

CHLOR - ALKALI 2

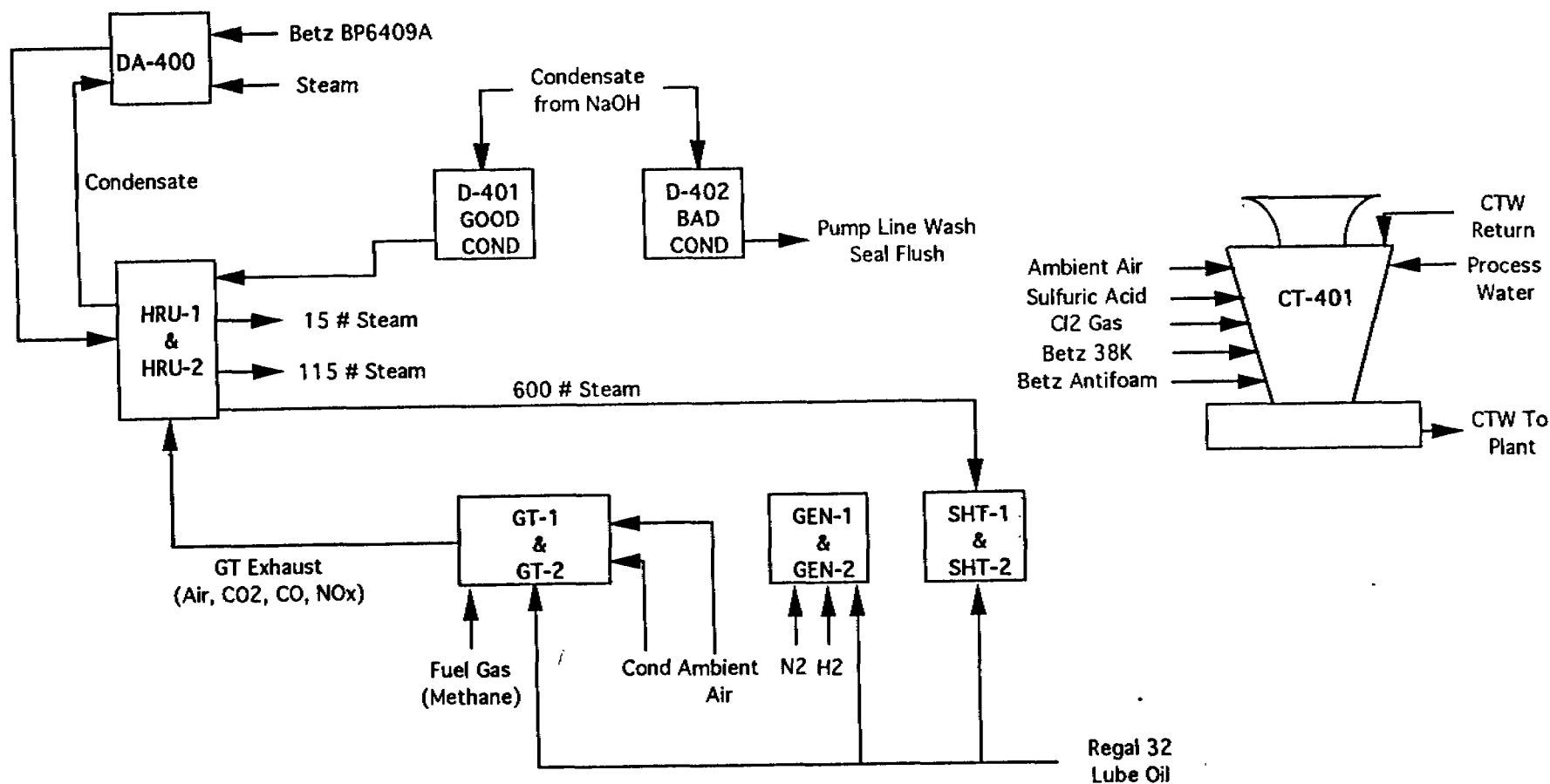
1994

REACTIVE CHEMICALS REVIEW

POWER AREA

DO A 046043
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POWER AREA



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POWER & UTILITIES CHEMICALS AND RAW MATERIALS

CHEMICALS:

