

**ALTERNATOR STARTUP**

**Turning gear to full operation.**

**Procedure initiated by: \_\_\_\_\_ . 7/03**

**Before starting procedure, remove all check marks.**

<input type="checkbox"/>	<b>1. Check log book for incomplete compliance for further operation.</b>	
<input type="checkbox"/>	<b>2. Motor control center A &amp; B.</b>	
<b>Assure all breakers are setup for full operation.</b>		
<input type="checkbox"/>	<b>Breakers – ON</b> MCCB: (2A) (2C) (2E) (2G) (2I) (3E) (3G) (3I) (3K) (1G) (1I) MCCA: (2E) (3E) (3I) (3J) (4I) (4K) (6G) (6K)	
<input type="checkbox"/>	<b>Breakers – ON Summer season weekends</b>	
<input type="checkbox"/>	<b>MCCA: (4B) (4C) Front and Rear Alt. Heaters.</b>	
<input type="checkbox"/>	<b>3. PLC operational, before speed #1 print all pertinent info, assure PLC is scanning.</b>	
<input type="checkbox"/>	<b>4. Alternator fault call out system - Disarm</b>	<b>203</b>
<input type="checkbox"/>	<b>5. Lube oil pump 1 &amp; 3 SB switches – Run then Auto start</b>	<b>443/203</b>
<input type="checkbox"/>	<b>6. Lube oil pump 2 &amp; 4 SB switches – Stop then Auto start</b>	<b>443/203</b>
<input type="checkbox"/>	<b>7. Exciter cooling water pump – ON</b>	<b>202</b>
<input type="checkbox"/>	<b>8. Seal oil tank drain pump – OFF</b>	<b>202</b>
<input type="checkbox"/>	<b>9. Alternator equipment inspection. Check condition of equipment.</b>	
<b>UPPER LEVEL</b>		
<input type="checkbox"/>	<b>Exciter power supply – Fault reset &amp; close main breaker</b>	<b>437/474</b>
<input type="checkbox"/>	<b>Main motor brush box interior – Check, carbon build.</b> When cleaning is necessary (See drive system isolation procedure).	
<input type="checkbox"/>	<b>Motor lift pumps – Check oil tank level, pressure and leakage</b>	<b>442</b>
<input type="checkbox"/>	<b>Alternator lift pumps – Check pump leakage and sound</b>	<b>208/209</b>
<input type="checkbox"/>	<b>City water auto valve – Check mechanical – Open</b>	<b>270</b>
<input type="checkbox"/>	<b>Air pressure – Check (indicated range)</b>	
<input type="checkbox"/>	<b>Alternator bearing’s strainers – Check pressure (indicated range)</b>	<b>239</b>
<input type="checkbox"/>	<b>Hot water system – Check temp. &amp; pressure (indicated range)</b>	<b>211</b>
<input type="checkbox"/>	<b>Building fans – Check proper seasonal settings</b>	
<b>LOWER LEVEL INSPECTION</b>		
<input type="checkbox"/>	<b>Air compressor – Check pressure (indicated range)</b> Blow out tank water and check oil level weekly (Mondays)	<b>289</b>
<input type="checkbox"/>	<b>Main vacuum pump – Check oil level (indicated range)</b>	<b>485</b>
<input type="checkbox"/>	<b>Ground cables and signs – (operating position)</b>	<b>485</b>
<input type="checkbox"/>	<b>Flywheel lift pumps – Check leakage and sound – area</b>	<b>485</b>
<input type="checkbox"/>	<b>Flywheel seal oil equipment – Check leakage, Wipe up.</b>	

