

MONSANTO COMPANY
Texas City, Texas

Date : March 30, 1967

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To : W. R. Nisbet (2)

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

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

Oxygen production was 20,073 tons (101% of rated capacity and 95% of schedule) with the plant forward 100% of the time. Production was limited primarily by low pressure tower capacity.

The 17B3 supercharger, for the main air compressors, was in service all month. The evaluation of the air compression equipment, with 17B3 in operation, is still incomplete although sufficient data has now been collected by the P. T. Department. Maintenance work on the blower is now scheduled for the week of April 3.

The oxygen plant was upset for a two-hour period on March 23 by failure of the solenoid valve controlling operation of the "C" bank nitrogen pass reversing valve. This incident is being investigated.

Carbide oxygen purchases totaled 2,850 tons (111% of schedule) and the year-to-date total is very close to the contract minimum of 7,650 tons (based on a daily average).

Carbide nitrogen purchases totaled 11,900 MCF in March.

Acetylene production was 9.15 $\bar{M}$ pounds (110% of rated capacity and 102% of schedule) with rates set to optimize the West Plant Complex operations. The plant was forward 100% of the time.

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The south purification train is scheduled for a three-day shutdown on April 3 for a routine cleanout of the 18D4-1 overhead system. This gives a 5½ month operating period between cleanouts for this train. No schedule has been set yet for a north train cleanout.

The first "production model" cokeless burner block failed on March 9 after only 15 hours operation because of a cooling water leak in the upper flange. This failure is not related to the cokeless block operation since the upper section design is unchanged. The performance data obtained from this very short run was highly encouraging and another "production model" cokeless burner block has been built and will be ready for operation about March 30. The design has now been changed so as to preclude the possibility of a water leak into the upper section again happening.

No Carbide acetylene was purchased in March.

Waste Disposal operations were satisfactory all month. A test of the use of the alternate incinerator feed nozzles for the 24D1 stripper overhead was carried out by P. T. Department this month. The feeding of the stream to the oxidation section of the furnace had no noticeable effect on the stack plume. P. T. Department is expected to report the results of the test in April.

HCN production was 3.9 M pounds (62% of rated capacity and 75% of schedule) with only two reactors on stream.

HCN rates were cut to the absolute minimum early in the month to reduce the HCN inventory. This was done to provide sufficient surge capacity for the HCN plant to operate through the anticipated April crude AN shutdown.

There were no reactor tripouts, periods of flaring, or shutdowns during the month.

Plans were finalized for converting the reactors to 18-layer gauze operation. This will be done with the scheduled April gauze change-out.

Pure AN production was 7.4 M pounds (70% of design and 87% of schedule). Production was below schedule because of an unexpected failure of reboiler piping on the AN column (20D7) on March 13 which forced shutdown of the pure unit. It was decided at this time to undertake the entire pure unit shutdown work scheduled for late April or May. Major work during the shutdown was cleaning of the columns and associated piping and replacement

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of the entire sump section of column D7. By in large, the unit was exceptionally clean and the entire shutdown required only six days. The unit operated at relatively high rates after the shutdown to return all the crude stored at Hess. AN product quality was excellent for the most part except for periods of high HCN caused by erratic pH control.

Crude AN production was 7.4 M pounds (70% of design and 87% of schedule). Approximately 440,000 pounds of unused C_2H_2 capacity occurred during the month. All five reactors were kept on stream except for a short period during the pure unit shutdown when purchase of Carbide oxygen was stopped. Crude AN produced during the shutdown was trucked to Hess Terminal in Houston. The tar trailer was received from Malone and used several times to transport tar to Vaughn Company. The use of the trailer will cut our tar hauling expenses in half and provide tremendous flexibility to the entire catalyst handling system. Operation of the AN stripping column (20D2) was put on automatic control this month. Steam flow to the reboiler is controlled by temperature of tray 14. This should reduce AN losses in the water system, improve jet chiller performance, and reduce steam usage in 20D2.

Acetaldehyde production was 530,000 pounds (100% of standard). A problem was experienced with AcH quality about mid-month which resulted in shipping one tank car of off spec material to Carbide (with their approval).

TBA production was a record 455,000 pounds (121% of rated capacity and 105% of schedule).

The increase in production was made possible by the hydrolyzer waste surge system -- completed a month ahead of schedule.

The plant started using a lower purity isobutylene early in the month with no detrimental effects on either production or yields observed to date. Successful conversion to this IBY will result in a raw material savings to Monsanto of \$158,000 in 1967.

Lactonitrile production was 833,000 pounds (100% of design for synthesis and recovery operation). LN inventory was adjusted from 63,000 gallons to about 55,000 gallons. Yields on the LN stripper column, 20D28, were improved somewhat this month by better pH control on the column bottoms stream.

