

May 31, 1994

To: Brent Beiler
Dale Gravóullia
Darren Metrejean
Ron Millender.

re: Training Quality Team

First, I would like to thank you for volunteering for the training team. I hope to use this team to help improve the methods by which training takes place. This includes Modules, testing, and refresher training which occurs every three years.

One of the many items we have to address is the recertification of operators. I have been in communication with the training dept. They recently had a meeting on how the recertification of personnel should proceed. The safety superintendents will be sending out a letter as to what is expected. I called our safety superintendent, Ronny Peebles, and he told me there are no specifics in the letter other than we have to recertify all operators every three years. He did tell me that other plants were basically going to do the same thing we are doing, and that is to extract 15-20% of the test questions out of the existing modules and have operations personnel test on these items. CAII will be using a panel method with pre-defined question. Each operator will appear before the panel for testing.

I have made up the various test that we need. The test are approximately 20% of the question asked for on the present modules that we have to test on.

I would like you to review this test and make any changes that you feel necessary. These test have already been handed out to the staff and some changes have been made. Also we need to come up with a test method for day folks & supervisors. That should be fun!

I would also like you to think about the method in which we will implement the recertification test. (Time frame)

I am going on vacation beginning the end of this week and will return on June 14. I will schedule a meeting date when I return. Be prepared to discuss operator recertification and other training proposals you may have.

Thanks

Gary

DO 013209
CONFIDENTIAL

Operator Re-Certification

Introduction

In 1992 the Occupational Safety and Health Administration (OSHA) issued a new Safety Standard entitled "Process Safety Management of Highly Hazardous Chemicals, Explosives and Blasting Agents." The majority of the provisions under the PSM standard became effective on May 26, 1992.

One of the PSM requirements concerns the training of employees. New employees must receive initial training on certain subjects before being involved in operating a process. In lieu of retraining employees already involved in operating a process and employer may certify that the employee has the required knowledge, skills, and abilities to safely carry out the duties and responsibilities as specified in the operating procedures.

Only employees who are actually involved in operating a process need to be certified. This would include process equipment operators, first line supervisors, Foremen and unit engineers up to and including the production superintendent.

As a result of this standard, in September of 1992 operational personnel in this plant signed a certificate stating that they have received the necessary training to gain the knowledge, skill and abilities to safely carry out the duties and responsibilities as specified in the operating procedures for the Chlorinated Methanes Product process. Management signed this certificate certifying that operations personnel have demonstrated the knowledge and skill levels to safely carry out the duties and responsibilities as specified in the operating procedures for the Chlorinated Methanes Product process.

One of the many requirements of the PSM Standard is that refresher training shall be provided every three years or more often if necessary and that the training be documented. This means that "Methanes" personnel have to be re-certified by May of 1995.

As a result of the commissioning and start up of our new plant, operations personnel have successfully completed the necessary training for the new plant process after the 1992 certification date. As a result operations personnel will only be required to train and test on the "OLD" section of the plant.

Concerns

One of my concerns for rectification is that of the area engineer and Shift Supervisors. At the present time I have training documentation for operations personnel only, but none for area engineers.

Proposal

This is a "DRAFT" of the proposed plan to ensure that we meet the re-certification of operators by May of 1995.

Step	Action
1	I will go through all the IPT modules on the old plant and choose approximately 20% from each.
2	I will place all of training objectives in one file
3	A copy of the training objectives will be given to each operator
4	The testing of the operations personnel can be conducted by a Physical Location, Demonstration and Verbal test with their shift supervisor. The testing should only take approximately 3-4 hours to complete.
5	Upon completion of the testing the operator and shift supervisor will sign a certificate stating the training and testing of the operator has been successfully completed. The certificate will then be given to the plant superintendent for signature.

Comments

Please make any suggestions or list any ideas you may have and get the information back to me ASAP.

Thanks**Gary Rizzo**

Kevins Suggetions	For area engineer - Select various highlights from technical theory section. (Basic Distillation, basic pump, valve design). Also if we have a general cmp ipt module like what is thermochlorination, purification, hydor. or we could draw a 1 line of the plant and explain the operating theory, basic reactive chemical concerns, moc policy, p&ids information, Example 1. Plant area - Basic theory, 1 line diagram A. thermal Chlorintation B. Hydrochlorination C. HCL Purification D. Condensing & Refrigeration E. Distillation 2. Environmental Regulations - Basic regs, permits knowledge 3. Chemical Knowledge - Describe characteristics and safety concerns of the following A. M1, m2,M3,M4, HCL, CL2, MEOH 4. Engineering Knowledge A. Material of Construction (Bricks, TFE, Pipt, etc) B. Pipe Specs, P&ids, H&mbs C. Mod V Code Knowledge D. MOC policy E. F&EI, CEI, Burner Management F. S&LP

OPERATOR RECERTIFICATION WRITTEN/ORAL TEST

Employees Name _____ Date: _____

1. Explain any special safety hazards associated with the below listed equipment.

- A E-240
- B E-245
- C E-256
- D R-250
- E C-200/201
- F C-210
- G C-202
- H C-610
- I C-650
- J K-213
- K Throx

2 List the protective equipment requirements for maintenance on the following

- A E-240 A/B
- B R-250 A/B
- C C-200
- D THROX
- E C-610 area
- F C-202/C-650

3. List the hazards and protective measures you should take while performing the following:

- A Vessel entry on R-250
- B Open any line in the quench system
- C Preparing an H₂so₄ pump for maintenance
- D Recharging V-56's

E Clearing a Plugged line in the Throx Area

✓ Good Question

F Responding to a leak in the C-610 area

4. List the safety devices and their setpoints for the following pieces of equipment (psv's/switches):

A R-250

B C-200

C C-210

D C-610

E C-650

F Throx

G K-213

Make certain they know location of latest list of PSV info.

