

DEPARTMENTAL CORRESPONDENCE

PLAINTIFF'S EXHIBIT

CC-213

Date May 16, 1978

Subject Refinery Instruction Manual

To Hadden/Hobbs/McMannis/Myers

Dep't. _____

From V. A. Cornell

Dep't _____

Attached are new instructions:

- Hazardous Job Procedures (#4 Reformer Stacked Reactors)
- Respiratory Program
- Entry Permits (Instructions)

Please proceed to the writing of instructions, in your area, of Paragraph RIM-1-3b(2)9.

V. A. Cornell
5-16-78

VAC:sm

attachments

cc: R. J. Johnston

Each Manager

RAM 0000636

I N D E X

REFINERY INSTRUCTION MANUAL

Section I General

- I-1. Purpose of Manual
- I-2. Electrical Lockout
- I-3. Safety Permits
 - I-3a. Hot Work Permits
 - I-3b. Entry Permits
 - I-3c. Respiratory Program
 - I-3d. Respiratory Training
 - I-3e. Hazardous Job Procedures
 - I-3e(1) #4 Reformer Stacked Reactors
 - I-3e(2) #4 Reformer Reactor #4
 - I-3e(3) Reactors - #1 Reformer
 - I-3e(4) Reactors - #2 Reformer
 - I-3e(5) C.O. Boiler
 - I-3e(6) Leaded Tanks
 - I-3e(7) #2 CDU Towers and Vessels
 - I-3e(8) HDS Reactors
 - I-3e(9) Others, when recognized
- I-4. Work Permits.
- I-5. Emergency Callout
- I-6. Hurricane Procedures
- I-7. Firewater System
 - I-7a. Firewater System - General Information
 - I-7b. Firewater System - Operations
- I-8. Security
 - I-7a. Security - General Information
 - I-7b. Security - Gate Operations
- I-9. Contractor Operations
 - I-9a. Contractor Operations - General Information
 - I-9b. Safety Pamphlet for Contractors
 - I-9c. Turnaround Operations/Maintenance
- I-10. Corporate Safety and Accident Prevention Manual
- I-11. Supervisor's Manual
- I-12a. Distribution for the RIM
- I-12b. Preparation Procedures and Approvals
- I-13a. Refinery Terminal Fire Company - General Information
- I-13b. Refinery Terminal Fire Company - Operations
- I-14. Piping Color Code - Guidelines

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REFINERY INSTRUCTION MANUAL

Instruction

RIM I-3e. HAZARDOUS JOB PROCEDURES

I-3e(1). #4 Reformer Stacked Reactors.

1. Purpose. To prepare, open, enter, make ready for work, inspect, remove catalyst, clean screens, make necessary repairs, reload catalyst, close, and return to operation.
2. Hazard. Since the platinum based catalyst may catch fire in the presence of air, these reactors must be maintained in a nitrogen rich atmosphere with no more than 5% oxygen present. Nitrogen is an odorless gas which will cause you to fall asleep and cease breathing if you lose your breathing air supply. After someone has passed out, they may be revived by using a resuscitator or by artificial respiration plus oxygen.
3. General. The stacked reactors consist of three vertical chambers, one on top of the other connected by small catalyst dip legs. Catalyst flows in to the top of the #1 Reactor, from #1 Reactor to #2 Reactor through the dip legs, from #2 Reactor to #3 Reactor through the dip legs and out the bottom of #3 Reactor in to a collection chamber. During operation, the Reformer feed flows through the #1 Reactor to a heater, then through #2 Reactor to a heater, then through #3 Reactor to the rest of the process.
4. Procedures. Whenever it is necessary to work in the above Reactors, the following procedures are to be used:

- a. Before any work is done determine that all reactor bed temperatures are below 120°F.
- b. The cooling down process is accomplished by circulating nitrogen through the entire system by using the recycle compressor. When the recycle compressor has been shut down, an outside source of nitrogen can percolate up through the reactors and maintain the required 95% concentration.
- c. Reactor blinds will be installed to isolate the reactors from the rest of the unit.

NOTE: Once all catalyst has been removed, air will be introduced into the reactors to facilitate cleaning and repairs.

