

### 3.24 Explosive Gas Mixture

#### Applicability

Applies to the Waste Gas System Hydrogen/Oxygen Analyzers

#### Objective

To prevent accumulation of explosive mixtures in the waste gas system.

#### Specification

- 3.24.1 The concentration of hydrogen/oxygen shall be limited in the waste gas decay tanks to Region "A" of Figure 3.24-1.
- 3.24.2 When the hydrogen/oxygen concentration in any of the decay tanks enters Region "B" of Figure 3.2.4-1, corrective action shall be taken to return the concentration values to Region "A" within 24 hours.
- 3.24.3 The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

#### Bases

These hydrogen/oxygen limits provide reasonable assurance that no hydrogen/oxygen explosion could occur to allow rupture of the waste gas decay tanks. The hydrogen and oxygen limits are based on information in NUREG/CR-2726 "Light Water Reactor Hydrogen Manual".

#### 4.28 Explosive Gas Mixture

##### Applicability

Applies to the Waste Gas System hydrogen/oxygen analyzers.

##### Objective

To prevent accumulation of explosive mixtures in the waste gas system.

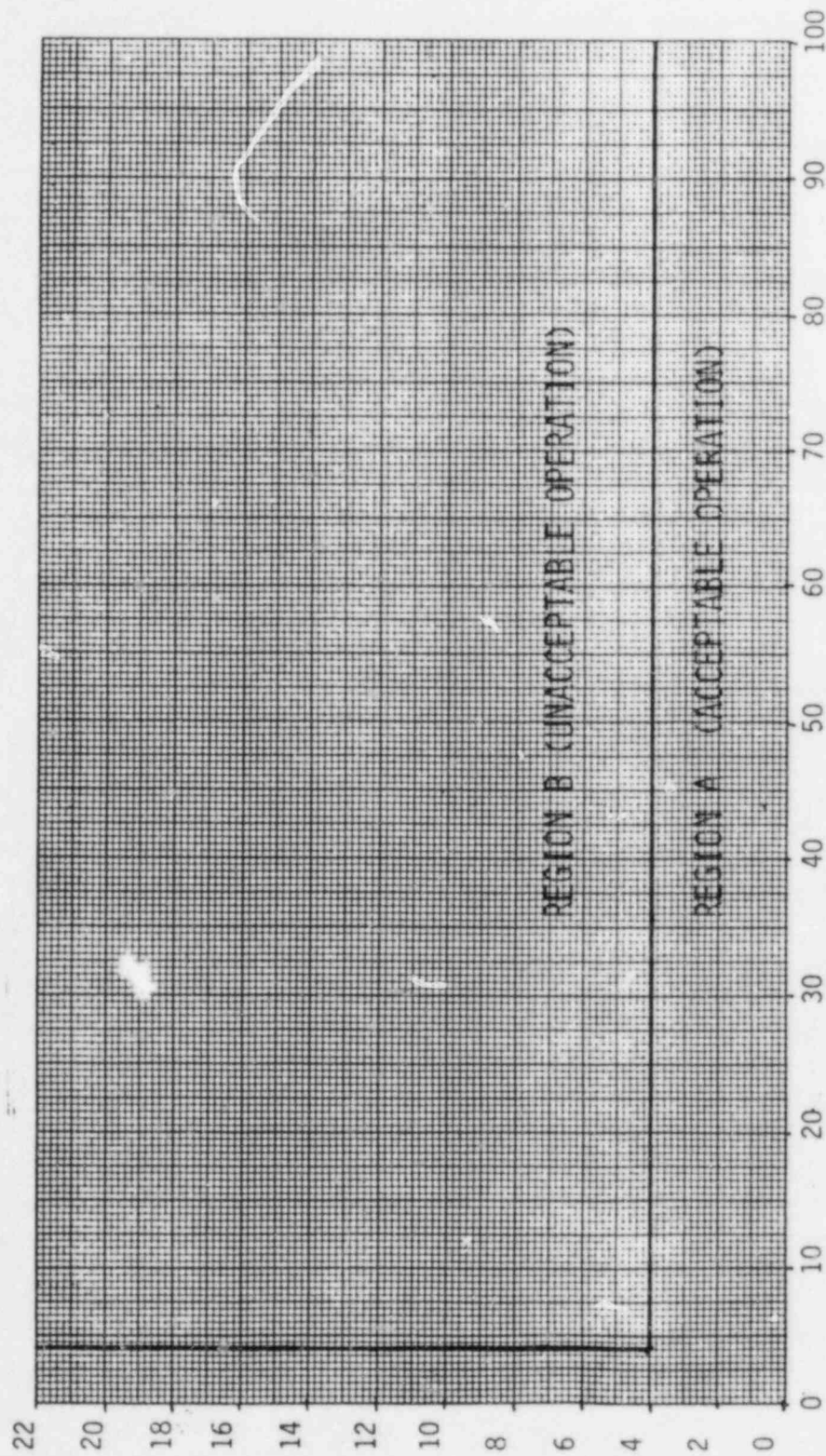
##### Specification

- 4.28.1 The concentration of hydrogen/oxygen in the waste gas system shall be monitored continuously by either the primary or redundant waste gas analyzer during waste gas compressing operations to the waste gas decay tanks.
- 4.28.2 During waste gas system operation, with no H<sub>2</sub>/O<sub>2</sub> analyzer in service, without delay suspend all additions of waste gas to the decay tanks or take grab samples for analysis every 4 hours during degassing operations, daily during other operations. The analysis of these samples shall be completed within 8 hours of taking the sample.

