TU ELECTRIC

Log # TXX-89146
File # 911.3, 10010,
10014

March 22, 1989

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Executive Vice President

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NOS. 50-445 AND 50-446
WASTE GAS HOLDUP SYSTEM-H_2 AND O_2 MONITORING INSTRUMENTATION

Gentlemen:

In response to a request made by Mr. Charles Nichols during the CPSES Technical Specification (T. S.) review meetings from February 13 through 24, 1989, attached is a description of the hydrogen and oxygen monitoring instrumentation utilized in the Waste Gas Holdup System. As noted, the monitors perform linearly over their response range.

As agreed upon during the T. S. meeting, and as indicated in CPSES T. S. Table 4.3-4, items 2.a and b, channel calibration of the hydrogen and oxygen monitors of the Waste Gas Holdup System Explosive Gas Monitoring System will be in accordance with the manufacturer's recommendations

If you have any questions concerning this matter, please do not hesitate to contact me or my staff.

Sincerely,

William J. Cahill, Jr.

RLA/ddm
Enclosure

c - Mr. R. D. Martin, Region IV
Resident Inspectors, CPSES (3)

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Description of Calibration Technique for the Hydrogen And Oxygen Monitoring Instrumentation of the Waste Gas Holdup System

The capability for monitoring hydrogen and oxygen in the Waste Gas Holdup System is provided as part of the Hydrogen Recombiner Unit. Monitoring of each gas is performed both at the recombiner inlet and outlet. Operation of the system, described in FSAR Section 11.3, consists of the constant recirculation of the in-service holdup tank by the waste-gas compressor, and processing by the recombiner between the compressor and holdup tank. Prior to reaching the holdup tank, waste gases are compressed and discharged by the compressor and treated by the hydrogen recombiner. The recombiner is designed to remove up to 6% hydrogen in a single pass, requiring that approximately 3% oxygen be added to the inlet (i.e., increase the O_2 content of the entering atmosphere by 3%). Up to 9% hydrogen can be accommodated on the inlet and still ensure that the outlet remains less than 3% hydrogen (maximum 3% oxygen added).

The major source of hydrogen addition to the system is from the continuous bleed from the Volume Control Tank. During normal operation of the system, hydrogen is removed by the recombiner prior to recirculation to the waste gas holdup tank. The most likely source of oxygen addition to the system is the oxygen that is intentionally added at the recombiner inlet, which should be totally used in the recombination process.

The instrument ranges for detecting hydrogen and oxygen are selected based on the anticipated concentration of gas, considering the operational process described above, with the objective of achieving the best accuracy and resolution. This results in the following instrument ranges and recommended gas concentrations to be used in calibration of the primary range of interest, which is underlined in the listing below.

Instrument	Range(s)	Vendor Recommended Calibration Gas Concentration
Inlet Hydrogen	0-10%	8%
Inlet Oxygen	0-5%, 0-10%, 0-25%	4%
Outlet Hydrogen	0-0.4%, 0-2%, 0-10%	1500 ppm
Outlet Oxygen	0-100 ppm, x1, x10, x100	75 ppm

In addition to the recommended calibration gases, a zero concentration gas of essentially pure nitrogen is used. These zero concentration and calibration gases are consistent with standard industry calibration practice of using "zero" gases in the range of 0-25% (usually 0-10%) and calibration gases in the range of 75-100% of the range of interest. Since these monitors are linear over their entire range, by calibrating with a zero gas and a gas

concentration of greater than 75% of the instrument upper limit, accurate monitoring of the gas concentrations of concern is achieved. Other gases in the system either have no effect on the analyzer or effect it linearly; appropriate corrections are made during calibration.