5. List the steps (in sequence) necessary to make the following equipment ready for maintenance:

A P-301

B C-610

C P-203

D K-213

E V-56

6. List the normal operating parameters of the following:

A R-250 top pressure

B E-256 level

C R-250 hot oil temperature

D E-260 pressure

E C-200/201 percent HCL in the bottoms

F C-200/201 overhead temperature

G C-210 Recycle Temperature

H State the normal operating temp. of E-212

I C-202 Mid Section Density

- J BTM, mid, top, recirc. flow
- K D-650 % H₂SO₄
- L C-650 press
- M K-55 oil temp
- N D-56 level
- O K-213 Suction pressure
- P Oil pressure
- Q AI-3119 R-750 percent oxygen concentration
- R AR-3056 R-750 PPM co concentration
- S TRC-3041 R-750 burner temp
- T FRC-3106 cell-effluent C-751
- U HIC-5066 sodium thiosulfate to C-751

7. State the results of high or low parameters and the results if it remains high or low.

8. List the sequence of steps you should take if the following conditions occurred.

- A Loss C-200/201 recycle flow indication on TDC
- B C-200/201 bottoms analyzers kick off of computer control
- C While attempting to heat up R-250 the modicom keeps terminating and shuts down R-250.
- D C-200 btms analyzer showing high HCL
- E C210 would be running a high diff.
- F High top section temp. on C-202
- G High conc. of sulfuric in D-650
- H High oil temp to K-55
- I High V1 in C-70 overheads
- J High ethylene in C-70 overheads
- K K-213 Oil pressure is low.
- L Oil temp is high
- M R-750 tripped off line and it won't reset.
- N D-750 is slowly filling up.
- O The high V1 concentration alarm activates.

- P** An operator comes in and reports that he/she smells chlorine in the front ditch.

9. List the steps (in sequence) necessary to make the following equipment ready for maintenance and state the protective equipment required.

- A** C-200/201 PSV's
- B** P-301
- C** Throx
- D** C-610
- E** K-213
- F** V-56

10. State environmental problems and actions to be taken in event of a spills on:

- A** R-250's
- B** C-610 Ov'hd / Btms
- C** HCL Purification

11. Given an emergency situation in this area, explain and simulate (in sequence) the actions you should take if the following incidents occur. Include precautionary measures such as washing out and purging equipment.

- A** Leak on C-202 BTMS
- B** Loss of recycle on C-200/201
- C** North door on R-750 is leaking (bad)
- D** P-470 has a blown seal
- E** K-55 seal leak

12. List the safety devices and their setpoints for the following pieces of equipment:

- A** C-202
- B** C-650
- C** R-250's
- D** Throx
- E** C-610

SCORE _____
RETEST _____

OPERATOR RECERTIFICATION TEST

EMPLOYEE'S NAME: _____ DATE: _____

		Correct	Incorrect
<u>HOT OIL SECTION</u>			
D-470			
1	Physically locate level transmitter	_____	_____
2	Physically locate pressure transmitter	_____	_____
3	Physically locate D-470 vent control valve	_____	_____
E-480			
1	Physically locate	_____	_____
2	Physically locate outlet oil temp. transmitter	_____	_____
3	Physically locate temp. control valve to R-250A/B	_____	_____
4	Physically locate level control valve (condensate)	_____	_____
5	Physically locate pressure trans.	_____	_____
6	Physically locate pressure control valve	_____	_____
7	Physically locate level trans.	_____	_____
E-470			
1	Physically locate temp. transmitter on E-470	_____	_____
2	Physically locate temp. c/v to R-250 A/B	_____	_____
3	Physically locate temp control valve (steam)	_____	_____
4	Physically locate condensate level control valve	_____	_____
5	Physically locate level trans	_____	_____
T-252			
1	Physically locate E-475 tie point b/v	_____	_____
2	Physically locate E-475	_____	_____
3	Physically locate b/v from R-250 A/B to T-252	_____	_____
4	Physically locate block valve to tracing to the heads	_____	_____
5	Physically locate block valve return from the heads	_____	_____
6	Physically locate drain valve to D-470	_____	_____
7	Physically locate drain line b/v from R-250's	_____	_____

R-250 System

E-240 A/B

- 1 Physically locate outlet flow trans.
- 2 Physically locate outlet flow control valve
- 3 HCL header control valve to R-250's
- 4 HCL header press.trans to R-250's
- 5 HCL header flow trans.to R-250's
- 6 HCL heatup control valve to R-250's
- 7 HCL heatup flow trans to R-250's
- 8 HCL heatup tiepoint to R-250's
- 9 E-240 flow trans
- 10 E-240 inlet press
- 11 E-240 inlet control valve
- 12 E-240 inlet temp

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E-245 A/B

- 1 Physically locate inlet temp. on E-245 A/B
- 2 M1 heatup control valve to R-250's
- 3 M1 heatup flow trans. to R-250's
- 4 M1 heatup tiepoint to R-250's
- 5 E-245 flow trans
- 6 E-245 flow control valve
- 7 E-245 inlet press
- 8 E-245 inlet temp
- 9 E-245 bleed to throxx
- 10 E-245 ADME tie-in

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E-256

- 1 E-256 pressure control valve
- 2 E-256 level control valve
- 3 E-256 level trans
- 4 E-256 pressure trans
- 5 E-256 meoh low pressure switch

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R-250's

- 1 R-250 HCL control valve
- 2 R-250 meoh control valve
- 3 R-250 HCL flow/press trans to R-250's
- 4 R-250 meoh flow/press trans
- 5 R-250 top pressure trans

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- 6 R-250 bottoms press trans
- 7 R-250 Hot Oil flow trans

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E-260

- 1 T-261
- 2 E-260 level control valve
- 3 E-260 level trans
- 4 E-260 pressure control valve
- 5 E-260 pressure trans
- 6 E-260 flow control valve
- 7 E-260 flow trans

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Demonstrate 2 of the following task for the R-250 system

- 1 Line up R-250/C-200 for start-up
- 2 Shutdown an R-250
- 3 Properly line up E-260
- 4 Start-up R-250

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Quench System for the Hydrochlorination System

C200/201

Correct Incorrect

- 1 C-200/201 bottoms level control valve
- 2 C-200/201 Mag meters manual valves
- 3 C-200/201 bottoms level crosstie manual valve
- 4 C-200/201 Analyzer manual block valves
- 5 E-301/302 process cross tie
- 6 C-200/201 man. block valve tie in from C-210
- 7 C-200/201 recycle temperature control valve
- 8 C-200/201 process water control valve
- 9 C-200/201 process water block valve at column
- 10 C-200/201 recycle flow control valve
- 11 C-200/201 recycle block valve at column
- 12 C-200/201 overhead block valves
- 13 LT-2301 (C-200 level)
- 14 LT-2309 (C-201 level)
- 15 FT-2318 (C-200 recycle flow)
- 16 FT-2320 (C-201 recycle flow)
- 17 FT-2319 (C-200 BTMS flow)
- 18 FT-2321 (C-201 BTMS flow)
- 19 FT-2322A (CTW to E-301)

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- 20 FT-2324 (CTW to E-302)
- 21 FT 2300 (make-up water to C-200)
- 22 FT-2316 (make-up water to C-201)
- 23 PT-2310 (R-250'S BTMS press)

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Demonstrate/simulate in the field or control room completing 2 of the following task in a logical safe manner.

