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OPTIMIZED H_2S TREATMENT AT PACIFIC GAS AND ELECTRIC COMPANY'S GEYSERS GEOTHERMAL PROJECT UNIT 11

Gary P. Dorighi
Pacific Gas & Electric

William A. Conner
Pacific Gas & Electric

Larry H. Kirby
Dow Chemical U.S.A.

ABSTRACT

The geothermal steam at Pacific Gas and Electric Company's Geysers Geothermal Project contains hazardous constituents of which hydrogen sulfide (H_2S) presents the greatest problem. Hydrogen sulfide removal processes were developed in the mid-1970's to comply with local air pollution control regulations. These chemical processes consumed a large volume of expensive chemicals and generated the major portion of the total waste for the geothermal plant.

This report describes the operation of a new process that was applied at Unit 11. This integrated system uses ferric HEDTA chelate to produce zerovalent sulfur in the condensate and the reduced iron chelate is reoxidized in the cooling tower. Thermal incineration and scrubbing of the non-condensible gas produces sodium bisulfite which is contacted with the zerovalent sulfur to produce soluble thiosulfate which remains in the geothermal condensate.

This process has greatly reduced the consumption of expensive chemicals and virtually eliminated the generation of hazardous wastes at Unit 11. The chemistry and the process results will be discussed.