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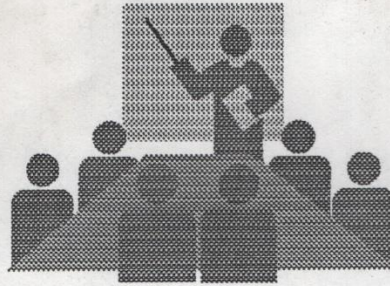


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Procedures for BP Engineers  
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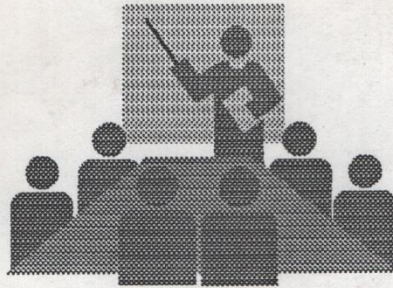
**PROCEDURE FOR B.P. ENGINEERS**

**SWITCHING FROM ELECTRIC EXHAUSTER  
TO STEAM EXHAUSTER**

**ACME STEEL COKE PLANT  
BY-PRODUCTS DEPT.**

**APRIL 1997**

- 1.) CHECK STEAM EXHAUSTER COOLING WATER AND OIL LEVELS AND FLOW.
- 2.) ASSIGN OPERATORS TO THEIR POSITIONS.
- 3.) RAISE THE SPEED OF STEAM EXHAUSTER TO 3000 RPMs.
- 4.) SIGNAL THE OPERATOR ON ELECTRIC EXHAUSTER DISCHARGE VALVE TO START CLOSING THE VALVE.
- 5.) ONCE THE VALVE IS HALF-WAY CLOSED, THE OPERATOR WILL SIGNAL THE B.P. ENGINEER. B.P. ENGINEER WILL THEN SIGNAL OPERATOR TO START OPENING THE DISCHARGE VALVE ON STEAM EXHAUSTER. DURING THIS TIME, OPERATORS WILL CLOSE AND OPEN THEIR BY-PASS VALVES TO THEIR ASSIGNED MACHINES.
- 6.) PUT ELECTRIC EXHAUSTER CONTROL TO *MANUAL* AND REDUCE THE SPEED TO 1000 to 1800 RPMs.
- 7.) CHECK SUCTION RECORDER AND MAKE ADJUSTMENTS AS NEEDED.
- 8.) SET STEAM EXHAUSTER TO RUN IN AUTOMATIC.
- 9.) WHEN THE STEAM EXHAUSTER IS STABLE, START THE PONY MOTOR ON ELECTRIC EXHAUSTER. SLOW MACHINE DOWN TILL LIMIT IS ON A. SHUT OFF THE LARGE MOTOR.
- 10.) AFTER SEVERAL MINUTES AND WHEN THE SHAFT ON THE LARGE ELECTRIC DRIVE MOTOR STOPS SHUT OFF ALL COOLING WATER TO THE MACHINE.
- 11.) REDUCE STEAM TO SOUTH BEARING TO 2 LBS.



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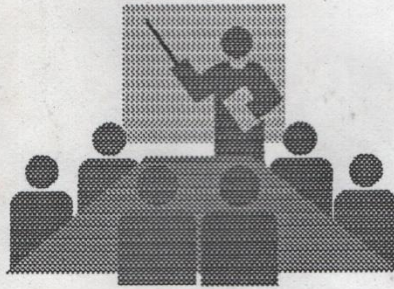
## PROCEDURE FOR B.P. ENGINEERS

### SWITCHING FROM STEAM EXHAUSTER TO ELECTRIC EXHAUSTER

ACME STEEL COKE PLANT  
BY-PRODUCTS DEPT.