<input type="checkbox"/>	<b>10. Alternator vapor extractor valve – Open to 4 “ WC</b>	<b>457</b>
<input type="checkbox"/>	<b>Seal oil pit – Check for excessive oil leakage</b>	
<input type="checkbox"/>	<b>11. Vacuum tank vent valve 41 – ½ turn open</b>	<b>PIT</b>
<input type="checkbox"/>	<b>Assure vacuum tank level is up on upper glass.</b>	
<input type="checkbox"/>	<b>12. Vacuum tank drain valve SO 73 – Close</b>	<b>PIT</b>
<input type="checkbox"/>	<b>13. Seal oil tank drain valve SO 74 – Close</b>	<b>PIT</b>
<input type="checkbox"/>	<b>14. Main seal oil pump – ON</b>	<b>202</b>
<input type="checkbox"/>	<b>15. Main vacuum pump – ON</b>	<b>202</b>
<input type="checkbox"/>	<b>16. Helium cabinet DC fused disconnect – ON</b>	<b>216E</b>
<b>CONTINUE LOWER LEVEL INSPECTION</b>		
<input type="checkbox"/>	<b>Machine gas pressure – (indicated range)</b>	<b>132</b>
<input type="checkbox"/>	<b>DC instrument panel – Voltage (indicated range)</b>	<b>216E</b>
<input type="checkbox"/>	<b>AC instrument panel – Voltage (indicated range)</b>	<b>217</b>
<input type="checkbox"/>	<b>Motor control center A – Voltage (indicated range)</b>	<b>210</b>
<input type="checkbox"/>	<b>Motor control center B – Voltage (indicated range)</b>	<b>201</b>
<input type="checkbox"/>	<b>House power distribution center – Voltage (indicated range)</b>	<b>201</b>
<input type="checkbox"/>	<b>Signal source UPS – ON (indicated by yellow light)</b>	<b>201</b>
<input type="checkbox"/>	<b>Voltage, amps (indicated range)</b>	
<input type="checkbox"/>	<b>Turning gear – ON – Check</b>	<b>202</b>
<input type="checkbox"/>	<b>17. Core monitor (date chart recorder), (power switch – ON), (sight glass, indicated range, adjust with HE 54), (Reset, reset button, assure fault clears), (Inactive switch – Active).</b>	
<input type="checkbox"/>	<b>18. 480 Volts diesel back transfer panel – Key switch in auto position</b>	
<input type="checkbox"/>	<b>Green indicator should be –ON</b>	<b>503</b>
<input type="checkbox"/>	<b>19. Flywheel strainers – Check differential pressure, leakage etc.</b>	
<input type="checkbox"/>	<b>20. Limit amp – Check –(doors properly locked), (isolation switch – ON position), (fused disconnect – Closed, green indicator – ON), (phase loss indicator –Reset)</b>	<b>112</b>
<input type="checkbox"/>	<b>21. Limit amp safety switch, Key – B- Ready position</b>	<b>112</b>
<input type="checkbox"/>	<b>22. Vibration monitor system – Operational</b>	<b>476</b>
<input type="checkbox"/>	<b>23. Cuno filter – ON –Check</b>	<b>202</b>
<input type="checkbox"/>	<b>24. Hot gas circulator – OFF</b>	<b>202</b>
<input type="checkbox"/>	<b>25. Hot water pump – ON – Check</b>	<b>202</b>
<input type="checkbox"/>	<b>26. Motor blower switch position – Auto</b>	<b>202</b>
<input type="checkbox"/>	<b>Exhaust louvers – Open – (check yellow light indication)</b>	<b>202</b>
<input type="checkbox"/>	<b>27. 2000 HP Motor blower – ON</b>	<b>202</b>
<input type="checkbox"/>	<b>28. Main river water pump – ON</b>	<b>202</b>
<input type="checkbox"/>	<b>29. Flywheel DC seal oil fused disconnect – ON</b>	<b>216C</b>
<input type="checkbox"/>	<b>30. Alternator DC seal oil fused disconnect – ON</b>	<b>216D</b>