- 1 Line up C-200/201 for start up of R-250
- 2 Swap C-200/201 P.S.V.'s
- 3 Swap P-301's
- 4 Cross-tie C-200/201 bottoms to C-610

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C-210 System

- 1 Physically locate manual bypass block valve.
- 2 Physically locate feed manual block valve on C-210.
- 3 Physically locate the throx manual block valve.
- 4 Physically locate the bottoms manual block valve and control valve.
- 5 Physically locate the recirculation manual block valve and control valve.
- 6 Physically locate process H2O manual block valve.
- 7 Physically locate C-210 O.H. manual block valve.
- 8 Physically locate M1 to E-210 manual block valve and control valve.
- 9 Physically locate m1 out of E-210 manual block valve.
- 11 Physically locate isolation block valves to E-211.
- 12 Physically locate D-211.
- 13 Physically locate make up block valve to D-211.

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Demonstrate 2 of the following task in a safe and logical manner.

- 1 Demonstrate how to line up D-211 for start up.
- 2 Valve up D-211 for service.
- 3 Line up C-210 for start up
- 4 By-pass E-210
- 5 Put E-210 in service

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** Operation of R-213 and Start-up?*

C-202 Drying System for the Hydrochlorination System

C-202

- 1 Physically locate make up acid C/V
- 2 Physically locate C-202 level C/V
- 3 Physically locate C-202 recirc. C/V
- 4 Physically locate density meter on mid section

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E-212

- 1 Physically locate block valve from E-212 and control valve.
- 2 Physically locate block valve to E-212.

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T-900

- 1 Physically locate T-900
- 2 Physically locate P-901
- 3 Physically locate P-901 recirc. B/V at the T-900
- 4 Physically locate T-900 level trans.
- 5 Physically locate T-900 press. trans.
- 6 Physically locate EBV on T-900 from T/C rack
- 7 Physically locate N2 switch for acid T/C
- 8 Physically locate make up acid flow trans.

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Demonstrate 1 of the following task in a safe and logical manner

- 1 Line up C-202 for start up
- 2 Swap top, mid or btm section pumps
- 3 Line up E-212
- 4 Swap P-901

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C-610

- 1 Physically locate E-610
- 2 Physically locate E-610-1
- 3 Physically locate E-620
- 4 Physically locate bottom c/v to c.w.t. & CA2 & canal
- 5 Physically locate steam c/v
- 6 Physically locate steam flow trans.
- 7 Physically locate temp. c/v for E-610
- 8 Physically locate temp. c/v for E-620
- 9 Physically locate p.w. to C-610 feed b/v
- 10 Physically locate C-610 vent to throx b/v
- 11 Physically locate C-610 level trans
- 12 Physically locate C-610 overhead press. trans.
- 13 Physically locate feed flow trans. (mag meter)
- 15 Physically locate C-610 btms flow trans. (mag meter)
- 16 Physically locate C-610 btms press. trans

Demonstrate 2 of the following task in a safe and logical manner

- 1 Line up C-610 for start up
- 2 Swap P-620's
- 3 Line up C-610 to the throx
- 4 Start PW to C-610

C650

- 1 Physically locate D-650
- 2 Physically locate C-650 to C-610 manual b/v
- 3 Physically locate C-650 bottom lev to c.w.t.
- 4 Physically locate C-650 lev to C-610
- 5 Physically locate pressure c/v (throx)
- 6 Physically locate D-650 level c/v
- 7 Physically locate ebv to throx
- 8 Physically locate fuel gas c/v
- 9 Physically locate p.w. to C-650 c/v
- 10 Physically locate C-650 press. trans
- 11 Physically locate ebv switchs for pumps
- 12 Physically locate level trans. on D-650
- 13 Physically locate level trans. on C-650
- 14 Physically locate p.w. strainers on C-650 system
- 15 Physically locate N2 tie point to C-650 system

Demonstrate 2 of the following task in a safe and logical manner

- 1 Line up C-650 system for start up
- 2 Swap rupture disc. on C-650
- 3 Isolate C-650 system for inspection
- 4 Swap pumps

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HCL PURIFICATION

E-51/52/V70/R50/R60/E61

- 1 FRC(2052) feed to E-51 c/v manual valves / bypass
- 2 FT(2052) E-51 feed flow trans
- 3 TRC(2067) V-70 temp c/v manual valves / bypass
- 4 TRC(2056) oil to E-52 c/v manual valves / bypass
- 5 TT(2056) E-52 temp trans
- 6 Locate V-70 Differential Pressure Transmitter
- 7 Locate R-50 and associated instrumentation
- 8 Locate R-60 and associated instrumentation
- 9 Locate e-61 and associated instrumentation

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K-55 System

D-56

- 1 LRC(2273) D-56 level c/v manual valves / bypass
- 2 DPR(2276) D-56 diff pres c/v manual valves / bypass
- 3 LT(2285)/(2273) D-56 level trans
- 4 PDT(2276) D-56 diff pres trans

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K-55

- 1 DPR(2146) K-55 bearing diff press c/v manual valves/bypass
- 2 PRC(2186) K-55 pres c/v manual valves / bypass
- 3 TRC(2281) K-55 oil temp c/v manual valves / bypass
- 4 K-55 suction manual valves
- 5 K-55 discharge manual valves
- 6 PT(2134) K-55 suction pres trans
- 7 PDT(2146) K-55 oil diff pres trans
- 8 TT(2281) K-55 oil temp trans
- 9 PT(2186) K-55 discharge pres trans