APRIL 1997

- 1.) CHECK MACHINE FOR OIL & WATER LEVELS. LIMIT SWITCH SET ON A.
- 2.) RAISE THE STEAM TO SOUTH BEARING TO 5 lbs. (THRUST BEARING)
- 3.) OPEN ASKANIA VALVE BEHIND PANEL BOARD.
- 4.) OPEN COOLING WATER LINES TO FLUID DRIVE AND OIL RESERVOIR TANK IN BASEMENT.
- 5.) CONTACT OVENS TO GET OKAY TO START ELECTRIC MOTOR.  
**NOTE:** IF ON DAY SHIFT, CONTACT COAL HANDLING TO ALSO GET THE O.K.
- 6.) START ELECTRIC MOTOR.
- 7.) CHECK OIL PRESSURE ACROSS FILTERS ON FLUID DRIVE (10 to 17 psi).
- 8.) BRING MACHINE TO IDLING SPEED OF ABOUT 1500 to 1800 RPMs.
- 9.) STOP PONY MOTOR.
- 10.) ASSIGN ALL OPERATORS TO THEIR DESIGNATED STATIONS.
- 11.) START INCREASING SPEED OF MACHINE TO APPROXIMATELY 2800 RPMs.  
*TRY TO DO THIS AS FAST AS POSSIBLE.*
- 12.) SIGNAL OPERATOR ON STEAM EXHAUSTER'S DISCHARGE VALVE TO START CLOSING VALVE.
- 13.) ENGINEER WILL MONITOR THE STEAM EXHAUSTER DISCHARGE CLOSING. WHEN IT GETS APPROXIMATELY 1/2 WAY CLOSED, SIGNAL OPERATOR TO START OPENING ELECTRIC EXHAUSTER DISCHARGE VALVE.
- 14.) WHEN OPERATOR SEES LIMIT TORQUE VALVE STARTING TO OPEN, CLOSE BY-PASS ON ELECTRIC EXHAUSTER.
- 15.) ENGINEER WILL PUT STEAM EXHAUSTER ON MANUAL CONTROL AND HAVE OPERATOR OPEN THE BY-PASS VALVE. IDLE MACHINE 1000 RPM.
- 16.) WHEN THE DISCHARGE VALVES FINISH THEIR OPENING & CLOSING CYCLES, MAKE THE NECESSARY SUCTION ADJUSTMENTS.  
**SUCTION TOO HIGH:** SLOW MACHINE DOWN  
**SUCTION TOO LOW:** INCREASE SPEED
- 17.) WHEN SUCTION REMAINS STEADY AT SETPOINT, PUT MACHINE ON AUTOMATIC CONTROL.
- 18.) PUT THE STEAM EXHAUSTER DOWN TO IDLING SPEED.



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## PROCEDURE FOR B.P. OPERATORS

### SHUTTING DOWN AMMONIA STILL

ACME STEEL COKE PLANT  
BY-PRODUCTS DEPT.

MARCH 1997

- 1.) SHUT DOWN LIQUOR FEED TO STILL.
- 2.) SET STEAM FEED TO STILL TO APPROXIMATELY 185 to 200 lbs. (BASE LOAD)
- 3.) SHUT DOWN CAUSTIC FEED TO STILL. BLOW OUT LINE TO STORAGE TANK.
- 4.) SHUT DOWN ACID FEED TO SOUTH AMMONIA BAY.
- 5.) PURGE STILL OUT TO SOUTH AMMONIA BAY 10 to 15 min.
- 6.) ISOLATE STILL DISCHARGE VALVE TO SOUTH BAY.
- 7.) OPEN VENT ON TOP OF STILL.
- 8.) CLOSE VAPOR LINE VALVE TO AMMONIA ABSORBER.
- 9.) BLOW OUT AND DRAIN "U" TUBE LINE AND LEAVE SLIGHT PURGE ON DRAIN LINE AND VENT LINE ON TOP OF STILL.
- 10.) SWITCH TO FLUSHING LIQUOR TO SECONDARY COOLER, IF NOT TAR PERCENT WILL HAVE TO BE REDUCED TO MAINTAIN THE 8 TO 10% OF LEVEL.
- 11.) DRAIN DOWN CAUSTIC LINE TO STILL FROM AFTER FISHER VALVE REGULATOR UNTIL EMPTY AND BLOWING STEAM ( OR BLOW OUT TO STILL ).

**NOTE:** IF SLIP BLANKING VAPOR LINE TO AMMONIA ABSORBER, SHUT DOWN STEAM PURGE AFTER ALL THIS PROCEDURE HAS BEEN DONE. AFTER BLANK IS INSTALLED, RESTART THE PURGE.



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## PROCEDURE FOR B.P. OPERATORS

### STEAMING OF PLUGGED TUBE BUNDLES ON WET SURFACE AIR COOLER

ACME STEEL COKE PLANT  
BY-PRODUCTS DEPT.

