If you are using a printed copy of this procedure, and not the on-screen version, then you MUST make sure the dates at the bottom of the printed copy and the on-screen version match. The on-screen version of the Collider-Accelerator Department Procedure is the Official Version. Hard copies of all signed, official, C-A Operating Procedures are available by contacting the ESSHQ Procedures Coordinator, Bldg. 911A

C-A OPERATIONS PROCEDURES MANUAL

15.3.3.18 Switching to Siemens Spare Oil Pump

(Booster/AGS Ring Power Supply Systems Group Procedure EPS-S-018)

Note: This document was formerly a C-A Group Procedure. The content of the group procedure was reviewed by the Technical Supervisor. All approvals and/or issue dates of the original group procedure are maintained for present use.

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approved: _____***Signature on File***_____ _____
Collider-Accelerator Department Chairman Date

M. Bannon

Booster/AGS Ring Power Supply Systems
Group Procedure EPS-S-018
Revision 00

PROCEDURE FOR SWITCHING TO SPARE OIL PUMP ON SIEMENS MG SET

Before you start: It is preferable that the pumps only be switched when the MG Set is stopped, however in the event of a failure while the mg Set is running, the pumps can be switched on the fly. Note: even in the event we loose a pump while running the machine can coast down with no pumps because the slinger rings should keep enough oil on the shaft journal and bearing surface so that no damage should occur. But this is not the desired way of coasting down. We would prefer all lift pumps but do not panic should a case arise that a pump fail and you were unsure of how to properly valve in the spare.

REFER TO DWG #A4 SHT 2 & 3 OF 12

I) The MG Set has two circulating systems in place. With one spare pump for each system.

a) The first system delivers high pressure to each pedestal which lifts the MG rotors off the bearings approximately .006 inch statically.

b) The second system delivers high volume of oil to each pedestal which keeps oil flowing over the bearings when the set is rotating.

II) To switch to a spare lift pump. Notes:

a) There are 4 lift pump (high pressure), 1 for each of the 3 pedestals and 1 spare.

b) These are the smaller motors on the top of the oil tank. They are labeled M3 for PED #1, M4 for PED #2, and M5 for PED #3. The motor labeled M6 is the spare.

c) There are 4 small gate valves on the top of oil tank towards the front. These are all attached to the spare pump manifold which can be opened for any of the 3 Pedestals. From left to right, first is for PED #3, then PED #2 , then PED #1 & then spare bypass gate valve is the furthest to the right [Refer to picture #1].

How to switch the spare lift pump to send oil to a Pedestal pump which has failed:

a) Open the valve to the required pedestal that's original pump has failed from the spare pump manifold. [Refer to pictures #1 & #2]

b) Close the spare bypass gate valve. (Normally left in the open position-bypass gate valve is the furthest to the right.) [Refer to picture #1]

c) Switch off the bad pump with A4b02 selector switch located in LA2L rack in old control room.[Refer to picture #4 & #5]

Note

The pump selector switches are located in rack LA2L in the Siemens old control room. This enclosure requires a Siemens high voltage key to open and there is 480vac present inside. The selector switches are on Row E which has 5 rotary switches and 5 red lights on it. A4b02 selector switch is the fourth switch from the left on Row E.

1. When switch is @ 12 o'clock position it will turn "Off" pump #1
2. When switch is @ 3 o'clock position it will turn "Off" pump #2
3. When switch is @6 o'clock position will turn "Off" pump #3
4. When switch is @ 9 o'clock position will power all 3 normal lift pumps. (This is the normal operating position)

d) Switch the spare lift pump "On" using switch A4b2. In LA2L to the right of selector switch in step 3. [Refer to picture #5]

1. Note: A4b2 selector switch positions:
2. When switch is @ 11 o'clock position the spare lift pump is "Off"
3. When switch is @ 12 o'clock position the spare pump is on for testing
4. When switch is @ 1 o'clock position will turn on spare pump when asked for during operations.

How to switch in the spare circulating pump:

a) There are 2 circulating pumps -low pressure high flow. One is active the other is a spare.

b) These are the two larger pumps on the top of the oil tank to the left labeled M1 (front pump) & M2 (rear pump). [Refer to picture #3]

c) The 3 larger gate valves to the left of M1 & M2 are for the circulating pumps. The front gate valve is the bypass value which should be open ½ a turn. The gate valve behind this one is for M1 pump and the rear gate valve is for the M2 pump. These 2 valves should be open ,unless the pump is being removed, then closed the gate valve whose pump is being sent out for repairs.

d) In LA2L rack in old control room set the A4b01 selector switch (Row "E" 2nd switch from the right) to the desires circulating pump. [Refer to picture #4 & #5]

