1904

K/EM-130/PT1

SANITIZED VERSION OF K-151, PART 1
PROCESS DIVISION WEEKLY REPORT
Issued 1/7/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:
Asst. D B Gilliland /sgt 5/31/95
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Oak Ridge, Tennessee 37831-7101
managed by MARTIN MARIETTA ENERGY SYSTEMS, INC.
for the U.S. DEPARTMENT OF ENERGY
under Contract DE-AC05-84OR21400

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Approved for issue by: A.P. Huber
Date of issue: January 7, 1948

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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION
Process Engineering Department
Production Engineering Section

PROCESS DIVISION WEEKLY REPORT

A.P. Huber

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Utilities and Auxiliaries

The steam demand at K-1501 averaged approximately 91 m. p.p.h. this week. Four boilers were in service supplying this demand.

Electrical Systems Operation

The duct flushing program was continued in Plant III.

The following tables are attached:

I. Weekly Production Report.

II. Cascade Cell Off-Stream Time and Labor Man Hours.

III. Utilities and Auxiliaries.

IV. Cascade Services.

LLThacker:bd

A.P. Huber

A.P. Huber

Enclosures (4)

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY CARBIDE AND CARBON CHEMICALS CORP. LOCATION Post Office Box P OAK RIDGE, TENN.

To: Mr. S.C. Barnett
Location: K-1001

Date: January 6, 1948

Copy to: Attached Distribution

Answering Letter Date

Subject: Process Division Weekly Report Ending 0800 Jan. 5, 1948

Cascade Operation

A complete plant inventory was taken at 1200 on December 31, 1947. Crude feed and waste condensing operations were suspended from 1145 to 1300.

The crude feed rate was decreased from 6,000 to 5,400 pounds of 616 per day on December 29. A further feed reduction of 600 pounds per day was effected on December 30. The crude feed rate was reduced in order to meet feed commitments for the month. A normal crude feed rate of 6,000 pounds per day was resumed after the inventory.

Y-12 enriched material amounting to 291.672 Kg. T at an average assay of 226897 was fed to the cascade this week.

Three cells (K-309-2.2; K-301-5.5 and K-309-3.5) developed C-816 leaks this week, resulting in a C-816 inleakage to the cascade of approximately 45 pounds. Thus the C-816 inventory in the cascade has again reached the point where it is economically desirable to operate the K-101 building for C-816 removal. It is planned, therefore, to begin operation of K-101 on January 5, 1948.

High side pressures in the K-311 and K-310 sections were reduced, in conformance with first contingency conditions, between 0530 and 0610 on January 5. The variable frequency feeders serving these two sections are to be removed from service one at a time and the ducts containing the feeders flushed with sanitary water. The pressures will be restored to normal when the duct flushing is completed in Vaults 1 and 2.

The manifold conversion in the K-402-5 and K-402-6 line recorder station was completed this week and a metal tube rack was installed. This is the first complete installation for the trial operation of one tube rack per two buildings.

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TABLE I

WEEKLY PRODUCTION REPORT
From 0700 December 29, 1947 to 0700 January 5, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
Kg T	28834.20	0.0
K-25 Waste Concentration	210908	1.1
K-27 Product Concentration	192238	.6
Purge Rates - Scf/Day		
K-312-1 (Top)	- - -	- - -
K-312-2 (Side)	3750	- 1.5
Conc. C-616 in Purge Cascade		
Top	3.8×10^{-5}	35.7
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Period (Lbs.)	
Inventory for Previous Week	591	
Produced	0	0
Consumed - K-300	14	0.0
Oxide Conversion	17	15.0
K-1400	1	0.0
K-1302	6 *	- - -
Inventory	553	- 6.42

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	4994	266	- -	- -	700	- -	- 303	5657
G-74 Pipe Line	3295	86	8	- -	- -	- -	- -	3389
G-74 Cylinder	- -	66	- -	- -	- -	- -	- -	66
TOTAL	8289	418	8	- -	700	- -	- 303	9112
% Increase from Prev. Week	2.9	- 26.0	0.0	- -	- 10.0	- -	- -	- 1.4

* Vented for Experimental Purposes

TABLE II
SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 December 29, 1947 to 0800 January 5, 1948

A. Cell off-stream time this week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase in No. of Times Over Prev. Week
Stage Pumps	1.67	1.81	1.67	1	8.33	1
Stage Pump Seals	31.59	34.24	12.72	3	25.00	1
L. R. Inleakage Tests	1.00	1.08	.17	1	8.33	
Excessive Inleakage	55.83	60.52	55.83	3	25.00	3
Miscellaneous	2.17	2.35	2.17	4	33.34	4
TOTAL	92.26	100.00	72.56	12	100.00	9