- d. All reactor manway bolts will be loosened at this time. The noise from the large impact causes all work to cease inside; therefore, all bolts on all manway flanges should be broken loose. No. 2 and #3 Reactor manways should be held closed by at least four bolts. No. 1 Reactor manway shall be opened at this time. All breathing air requirements in accordance with company regulations (RIM I-3c

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RIM I-3e. HAZARDOUS JOB PROCEDURES

I-3e(1). #4 Reformer Stacked Reactors (cont'd)

and RIM I-3d) shall be in place and in operation prior to opening any manway.

NOTE: These reactors are classified as hazardous atmospheres and the following personnel guidelines will be enforced at all times while catalyst and/or nitrogen purge is in the reactor:

- (1) The high pressure breathing air unit will be located within sight of the reactor manway being worked. The unit will be attended at all times by a trained operator fully aware of the job being performed and all pertinent company regulations. He shall watch both the unit and his contact man on the platform outside the manway being worked.
- (2) Four high pressure air supply lines will be run from the HPBAU trailer to the platform outside the manway being worked.
- (3) There shall be no more than two workers in the bottom of the reactor at any one time (each on a different supply line). One other man, wearing the HPBAU, may enter to the top deck of the reactor to pass equipment or assist those below to keep lines straight, etc.
- (4) The fourth HPBAU will be worn by the second standby man on the platform, ready in case of emergency. A resusitator will also be located on the platform for emergency use.
- (5) Two men will stand by on the platform to communicate between the reactor internals and the ground unit. They will also keep harness, air, and lighting lines untangled and be ready for rescue efforts, if the need arises.
- (6) Prior to entering the reactor, all excess equipment and tools will be cleaned off the platform outside the manway being entered and a separate deck shall be constructed to stand on to hoist a man out, if necessary. This deck shall not get in the way of normal operations.
- (7) Sufficient 12-volt lighting shall be provided inside the reactor to maintain visual contact with the workers.
- (8) If a worker has a problem, he should be immediately hoisted out of the reactor. If he is tangled or for some reason, cannot be pulled out within 15-20 seconds, another worker shall determine if the fallen worker has air. If not, check the following:
 - (a) Is the man breathing? If not, use the resusitator and

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RIM I-3e. HAZARDOUS JOB PROCEDURES

I-3e(1). #4 Reformer Stacked Reactors (cont'd)

get him breathing while a third man comes in to untangle or get the fallen man ready to hoist out.

- (b) Is his mask broken? Bring him the spare while his co-worker untangles him.
- (c) Has his air supply failed? Turn on his backup supply while a third man comes in to untangle him.
- (d) At the first sign of a problem inside the reactor, the ground man should be signaled to perform the following tasks:

- 1. Call for additional help.
- 2. Double check his unit and the lines leading to the reactor.
- 3. Instruct someone to shut off the nitrogen flow to the reactors.

NOTE: There will be sufficient nitrogen in the reactor to be safe. Shutting off the flow will help the men leaning in the manway doing the hoisting.

- 4. More than likely, an emergency inside the reactor will require an ambulance. Instruct someone to call one.
- (9) Any contractor or sub-contractor working inside the reactor must comply with the above procedures or furnish equal procedures of his own with the prior approval of our company's representative.
- e. Call the Safety Department for oxygen sniff test to insure that less than 5% oxygen is present inside of #1 Reactor chamber. After the entry permits have been signed by Operations, Safety and Maintenance, a mechanic with "full breathing air and rescue equipment" may enter #1 Reactor to perform the following tasks: Remove all ten (10) dip legs (match mark and number so that they may be returned to original position). Next, remove three (3) pie plate sections just inside the manway.

Note: A special variable length chain ladder is to be used hanging from the neck of the manway by thin straps so as not to obstruct the passage way. This ladder will be used to go and come from the bottom of the reactor. As catalyst is removed, additional sections of ladder shall be added in order to reach the bottom.

