

STANDARD OPERATING PROCEDURE rev. 4/89

REACTOR AREAS Per-Tri Dowtherm Furnace Startup

CHECK	ACTION STEPS (All Caps)	COMMENTS (Below steps)
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THE OPERATOR IS REQUIRED TO INITIAL EACH ITEM AS DONE IN THE SEQUENCE SHOWN.

- 1. PAD THE REACTOR TO BE HEATED UP BETWEEN 80-90# NITROGEN PRESSURE.
- 2. CHECK TO SEE THAT STEAM DRUM FOR THAT REACTOR IS IN SERVICE AND HAS A GOOD CONDENSATE LEVEL.
- 3. UNBLOCK SNUFFING STEAM EXCEPT FOR MANUAL LOADING STATION.
- 4. IF MAIN BURNER IS TO BE LIT, LINE UP DOWTHERM RECIRCULATION PUMPS TO REACTOR THAT IS TO BE HEATED UP. IF MAIN BURNER IS NOT TO BE STARTED, LEAVE VALVES BLOCKED UNTIL YOU ARE READY TO START PUMPS AND LIGHT MAIN BURNER.
- 5. OPEN INLET AND OUTLET VALVES AT FURNACE WITH MANUAL LOADING STATION.
- 6. START DOWTHERM CIRCULATION PUMPS AND INSURE MINIMUM DOWTHERM FLOW (270 GPM) HAS BEEN ESTABLISHED IN FURNACE TUBES BY CHECKING RECEIVER GAUGE AT THE FIRETRON CONTROL PANEL. IF MAIN BURNER IS NOT GOING TO BE STARTED, LEAVE PUMPS DOWN UNTIL JUST BEFORE LIGHTING MAIN BURNER.
- 7. CHECK TO SEE THAT THE PILOT GAS GLOBE VALVE, MAIN BURNER FACTORY MUTUAL PLUGCOCK VALVE, AND BOTH MAIN GAS MAXON VALVES ARE IN THE CLOSED POSITION.
- 8. PUT THE NATURAL GAS PRESSURE REGULATOR IN SER-91-1145

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VICE.

- 9. ACTIVATE THE FIRETRON CONTROL PANEL BY PLACING BOTH THE MANUAL SHUTDOWN SWITCHES (ONE ON FIRETRON PANEL S-1 AND THE ONE ON CONTROL ROOM PANEL SDS-230) IN THE "ON" POSITION. BOTH SWITCHES SHOULD BE NORMALLY IN THE "ON" POSITION TO KEEP POWER ON FIREYE AMPLIFIER AND HEAT LAMP L3 TO KEEP PANEL DRY.
- 10. ACTIVATE THE FURNACE PURGE CYCLE BY DEPRESSING THE "START PURGE CYCLE" SWITCH ON FIRETRON PANEL. THE PURGE CYCLE (SET FOR TWO MINUTES) IS COMPLETE WHEN "PURGE COMPLETE" LIGHT COMES ON. (IF "PURGE COMPLETE" LIGHT DOES NOT COME ON, CHECK TROUBLE-SHOOTING GUIDE.)
- 11. CHECK THE ATMOSPHERE INSIDE BOTTOM OF FURNACE (AT BURNER ASSEMBLY) WITH AN EXPLOSION METER TO ASSURE THAT NO RESIDUAL COMBUSTIBLE GASES ARE INSIDE THE HEATER.
- 12. LIGHT THE PILOT BURNER BY FIRST OPENING GLOBE VALVE IN GAS LINE, THEN DEPRESSING THE "PILOT START" SWITCH ON THE FIRETRON PANEL.
 - a. This switch opens the solenoid valve in the pilot gas line and energizes the spark plug which ignites the pilot burner. The "pilot on" light comes on.
 - b. When the fireye detects a flame, the voltage meter in the Firetron panel will show voltage. At this time, pilot has been successfully lit and at this time, "pilot on" switch can be released. The "start" light L1 will come on. (If pilot does not ignite, see trouble-shooting guide.)
- _____ 13. VISUALLY INSPECT THE PILOT FLAME TO ASSURE IT IS PROPERLY ADJUSTED. THE PILOT WILL BURN INDEFINITELY AT THIS POINT, UNLESS "STOP" BUTTON S-3 IS PUSHED OR MAIN BURNER IS LIT.
- _____ 14. IF THE MAIN BURNER IS TO BE LIT, NOTIFY PERSONNEL IN THE CONTROL ROOM THAT PILOT IS LIT

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AND THE HEATER IS READY FOR THE MAIN BURNER.
(BE SURE THAT DOWTHERM RECIRCULATION PUMPS
HAVE BEEN LINED UP AND STARTED.)

- _____ 15. THE CONTROL ROOM OPERATOR WILL PLACE THE DOW-
THERM HEATER TEMPERATURE CONTROLLER IN THE
MANUAL POSITION AND SET OUTPUT SIGNAL AT 4 TO
6 PSIG. INSURE THAT CONTROLLER IS IN MANUAL
POSITION.
- _____ 16. DEPRESS THE "MAIN BURNER START" SWITCH ON THE
FIRETRON PANEL. THIS CLOSES VENT VALVE SV-216
AND PUTS POWER TO MAXON VALVES MV-217 AND MV-
218. IT ALSO RESETS PURGE TIMER T1.
- _____ 17. OPEN BOTH MAXON VALVES.
 - a. This supplies natural gas pressure
to low gas pressure switch PS-208.
 - b. Starts 30 second pilot timer (after
30 seconds, solenoid valve to pilot
will close).
 - c. Supplies power to flame failure
alarm.
- _____ 18. AFTER BOTH MAXON VALVES ARE OPENED, SLOWLY
OPEN PLUGCOCK VALVE ALLOWING PILOT FLAME TO
IGNITE MAIN BURNER. IF A FLAME IS ESTABLISHED
ON MAIN BURNER WHEN PILOT TIMES OUT THE FIREYE
WILL CONTINUE TO SEE A FLAME.
- _____ 19. IF LIGHTING OF THE MAIN BURNER IS NOT ACCOM-
PLISHED, STEPS 9 THROUGH 15 WILL HAVE TO BE
REPEATED.
- _____ 20. VISUALLY INSPECT MAIN BURNER FLAME AND INFORM
OPERATOR THAT BURNER IS LIT AND HEATUP MAY
BEGIN.

The temperature controller should remain
in the manual position and gas slowly
increase for heatup.

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