Weekly Stream Efficiency - - - - - - - - - - - 99.90%
Weekly Stream Efficiency Last Week - - - - - 99.98%
Weekly L. R. Stream Efficiency - - - - - - - 96.47%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from Nov. 9, 1947 to Jan. 5, 1948

	Accumulated Labor Man Hrs.	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hrs.
Stage Pumps	252.00	69.13	3.65
Stage Motors	931.50	378.59	2.46
Inst. and Auto Valves	11.00	7.50	1.47
Lube Oil System	1.00	1.67	.60
Coolant System	109.00	55.00	1.98
Excessive Inleakage	50.50	27.50	1.84
TOTAL	1355.00	539.39	2.51

TABLE III

UTILITIES AND AUXILIARIES
From 0700 December 25, 1947 to 0700 January 2, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	79.89	1.28	75°F	106,860	44.61	0.98	75°F
Increase from Previous Week	- 1.61%	25.87%	0°F	- 12.1	2.34%	8.71%	0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	3.953	- 3.46
Flow to Distribution (Mn. Gal/D)	3.953	- 2.70
Volume in Storage (Mn. Gal)	2.390	0.00

1100 and 1200 SECTIONS

Period	Ambinet Air Scfm	Ambinet Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	5,240	- 98°F	5,000	- 108°F
Increase from Previous Week	22.68%	0°F	0.26	1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M.Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs	Equiv. Steam In Condensat M. Lbs.
This Week	15,317	847.1	2,589*	4,974	10,06	705
% Increase	11.65	11.49	- 7.43	18.51	8.07	1.43

* As of 12-30-47

TABLE IV

CASCADE SERVICES
December 29, 1947 through January 4, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. and Heads	Leaks Found
Vacuum Testing	1	0	1	3	85 Heads	11
Pressure Testing	0	0	2	1	85 Heads	20
CO_2 Testing	1	0	---	---	----	1
C-816 Testing	---	---	2	---	----	0

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	4	---	0	12,003.5 Gms.	6 Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	14	14	---	---	---
C-816 Storage	---	---	---	---	---	59 Lb.	---	---
Field Decon.	---	0	2	---	---	---	6	11

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	2	27	13	14

	Total Samples	Total Determinations
Chemical Analysis	266	79

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K/EM-130/PT2

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PROCESS DIVISION WEEKLY REPORT
Issued 1/14/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

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Report Number: K-151, Part 2

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Production Engineering Section

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY CARBIDE AND CARBON CHEMICALS CORP. LOCATION Post Office Box P OAK RIDGE, TENN

To: Mr. S.C. Barnett
Location: K-1001

Date: January 13, 1948

Answering Letter Date

Copy to: Attached distribution

Subject: Process Division Weekly Report Ending 0800 Jan. 12, 1948

Cascade Operation

K-301-5.5 was isolated from the cascade at 2300 on January 3, with a C-816 inleakage of approximately 30 pounds per day. Considerable difficulty was encountered in locating and repairing the C-816 leak in the stage 1 cooler. The cell experienced a total off-stream time of 93 hours before being returned to normal operation.

A leak developed in the sight glass on the reflux return line when the K-101 building was charged this week. It was decided to operate with the sight glass by-passed and use a rotometer to control the reflux flow. The building was connected into the cascade at 1035 on January 9.

As of 0800 January 12, the C-816 concentration in K-302-3.6 had decreased to 0.3%.

Y-12 enriched material amounting to 295.843 Kg. T at an average assay of 184520 was fed to the cascade this week.

The high side pressures in the K-402-1 building were adjusted on January 8, to conform more completely with optimum operating pressures.

The K-311 and K-310 high side pressures, which had been reduced to allow flushing of the variable frequency feeder ducts, were returned to normal on January 6, after the duct flushing program in Vaults 1 and 2 was temporarily discontinued. The pressures in these two sections were reduced again between 0530 and 0630 on January 12, in anticipation of the renewal of the duct flushing program next week.

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K-402-8.3 was off-stream for 10 1/2 hours for replacement of the 2B motor which had burned. The definite reason for this motor failure has not been ascertained.