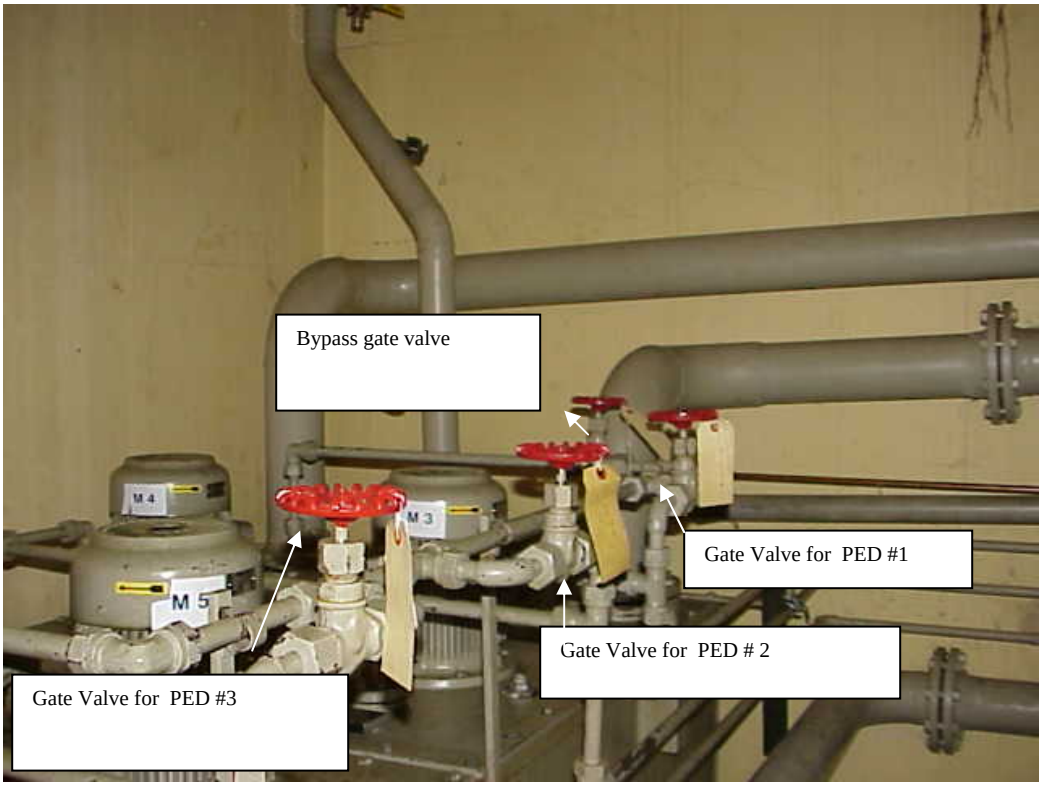
1. When switch is @ 9 o'clock position – M1 pump is selected for operation.
2. When switch is @ 12 o'clock position – M2 pump is selected for operation.

Note:

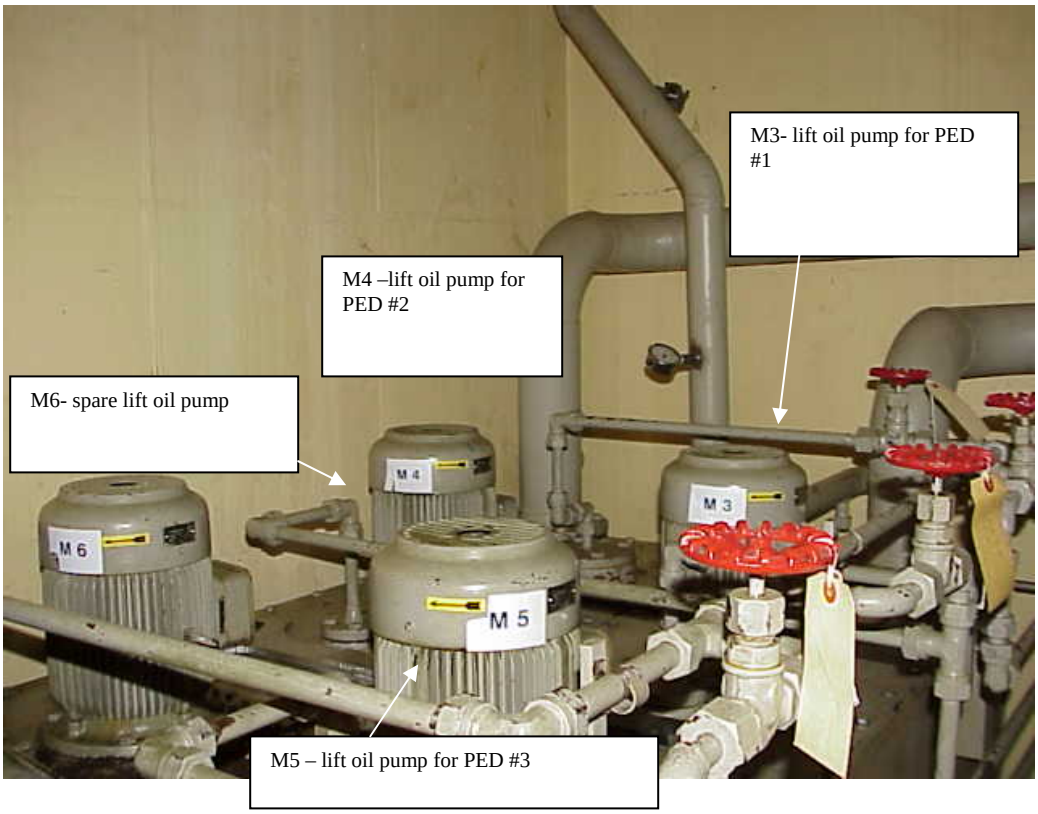
It is a good practice to switch back and forth between these pumps once a year during summer shutdowns to keep both pumps viable.