MARCH 1997



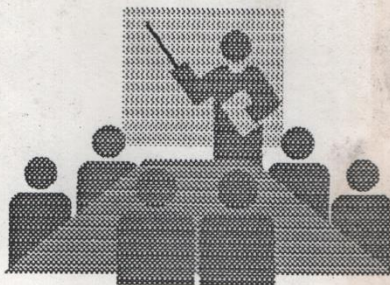
- 1.) FIRST THE OPERATOR MUST DETERMINE IF THERE IS A PLUGGING PROBLEM BY SEEING ONE OF THE FOLLOWING:
  - A.) AN INCREASE IN SECONDARY COOLER 'S PUMP PRESSURE (NORMAL DISCHARGE PRESSURE IS 43 psi)
  - B.) LOSE OF FLOW ON RECORDER IN CONTROL ROOM
  - C.) AN INCREASE IN SECONDARY COOLER DISCHARGE GAS TEMPERATURE
  
- 2.) ONCE ON THE WSAC, THE B.P. OPERATOR MUST CHECK THE DIFFERENTIAL TEMPERATURE BETWEEN THE INLET AND OUTLET OF EACH TUBE BUNDLE TO DETERMINE WHICH BUNDLES ARE PLUGGED.

**EXAMPLE:**

IF THREE OF THE BUNDLES ON THE HOT SIDE ARE SHOWING THE SAME TEMPERATURE AND ONE BUNDLE IS RUNNING COOLER, THE COOLER BUNDLE IS THE PLUGGED ONE, SAME ON COLD SIDE.

- 3.) TO STEAM A PLUGGED TUBE BUNDLE:
  - A.) ISOLATE THE INLET LIQUOR VALVE
  - B.) CLOSE DOWN THE DISCHARGE VALVE UNTIL 95% CLOSED (3 to 5 THREADS OPEN)
  - C.) HOOK UP STEAM HOSE FIRST TO THE STEAM OUT ABOVE THE INLET VALVE AND STEAM FOR APPROXIMATELY 30 MINUTES. IF NO PROGRESS, SHUT OFF THE STEAM AND BLEED DOWN THE LINE AND ATTACH THE STEAM HOSE UP TO THE NEXT CHAMBER ON THE PLUGGED BUNDLE UNTIL ALL FOUR CHAMBERS HAVE BEEN STEAMED AND A FLOW OF STEAM HAS BEEN NOTICED THROUGH THE DISCHARGE VALVE. ALSO, B.P. OPERATOR WILL NOTICE AN INCREASE IN OUTLET TEMPERATURE AS THE STEAM MAKES ITS WAY THROUGH THE DISCHARGE VALVE.

**NOTE:** THE STEAM/ FLUSHING LIQUOR STATION ON THE EAST SIDE OF THE WSAC CAN ALSO BE USED FOLLOWING THIS PROCEDURE AND AT TIMES IS MUCH MORE EFFICIENT THAN USING STEAM ALONE.
  
- 4.) TO DETERMINE THAT THE BUNDLE IS OPEN, THE B.P. OPERATOR CAN REVERSE THE PROCESS UNTIL THE STEAM HOSE IS FINALLY BACK ON THE STARTING POINT JUST ABOVE THE INLET VALVE AND A LARGE VOLUME OF STEAM IS GOING THROUGH THE ENTIRE BUNDLE
  
- 5.) ONCE STEAMING IS FINISHED:
  - A.) OPEN DISCHARGE VALVE
  - B.) OPEN INLET VALVE
  - C.) CHECK PUMP PRESSURE (NORMAL 43 psi)
  - D.) CHECK FLOW RECORDER (NORMAL 900 to 1000 gpm)
  - E.) CHECK GAS DISCHARGE TEMPERATURE (APPROXIMATELY 40°C LOWER THAN INLET TEMPERATURE)



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## PROCEDURE FOR L.O. OPERATORS

### STEAMING OUT OF HEADER #6 LIGHT OIL GAS BLANKETING LINES

ACME STEEL COKE PLANT  
BY-PRODUCTS DEPT.

