ESFIPI6755 A&B, RC ITIO122 MA, RC ITIO112 HB, RC ITIO122 CA, RC ITIO112 CB, RC IP10102 A,B,C,&D, RC ILI0110 X&Y, SG ILI1113 A,B,C,&D, SG ILI1123 A,B,C,&D, SG ILI1115 A2&B2, SG ILI1125 A2&B2, SI ILI7145 A, SI ILR7145 B, all CET's, all Category 1 Containment Isolation Valve Position Indicators, EFWILI9013 A&B, HJTC's, and ENIJI0001 C&D.

3/4.3.3.7 CHEMICAL DETECTION SYSTEMS

The chemical detection systems are the chlorine and broad range toxic gas detection systems.

The OPERABILITY of the chemical detection systems ensures that sufficient capability is available to promptly detect and initiate protective action in the event of an accidental chemical release.

The chemical detection systems provide prompt detection of toxic gas releases which could pose an actual threat to safety of the nuclear power plant or significantly hamper site personnel in performance of duties necessary for the safe operation of the plant.

The broad range toxic gas detection system operates on the principle of gas photoionization, and therefore, the system is sensitive to a broad range of gases.* The system is therefore sensitive to both atmospheric and chemical composition normal fluctuations affecting the Waterford 3 site. The setpoint for the system is thus based on testing and operating experience, and the setpoint is set at the lowest achievable IDLH gas concentration providing reliable operation and the optimum detection of toxic gases. The setpoint is therefore subject to change wherein necessitated by operating experience such as a result of changes in the Waterford 3 area chemical atmospheric profile. The setpoint is established and controlled by procedure.

INSERT 3

3/4.3.3.8 This section deleted

3/4.3.3.9 This section deleted

*Including Ammonia

INSERT 3

The broad range toxic gas detection system utilizes a Fourier Transform Infrared (FTIR) analysis technique, and therefore, the system is sensitive to a broad range of gases including ammonia. The system is sensitive to normal fluctuations of both atmospheric and chemical composition which affect the Waterford 3 site. The setpoints associated with the system are based on testing and operating experience. Setpoints are set based on control room habitability calculations as described in the FSAR, while providing reliable operation and the optimum detection of toxic gases. The setpoint is therefore subject to change with operating experience such as a result of changes in the Waterford 3 area chemical inventory. The setpoint is established and controlled by procedure.

The LCO and ACTIONS for the broad range gas detection system are annotated such that the system instrument automatic background/reference spectrum check does not constitute system inoperability under the following conditions: (1) both channels are operable and (2) both channels are not performing the check simultaneously. The instrument automatically performs the background/reference spectrum check. During the time that the automatic background/reference spectrum check is taking place (which will be two minutes or less), the channel will not perform the function of isolation of the control room. 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/reference spectrum check, both channels will be unable to perform the function of isolating the control room for the short time of the background/reference spectrum check. Qualitative analysis based on a quantitative risk assessment has shown that the impact on operator incapacitation and subsequent core damage risk of the background/reference spectrum check while one monitor is out of service for its 7 day allowed outage time is negligible. Therefore, entry into the ACTION solely due to the automatic background/reference spectrum check is not required.

No specific manual CHANNEL CALIBRATION is required as the system instrument performs this function as the background/reference spectrum check automatically for two minutes or less on a frequency of once every hour to once every four hours. The exact frequency is established based on operating experience with the instrument.

A CHANNEL CHECK is performed once every 12 hours to compare channel indications of the same parameter. The performance of the CHANNEL CHECK ensures that a gross failure of the instrument has not occurred. Significant deviations from the expected readings and actual readings could be an indication of a malfunction within the unit. The CHANNEL CHECK will detect gross system failure; thus, it is the key to verifying the instrument continues to operate properly between each CHANNEL FUNCTIONAL TEST.

A CHANNEL FUNCTIONAL TEST is performed to ensure the entire channel will perform its required function. This test includes introduction of a standard gas and verification of isolation of the control room. The time of the occurrence of the background/reference spectrum check is set during the CHANNEL FUNCTIONAL TEST such that both channels are not out of service simultaneously.