##### Bases

To assure that the hydrogen/oxygen concentration will be kept within the limits in Figure 3.24-1 and therefore not enter the flammable region concentrations in the waste gas decay tanks.

Grab Samples are to be taken every 4 hours during degassing operations when both hydrogen/oxygen analyzers are out of service. These samples are to be analyzed within 8 hours to assure that the hydrogen/oxygen concentration is within the limits in Figure 3.24-1. During other Waste Gas compressor operations the hydrogen/oxygen concentration is not as subject to change, therefore grab samples are to be taken every 24 hours.



HYDROGEN %

FIGURE 3.2 4-1

HYDROGEN - OXYGEN LIMITS FOR ANO-1  
WASTE GAS SYSTEM

### 3/4.11 RADIOACTIVE EFFLUENTS

#### 3/4.11.1 EXPLOSIVE GAS MIXTURE

##### LIMITING CONDITION FOR OPERATION

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3.11.1.1 The concentration of the hydrogen/oxygen shall be limited in the waste gas storage tanks to Region "A" of Figure 3.11-1.

APPLICABILITY: At all times.

ACTION:

- a) When the concentration of hydrogen/oxygen in the waste gas storage tanks enters Region "B" of Figure 3.11-1, corrective action shall be taken to return the concentration values to Region "A" within 24 hours.
- b) The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

##### SURVEILLANCE REQUIREMENTS

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4.11.1.1.1 The concentration of hydrogen/oxygen in the waste gas holdup system shall be determined to be within the above limits, with the waste gas system in operation, by continuously monitoring with the hydrogen/oxygen monitors required OPERABLE by table 3.3-12 of Specification 3/4.3.