<input type="checkbox"/>	<b>31. Exciter DC breaker &amp; protective relay fused disconnect – ON</b>	<b>216I</b>
<input type="checkbox"/>	<b>Check – protective power indicator lights – ON – or trip</b>	<b>202</b>
<input type="checkbox"/>	<b>32. Alternator DC lube oil breaker – ON</b>	<b>216F</b>
<input type="checkbox"/>	<b>33. Flywheel DC lube oil breaker –ON –Alarm reset</b>	<b>216G</b>
<input type="checkbox"/>	<b>34. Alt. DC lube oil pump starter, SB switch position – Auto start</b>	<b>104</b>
<input type="checkbox"/>	<b>Ready standby green light illuminates</b>	<b>104</b>
<input type="checkbox"/>	<b>DC system problem blue light clears.</b>	<b>104</b>
<input type="checkbox"/>	<b>35. Alt. DC seal oil pump starter, SB switch position – Auto start</b>	<b>105</b>
<input type="checkbox"/>	<b>Ready standby green light illuminates</b>	<b>105</b>
<input type="checkbox"/>	<b>DC system problem blue light clears.</b>	<b>105</b>
<input type="checkbox"/>	<b>36. Flywheel DC seal oil pump starter, SB switch position – Auto start</b>	<b>450</b>
<input type="checkbox"/>	<b>Ready standby green light illuminates</b>	<b>450</b>
<input type="checkbox"/>	<b>DC system problem blue light clears.</b>	<b>450</b>
<input type="checkbox"/>	<b>37. Flywheel DC lube oil pump starter, SB switch position – Auto start</b>	<b>449</b>
<input type="checkbox"/>	<b>Ready standby green light illuminates</b>	<b>449</b>
<input type="checkbox"/>	<b>DC system problem blue light clears.</b>	<b>449</b>
<input type="checkbox"/>	<b>38. City water valve CW 6 – Open</b>	<b>202</b>
<input type="checkbox"/>	<b>39. All system fault lights – Cleared – Check</b>	<b>201/202/203</b>
<input type="checkbox"/>	<b>40. PLC. Starting procedure, All faults cleared for starting.</b>	
<input type="checkbox"/>	<b>41. Before starting – Notify – Comm Electric (Wareham) Phone #: 9-617-541-7835</b>	
<input type="checkbox"/>	<b>42. Alternator house personal – Notify – About to start, stand clear.</b>	
<input type="checkbox"/>	<b>43. Zero speed fault – Rest</b>	<b>111</b>
<input type="checkbox"/>	<b>44. 2000 HP motor lock out switch, Key – A _ Position _ Ready</b>	<b>111</b>
<input type="checkbox"/>	<b>45. Drive start procedure (read completely before starting)</b>	
<input type="checkbox"/>	<b>Limit amp start bottom – Activate</b>	<b>111</b>
<input type="checkbox"/>	<b>Observe indicated AC current – 100 amps each phase</b>	<b>111</b>
<input type="checkbox"/>	<b>If current is abnormal (125+ amps) stop button – Active</b>	<b>111</b>
<input type="checkbox"/>	<b>Permissive green light illuminates – Check</b>	<b>111</b>
<input type="checkbox"/>	<b>IOC active (yellow light illuminates) – Check</b>	<b>111</b>
<input type="checkbox"/>	<b>Drive start button – Activate</b>	<b>111</b>
<input type="checkbox"/>	<b>Drive stop button illuminates red</b>	<b>111</b>
<input type="checkbox"/>	<b>Monitor drive current, soft start approx. 250 amps DC peak</b>	<b>111</b>
<input type="checkbox"/>	<b>If excessive current – Active stop button.</b>	<b>111</b>
<input type="checkbox"/>	<b>If no acceleration within 60 sec. – Activate stop button.</b>	<b>111</b>
<input type="checkbox"/>	<b>46. Preheat may be used for rotor heating during acceleration to speed #1 – 15 minutes on then 10 minutes off</b>	
<input type="checkbox"/>	<b>47. Exciter field supplies.</b>	
<input type="checkbox"/>	<b>Fault panel – Reset</b>	<b>473/474</b>
<input type="checkbox"/>	<b>Excitation – Fault system – Reset</b>	<b>131</b>