Trial operation of the cross-over between the two manifolds in the K-402-5 and 6, K-303-4 and 5 and K-305-8 and 9 line recorder stations has proved satisfactory and orders have been issued to install cross-overs in all line recorder stations. One manifold in each line recorder station will be converted to the new design, for accommodation of a metal tube rack.

Utilities and Auxiliaries

A momentary interruption in recirculating water supply was experienced at 0930 on January 2, when the cone valve of the 4A pump failed to operate and the "B" venturi valve closed simultaneously. No satisfactory explanation for this water flow interruption has been obtained as yet.

The combined plant and instrument air flows averaged 4,990 SCFM this week at an average dewpoint of -109°F.. These flows were supplied at all times by one large and one small reciprocating compressor.

The steam flow at K-1501 averaged 94 M p.p.h. this week. The condensate return flow continued at a steady rate and accounted for 67% of the total feed water used.

Electrical Systems Operations

Feeders 242 and 244 were out of service for short periods of time for duct flushing.

The following tables are attached:

I. Weekly Production Report.
II. Cascade Cell Off-Stream Time and Labor Man Hours.
III. Utilities and Auxiliaries.
IV. Cascade Services.

LLThacker:bd
Enclosures (4)

A.P. Huber
A.P. Huber

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 January 5 to 0700 January 12, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
g T	28834.20	0.0
25 Waste Concentration	210909	0.1
27 Product Concentration	192228	- 0.9
Purge Rates - Scf/Day		
K-312-1 (Top)	- - -	- - -
K-312-2 (Side)	3889	3.7
Conc. C-816 in Purge Cascade		
Top	2.8×10^{-5}	- 26.3
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Period (Lbs.)	
Inventory for Previous Week	553	- - -
Produced	0	0.0
Consumed - K-300	42	200.0
Oxide Conversion	24	41.2
K-1400	5	400.0
K-1004	0	0.0
Y-12	0	0.0
Inventory	482	- 12.8

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
-28	4787	617	- - -	- - -	774	- -	392	6570
74 Pipe Line	3397	229	9	- - -	- - -	- -	- - -	3635
-74 Cylinder	- - -	119	- - -	- - -	- - -	158	- - -	277
TOTAL	8184	965	9	- - -	774	158	392	10482
Increase from Prev. Week	- 1.3	130.9	12.5	0.0	10.6	0.0	- - -	15.0

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TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 January 5 to 0800 January 12, 1948

A. Cell off-stream time this week.

ons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev.Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase in No. of Times Over Prev. Week
tage Pumps	-	-	-1.67	-	-	-1
tage Motors	10.50	5.33	10.50	1	5.00	1
tage Pump Seals	76.93	39.04	45.34	7	35.00	4
R. Inleakage Tests	11.20	5.69	9.70	9	40.00	8
cessive Inleakage	98.41	49.94	42.58	4	20.00	1
scellaneous	-	-	-2.17	-	-	-4
TAL	197.04	100.00	104.28	21	100.00	9

Weekly Stream Efficiency 99.79%
Weekly Stream Efficiency Last Week 99.90%
Weekly Line Recorder Stream Efficiency 96.69%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947, to January 12, 1948.

	Accumulated Labor (Man Hours)	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
tage Pumps	5.00	1.67	2.99
tage Motors	266.00	71.30	3.73
tage Pump Seals	1063.00	419.10	2.54
nst. and Auto Valves	11.00	7.50	1.47
ube Oil System	1.00	1.67	.60
olant System	109.00	55.00	1.98
cessive Inleakage	158.25	96.67	1.64
TAL	1613.25	652.91	2.47

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 January 2 to 0700 January 9, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	81.22	1.30	75°F	107,140	44.18	1.03	75°F
% Increase From Previous Week	1.66%	1.08%	0°F	0.26%	-0.97%	4.97%	0°F

SANITARY WATER

	This Week	% Increase From Previous Week
Flow to Storage (Mn. Gal/D)	3.907	-1.16
Flow to Distribution (Mn. Gal/D)	3.907	-1.16
Volume in Storage (Mn. Gal)	2.390	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	4,600	-99°F	4990	-109°F
Increase from Previous Week	-12.21%	- 1°F	-0.20%	- 1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	17,715	977	2,992	6,039	12,161	958
% Increase from Previous Week	15.65	13.34	15.56	21.31	20.84	35.88

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TABLE IV

CASCADE SERVICES
January 5 through January 11, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	0	0	1	3	111 Heads	13
Pressure Testing	0	0	2	0	111 Heads	15
CO_2 Testing	0	12	----	----	----	2
C-916 Testing	----	----	2	----	----	0