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RIM I-3e. HAZARDOUS JOB PROCEDURES

I-3e(1). #4 Reformer Stacked Reactors (cont'd)

- f. At this point, it is intended to use a catalyst removal service, such as Browning-Ferris, for removal of the catalyst from the #1 Reactor. A re-check of oxygen levels within the reactor should be made just prior to removing the catalyst and periodically during the catalyst removal operation.
- g. After all catalyst has been removed from #1 Reactor, close the manway and secure with four (4) bolts.
- h. Open #2 Reactor manway and repeat steps e-g.
- i. Open #3 Reactor manway and repeat steps e-g.
- j. Drain the remaining catalyst from the stacked reactor system by removing a section of line from the bottom of the catalyst collector on the bottom of #3 Reactor.
- k. The nitrogen flow will now be disconnected and shut off and all manways opened.
- l. Notify the Safety Department and request that the reactors be sampled at all points to determine if they are safe to enter without breathing air equipment. If not, continue to purge the reactors with fresh air fans until they are safe to enter. The reactors are now ready for cleaning.
- m. Working from the top down, the screens in all three reactors may be cleaned by wire brushing, vibration, and/or cleaning individual slots with a thin metal blade. All normal safety precautions should be observed. All internal lighting shall be 12 volts. All scaffolding required should be in accordance with NIOSH standards and projections and snags held to a minimum.
- n. After the screens in each reactor are cleaned, the dust shall be vacuumed from the bottom of the reactor.
- o. Inspection of the reactors by Operations, Inspection Department personnel, and outside interests may be made at this time.
- p. Obtain necessary permits and perform any required repairs at this time.

NOTE: Full high pressure breathing air equipment must be worn inside the stacked reactors from this point on.

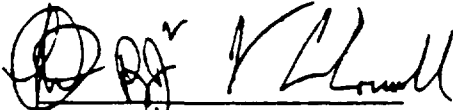
- q. Close #1 and #2 Reactor manway. Reconnect nitrogen piping and initiate nitrogen flow in to the bottom of #3 Reactor and purge the entire stack. This will be done at the direction of the turnaround Maintenance Superintendent.

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RIM I-3e. HAZARDOUS JOB PROCEDURES

I-3e(1). #4 Reformer Stacked Reactors (cont'd).

- r. Sample the atmosphere within #3 Reactor to insure that less than 5% oxygen is present and reload the catalyst into #3 Reactor.
- s. Re-install the pie plates on the top of #3 Reactor.
- t. Re-install all dip legs, close the reactor manway and seal with at least four (4) bolts.
- u. Open #2 Reactor manway. Repeat steps r, s, and t.
- v. Open #1 Reactor and repeat steps r, s, and t.
- w. Install all bolting; torque all manways shut.
- x. Open the top of the reduction zone heat exchanger and load catalyst as required by Operation's supervision to fill the stack to the top.
- y. Close the reduction zone heat exchanger and tighten bolts.
- z. The stacked reactors are now ready to have blinds pulled and returned to operations.


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REFINERY INSTRUCTION MANUAL

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RIM I-3c. RESPIRATORY PROGRAM

I-3c(1). Policy. All persons working at the Coastal States Refinery will be required to use the respiratory equipment, as instructed, to prevent any harmful consequences of contaminated or unclean air.

I-3c(2). Procedure.

1. Management will take engineering measures to control process and storage equipment which produces contaminated atmospheres, providing ventilation or other control measures to minimize the hazards.
2. Respiratory equipment will be provided when such equipment is necessary to protect the health of an employee or others.
3. Respiratory equipment will be selected according to the hazard that exists where an employee or others may be exposed to it.
4. High Pressure Breathing Air Equipment (HPBAU) is described as follows: No. 900007-23 Scott pressure demand, hose line, breathing air units with egress emergency air supply using only bottled air through #15319-00 and #6141-00 high pressure, non-kink, armored air hose.
 - (a) HPBAU will be used on all jobs where the atmosphere is classified as "Hazardous" and could require the use of the egress bottle for escape.
 - (b) All persons required to use the HPBAU will be trained and certified in its use and for entry into confined spaces and/or hazardous atmospheres. This training will include the medical examination and performance testing to prove the person is physically and mentally able to do the work safely with the HPBAU.
5. Low Pressure Breathing Air Equipment (LPBAU) is described as follows: No. 802230 Scott demand and continuous flow respirator with harness using bottled or plant breathing air through 1/4" 300010-2 braid neoprene hose lines.
 - (a) LPBAU will be used for jobs classified as non-hazardous and where egress can be accomplished without the air mask.
 - (b) LPBAU will be used on all jobs to prevent exposure to contaminated or unclean air except in some cases where the paper-type dust mask is satisfactory for solid particle air contaminants.
 - (c) All persons required to use LPBAU will be trained and certified in its use, which includes entry into confined spaces.

