

STUDY GROUP MINUTES
THREE-YEAR FCC RUNS
EL PASO REFINERY

R. L. Flanders and J. H. Morrison met with members of the El Paso Refinery (J. C. Keating, C. R. McGinnis, J. W. Barefoot, M. L. Brown, N. L. Lewis, R. A. Noreen, P. J. O'Keefe, R. H. Payne, and J. R. Wheeler) November 7 to develop a list of design considerations and maintenance items required to permit operation of the El Paso FCC Plant for three-year intervals between shut-downs. The time interval of three years was selected to correspond to the State of Texas requirement to inspect the CO Boiler and FCC Regen Gas cooler at three-year intervals. Maintenance and alteration items contemplated for the next El Paso FCC Plant shutdown, April 1975, were also discussed and are included in the summary notes below. The personnel key to these minutes follows:

RLF/JHM--indicates a joint recommendation of persons listed.

GROUP --indicates agreement between El Paso personnel, RLF (Chevron Research representative) and JHM (Socal Engineering Department representative).

El Paso--indicates responsible group at El Paso Refinery made the decision or will handle the work

* --information developed in afternoon meeting with only M. L. Brown, RLF, and JHM in attendance.

A. FCC Regenerator Grid Support Posts and Peripheral Grid to Shell Seal

1. GROUP. These should be replaced by a single cylindrical support system as shown on Drawing GT-F-27548-0. This will require purchase of a 1-1/4 Cr grid knuckle section and a 1-1/4 Cr/carbon steel cylinder support section. Socal Engineering Department personnel have ordered needed material and will arrange for fabrication of both knuckle section and support cylinder.
2. *JHM/MLBrown. Details still under study by the Socal Engineering Department and not yet approved by El Paso are:
 - a. Need for refractory lining on top side of knuckle section to lower temperature of weld and to mitigate hot spots.
 - b. Desirability of packing void between cylindrical support and shell with KAOWOOL.
 - c. Alteration to grid to grid knuckle section weld detail to permit easier fit up where grid is warped.

Encl. - Figure 41 of 1974 Process Meeting Notes

2-518-RV.2

B. New Seals for FCC Regen Overflow Well and/or Spent Catalyst Riser

1. El Paso Engineering group is aware of pros and cons of "purchased" bellows seals versus "in-field" box-type seals. They plan to consolidate their thinking and position shortly. Until then, Social Engineering Department will obtain no bids and order no material.
2. *RLF/JHM will develop and transmit written recommendation to El Paso on:
 - a. Outer shroud over seal.
 - b. Installation of Social Engineering Department designed top well guide. (El Paso has details.)
 - c. Under grid secondary seal. (See Figure 41, 1974 Chevron Process Meeting notes attached.)

C. FCC Regen Cyclone Shave Pockets

1. RLF. Decommission shave-off pockets in all primary cyclones. Use Richmond Refinery procedure as a guide. (Both general data and details left with Mel Brown.)
2. RLF. Leave shave-off pockets of all secondary cyclones "as is" as erosion has not been a problem.
3. El Paso agrees.

D. Emergency Water Spray in Regen Plenum

1. RLF/JHM. Relocate nozzle to first elbow off regenerator. (RLF/JHM would appreciate opportunity to review design.)
2. El Paso tentatively agrees.

E. Catalyst Withdrawal System, FCC Regen

1. GROUP. El Paso will design and install a more effective bar-type strainer over grid drain hole.
2. *RLF/JHM. Recommended El Paso design a better under grid slip joint or packing gland in dump line. Social Engineering Department will assist if so requested. El Paso will investigate.

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F. FCC Regen Shell
Refractory and Insulation

GROUP. El Paso will repair all bulged areas with "one-shot" refractory and alloy anchors. At least three (3) carbon steel anchor rods will be sent to Richmond Materials Lab for analysis.

G. High Temperature Regeneration
or Air Spargers in FCC Regen

JCK/RLF. Agreed neither of above process changes could be justified in immediate future; so no special shutdown work or studies are required.