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D-55's

- 1 LT(2168) D-55 level trans
- 2 LSH(2167) D-55 indep level switch

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V-55

- 1 Locate V-55 A/B/C/D
- 2 Locate PDT(2164) V-55 diff pres trans
- 3 Manual valves on outlet V-55'S
- 4 3-WAY valve on the inlet of V-55'S

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Physically locate the following tanks and vessels

- 1 D-60
- 2 V-56 A/B
- 3 V-57
- 4 P-55A
- 5 P-55B
- 6 P-57
- 7 Oil add PMP

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C-70

- 1 FRC(2208) R-12 to E-74 c/v manual valves / bypass
- 2 FRC(2212) R-12 to E-73 c/v manual valves / bypass
- 3 PRC(2179) user press c/v manual valves / bypass
- 4 LRC(2206) C70 btms level c/v manual valves / bypass
- 5 D-71 level c/v manual valves / bypass
- 6 D-71 vent c/v manual valves / bypass
- 7 Manual valve to solvents at canal
- 8 Manual valve from V2 to CMP at canal
- 9 PIC(2200) C-70 ovhd press trans
- 10 FT(2212) E-73 R-12 flow trans
- 11 LT(2210) E-73 level trans
- 12 FT(2208) E-74 R-12 flow trans
- 13 LT(2206) C-70 btms level trans
- 14 FT(2182) C-70 recycle to E-51
- 15 PT(2179) User plants pressure trans
- 16 FT(2180) C-70 ovhd to solvents flow trans
- 17 PT(2188) C-70 ovhd to solvents pressure trans.
- 18 FT(2181) C-70 ovhd to cmp flow trans.
- 19 C-70 btms temp trans

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Demonstrate 2 of the following task in a safe and logical manner

- 1 Line up purification for start up.
- 2 Swapping R-50 flows (reverse flowing)
- 3 Making a round in purification
- 4 Adding oil to the K-55 system
- 5 Swapping oil pumps
- 6 Lining K-55 up for start up.
- 7 Swapping V-56's
- 8 Swapping V-55's

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K-213 R-22 Compressor

- 1 Physically locate K-213.
- 2 Physically locate suction/discharge valves on K-213.
- 3 Physically locate E-213.
- 4 Physically locate E0-213 A&B.
- 5 Physically locate r/w valves on E0-213.
- 6 Physically locate FL-213 A&B.
- 7 Physically locate blk valves on FL-213 A&B.
- 8 Physically locate MK-213.
- 9 Physically locate D-213.
- 10 Physically locate D-213 level transmitter.
- 11 Physically locate E-211.
- 12 Physically locate S-213.
- 13 Physically locate S-213 level transmitter.
- 14 Physically locate S-213 indep level switch.
- 15 Physically locate EC-213.
- 16 Physically locate P-213A&B.

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Demonstrate 2 of the following task in a safe and logical manner

- 1 Demonstrate how to properly check out and line up K-213 system for start up.
- 2 Demonstrate checking and adding oil to P-213 and K-213 and state what type oil they take and/or where to find the type oil that is required.
- 3 Demonstrate /simulate in the field swapping the P-213's

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K-213 Demonstration Continued:

4. Demonstrate the following use of the microprocessor.
 - A. Change display mode
 - B. Clear alarm
 - C. Shutdown machine and return to start up mode
 - D. Step load valve from manual to auto
 - E. Change paramiter set points.
 - F. Check load valve position
 - G. Kill power to the panel for repair.
5. Demonstrate how to set up the oil pumps,fans and main motor for start up.
6. Demonstrate how to change lead oil pumps on the microprocessor panel.

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Throx System

- 1 FRC-3013 Fuel Gas To R-750
- 2 LRC-3047 R-750 Condensate Level C/V
- 3 R-750 Pilot Gas Manual Block Valve
- 4 R-750 Steam Outlet Block Valve And 2" Bypass Block Valve
- 5 FT-3013 R-750 Fuel Gas Flow Trans
- 6 TT-3041 R-750 Burner Temperature Trans.
- 7 FT-2948 R-750 Air Flow Trans To
- 8 LT-3047 R-750 Condensate Level Trans
- 9 FT-3057 R-750 Steam Flow To Header
- 10 PDT-3038 R-750 Diff Pressure
- 1 FT-2997 R-750 Liquid Feed Flow Trans
- 11 FT-3016 R-750 Atomizing Air For Liquid Injection
- 12 LSL-3053 R-750 Low Level Shutdown Switches
- 13 PT-3025 R-750 Atomizing Air Pres Trans
- 14 FRC-3016 Atomizing Air C/V
- 15 FRC-3070 T-803 Pressure C/V To R-750
- 16 FRC-2903 E-259 Flow C/V To R-750
- 17 PRC-2902 Tank Car Vent To R-750
- 18 FRC-2997 Liquid Feed C/V

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D-751

- 1 FRC-2292 D-751 Dry Vent To R-750
- 2 PT-2988 D-751 Pressure Trans
- 3 FT-2292 D-751 Dry Vent Flow Trans
- 4 LT-2990 D-751 Level Trans

_____	_____
_____	_____
_____	_____
_____	_____

D-750

- 1 FRC-2968 D-750 Wet Vent To R-750
- 2 FT-3003 D-750 Flow Trans To And From V2
- 3 PT-2964 D-750 Pressure Trans
- 4 FT-2968 D-750 Wet Vent Flow Trans
- 5 LT-2965 D-750 Level Trans

_____	_____
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D-752

- 1 LRC-2923 D-752 Level C/V
- 2 PRC-2922 D-752 Pressure C/V
- 3 LT-2928 D-752 Level Trans
- 4 PT-2922 D-752 Pressure Trans
- 5 FT-2916 Steam Flow To D-752
- 6 PT-3051 Steam Pressure Trans To D-752

_____	_____
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_____	_____

C-750

- 1 FRC-3076 Process Water To C-750 C/V
- 2 Emergency Water To C-750
- 3 FT-3076 C-750 Process Water Flow Trans
- 4 LT-3084 C-750 Level Trans
- 5 PDT-3081 C-750 Diff Pressure Trans

_____	_____
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C-751

- 1 FRC-3107 Process Water To C-751 C/V
- 2 FRC-3106 Cell-Effluent To C-751
- 3 FT-3107 C-751 Process Water Flow Trans
- 4 LT-3117 C-751 Level Trans
- 5 PDT-3110 C-751 Diff Pressure Trans
- 6 FT-3106 C-751 Cell-Effluent Flow Trans
- 7 PH-3121 C-751 PH Meter

_____	_____
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_____	_____

BL-750

- 1 PRC-2944 BL-750 Pressure C/V
- 2 PRC-2950 BL-750 Pressure C/V
- 3 PDT-2944 BL-750 Diff Pressure Trans

_____	_____
_____	_____
_____	_____

Demonstrate 2 of the following task in the field a logical safe manner.

