

MONSANTO COMPANY

Texas City, Texas

Date : July 27, 1966

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Subject: Acetylene - AN - VCM - VAM - Methanol Monthly Summary
July, 1967

O P E R A T I N G C O M M E N T S

Oxygen production was 19,666 tons (99% of capacity and 98% of schedule) for July. The plant was forward 100% of the time but production was curtailed by a 68 hour, half-rate operation to desalt the main air compressor drive turbines. The return to full rate operation was delayed by an emergency repair to 17E1-1 intercooler, and later, by problems with the oxygen drive turbine.

The turbine desalting was ineffective in reducing thrust loads, indicating insoluble salt buildup on the rotors. Mechanical cleaning of the rotors will undoubtedly be necessary in the near future.

The nine day, half-rate, shutdown of Department 17 is tentatively scheduled to begin on September 25. The major objective of this shutdown will be the installation of a Kingsbury thrust bearing in the north main air compressor drive turbine.

Carbide oxygen purchases totaled 3,840 tons for July, reflecting the first full month of operation at the 145 ton per day contract maximum rate.

Carbide nitrogen purchases totaled 14,235 MCF.

CBY 1113188

RSV0032640

Acetylene production in July was 8.50 $\bar{M}$ pounds (102% of rated capacity and 93% of schedule). Production was limited mainly by oxygen availability, resulting from Department 17 half-rate operation and a two day cutoff of Carbide's oxygen. There was some rate restriction caused by downtime on the 18C3-2 cracked gas compressor.

P. T. Department has now completed testing of the latest version of a cokeless burner block. Performance of this burner block has been good and, thus, restored some of our earlier optimism for cokeless burner blocks. P. T. Department has indicated that they will make a formal recommendation about August 1.

The No. 2 cracked gas compressor turbine has been a problem most of the month. The turbine rotor began to vibrate excessively following desalting on July 6. The rotor was removed, straightened, and balanced on July 7, but the serious vibration continued. The rotor was again removed for repair on July 25. A spare rotor is now being built from an old spindle that had been in storage here.

Monochem addition to the reflux flow to the south solvent stripper (18D4-1) tower was started on July 19.

Waste Disposal operations were satisfactory throughout the month.

HCN production was 4.8 $\bar{M}$ pounds (75% of rated capacity and 86% of schedule). Rates were below schedule because of an increase of C_2H_2 to VCM on July 10 because of demand. The HCN plant was also shut down for two days early in the month to correct process restrictions (i.e., plugging in 19D6 overhead line; salting of drive turbine on main air compressor 19C2; plugging in 19D7 feed line). All demand for HCN during the shutdown was supplied from storage. After the shutdown, both reactors were run at near maximum rates to rebuild inventory which had been depleted to 100,000 pounds and is now back to about 390,000 pounds.

A reactor tripout occurred prior to the shutdown while attempting to reduce rates due to a high C_2H_2 rate reduction in Department 20. Both auxiliary air compressors (19C5, & 6) were being operated at the time because of severe salting on the main air compressor turbine. The reactors were back on stream in about 30 minutes.

CBY 1113189

RSV0032641

The pump drive turbines on CT-2 were desalted on June 29 with a resultant speed gain of 350 rpm.

Pure AN production was 7.8 $\bar{M}$ pounds (72% of rated capacity and 80% of schedule). Production was below schedule because of a reallocation of C_2H_2 from AN to VCM early in the month.

Product quality was generally good, with only occasional high MVK. Ammonia feed to the MVK system was switched from liquid to vapor to improve stability and pH control. Operation has been very smooth since this switch. Two barge shipments this month (2.7 M and 2.8 M) practically depleted all the AN inventory.

Crude AN production averaged 7.9 $\bar{M}$ pounds (73% of rated capacity and 81% of schedule). Reactor control was fair to poor most of the month due to a widely fluctuating C_2H_2 supply (Department 17 compressor desalt; Department 18 train shutdown; Carbide shutdown; Department 18 power failure, reallocation of C_2H_2). Economical catalyst scheduling was also difficult under these conditions. At times only three reactors and two cycle gas compressors were required. At other times all five reactors and four compressors were required. On July 13 all reactors were shut down for 1-1/2 hours when a power failure knocked Department 18 off line. The tar removal tank (20T29-3) developed a hole near the base after 14 months service and will have to be replaced.

Acetaldehyde production (434,000 pounds) was below standard again this month as a result of the relatively poor reactor control. A substantial amount of ACH was also lost through venting caused by poor performance of the chilled water jet refrigeration system.

Lactonitrile production was 657,000 pounds. Synthesis of LN was carried out for only 18 days because of high LN and LA inventories. Operations were normal.

TBA remained down the entire month due to limited usage during the extended rubber industry strike. Current plans call for a startup of the unit the week of August 7.