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	4	----	0	21,093 Gms.	4 Cyls.	----	----	----
Carbon and Alumina Traps	----	----	----	0	0	----	----	----
C-816 Storage	----	----	----	----	----	0 lb.	----	----
Field Decon.	----	0	4	----	----	----	5	18

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	3	0	18	23

	Total Samples	Total Determinations
Chemical Analysis	286	135

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PROCESS DIVISION WEEKLY REPORT
Issued 1/21/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:-

Technical Information Officer
Oak Ridge K-25 Site

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PROCESS DIVISION
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Production Engineering Section

PROCESS DIVISION WEEKLY REPORT

A.P. Huber

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To: Mr. S.C. Barnett
Location: K-1001

Date: January 21, 1948

Answering Letter Date

Copy to: Attached Distribution

Subject: Process Division Weekly Report Ending 0800 Jan. 19, 1948

Cascade Operation

The high side pressures in the K-311 and K-310 sections, which were reduced at 0630 on January 12, to allow flushing of the variable frequency feeder ducts, were returned to normal on January 13, after completion of the duct flushing program in Vaults 1 and 2.

The C-816 removal unit in K-101 operated satisfactorily during the first part of this week except for a few difficulties encountered with the "J" pump and the rotometer reflux control. Operation of the unit was discontinued on January 15, however, to allow the cascade to reach an equilibrium for an anticipated special "T" and "X" inventory.

Four cylinders of Y-12 enriched material amounting to 292.066 Kg T at an average assay of 168622 were fed to the cascade during the week.

The motors of K-306-6.2 were tripped by over-current relay action at 1625 on January 13, when the inboard bearing on the 1A motor stuck. The failure was apparently caused by a loose set screw which allowed the inboard bearing to turn. After replacement of the 1A motor, the cell was returned to the cascade at 2200 on January 13.

K-306-3.10 was off-stream for 8 hours on January 13, while the 4B motor was being replaced. The outboard bearing of the 4B motor had failed, possibly as the result of a loose set screw.

K-305-11.10 was isolated from the cascade at 2125 when the 1B pump froze, causing the motor to burn. In addition to the replacement of the 1B motor-pump assembly, the 4A pump bearings were changed. The cell was restored to normal operatiin at 2345 on January 15.

K-305-5.9 was taken off-stream at 0545 on January 15, when the 2A motor burned as the result of a bearing failure. Before being returned to normal operation at 0935 on January 17, the cell experienced a total cell off-stream time of 46 hours. The 2A motor was replaced and a total of 6 complete seal changes were made with gaskets being replaced in 4 others.

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An inleakage of C-816 to the cascade became apparent at 0815 on January 15. Five cells were isolated on inverse recycle and the cascade was split three times for short periods before the leak was located in K-309-2.2. The cell was off-stream for 68 hours while the leak was being identified and repaired in the stage 2 cooler. This is the second C-816 leak which has developed in the stage 2 cooler of K-309-2.2 within the past three weeks.

K-301-4.7 was isolated from the cascade at 2135 on January 17, with a 90 pounds per day C-816 inleakage. Several cells were isolated and the cascade was split in three different places in locating the leak in cell 7. A negative C-616 analysis has not been obtained as yet.

The 4A pump of K-301-3.5 failed at 0920 on January 18. The cell was isolated and purged to the cascade and a negative analysis was obtained at 0615 on January 19. Replacement of the 4A pump will begin at 0800.

The K-312-2 building was operated at 40 cycles per second between 1625 and 1900 on January 18, to facilitate purging the excess nitrogen up-flow which originated with the purging of K-301-3.5 and K-301-4.7 in Plant II.

The lube oil coolers in K-402-2, K-402-3 and K-402-5 were by-passed last week in a test to determine the possibility of operating at higher lube oil temperatures in Plant I. In general, results have indicated that the lube temperatures vary with the ambient air temperature. At present ambient conditions, the average lube oil temperature ranges between 122° to 127°F. With flow through the coolers, the lube temperatures averaged 115°F.

A leak has existed for some time in the steam header which serves the high frequency generating system at the K-25 Power House. A complete shutdown of the K-306 section for a period of 7 to 30 hours is planned for next week in order that this leak may be repaired. Necessary precautions will be taken to guard against any large accumulations of process gas during the shutdown period. Also, as much necessary maintenance work as can be accomplished will be scheduled for this period.

