

SECTION 2 OBJECTIVES

The overall goal of the DSRP development program was to operate a “pilot” unit at a large enough scale and for long enough duration to establish commercial credibility of the process. Furthermore, additional, confirming data on the effects, if any, of trace components in coal gas were desired. The overall contract objectives are summarized below:

- Develop and test an integrated, skid-mounted, bench-scale zinc titanate fluidized-bed desulfurization (ZTFBD)/DSRP reactor system with a slipstream of actual coal gas.
- Test the bench-scale DSRP over an extended period with a slipstream of actual coal gas to quantify the degradation in performance, if any, caused by the trace contaminants present in coal gas (including heavy metals, chlorides, fluorides, and ammonia).
- Expose the DSRP catalyst to actual coal gas for extended periods (about 400 hours) and then test its activity in a laboratory reactor to quantify the degradation in performance, if any, caused by static exposure to the trace contaminants in coal gas.
- Design and fabricate a six-fold-larger-scale DSRP reactor system for future slipstream testing.
- Further develop the fluidized-bed DSRP to handle high concentrations (up to 14%) of SO₂ that are likely to be encountered when pure air is used for regeneration of desulfurization sorbents.
- Expose the DSRP catalyst further (about 1,000 hours) and then test its activity in a laboratory reactor to quantify the degradation in performance, if any.
- Conduct an extended field test of the 6X DSRP reactor with actual coal gas and high concentrations of SO₂.

The work to satisfactorily meet the first three objectives is covered in detail in Appendices A and B. The main body of this report details the work towards the last four objectives.