- 1** Line up R-750 for start up
- 2** Start up R-750
- 3** Increase betz chemicals to R-750
- 4** Check the independant low level shutdown switches
- 5** Properly shut down the blowers and rack out
- 6** Reset vibration monitors on blowers

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

SCORE: _____
RETEST: _____

EMPLOYEE'S NAME: _____

DATE: _____

MOD V RECERTIFICATION WRITTEN TEST

1. Explain why all MOD V information is DOW CONFIDENTIAL.
2. Define the following terms associated with the MOD V system.
 - A. system
 - B. can
3. Define and explain the following .
 - A. analog input
 - B. analog output
 - C. digital input
 - D. digital output
4. State the two safety hazards of a MOD V system.
5. Define the preferred method of extinguishing a fire in a MOD V system.
6. Classify the following signals as an analog input (AI), analog output (AO), digital input (DI), or digital output (DO).
 - A. Temperature
 - B. Motor Starter
 - C. High Level Switch
 - D. Pressure
 - E. State of a block valve
 - F. Amps
 - H. Steam control valve

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7. Define the following.

- A. Fox/dog selection switch
- B. MCU key
- C. Alarm horn relay light
- D. Abort key
- E. Deadman acknowledge button

8. Define the three parts of the MSI panel

9. When is a MOD V computer designated as the EAGLE computer, with an E in the far left digit of the debug panel display?

10. How would you acknowledge the alarm associated with a computer failure?

11. Define and explain the following.

- A. Element number
- B. Range
- C. Engineering units

12. What does a value of 1 in the MCU window indicate for a DI used as a high level switch?

13. Define and explain the following.

- A. AK =
- B. AP =
- C. AG =
- D. DK =
- E. DM =
- F. DT =
- G. AC =
- H. DC =

14. What visual indications are there that the following are in manual?

- A. DO
- B. DI
- C. AO
- D. AI

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15. Explain what will appear in the MCU window if the user presses an incorrect sequence of buttons on the MCU.
16. Define and explain the following, and state when the variable will have a value of 1.
- A. ALM=
 - B. STEP=
 - C. TERM=
 - D. JSTEP=
 - E. DK=
 - F. DM=
 - G. NSHD=
17. If the MCU indicates that a valve is 60% open. What position is it open in the field.
18. At what % valve output on the MCU does a valve actually open.

GR 10/89

MOD5WRT.TST

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**BASIC OPERATOR RECERTIFICATION
WRITTEN/VERBAL TEST**

EMPLOYEES NAME: _____ DATE: _____

GENERAL FLOWS

Draw a simplified sketch of CMP's process flows.

PUMPS

- 1 State the purpose of a seal flush.
- 2 Explain the operation and function of a tandem seal
- 3 State the major causes of seal failure. how can these conditions be eliminated
- 4 What type oil is used in tandem seals.
- 5 How is the level checked in the oil pots.
- 6 State the purpose of a coupling guard
- 7 Explain any special safety hazards assoc. with pumps.
- 8 Explain the function and operation of the oil mist system.
- 9 State the reason we check a pump for rotation after the motor has been changed out or electrical wiring has been worked on.
- 10 Explain the operation of a mag drive pump.
- 11 State the major causes of mag pump failure.
- 12 Explain the use of thermal couples on mag drive pumps.
- 13 State the steps you would take if a high differential temp alarm came on.(mag pump) and why
- 14 What is the normal operating diff temp on a mag drive pump.

**BASIC OPERATOR RECERTIFICATION
WRITTEN/VERBAL TEST**

ELECTRICAL

1 Explain the following terms

- A** AC Current
- B** MCC
- C** Fuses
- D** GFCI
- E** Field Switch
- F** VFD's
- G** Flash Suit
- H** "Breaker Open"
- I** "Breaker Closed"
- J** "Racking In"
- K** "Racking Out"

- 2** State the proper safety gear required when racking in/out breakers 480 volt and larger
- 3** State when it would be most likely that an electrical flash would occur.
- 4** Explain when GFCI's are required.
- 5** Explain the condition which require the use of phasing sticks
- 6** Explain what a circuit breaker is and what we use it for.
- 7** Explain how you could determine if there was a GROUND in one of the systems
- 8** Explain the purpose of the UPS system

Given an emergency situation in this area, simulate (in sequence) what should be done to secure the area and handle the emergency. (CHOOSE 1 ITEM)

- 1** Fire coming from inside the Motor Control Center
- 2** Circuit Breaker explodes
- 3** Electrical shock occurs to an individual

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**BASIC OPERATOR RECERTIFICATION
WRITTEN/VERBAL TEST**

AIR HEADER

- 1 State the normal operating parameters for the following items.**
 - A Inlet / Outlet oil temperature on the oil coolers**
 - B 1st & 2nd Stage Temperature**
 - C Inlet filters differential pressure**
 - D Vibrations for 1st, 2nd and 3rd stages**
 - E Discharge Pressure**
 - F Oil sump level**
 - G Motor oil sight glass level**
 - H Motor bearings temperature**
- 2 List the trips for K-1002 A/B:**
- 3 State the hazards associated with the air system**
- 4 List the steps (in sequence) necessary to make the following equipment ready for maintenance:**
 - A Interstage coolers**
 - B Oil cooler/filter**
 - C Air Dryers**
 - D K-1002 A or B**
- 5. Given an emergency situation in this area, simulate (in sequence) what should be done to secure the area and handle the emergency. (EVALUATOR WILL CHOOSE 1)**
 - A Lost plant air**
 - B Large oil spill**
 - C High vibrations on the compressor**