When the spare lift pump is not in use, the bypass gate valve must remain open and the 3 pedestal gate valves must remain closed. When not is service, the spare lift pump is used by the oil tank heater to circulate the oil in the tank.

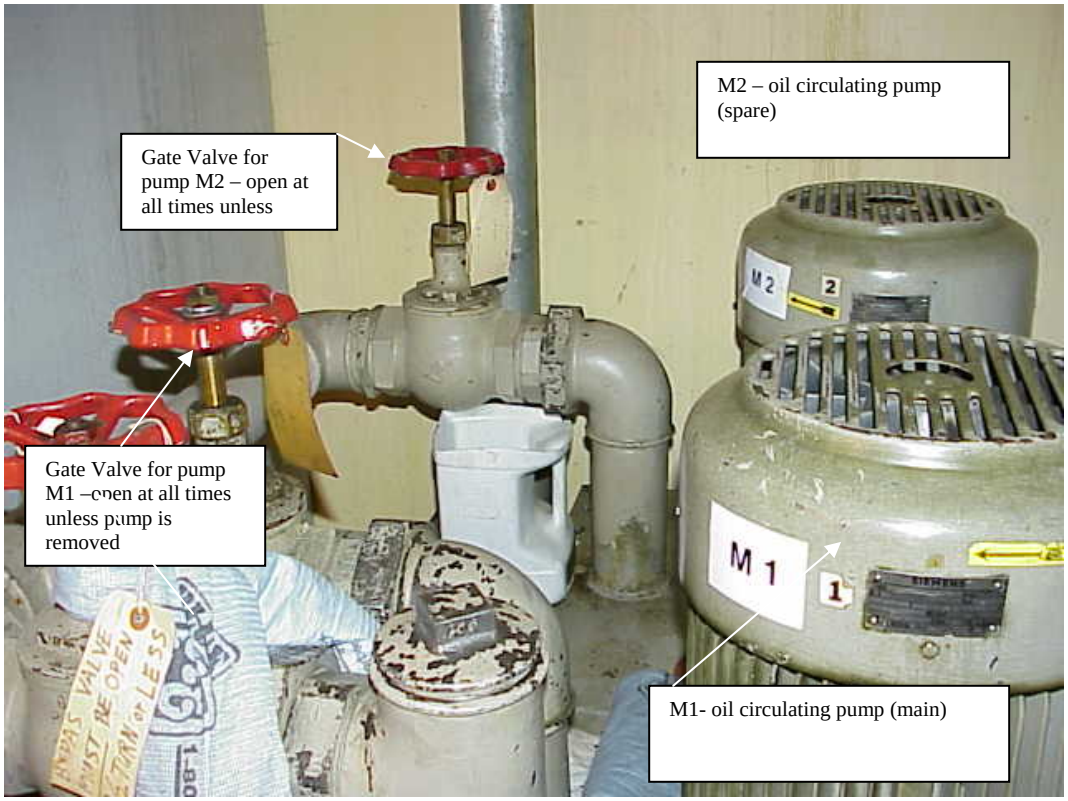
Picture #1



Picture #2

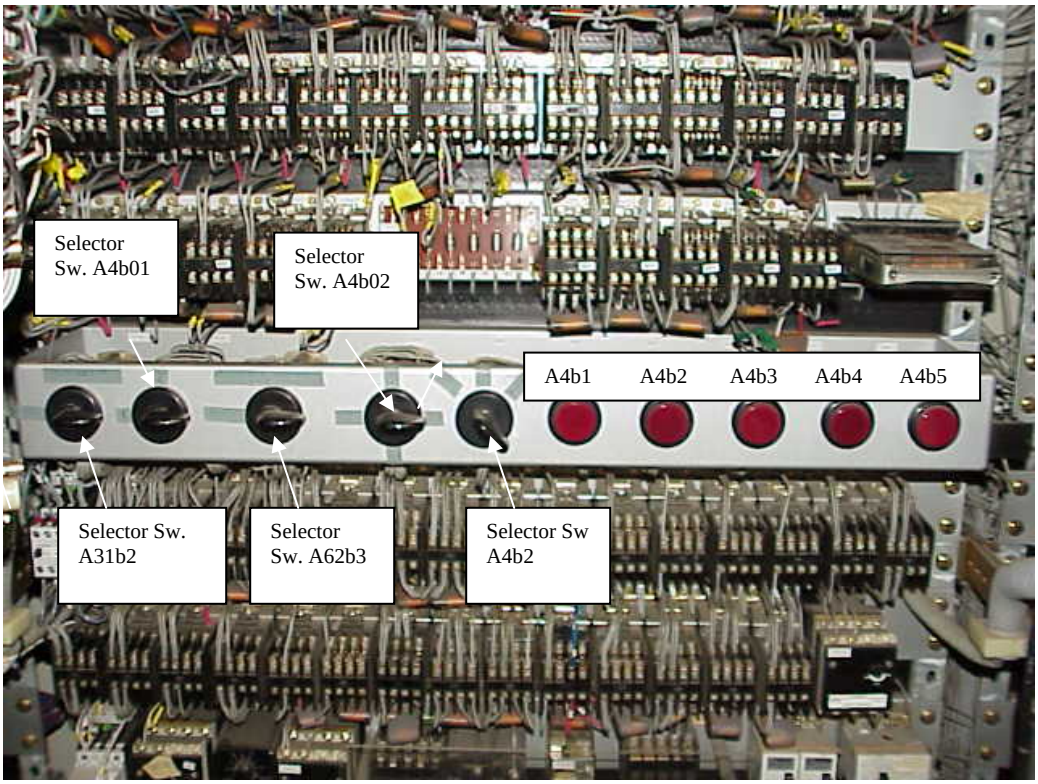


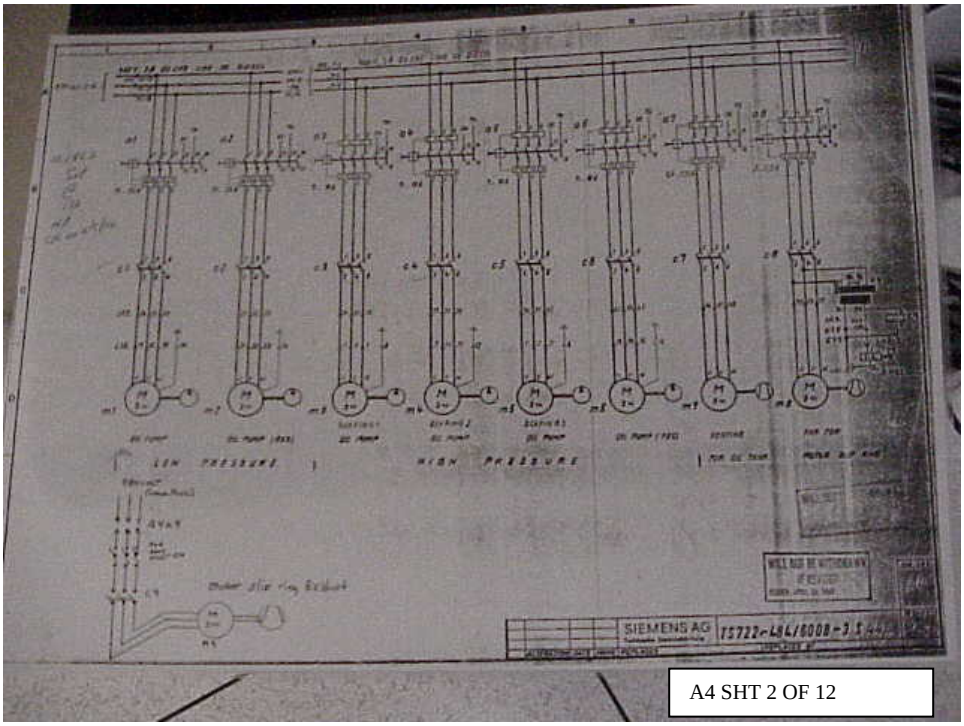
Picture #3



Picture #4

Picture #5





Also refer to A4 sht 3 of 12 for more info.

Written by,
Roger Bonati, Michael Bannon