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RIM I-3c. RESPIRATORY PROGRAM

6. Emergency Scott Air Pack Equipment (ESAP) is described as follows: Scott self-contained 15-minute sling packs, or Scott self-contained 30-minute back packs.
 - (a) ESAP is to be used for entry into hazardous atmospheres for emergency use only.
 - (b) All persons that may be required to use the ESAP will be trained and certified in its use for emergency conditions.

I-3c(3). Rules.

1. Management will select or appoint those persons that require the respiratory training in each category:
 - (a) HPBAU -
 - (b) LPBA -
 - (c) ESAP -
2. Safety, Maintenance and Training Departments will develop and perform the respiratory training and certification programs, as needed. See RIM I-3d.
3. Safety Department will inspect, repair and test all breathing air equipment on a monthly basis and keep records.
 - (a) Each piece of equipment will be tagged or otherwise developed.
4. Safety Department will purchase any new parts or equipment as needed.
5. Maintenance Department will provide manpower and cooperate as required to accomplish the successful completion of the breathing air equipment monthly inspection program.
6. Breathing air equipment will be issued only to and returned by designated Coastal States employees, as maintained by Safety Department.
7. HPBAU will be issued only on those jobs where the Safety Department has a copy of the approved job plan or job safety analysis, and for use by only certified employees.
8. LPBA will be issued to and returned by the same Coastal States employee and will be for use by only those persons certified in training.
9. ESAP will be permanently located on site at the place where it is needed and will also be inspected on a monthly basis by the Safety Department.

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RIM I-3c. RESPIRATORY PROGRAM

10. Persons with training certification will be required to use the breathing air equipment exactly as required by the training and rules. Exceptions and infractions will be cause for disciplinary action which will include retraining, days off without pay, or dismissal.
11. Any faulty breathing air equipment must be removed from the job site and returned to the Safety office, and must be done immediately upon discovering the malfunction.
12. Masks must not be passed from one person to another during use, as this violates sanitation regulations.

I-3c(4). Preliminary Requirements for Persons Using Breathing Air Equipment.

1. A recommendation from a Coastal States Supervisor that employee's performance indicates he is reliable and can be depended on to do the job properly.
2. Able to speak, read and understand English.
3. Demonstrate the ability to follow instructions carefully and use good judgment.
4. Demonstrate the physical strength and agility required for this work.
5. Must have no facial hair that can interfere with the seal of the mask and pass the face piece fit test (ANSI Z88.5).
6. Must pass physical size and age requirements and show no signs of claustrophobia or fear of high places.

I-3c(5). Medical Examination.

1. The company medical officer will establish and perform examinations for those persons required to use breathing air equipment.
2. Medical examination will include pulmonary test, hearing test, eye test, cardiovascular impairment or other conditions as noted by the medical officer.

I-3c(6). Training (See RIM I-3d) Persons who pass the preliminary requirements (I-3c(4) above) and medical examination (I-3c(5) above) will enter into the various training programs, including:

- (a) HPBAU and its use in hazardous atmospheres while working in confined spaces.

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RIM I-3c. RESPIRATORY PROGRAM

- (b) HPBAU and its use in hazardous atmospheres while working and in emergencies.
- (c) LPBA and its use in jobs where escape can be made without the mask.
- (d) ESAP and its use during emergencies.


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REFINERY INSTRUCTION MANUAL

Instruction

RIM I-3b. ENTRY PERMITS (INSTRUCTIONS)

I-3b(1) Policy. An entry permit is required before any person may enter into any enclosure such as process vessels, towers, sewers, pits or other confined space.

I-3b(2) Procedure.