**BASIC OPERATOR RECERTIFICATION
WRITTEN/VERBAL TEST**

- 6 List the sequence of steps you would take if the following condition were to occur.**
- A High Oil Temperature**
 - B Low oil pressure to bearings**
 - C Auxillary oil pump comes on**
 - D High Amps**
 - E Low air pressure**
 - F 1st, 2nd or 3rd stages leaking oil**
 - G High Dewpoint**
 - H Spare air compressor will not engerize**

BASIC DISTILLATION

List the hazards of the following equipment:

- 1 All of the distillation columns**
- 2 List the safety equipment required when sampling any of the above**
- 3 Explain the purpose of a distillation column.**
- 4 Explain how a distillation column works.**
- 5 Explain how a thermosyphon reboiler works.**
- 6 Explain what "reflux" is.**
- 7 Explain what is meant when we say a column is flooded.**
- 8 Explain the correlation between pressure and boiling points.**
- 9 Explain the purpose of a "vent".**
- 10 Explain what a composition change is and how it affect a column.**
- 11 What are the three key variables in operating a distillation column?**
- 12 Explain how a change in column pressure affects column operations.**
- 13 State the difference between a normal distillation column and a stripping column.**

**BASIC OPERATOR RECERTIFICATION
WRITTEN/VERBAL TEST**

FANS

- 1 State the purpose of a fin fan exchanger
- 2 Explain the purpose of a vibration monitor.
- 3 Explain the following terms.
 - A Variable speed
 - B Reversible Fan
 - C Fins
 - D Shroud/fan ring
 - E Pitch
- 4 State the HAZARDS associated with a fin fan exchanger

H₂SO₄ Tank Car

- 1 What is "SULFURIC ACID" and what do we use it for?
- 2 What personnel safety equipment is required to unload a sulfuric acid tank car?
- 3 What should be done if sulfuric acid comes in contact with your skin or eyes ?
- 4 Why should steel tools not be used around the open dome ?
- 5 What means of lighting should be used in unloading at night and why ?
- 6 What N₂ pressure should be set on the regulator ? why
- 7 What should be checked first before the unloading preparations are made ?
- 8 What percent sulfuric acid do we unload into T-900 ?
- 9 What procedure must be used to assure that the regulator is working properly ?
- 10 How can you tell when a car has finished offloading?

**BASIC OPERATOR RECERTIFICATION
WRITTEN/VERBAL TEST**

SAFETY

- 1 What is the minimum safety equipment required in this block?
- 2 State the proper Safety Equipment required for use on the following equipment.
 - A Drill Press
 - B Hand Grinder
 - C Band Saw
 - D Cutting Torch
 - E Rotor Hammer
 - F Ramset
- 3 Which areas of the plant require hearing protection?
- 4 What is the Division policy on contact lenses?
- 5 What is Dow's policy on defective ladders?
- 6 What is the maximum allowable height for working on straight or extension
- 7 What safety mechanism should be inspected prior to using a chain hoist or come-along?
- 8 What should be checked on a hand grinder before its use?
- 9 Why should an analyzer shack be "sniffed" before entry by personnel?
- 10 Who is permitted to build scaffolding?
- 11 Under what circumstances must a safety harness be worn while on scaffolding?
- 12 What are the safety requirements for access ladders on scaffoldig?
- 13 When are cleats needed on platform planks?
- 14 What steps would you take if a person were exposed to acid?
- 15 Describe the identifying markings on plant utility stations and their associated hoses (A-11).

BASIC OPERATOR RECERTIFICATION
WRITTEN/VERBAL TEST

SAFETY CONTINUED

- 16 State Dow's policy on crossties between the block nitrogen system and plant air
- 17 Be able to draw a simple diagram of a temporary nitrogen hose connection to process
- 18 State what safety equipment is required to run samples in the lab.
- 19 Explain the CMP evacuation policy.
- 20 State the duties of a "hole watcher"
- 21 State what requirements must be met before a person can operate a forklift or a JLG.
- 22 State who must issue a Blue Flag Permit before work can begin on a section Of track on the MAIN LINE.
- 23 State who may perform the transfer of hazardous materials.
- 24 State what types of equipment /material need to be decontaminated.
- 25 Define "HOT WORK"
- 26 State who is responsible for following safety procedures in preparing equipment for a hot work job.
- 27 Define a "PIPE STOPPER".
- 28 State who must approve the use of a pipe stopper.
- 29 State what must be on the pipe stopper when it is inserted into a line.

**BASIC OPERATOR RECERTIFICATION
PHYSICAL LOCATION / DEMONSTRATION TEST**

EMPLOYEES NAME: _____ DATE: _____

PUMPS

Demonstrate 2 of the following items. Which two is the discretion of the evaluator/s.

- | | | | |
|---|---|-------|-------|
| 1 | Demonstrate how to properly check and add oil to the oil pots for tandem seals. | _____ | _____ |
| 2 | Demonstrate the proper procedure for taking a pump out of service and getting it ready for maintenance. | _____ | _____ |
| 3 | Demonstrate locating a pump switchgear. | _____ | _____ |
| 4 | Demonstrate the proper procedure for racking a variable speed pump out. | _____ | _____ |

OIL MIST

Demonstrate 2 of the following items. Which two is the discretion of the evaluator/s.

- | | | | |
|---|---|-------|-------|
| 1 | Demonstrate checking and adding oil to the oil mist system. | _____ | _____ |
| 2 | Demonstrate starting up the oil mist system. | _____ | _____ |
| 3 | Demonstrate the proper procedure for swapping a pump. | _____ | _____ |

VALVES

- | | | | |
|---|---|-------|-------|
| 1 | Given any valve, state if opened or closed. | _____ | _____ |
| 2 | Physically identify the different types of valves to include gate valves, ball valves, check valves, butterfly valves, and plug valves, three way valve, four way valves. | _____ | _____ |
| 3 | Demonstrate the proper procedure for swapping a four way valve. | _____ | _____ |
| 4 | Demonstrate the proper procedure for isolating a control valve for maintenance and state the safety precautions involved. | _____ | _____ |

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ELECTRICAL

Physically locate the following in the old Main Motor Control Center

- 1 The main feeders into the block
- 2 480 volts feeders gross tie
- 3 Flash Suit Compartment

_____	_____
_____	_____
_____	_____

Physically Locate the following in the New Motor Control Center

- 1 15 KV remote panel (RCP-30)
- 2 5 KV remote panel (RCP - 20)
- 3 480 volt remote panel (RCP - 10)
- 4 Physically locate the UPS system
- 5 Battery back up system
- 6 Batter back up systems switch gears (Chargers)

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Electrical Demonstration Test

- 1 Demonstrate how to properly test a GFCI
- 2 Demonstrate the proper procedure for Racking In/out any given switch gear
- 3 Demonstrate how to place a variable speed drive equipment in manual and adjust the speed
- 4 Demonstrate the proper procedure you should use if a "GROUND" is detected.