Utilities and Auxiliaries

The hydryers at the Air Conditioning Plant are now being cooled to a temperature of 65°F. rather than the usual 70°F. Operation at the lower temperature should improve average dewpoints as well as increase the efficiency of the alumina. The additional cooling cost involved is of a minor nature.

Steam demand at K-1501 averaged 97 M. p.p.h. this week with a peak load of 140 M. p.p.h. being recorded.

Electrical Systems Operation

Feeder 234 tripped out of service at the K-25 Swith House by neutral relay action at 2251 on January 15. The fault was located on the "B" phase between transformers 3-V11B and 3-V7A and appeared to have resulted from a damage to the lead sheath which probably occurred during the original installation. The section of cable between the two transformers was replaced with approximately 133 feet of number 2 cable. A dielectric absorption test was performed on the feeder before it was restored to normal service on January 17.

Several feeders were out of service for short periods of time during the week in order to sample the water which had accumulated in the feeder ducts.

The variable frequency feeder duct flushing program has been completed in Plant II. Duct flushing was continued in Vaults 16 and 17 of Plant III.

The following tables are attached:

I. Weekly Production Report.
II. Cascade Cell Off-Stream Time and Labor Man Hours.
III. Utilities and Auxiliaries.
IV. Cascade Services.

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Enclosures (4)

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TABLE I

WEEKLY PRODUCTION REPORT
From 0700 January 12 to 0700 January 19, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	192113	- 0.4
K-27 Product Concentration	192227	- 0.1
Purge Rates - Scf/Day		
K-312-1 (Top)	- - -	- -
K-312-2 (Side)	4418	13.6
Conc. C-616 in Purge Cascade		
Top	2.7×10^{-5}	- 3.6
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Period (Lbs.)	
Inventory for Previous Week	482	- -
Produced	92	0.0
Consumed - K-300	42	0.0
Oxide Conversion	23	- 4.2
K-1400	6	20.0
Inventory	503	- 9.0

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	4658	779	- -	- -	744	- -	658	6839
G-74 Pipe Line	3669	396	15	1	- -	- -	- -	4081
G-74 Cylinder	- -	211	- -	- -	- -	0	- -	211
TOTAL	8327	1386	15	1	744	0	658	11131
% Increase from Previous Week	1.7	43.6	66.7	0.0	- 3.9	0.0	67.9	6.2

TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 January 12 to 0800 January 19, 1948

A. Cell off-stream time this week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase in No. of Times Over Prev. Week
Stage Pumps	51.36	18.43	51.36	2	7.14	2
Stage Motors	38.92	13.97	28.42	4	14.29	3
Stage Pumps Seals	67.72	24.36	- 9.21	7	25.00	-
Inst. & Auto Valves	3.12	1.12	3.12	2	7.14	2
L.R. Inleakage Tests	10.99	3.94	- .21	7	25.00	- 2
Excessive Inleakage	105.50	37.87	7.09	5	17.86	1
Miscellaneous	1.00	.36	1.00	1	3.57	1
TOTAL	278.61	100.00	81.57	28	100.00	7

Weekly Stream Efficiency 99.71%
Weekly Stream Efficiency Last Week 99.79%
Weekly Line Recorder Stream Efficiency . . 92.56%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to January 19, 1948.

	Accumulated Labor (Man Hours)	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Stage Pumps	5.00	1.67	2.99
Stage Motors	302.00	89.30	3.38
Stage Pump Seals	1,238.75	467.49	2.65
Inst. & Auto Valves	11.00	7.50	1.47
Lube Oil System	8.00	7.20	1.11
Coolant System	109.00	55.00	1.98
Excessive Inleakage	226.25	161.00	1.41
TOTAL	1,900.00	789.16	2.41

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 January 9 to 0700 January 16, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn.Gal/D	Section 830 Avg. Supply Temp.
This Week	82.25	1.17	75°F	91,430	43.57	0.94	75.1°F
Increase from Previous Week	1.29%	-9.90%	0°F	-14.66%	1.37%	-8.70%	0.1°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal./D.)	3.706	-5.14
Flow to Distribution (Mn. Gal./D.)	3.706	-5.14
Volume in Storage (Mn. Gal.)	2.390	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	4,600	-99°F	5,000	-110°F
Increase from Previous Week	0.00%	0.0°F	0.20%	-1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	16,330	927	3,337	5,741	10,226	837
% Increase from Previous Week	-7.81	-5.11	11.53	+4.93	+15.9	+12.63