Lube & Seal Oil "Regal 32"

Detergent

Sulfuric Acid

Anti-foam

Betz 6409B

Betz 38K

RAW MATERIALS:

Chlorine Gas

Hydrogen Gas

Methane

Water

A) Condensate

B) Process Water

C) Steam 600 / 235 / 115 / 30 PSIG

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POWER & UTILITIES

POTENTIAL PROBLEMS

POSSIBLE EXPLOSION/FIRE DUE TO
METHANE - OXYGEN MIXTURE IN PIPE
OR VESSEL

POSSIBLE EXPLOSION/FIRE DUE TO
METHANE - OXYGEN MIXTURE IN GAS
TURBINE DURING STARTUP OR
SHUTDOWN

POSSIBLE EXPLOSION/FIRE DUE TO
HYDROGEN - OXYGEN MIXTURE IN
FILL SYSTEM AND COOLING SYSTEM
FOR GENERATORS

POSSIBLE EXPLOSION/FIRE DUE TO
HYDROGEN FROM SEAL OIL SYSTEM
ENTERING INTO LUBE OIL SUMP

PREVENTIVE MEASURES

- 1 - Established procedures on purging fuel gas lines with nitrogen before taking out of service or returning to fuel gas service.
- 1 - Double block & bleed system integrated with startup and shutdown sequence.
- 2 - Compressor discharge press switch to insure adequate air supply before injecting fuel gas.
- 3 - Flame monitors to detect presence of flame in combustion section. Trips unit if flame not detected.
- 4 - Manual Air solenoid with time out function to enable fuel gas valves only during startup operation.
- 1 - Procedure for connecting/disconnecting hydrogen trailers from Air Products.
- 2 - Sampling procedure to verify H₂ purity.
- 3 - Purge procedures for pressuring/depressuring generators.
- 1 - Seal oil system is backed up by the gas turbine oil pumps.
- 2 - Hydrogen vapor extractor removes H₂ gas before oil reaches lube oil sump. System is protected by a dip leg to prevent gas from entering sump.
- 3 - Lube oil reservoir has a blower to remove hydrogen gas/oil vapor from sump.

POWER & UTILITIES

POTENTIAL PROBLEMS

FIRE INSIDE LINES CAUSED BY
RESTRICTION OF AIR FLOW DUE TO OIL
IN COOLING AIR SYSTEM

PREVENTIVE MEASURES

- 1 - Seal air system has low pressure alarm to prevent oil leakage.
- 2 - Cooling air flow indication with high/low temperature alarms.
- 3 - Auto swap on plant air to seals for startup and shutdown.

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POWER AREA CRITICAL INSTRUMENTS

Compressor discharge pressure transmitter - Initiates ignition at pressures greater than 18" water.

Over-speed trip diaphragm pressure switch monitors position of over-speed trip valve and is a permissive for the fuel gas over-speed trip valve. Trip is set at 35 psi.

High fuel gas pressure transmitter will trip turbine at 215 psi, provided 100 % speed has not been reached.

Low fuel gas pressure transmitter will trip turbine at 110 psi, provided the operator selector switch is not in SPIN position.

Starting valve reset is a permissive for the turbine ignition sequence.

High turbine exhaust blade bath temperature transmitters trip turbine at 1010 F. Both transmitters must be greater than setpoint to trip turbine.

High turbine exhaust blade manifold temperature transmitters trip turbine at 1010 F. Both transmitters must be greater than setpoint to trip turbine.

High disc cavity temperature transmitters trip generator at 550 F for first set and 800 F for remaining sets. It takes both transmitters in each set to trip the generator.

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