_____	_____
_____	_____
_____	_____
_____	_____

AIR HEADER

Physically locate the following equipment.

- 1 K-1002 A/B , associated equipment & Instrumentation
- 2 Air header pressure (PI-3414)
- 3 Physically locate the division air control valve

_____	_____
_____	_____
_____	_____

DO 013240
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AIR HEADER Continued:

Demonstrate 2 of the following task, explaining the purpose and reason for each step

- | | | | |
|---|--|-------|-------|
| 1 | Make a round on K-1002 A/B and explain the importance of each item on the round and what action you should take if any of the readings are out of their normal operating paramters | _____ | _____ |
| 2 | Lining up and starting an air compressor up. | _____ | _____ |
| 3 | Adding oil to the sump and motor bearing | _____ | _____ |
| 4 | Putting an air compressor on back up. | _____ | _____ |
| 5 | Demonstrate in the field how to determine if the dryers are on heat up and if so which bed is on heat up and which is on line (DR-100) | _____ | _____ |

FANS

Demonstrate/simulate in the field completing each task in a logical safe manner

- | | | | |
|---|--|-------|-------|
| 1 | Set up a fan for start up | _____ | _____ |
| 2 | Properly take down a fan for maintenance | _____ | _____ |
| 3 | Grease a fan | _____ | _____ |
| 4 | Locate the following on any given fan. | _____ | _____ |
-
- | | | | |
|----|-----------------------|----|------------------|
| A. | Fan blades | B. | Shroud/fan ring |
| C. | Tube Bundle | D. | Inlet header |
| E. | Outlet header | F. | Motor |
| G. | V-belt | H. | Field Switch |
| I. | Variable speed driver | J. | Main switch gear |
| K. | Vibration monitor | L. | Grease fittings |

H2S04 TC

Physically Locate the following on the acid rack.

- | | | | |
|---|--------------------------------|-------|-------|
| 1 | Unload line manual block valve | _____ | _____ |
| 2 | Sample block valve | _____ | _____ |
| 3 | N2 regulator block valve | _____ | _____ |

DO 013241
CONFIDENTIAL

H2S04 TC CONTINUED:

Demonstrate 2 of the following items in a safe and proper manner. *

- | | | | |
|---|--|-------|-------|
| 1 | Demonstrate hooking up a sulfuric acid tank car. | _____ | _____ |
| 2 | Demonstrate running a sulfuric acid tank car sample. | _____ | _____ |
| 3 | Demonstrate unhooking a sulfuric acid tank car and preparing it for removal. | _____ | _____ |
| 4 | Check the N2 regulator for proper setting and function | _____ | _____ |
| 5 | Calling and ordering another tankcar. | _____ | _____ |
| 6 | Filling out the sulfuric acid check sheet. | _____ | _____ |
| 7 | Demonstrate changing the rupture disk on a tank car | _____ | _____ |

SAFETY

Demonstration the following in a safe manner

- | | | | |
|---|---|-------|-------|
| 1 | Demonstrate an understanding of the Safe Work Multi-Permit form, including the Vessel Entry and Hot Work sections, and the ability to properly fill one out | _____ | _____ |
| 2 | Demonstrate the ability to properly use the plants fire fighting equip. | _____ | _____ |
| 3 | Demonstrate how to properly trip the sprinkler systems | _____ | _____ |
| 4 | Demonstrate the proper use of a safety harness | _____ | _____ |

DO 013242
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**BASIC ENGINEERS RECERTIFICATION
DEMONSTRATION & WRITTEN/VERBAL TEST**

ENGINEERS NAME: _____ DATE: _____

SAFETY

- 1 What is the minimum safety equipment required in this block?
- 2 Which areas of the plant require hearing protection?
- 3 Explain the CMP evacuation policy.
- 4 What is the Division policy on contact lenses?
- 5 State under what circumstances safety harness be worn.
- 6 State Dow's policy on crossties between the block nitrogen system and plant air
- 7 State the proper safety gear required when racking in/out breakers 480 volt and larger
- 8 What is "SULFURIC ACID" and what do we use it for?
- 9 State the proper safety gear required when in an H₂SO₄ area
- 10 State the action required if skin/eyes are exposed to chemical

CHEMICAL KNOWLEDGE

Describe characteristics and safety concerns of the following

- 1 Methyl Chloride
- 2 Methylene Chloride
- 3 Chloroform
4. Carbon Tet
- 5 Chlorine
- 6 Meoh
- 7 HCL
- 8 R-22
- 9 Nitrogen

Demonstrate you ability to locate and use the Material Data Sheet (MSMS)

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BASIC ENGINEERS RECERTIFICATION
DEMONSTRATION & WRITTEN/VERBAL TEST

ENVIRONMENTAL

- 1 Give a definition of "Hazardous Waste"
- 2 Explain the proper means of disposal of waste
- 3 Review and explain the environmental regs for Air, Water
- 4 Explain the following and state how these effect our plant.
A. Hazwoper B. RCRA C. TSCA
D. SARA
- 5 Demonstrate your ability to locate the proper documentation needed for a EPA audit.
- 6 Demonstrate your ability to locate and use the employee hazard communication manual.
- 7 State the procedure required if environmental equipment shuts down or will be shut down.

GENERAL FLOWS

Draw a one diagram of the CMP's process flows and explain briefly the purpose of each piece of equipment.

MECHANICAL EQUIPMENT

- 1 Explain any special safety hazards assoc. with pumps and fans
- 2 Explain the operation of a mag drive pump.