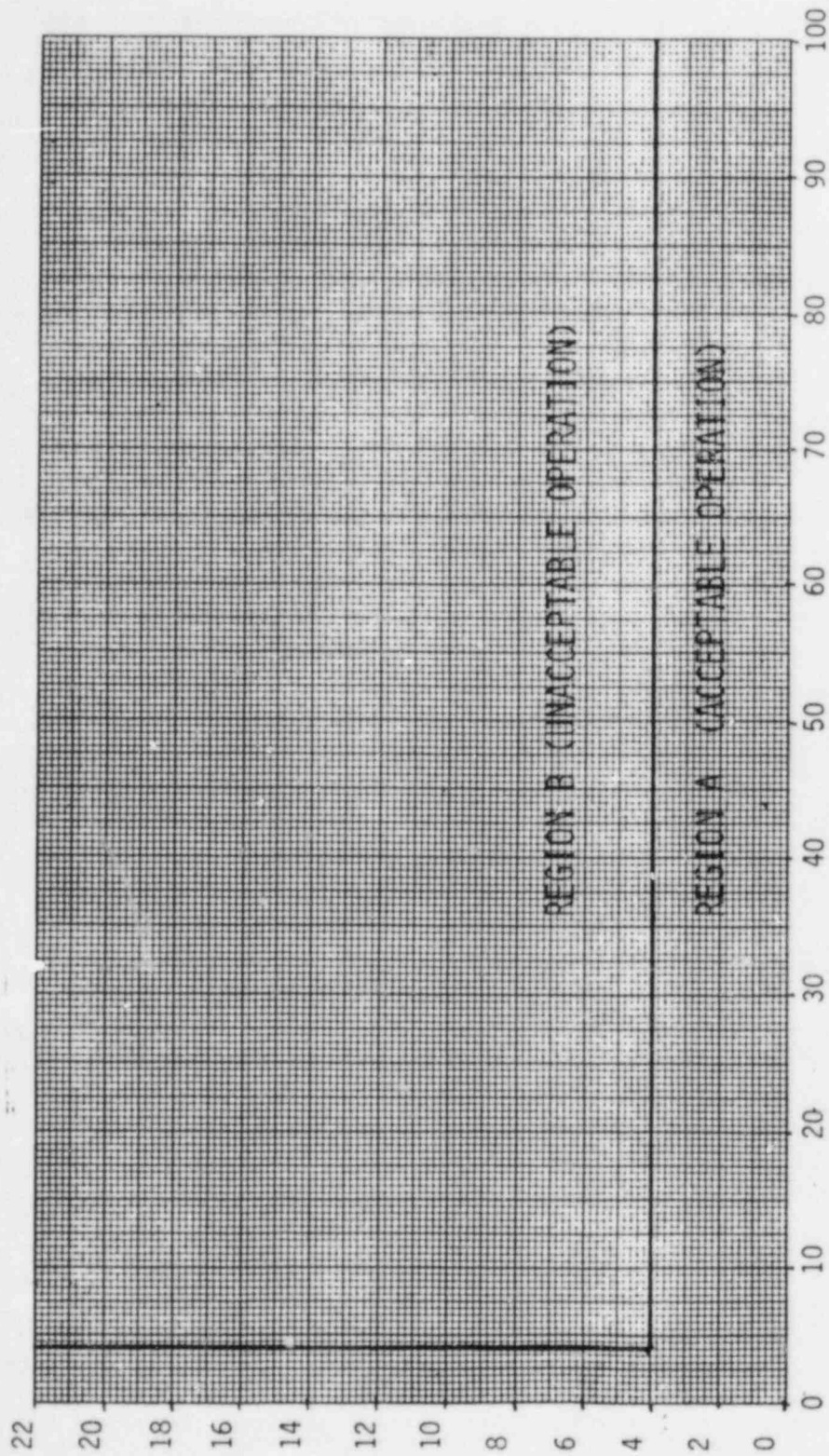
TABLE 3.3-12

## RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

<u>Instrument</u>	<u>Minimum Channels Operable</u>	<u>Applicability</u>	<u>Action</u>
1. Waste Gas Holdup System Explosive Gas Monitoring System			
a. Hydrogen monitor	(1)	*	(1)
b. Oxygen monitor	(1)	*	(1)

\*During waste gas compressing operation (treatment for primary system off gases.)

ACTION 1 - With both channels inoperable, operation may continue provided grab samples are taken and analyzed 1) every 4 hours during degassing operations and 2) daily during other operations. The analysis of these samples shall be completed within 8 hours of taking the sample.



HYDROGEN %

FIGURE 3.11-1

HYDROGEN - OXYGEN LIMITS FOR ANO-2

WASTE GAS SYSTEM



### 3/4.11 RADIOACTIVE EFFLUENTS

#### BASES

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#### 3/4 11.1 EXPLOSIVE GAS MIXTURE

It is expected that the hydrogen/oxygen concentration will be kept within the above limits and therefore not enter the flammable or detonable region concentrations within the waste gas storage tanks.

These levels provide reasonable assurance that no hydrogen/oxygen explosion could occur to allow rupture of the waste gas storage tanks. The hydrogen and oxygen limits are based on information in NUREG/CR-2726 "Light Water Reactor Hydrogen Manual".

Grab samples are to be taken every 4 hours during degassing operations when both hydrogen/oxygen analyzers are out of service. These samples are to be analyzed within 8 hours to assure that the hydrogen/oxygen concentration is within the limits in Figure 3.11-1. During other Waste Gas Compressor operations the hydrogen/oxygen concentration is not as subject to change, therefore grab samples are to be taken every 24 hours.