H. Replacement Air Cooler for
FCC Regen Gases

1. GROUP. Agreed bid for hi-temp regeneration operation, as well as bid for replacement in kind should be obtained.
2. JHM. Replacement in kind bid should be available late November/early December. Hi-temperature bid about 2-4 weeks later.

I. FCC Regen Cyclone Hanger Rods

GROUP. Carefully inspect and seal weld or otherwise repair as necessary.

J. FCC Reactor Cyclone Hanger Rods

GROUP. Carefully inspect and seal weld or otherwise repair as necessary.

K. Reactor Cyclones

1. GROUP. Obtain quote for set of replacement carbon steel cyclones. Existing units are oldest ones in Corporation. Metal deterioration makes weld repairs most difficult and not reliable. Will probably require replacement second scheduled shutdown from now.
2. RLF/JHM. Recommend at least three vendors be requested to bid. Also, suggest bid lists outline general cyclone requirements rather than request exact duplicate units to obtain full benefit of latest cyclone technology and more competitive bids.

L. Reactor Lining

1. GROUP. Replace defective lining.
2. *JHM to determine possibility of using "one-shot."

2-5-80 JV2

M. Reactor S Bend

1. RLF. No need to maintain straightening vane assembly in S bend.
2. *Mel Brown. El Paso will eliminate straightening vane or repair depending on which alternate is cheaper and easier.

N. Reactor Grid Holes

1. RLF. Enlarged holes not detrimental as long as integrity of deflector plate support bars and grid support pins are maintained. A new reactor grid is not (negative) needed.
2. GROUP. Will re-establish original grid hole size in areas needed to assure above objective.
3. *RLF. Recommends four 4-inch holes be installed in deflector plate. Will send El Paso Chevron Research sketch; El Paso tentatively plans to do work.

O. Reactor Primary Dip Legs

1. RLF. Reactor dip legs should be sealed and discharge into annulus area.
2. GROUP. Above will be done with either trickle valves or box seal (whichever is cheaper).
3. JHM will send El Paso drawings of Pascagoula box seal installation.

P. Reactor Secondary Dip Legs

RLF is analyzing possible benefits and will advise El Paso of his recommendations. El Paso to generate rates of catalyst in fractionator bottoms.

Q. R-205 Flare Inspection and Repair

*El Paso is studying the scheduling and other problems required to inspect and repair R-205 flare during April 1975 shutdown.

R. U-Bend Replacement and Repairs

El Paso has needed material on order for April 1975 shutdown.

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S. Pacific Slide Valve in
Regenerated Catalyst U Bend

1. *El Paso expects major repairs. Anticipated life beyond one more run is uncertain.
2. *RLF/JHM. Recommend bids for a replacement chrome valve be available from at least Chapman and TAPCO early May 1975. Delivery now of such valves is 8 months plus. (Pacific no longer sells slide valves.)
3. JHM will send El Paso drawings of how Chapman plans to rebuild Pacific slide valves for Pascagoula as soon as details are finalized.

T. Necking Down of CO Boiler Stack

1. *RLF will send El Paso data on opacity of stack gases versus velocity. Also recommends that increase in pressure of system be analyzed as to its effect on possible overpressuring of FCC Precipitator, etc.
2. *JHM suggests El Paso design be reviewed by Social Engineering Department as to possible adverse noise and/or vibration problems (Pascagoula and Vancouver). Also, will design adversely affect FCC and/or CO Boiler blowers?

U. Regenerator Dense Bed
Water Sprays

RLF recommends piping to these sprays be dismantled.
El Paso is reviewing.

V. Regen Torch Oil Installations

1. *RLF/JHM recommend the existing fixed torch oil nozzles be converted to retractable-type nozzles to ensure three years of operation. Existing small nozzles could be blinded off and abandoned and 3-inch water spray nozzles used for this service. (See U. above.) Oil should be atomized to minimize hot spots and cat attrition.
2. *RLF will supply nozzle details. El Paso has details on retractable nozzles.

W. Regen Secondary Dip Legs

RLF. Recommends these be extended to within 4 feet of grid to cut down on fines recycling.