MARCH 1997

- 1.) VENT L.O. STORAGE TANK TO THE ATMOSPHERE AND ISOLATE PRESSURE GAUGE.
- 2.) VENT L.O. SUMP TO THE ATMOSPHERE.
- 3.) VENT L.O. VENTS (Inside L.O. Bldg.) TO THE ATMOSPHERE, ISOLATE PRESSURE GAUGE.
- 4.) VENT HOT CIRCULATION TANK AND HOT DECANter TO THE ATMOSPHERE.
  - SET WEIR ON HOT DECANter DOWN 5 TO 8 FULL TURNS UNTIL NORMAL OVERFLOW IS ESTABLISHED. ISOLATE PRESSURE GAUGES.
- 5.) VENT COLD CIRCULATION TANK AND COLD DECANter TO THE ATMOSPHERE.
  - SET COLD DECANter WEIR DOWN 12 TO 15 FULL TURNS UNTIL NORMAL OVERFLOW IS ESTABLISHED.
- 6.) BLOCK IN THE ON SWITCH INSIDE OF RACK 6 YELLOW BOX.
  - THIS WILL MAKE SURE ALL REGULATORS STAY OPEN.
- 7.) ISOLATE IMPULSE FEED FROM FOXBORO TRANSMITTERS ON RACK 6 AND 6A.
  - THIS WILL CAUSE FISHER VALVES TO OPEN ALL THE WAY
- 8.) ISOLATE REMAINDER OF PRESSURE GAUGES.
- 9.) ISOLATE GAS SUPPLY VALVE ON LANDING NORTHEAST OF #1 LBA.
- 10.) HOOK UP STEAM HOSE TO 3/4" STEAM OUT VALVE ABOVE GAS SUPPLY VALVE AND TURN ON THE STEAM.
  - A.) THIS PROCEDURE WILL ALLOW THE STEAM TO FOLLOW THE SAME ROUTE THE SUPPLY GAS TAKES FINALLY MAKING ITS WAY BACK TO THE SUCTION MAIN.
  - B.) WHILE STEAMING, A CHECK MUST BE MADE TO DETERMINE WHERE THE BLOCKAGE IS BY CHECKING THE AMOUNT OF STEAM FLOW COMING OUT OF THE SAMPLE VALVES ON EACH VESSEL AND LINE.
  - C.) ALSO, L.O. OPERATOR MAY WANT TO INCREASE THE AMOUNT OF BACK PRESSURE BY USING THE MANUAL ISOLATION VALVE JUST WEST OF THE FISHER VALVE ON RACK 6A (Suction Side).
  - D.) ONCE THE DESIRED AMOUNT OF STEAM PRESSURE IS OBTAINED, OPEN THE GAUGE HATCHES ON THE COLD AND HOT DECANterS AND ONE AT A TIME EXERCISE THE 3WAY VALVES ON EACH VESSEL UNTIL GOOD STEAM FLOW IS GOING INTO EACH VESSEL.
  - E.) ONCE IT IS DETERMINED THAT THE GAS SUPPLY LINES ARE OPEN FROM THE SOURCE TO EACH VESSEL, OPEN THE MANUAL ISOLATION VALVE ON RACK 6A (Suction Side) AND CONTINUE STEAMING TO THE SUCTION MAIN, BETWEEN 4 TO 6 HOURS SHOULD BE ENOUGH.
- 11.) SHUT OFF THE STEAM.
- 12.) REMOVE THE STOP ON RACK 6 ON SWITCH (HEADER WILL TRIP).