VCM production was 11.9 $\bar{M}$ pounds (98.5% of rated capacity and 103.5% of schedule). Rates were limited primarily by demand (14 days) and by lack of EDC (4 days) due to Department 23 problems.

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Quality control was 94.9% RFT. 658,000 pounds of VCM in 22T9-2 (spec. storage sphere) went off-spec in dilatometer. This material was off-spec due to problems with the Cl_2 injection system while raw C_2H_2 was fed to reaction. The C_2H_2 purification was down for repairs during this period.

Department 23 EDC production was 11.5 M pounds (92.0% of rated capacity and 89.5% of schedule). The unit was down for four days to make repairs to the 23V1 EDC reactor.

Department 26 EDC production was 1.1 M pounds (44% of rated capacity and 59% of schedule). Operations were normal. Rates were adjusted as required to consume Cl_2 . The unit was down four days due to Department 23 problems.

Muriatic acid production was 120,000 gallons (10.9% of rated capacity and 60.0% of schedule). Acid was produced to supply in-plant acid requirements.

VAM production was approximately 6.0 M pounds (110% of rated capacity and 100% of schedule). Major rate limitations were: 1) no acetylene from VCM during the 22D15 cleaning, and 2) a scheduled shutdown starting 7-24-67 to replace the catalyst in 34R1-2 plus perform other maintenance (i.e., approximately two days down plus three days at half-rate operations). Catalyst batch #208 (calicat, 11% Zn.) produced approximately 12 M pounds VAM; 85% of standard life. No fouling in purification was detected until about 7-13-67 when 34E16 began to plug. The reboiler was switched during the shutdown.

Quality has been good to excellent all month; all crude and slop material has been processed.

Methanol production was approximately 2,565,000 gallons (118% of rated capacity and 116% of schedule). There was one emergency shutdown on July 13 due to a power failure in Department 18. Linde was down 2-1/3 hours due to the upset and loss of raw gas supply from Department 18.

The Linde pressure differentials continued to increase throughout the month. Advantage was taken of reduced rate periods to run at low yields to help arrest an increasing trend. Also, an attempt was made to decrease the Δp on July 18 by running at a 3.15 minute

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cycle at full rates. These changes were helpful in preventing further increases in the pressure differentials, but did little to lower them. The raw gas end point temperatures averaged 148°C and the Linde yield averaged 75% during July. The 31E31 data indicates a fouling trend which should make a defrost necessary in August.

Uncoordinated downtime on the synthesis gas compressors amounted to 53 hours in July. Replacing the fourth stage rings on 31C5-2 accounted for 4-1/2 hours and cleaning a plugged third stage intercooler and repairing the timing chain on 31C5-1 accounted for 32 hours of this downtime. The remaining downtime was due to miscellaneous valve repairs.

The 31R1-2 methanol reactor was down 5 hours and the 31R1-1 was down 16-1/4 hours due to the emergency shutdown on July 13 which resulted from a power failure in Department 18.

S A F E T Y & H O U S E K E E P I N G

The department 17-18-24 safety meetings were presented by R. G. McDonnell and R. F. Arnold with a film entitled "Help Yourself to Safety." Seventy-two percent of the hourly employees attended these meetings.

All supervisory personnel met with W. C. Fuller in July for a discussion on our plant-wide safety program and our individual safety responsibilities. Subsequently, a meeting was held with all chief operators to discuss the same subject.

All valve chain operators in Departments 17, 18 and 24 have been overhauled and repaired as necessary to comply with the new plant standard.

The monthly safety meeting for AN-HCN is being given by T. L. Nelson. The subject is "Corrosive Chemicals." Twenty operators were checked out in the use of the vapor proof suit. This is a continuous program with each operator being checked out once each year. The "Unit Hourly Safety Committee" was formed and held its first meeting on July 17 to discuss organization and procedural policy, and to develop a plan of action for the next six months.

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VCM safety meetings for the month were on the Emergency Procedure Plan and were conducted by K. F. Webb. In addition, two films, "Verdict at One Thirty-Two" and "Not Even One Chance," were shown. L. N. Vickery and J. J. Ringer conducted Scott Air Pak drills with the operating personnel.

To date there has been one injury (doctor's case) in the VCM area. An operator was sprayed with EDC, VCM, HCl mixture when a bleeder valve leaked through while depressuring an EDC cracker to the flare.

VAM departmental safety meeting (Dept. 34's section of the Texas City Emergency Procedure Plan) has been postponed, awaiting final issuance of the Plan. Short safety write-ups on sampling safety and properly grounded containers, plus goggle protection during sampling has been given by J. McQueeney.

There has been one injury (minor) reported to date; a pipefitter received an acetic acid burn on his hand.

The Department 31 safety meeting in July was a discussion about the hazards of ammonia, and was conducted by M. K. Hughes.



W. C. Fuller

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