<input type="checkbox"/>	<b>AC yard breakers #1 – Close – Red light indication</b>	<b>443</b>
<input type="checkbox"/>	<b>DC field breakers – Close – both indicate red</b>	<b>443</b>
<input type="checkbox"/>	<b>Excitation – Fault system – Reset</b>	<b>131</b>
<input type="checkbox"/>	<b>Exciter power – ON – Activate</b>	<b>131</b>
<input type="checkbox"/>	<b>Preheat button – Activate</b>	<b>131</b>
<input type="checkbox"/>	<b>Exciter power supply current – Check – 600 amps</b>	<b>131</b>
<input type="checkbox"/>	<b>48. All lift pumps shut off at 200 RPM – Check</b>	<b>202</b>
<input type="checkbox"/>	<b>49. Vacuum tank vent valve – start closing throughout speed 1 and 2</b>	
<input type="checkbox"/>	<b>50. When speed #1 is reached, preheat may be necessary to assure rotor temperature of 135°F or higher before proceeding to speed #2 – 15 minutes ON then 10 minutes OFF</b>	
<input type="checkbox"/>	<b>51. Activate PLC fault circuit</b>	
<input type="checkbox"/>	<b>52. Speed #2 button – Activate</b>	<b>111</b>
<input type="checkbox"/>	<b>53. When speed #2 is reached, preheat may continue to be necessary to assure rotor temperature is above 140°F before proceeding to speed #3. – 15 minutes on then 10 minutes off Check hot water system temperature indications.</b>	<b>202/203</b>
<input type="checkbox"/>	<b>54. Mechanical room cooling water and air system – Checklist</b>	<b>BLDG NW21</b>
<input type="checkbox"/>	<b>55. Speed #3 button – Activate – Observe current &amp; Voltage</b>	<b>111</b>
<input type="checkbox"/>	<b>56. At 1260 RPM auto transformer switches out.</b>	
	<b>57. Observe switch gear shift and current limits</b>	<b>170A/111</b>
<b>Seal oil make up tank high level – Alarms</b>		
<b>Check Operational Notes</b>		
<input type="checkbox"/>	<b>58. Alternator water re-circulator – Auto – ON – Check If pump fails – Open river water valve #20 for direct cooling</b>	<b>202</b>
<input type="checkbox"/>	<b>59. Flywheel seal oil valve #97 – Close</b>	<b>458</b>
<input type="checkbox"/>	<b>60. Vacuum Valve V#41 – Close</b>	
<input type="checkbox"/>	<b>61. When speed #3 is reached – Check correct RPM (1700)</b>	<b>111</b>
<input type="checkbox"/>	<b>62. 15 KV air switch – Operational</b>	<b>289</b>
<input type="checkbox"/>	<b>Remove kirk lock key</b>	<b>289</b>
<input type="checkbox"/>	<b>Connect air quick connect to switch</b>	<b>289</b>
<input type="checkbox"/>	<b>Open air valve as indicated</b>	<b>289</b>
<input type="checkbox"/>	<b>Assure 15 KV pressure switch indicates – OK</b>	<b>203</b>
<input type="checkbox"/>	<b>Bleed air tank some to start compressor if pressure is not – OK</b>	<b>289</b>
<input type="checkbox"/>	<b>63. Call control room every run day, “machine is ready. You are in control.”</b>	<b>289</b>
<input type="checkbox"/>	<b>64. To assure systems and equipment are operating properly record</b>	

<input type="checkbox"/>	<b>Check sheet readings 2 times daily at 9:30 am and 2 :00 pm</b>	
<input type="checkbox"/>	<b>Carry rags to wipe off equipment and gauges</b>	
<input type="checkbox"/>	<b>Record any and all equipment discrepancies into logbook and job worksheet.</b>	
<input type="checkbox"/>	<b>65. Seal oil pit – Drain Alt. Diet alarm and seal oil diet alarm</b>	<b>PIT</b>
<input type="checkbox"/>	<b>Wipe down oil drippings and drain drip trays – DAILY</b>	<b>PIT</b>
<input type="checkbox"/>	<b>Also wipe down seal oil equipment – DAILY</b>	<b>PIT</b>
<input type="checkbox"/>	<b>66. Main oil tanks – Check 4 to 5” extractor pressure, Wipe down</b>	
<input type="checkbox"/>	<b>Tank tops and cuno filter, including base and drip tray.</b>	

<b>OPERATIONAL NOTES</b>		
<input type="checkbox"/>	<b>Seal oil make up tank high level</b>	
<input type="checkbox"/>	<b>Assure vapor extractors are alarm ON and at 4” to 5” WC</b>	<b>457</b>
<input type="checkbox"/>	<b>Assure lube oil tank levels are in working range. Alt tank 12 O’clock or better.</b>	
<input type="checkbox"/>	<b>Assure Alt. bearing vapor pressure gauge is not more than 0.5 psi</b>	
<input type="checkbox"/>	<b>Open valve #SO-74 and start drain pump until level is stable. Then secure pump and valve #SO-74</b>	
<input type="checkbox"/>	<b>Check temp. of bearing overflow line for reverse flow. Close valve SO #20 until stable. Record in logbook if left closed.</b>	

<b>MAINTENANCE NOTES</b>		
<input type="checkbox"/>	<b>Gas dryer pump – ON – As required to maintain below 10 g/mc</b>	<b>510</b>
<input type="checkbox"/>	<b>Record Humidity – Run days</b>	
<input type="checkbox"/>	<b>Main vacuum pump – Drain water from all drains when pump is off only - MONTHLY</b>	