1. The Safety Inspector will issue a safe entry permit for all work in confined spaces. Use the Safety Permit Form C-613a. Each entry job must be reviewed in advance to provide time to prepare and plan all the precautionary measures that will be required for a safe job without delays.
2. The owning Supervisor is responsible for the preparation of the vessel or equipment, including decontamination, cleaning, blinding, isolation, electrical lock out, mechanical disconnect and any other precaution required to make the equipment safe for entry.
3. The entry permits will be issued to the Coastal States employee in charge of the person or persons that are to enter the confined space.
4. The Safety Inspector, owning Supervisor, and the person receiving the permit must all be in complete agreement on the conditions of the permit and so indicate by the signing of the permit.
5. The Safety Inspector will inspect the job site and make the vapor tests for explosive or toxic gases, T.L.V. limits or oxygen deficiencies, and other tests as needed.
6. The Safety Inspector will inspect and approve ventilation methods and rates. /
7. The Safety Inspector will inspect and approve the rescue equipment and methods.
8. Entry permits will be classified as "Hazardous" for those jobs requiring protection from inert or toxic atmospheres or where escape cannot be safely done without the use of a breathing air mask.
9. For areas determined to be hazardous and a specific procedure does not exist, the owning Supervisor will work out adequate procedures, at the time, with the two co-signers of the Safety Permit. Some of these hazardous areas are as follows:
 - (a) #4 Reformer Stacked Reactors. See RIM I-3e(1).
 - (b) #4 Reformer Reactor #4. See RIM I-3e(2) to be issued.
 - (c) Reactors - #1 Reformer.
 - (d) Reactors - #2 Reformer.

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RIM I-3b. ENTRY PERMITS (INSTRUCTIONS)

- (e) C.O. Boiler.
 - (f) Lead Tank.
 - (g) #2 CDU Towers & Vessels.
 - (h) HDS Reactors.
 - (i) Others, when recognized.
10. All persons entering hazardous atmospheres will be required to use the high pressure Scott breathing air hose line equipment and be certified for training in its use. See RIM I-3b, I-3c, and I-3d.
 11. All persons entering confined spaces will be required to wear rescue harness and have proper life line attached except where rescue can be achieved easily without the life line.
 12. Low pressure hose line masks and harness will be required for health hazard or nuisance atmospheres and where escape can be accomplished without the use of the mask.
 13. Persons performing the actual entry are responsible for following all the precautions included in the entry permit, the job plan and the associated training.
 14. Outside contractors will comply with the same rules and procedures as required for Coastal States employees.
 15. No person will be required to enter a flammable or explosive atmosphere.
 16. Entry permits for hazardous atmospheres are valid for one work shift only. A new permit must be issued for the oncoming shift.
 17. All other entry permits will be issued for longer or shorter periods as determined by the co-signers.
 18. If in the opinion of any of the permit co-signers, the conditions change and become unsafe, the work will be discontinued for re-evaluation of the conditions.
 19. Each entry job will require a continuous standby person or persons at the entrance with direct communications with those working inside. The standby must also be capable of executing rescue measures in an effective manner at all times.
 20. Distribution of entry permits:
 - (a) The person performing the entry work will be given the white original copy and will keep it until the permit expires.
 - (b) The yellow copy will be posted in the control room in a place separate from the hot work permits.
 - (c) The pink copy will be retained by the Safety Inspector.

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RIM 1-3b. ENTRY PERMITS (INSTRUCTIONS)

21. An entry permit does not authorize hot work such as welding or cutting. A separate hot work permit will be required if hot work is to be done. See RIM I-3a.
22. After a permit is issued, it becomes the responsibility of the owning Supervisor, the Maintenance Supervisor and the person in charge of the job, to maintain conditions and precautions listed on the permit.
23. Supervisors, Foremen and Engineers involved in the planning and execution of work in confined spaces shall become familiar with the following standards, regulations and industry practices:

Coastal States RIM 1-3c, Respiratory Program.

OSHA Regulations Paragraph 1910.134.

ANSI Standard Z-88.2 Practices for respiratory protection.

ANSI Standard Z-117.1 Safety requirements for working in tanks and other confined spaces.

API Publication 2015 Cleaning Petroleum Storage Tanks.


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