12/93

COMBUSTION TUNING

new burner register setup philosophy

combustion tuning — Criteria — optimized
- O_2 CO NOx LOI temps Econ out
- balancing AGAS flame stability
- optimize
- Testing - Boiler η / RAH
- Turndowns
- Boiler leakage reduction

cooling air
Excess Air - levels

fineness
coal quality
SB
preheating

fuel flow balancing
- burner line restrictors
- clean air flow, dirty air flow, rotor probe

EPRI

Rick Skiyers
(415) 855-2948

airflow balancing (secondary)
- shrouds inner + outer registers

off-line +

NOx Optimization
Control Software

Additional Testing: direct temp - flame temp
velocity measurements [fuel flow
soot blowing optimization program

ongoing turndowns
fineness

10-20% reduction

Capital:
Low NOx burners

AARON
JODEAN GIESE
(213) 367-0409

software/services package
$250K

Mods flame stabilizer

Demo's

Additional NOx mods

FAX Jodean
213 3670210

Overfire Air NOx ports cost
- ductwork
- sec air dampers
- louvers/dampers (individual adjustments)

capital project

nozzles
boiler tube mods

12/93

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- cooling air
- Excess Air - levels

- fineness
- coal quality
- SB
- preheating

fuel flow balancing

- burner line restrictors
- clean air flow, dirty air flow, rotor probe [direct velocity measurement

airflow balancing (secondary)

- shrouds inner + outer registers off-line testing

Additional Testing: direct temp - flame temp
velocity measurements [fuel flow
soot blowing optimization program

ongoing turndowns
fineness

Capital:

Low NOx burners 2 register

~~213 367-0210~~

Mods flame stabilizer

Additional NOx mods

Overfire Air NOx ports cost

capital project

- duct work
- sec air dampers
- louvers/dampers (individual adjustments)

nozzles
boiler tube mods

Intermountain Generating Station
Fact Sheet

- The IGS is a two unit 1600 MW coal-fired generating plant located near Delta in west central Utah. The generating station began commercial operation in June 1986 (Unit 1) and May 1987 (Unit 2). The participants include 23 municipal utilities, six rural electric cooperatives and one investor-owned utility, all from Utah, and six municipalities from California. July

- Cost estimates for the project was $5.5 billion. Approximately one-third of the cost was toward the development and construction of the emission controls system. IGS's control equipment consists of the fabric filter, scrubber and low NOx burners.

- The IGS's permit limit for NOx is 0.55 lb/MMBTU, based on New Source Performance Standards. With LNB, IGS is currently achieving a NOx rate of approximately 0.40 lb/MMBTU.

- Since the plant started operation, the following combustion fine tuning have been performed on a rotation basis (list)

- In 1991 and 1992, both units' original LNB were replaced with new LNB having a modified design to resolve certain mechanical problems. The intent of the burner changeout was to increase the mechanical life of the burner without affecting NOx levels. Total expenditures for the burner modifications was $2.2 million.

12/9/93

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