BASIC ENGINEERS RECERTIFICATION
DEMONSTRATION & WRITTEN/VERBAL TEST

ENGINEERING KNOWLEDGE

- 1 Demonstrate your ability to perform the following task
 - A Demonstrate your ability to properly read and understand any given Mod V Code.
 - B Explain our MOC policy
 - C F&EI, CEI, Burner Management
 - D Demonstrate the usage of Pipe Specs, P&ids, H&imbs
 - E Material of Construction (Bricks, TFE, Pipt, etc)
 - F Explain the proper procedure for updating plant procedures

**LAB RECERTIFICATION
WRITTEN / VERBAL TEST**

EMPLOYEES NAME: _____ DATE: _____

1. What is the minimum safety equipment required in the lab?
2. What would NO PEAKS DETECTED on a report tell you to check?
3. If a particular sample report normally has ten peaks, but this time has 100 peaks, what would you check?
4. What would you do if your major component showed a result as being 75% rather than 99 or 100%?
5. If an analysis was ran and chromatograph looked ok but the report did not what would you check?
6. If you checked the flame, septum, & syringe, and all were ok, but you could not get any analysis out what else would you check?
7. What steps would you take in solving a titration problem, where the indicator did not change color?
8. What would you do should an automatic titrator fail?
9. Explain what each of the following are used for: Zero Air, Plant Air, Hydrogen, Low Pressure Nitrogen, High Pressure Nitrogen, Helium, Process Water and Deionized Water.
10. Explain how the backup gas supply system should operate.
11. What is the function of the computer in our lab?
12. List all the different devices associated with the computer.
13. Where can one find the correct pressure and flow settings for a particular chromatograph.
14. Where would you find the header pressure indication for each gas mentioned in question above?
15. Explain in simple terms what integration is all about.
16. What type of integration do we use here at CMP?
17. What controls the H P integration?
18. How would you change the integration of a particular chromatograph?
19. What do the markings on the side of chemical containers tell you?
20. What are the largest amounts of any chemicals one can store in a lab at any time?

DO 013246
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**LAB RECERTIFICATION
WRITTEN / VERBAL TEST**

21. What are the labling procedures for waste identification?
22. Explain what would be hazardous waste.
23. How would you dispose of lab waste.
24. Where are FID collectors located?
25. What are the different reagents used for process analysis testing?
26. Explain how a titration analysis works.
27. What is an A/D box?
28. What are the different reagents used for water analysis testing?
29. What does RCL's represent as for as water analysis is concerned?
30. Give a general explanation of what a gas chromatograph is and what it is used for.
31. Name the parts of a gas chromatograph.
32. Why are carrier gasses used on GCs?
33. Why would a GC have a different temperature for different analysis?
34. Why do GCs' have different columns?
35. What is a range setting used for?
36. What is zero setting used for?
37. How would you check the Specific Gravity of a sample?
38. Which program on the lab computer controls GC integration?
39. Which program on the lab computer sets up a GC for a particular analysis?
40. What information on routine analysis report should you look for?
41. What are some things you should check before analyzing a sample?
42. How would you analyze a non routine sample using a GC?
43. How is a GC connected to the HP system ?
44. How is a method setup on the HP system for a particular analysis?
45. How would you look at a plot of your analysis on the HP system?
46. How would you change or modify a method using the HP system?
47. How would you check and/or recalibrate a method using the HP system?

DO 013247
CONFIDENTIAL

**LAB RECERTIFICATION
WRITTEN / VERBAL TEST**

- 48. What is the first thing to check on an A/D box if you did not get any results from a sample run?
- 49. What is the second thing to check on an A/D should you not get any results from a sample run?

DO 013248
CONFIDENTIAL

**LAB RECERTIFICATION
PHYSICAL LOCATION / DEMONSTRATION TEST**

PHYSICAL LOCATIONS

- | | Correct / Incorrect |
|--|---------------------|
| 1 Physically locate all sample points for routine samples. | _____ |
| 2 Physically locate the normal and backup utilities supply to the lab. | _____ |
| 3 Physically locate all block valves for utilities to the lab. | _____ |
| 4 Physically identify where the glass sample bottles and caps are stored. | _____ |
| 5 Physically identify where you would find spare parts for cylinder. | _____ |
| 6 Physically identify where to find extra glassware, and pipettes. | _____ |
| 7 Physically locate all the electrical breaker panels associated with the lab. | _____ |
| 8 Physically locate and identify a GC. | _____ |
| 9 Physically locate the electrical supply for a GC? | _____ |
| 10 Physically locate and tell where to analyze the different process samples. | _____ |
| 11 Physically demonstrate how to change a septum. | _____ |

LAB DEMONSTRATION

- | | |
|--|-------|
| 1 Demonstrate where to analyze each of the routine samples. | _____ |
| 2 Demonstrate how to operate the chemical waste pot. | _____ |
| 3 Demonstrate how to setup and analyze a sample using a GC on the HP system. | _____ |
| 4 Demonstrate how to relight the FID flames on ALL GCs in the lab. | _____ |
| 5 Demonstrate how to reboot the HP computer system. | _____ |

DO 013249
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**LAB RECERTIFICATION
PHYSICAL LOCATION / DEMONSTRATION TEST**

LAB DEMONSTRATION CONTINUED:

- 6 Demonstrate how to enter your results on the HP computer. _____
- 7 Demonstrate how to bring up an HP device once it has been downed. _____
- 8 Demonstrate how to send reports to the different printer locations. _____
- 9 Demonstrate how to use the FIND program. _____
- 10 Know how to make the following reagents _____
 - a) Bromothymol Blue Indicator
 - b) Starch Solution
 - c) Phenolphthalein Indicator
 - d) Potassium Iodide
- 11 Demonstrate how to analyze (?) of the following samples _____
 - Explain how to analyze for PPM Sulfite.
 - Explain how to analyze for PPM Phosphate.
 - Explain how to analyze for PH.
 - Explain how to analyze for Conductivity.
 - Explain how to analyze for Weight % HCL and Weight % Sulfuric.
 - Explain how to analyze for PPM HCL.
 - Explain how to analyze for PPM Water.
 - Explain how to analyze for PPM Chlorine.
 - Explain how to analyze for Non Volatile Matter.
 - Explain how to analyze for Color.
 - Explain how to analyze for Free Halogens.

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