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X. Second-Stage Gas Compressor

1. GROUP. Past history of failures of this equipment indicates corrective action must be taken to permit three-year FCC Plant runs.
2. JCK requested Social Engineering Department and Chevron Research in-depth study of this problem as soon as possible to pinpoint problem and recommend corrective action. JHM/RLF will set up. This study is related to Item AA.

Y. Doughnut Rings in Reactor Stripper

JHM recommended either replacement of existing damaged doughnut rings per Detail D of PA-18-22422-0 or installation of horizontal restricting plates. Mel Brown will accept one of these alternates after Social Engineering Department provides additional details. JHM will handle.

Z. Precipitator

El Paso group did not feel reliability of precipitator was a problem as far as three-year runs. They do feel that detailed inspection and thorough workmanship is important during shutdown periods. They agree operator startup procedures are important. RLF transmitted a copy of Richmond Refinery precipitator operating startup procedures to Dick Noreen for reference.

AA. Recovery Area Column Exchanger and Reboiler Reliability

El Paso is analyzing replacement bundle needs, bypass requirements if any, etc., to determine what is needed.

BB. New Rotor for K-1801 Air Blower and Other Spare Parts

El Paso is studying. Some common rotating elements for Hawaii/El Paso now exist.

CC. Regen Primary Dip Legs and Trickle Valves

GROUP. These should be retained to save catalyst on startup. Thinned sections of pipe will be replaced. Consideration will be given to extending hexmesh lining to the outlet of the pipe top to bottom.

12-11-68 RV/2

DD. Reactor to Fractionator Line Mitres
and Fractionator Bottoms Nipples

1. El Paso plans to thoroughly inspect all mitres for possible cracking as occurred recently at El Segundo. (This was last done in 1970.)
2. El Paso also plans to inspect all nipples and attachments in fractionator bottoms systems for fatigue cracks.

EE. Repen Grid Manway

El Paso does not require design check out of this installation by Social Engineering Department.

:lw

22 FEB 1972

OUTGOING TELEGRAM

IGRR 1-13-75 4:10 PM

J. C. KEATING
ATTN C MCGINNIS/M L BROWN
EL PASO REFINERY
EL PASO TEXAS

IN ANSWER TO JCK PHONE INQUIRY TO R L FLANDERS WE SUGGEST FOLLOWING
FCC SHUTDOWN ITEMS SHOULD BE GIVEN SPECIAL ATTENTION IN YOUR
DECISION TO POSSIBLY DELAY SCHEDULED SHUTDOWN TILL 1976. LETTER
DESIGNATIONS ARE PER OUR NOVEMBER 12, 1974 LETTER:

C. REGEN CYCLONE SHAVE POCKETS

CATALYST LOSS WILL INCREASE AND REPAIRS WILL BE MORE EXPENSIVE
AS TIME GOES ON. UNLIKELY THAT THIS WILL FORCE A SHUTDOWN.

F. REGEN SHELL REFRACTORY/INSULATION

RECOMMEND YOU MONITOR THIS WITH INFRARED AND/OR HAND PYROMETER
ONCE EVERY SIX WEEKS TO ASSURE INTEGRITY.

H. REPLACEMENT AIR COOLER

- 1. AWAIT RESULTS OF RADIOACTIVE WATER LEAKAGE TEST NOW UNDER WAY.
2. VERIFY PRESSURE DROP FROM PLUGGED TUBES DOES NOT LIMIT
PRESSURE RELIEFING CAPACITY OF GAS SYSTEM FROM REGENERATOR.

H. REACTOR CYCLONES

MONITOR QUANTITY AND SIEVE ANALYSIS OF CATALYST IN FRAC BOTTOMS
WEEKLY TO VERIFY INTEGRITY OF SYSTEM.

R. U-BEND REPLACEMENT

MOST CRITICAL ITEM ON SHUTDOWN LIST AS FAR AS DEFERRAL IS
CONCERNED. MEANINGFUL ON STREAM MONITORING UNLIKELY BUT INVESTIGATING
POSSIBILITY WILL CALL MEL BROWN 1-15.

X. SECOND-STAGE GAS COMPRESSOR

SPECIAL REPORT IN PREPARATION.

MAILED	
DATE	1/13/75
TIME	4:10 PM
BY	JCK
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