VAM production was approximately 5.7 M pounds (105% of rated capacity and 97% of schedule). Primary rate limitations were (1) the

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34R1-1 catalyst change the first part of the month, and (2) a complete departmental shutdown on 3-26-67 for a catalyst change in 34R1-2, plus other scheduled maintenance. The catalyst in 34R1-2 only produced 9.6 M pounds of VAM; 4.4 M pounds short of standard life. The 34D3 reboiler started fouling rapidly again on 3-14-67, requiring a reboiler switch on 3-20-67. Column and reboiler continued to foul and barely made it to the 3-26-67 shutdown.

One day's VAM production was over twice too high in inhibitor, requiring blending. Two VAM rundowns were off-spec in color. Quality was near borderline on low range UV spec the latter part of the month and went off spec on occasions. All material transferred from Department 34 was blended to exceed specifications.

VCM set a monthly production record this month of 17.1 M pounds (141% of rated capacity and 114% of schedule). The previous monthly record was 15.0 M pounds set in December, 1966. The average daily production of 552 M pounds set a new record for a month (previous record was in February, 1967, of 511 M pounds/day).

A weekly production record was set (3.78 M pounds). Six daily production records were set: 546 M pounds; 547 M pounds; 553 M pounds; 559 M pounds; 568 M pounds, and 580 M pounds. The previous daily production record of 545 M pounds was set February 27, 1967. There was only one rate limitation (other than the purified C_2H_2 distribution between VCM and VAM) during the month; 65,000 pounds of lost VCM production due to switching of 22D9 (EDC purification column) reboiler.

Quality - 207 M pounds of VCM was slopped due to high HCl. This was caused by rerunning a small amount (24 M pounds) of water-rich VCM which was in the off-spec sphere. There are 70 M pounds of off-spec VCM now on hand, and it will be rerun at the earliest opportunity.

Department 23 set a new production record of 18.3 M pounds of EDC (146% of rated capacity and 126% of schedule). Rates were adjusted as required by Department 22's demands. A weekly production record of 4 M pounds was set. The previous weekly record of 3.87 M pounds was set in January, 1966.

Department 26 was down all month to maximize Cl_2 usage.

Muriatic acid production was 266 M gallons (425 M gallons scheduled). Acid was produced to consume maximum Cl_2 .

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Methanol production was approximately 2.7 M gallons (124% of rated capacity and 111% of schedule). The department operated continuously during the month. The 31R1-2 was down 23-3/4 hours to replace the south outboard and inboard packing on 31C7-2 reactor recycle compressor.

The Linde regenerator pressure differentials began to increase slightly during March but seem to be within control. The raw gas end point temperatures averaged 147°C and Linde yield averaged 75.7°C. The 31E31 ΔT increased slightly during the month, and there is some indication of refrigeration limitations. An E-31 defrost is expected in April.

Uncoordinated downtime on the synthesis gas compressors amounted to 24 hours during March. Eleven hours of this downtime was due to replacing the third stage packing on 31C5-2. Repairs to the north scavenger air cylinder of 31C5-1 accounted for 2-3/4 hours and the remainder was due to miscellaneous valve repairs on all three compressors.

On March 9, at about 2045, the 31C7-2 packing blew out and caused reactor gases leaking through the packing to discharge to the 31S25 (compressor oil blowdown pot). Unfortunately, the Department 18 flare was emitting sparks which ignited the gases escaping from the 31S25 vent. The fire was put out by shutting down the 31C7-2 and depressuring the 31R1-2 methanol reactor.

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

Department 17-18-24 safety meeting on "Oxygen Safety" was presented by R. E. Watson to 93% of the operating personnel.

The area around the CT-3 and CT-4 cooling tower pumps has been declared a noise hazard area. Effective March 20, anyone working in the area for periods of 10 minutes or more must wear accoustical ear muffs.

The monthly safety meeting in Department 19-20 was held by T. L. Nelson on the subject of "Artificial Resuscitation." Approximately 95% of the operators were covered.

The March safety meetings for the Texas City Maintenance Department were presented by Joe McClellan on "Hazards in the AN-HCN-TBA Plants." All chemicals in these plants were discussed, but emphasis was placed on HCN toxicity and work practices or rules.

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The VAM safety meeting scheduled for March has been postponed due to the two shutdowns, vacations and the press of operating problems.

VCM safety meetings for the month were conducted by H. W. Cutcher on "The Safe Handling Procedures for Acid and Caustic in the VCM Area."

There were three minor injuries in VCM. A machinist strained his back while removing a pump for maintenance repairs; a maintenance supervisor bumped his elbow on a valve and bruised it; and a pipefitter inhaled Cl_2 while changing out a Cl_2 Dp cell on the EDC crackers.

The Department 31 safety meeting for March was a movie entitled "How To Avoid Muscle Strain." The meeting was attended by all operators and maintenance personnel regularly assigned to the unit.

P E R S O N N E L

A. H. Conrad, J. J. McClellan, P. E. Brubaker, and W. E. Repschleger attended Robert Gunning's course on "Clear Technical Writing."

All personnel in Departments 19 and 25 are now trained and qualified for all jobs in these departments. A system of rotation was put into operation.

W. C. Fuller
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