- 13.) REMOVE THE TUBING FROM FOXBORO TRANSMITTERS (IMPULSE) AND ROD OUT ANY BLOCKAGE INSIDE VALVE AND LINE, THEN CHECK TUBING FOR BLOCKAGE.
- 14.) HOOK TUBING BACK UP AND OPEN VALVES TO IMPULSE LINES.
- 15.) OPEN GAS SUPPLY VALVE NORTHEAST OF #1 LBA.
- 16.) ACTIVATE **START** SWITCH INSIDE RACK 6 YELLOW BOX.
- 17.) PUT L.O. STORAGE TANK BACK ON LINE AND OPEN VALVE TO PRESSURE GAUGE.
- 18.) PUT L.O. SUMP BACK ON LINE.
- 19.) PUT L.O. VENTS BACK ON LINE.
- 20.) PUT HOT CIRCULATION TANK AND HOT DECANTER BACK ON LINE, CLOSE GAUGE HATCH.
  - SET HOT DECANTER WEIR BACK UP 5 TO 8 TURNS UNTIL NORMAL OVERFLOW IS ESTABLISHED, CLOSE GAUGE HATCH
- 21.) PUT COLD CIRCULATION TANK AND COLD DECANTER BACK ON LINE.
  - SET COLD DECANTER WEIR UP 12 TO 15 TIMES UNTIL NORMAL OVERFLOW IS ESTABLISHED.
- 22.) MONITOR CONTROL VALVES ON RACK 6 AND 6A UNTIL 2"+ OF WATER COLUMN IS REACHED BEFORE FISHER CONTROL VALVE ON RACK 6A (Suction Side).
- 23.) YOU ARE NOW BACK TO NORMAL OPERATION, BUT SEVERAL CHECKS SHOULD BE MADE:
  - A.) GAS SUPPLY TEMPERATURE IS ABOVE 100°C.
  - B.) ONCE 2" OF WATER COLUMN IS REACHED, ONLY THE BOTTOM CONTROL FISHER VALVE SHOULD BE DOING THE REGULATING (RACK 6).
  - C.) FISHER CONTROL VALVE (RACK 6A) SHOULD ONLY BE OPEN JUST LESS THAN 1/2 TO 1/3 OF THE WAY OPEN.

**NOTE:** STEAM MAY ALSO BE APPLIED JUST BEFORE FISHER VALVE ON RACK 6 AND DIRECTED BACK TO GAS SUPPLY VALVE NORTHEAST OF #1 LBA. L.O. OPERATOR MUST FIRST ISOLATE USING VALVE JUST EAST OF FISHER VALVE AND STEAMING ONE SECTION OF LINE AT A TIME, THEN DIRECT STEAM FLOW TO NORMAL FLOW ROUTE ONCE THE LINE IS OPEN.

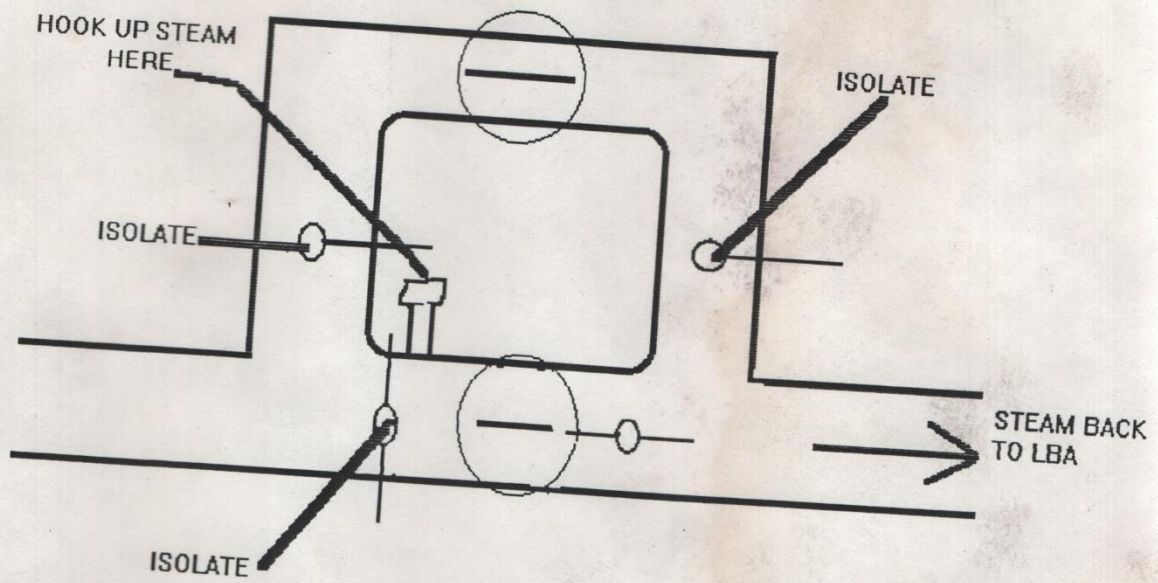


Figure: Regulators on Top of Cold Decanter.

NOTE: IF HEADER IS ALREADY TRIPPED, SET DECANTER WEIRS AS SOON AS AS POSSIBLE THEN FOLLOW THIS PROCEDURE.