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TABLE IV

CASCADE SERVICES
January 12 through January 18, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. and Heads	Leaks Found
Vacuum Test	0	0	1	2	102 Heads	6
Pressure Testing	0	1	1	0	102 Heads	17
CO_2	0	0	- -	- -	- -	0
C-816 Testing	- -	- -	31	- -	- -	7

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	PuO₂ Spills	Excess Alpha
C-616 Charging	4	- -	0	16,220 Gms.	4 Cyls.	- -	- -	- -
Carbon and Alumina Traps	- -	- -	- -	6	6	- -	- -	- -
C-816 Storage	- -	- -	- -	- -	- -	0 lb.	- -	- -
Field Decon.	- -	1	6	- -	- -	- -	1	8

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	3	38	19	13

	Total Samples	Total Determinations
Chemical Analysis	318	210

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SANITIZED VERSION OF K-151, PART 4
PROCESS DIVISION WEEKLY REPORT
Issued 1/28/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:

Technical Information Officer Date
Oak Ridge K-25 Site

Oak Ridge K-25 Site
Oak Ridge, Tennessee 37831-7101
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for the U.S. DEPARTMENT OF ENERGY
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ADD signature (final reviewer) Sam W. Wohlfort Date 5/4/94

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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION
Process Engineering
Production Engineering Section

PROCESS DIVISION WEEKLY REPORT

A. P. Huber

Plant Record
Doc. No. 14859
Serial No. 4
File No. 027

K 151 PT4 23 A

K 151 PT4 23 A

Cy 1. Barnett, S. C.
2. Center, C. E.
3,4,5. Chief, Clinton Prod. Div.
6,7. Clement, Mrs. A. T.
8,9. Margrave, Mrs. H. F.
Att. Cromer, S.
Garrett, S. C.
10. Preston, C. M.
Att. Korsmeyer, R. B.
11,12. Randall, G.
13,14. Schiffman, S. D.
(K-25 Lab. Central Files)
Att. Beck, C. K.
Hurd, F. W.

Att. Carnes, H. W.
Cook, M. L.
Dahler, R. B.
Hartman, W. C.
Huber, A. P.
Jorden, R. G.
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Marshall, J. A.
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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

TO: Mr. S. C. Barnett
Location: K-1001

Copy To: Attached Distribution

Date: January 27, 1948

Answering Letter Date

Subject: Process Division Weekly Report Ending 0800 January 26, 1948

Cascade Operation

The entire K-306 section was shut down for approximately 12 hours on January 22, in order that a leak in the steam header which serves the high frequency generating system at the K-25 Power House could be repaired. The K-306 section was isolated from the remainder of the cascade at 0530. All cells in the section were isolated and shut down between 0700 and 0712. Also, the normal tops purge building, K-312-1, was shut down during this period. The K-305-12 building was set up to function as the top of the cascade with the normal side purge building, K-312-2, being used for tops purge. Stage pressures in the top cells of K-305-12 were increased 0.1 psi at the rate of one stage every 40 minutes to provide storage capacity for the upflow of enriched material. The repairs to the steam header at the Power House were completed and power was restored to buses #11 and #12 at approximately 1600. After all cells had been started, the K-306 section was connected into the cascade again at 2015. Two seal failures which occurred shortly after the start-up of the K-306 section, can probably be attributed to the power outage.

K-306-2.11 was isolated from the cascade at 2330 on January 22, after the 6B motor had burned. The motor was replaced and the cell was returned to normal operation at 0435 on January 23.

The C-816 leak which appeared at 2135 on January 17, in K-301-4.7 was located in the stage 6 cooler. While the leak was being welded, however, the tube sheet cracked, necessitating the replacement of the number 6 converter. The cell was returned to the cascade at 1615 on January 22, after the converter replacement.

The 4A pump in K-303-7.2 failed at 0530 on January 26, causing the motor to burn. The cell has not been purged of C-616 as yet.

A special "T" and "X" plant inventory was taken at 1300 on January 23. Crude feed and waste condensation operations were discontinued for a short period while the inventory measurements were being made.

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The transformer replacement program in Vault 1 was postponed until January 26, however, so the pressures were returned to normal on January 23.

The recirculating cooling water supplied to the coolant coolers in K-25 reached a maximum temperature of 92°F on January 25, when ice formation on the louvers of the cooling towers at K-802 reduced the cooling capacity of these units.

A gradual return to normal operation was effected by manually chipping the ice from the louvers and raising the supply header pressure to 57 psig.

The crude feed rate was increased from 250 to 270 pounds per hour on January 23 and was lowered from 270 to 250 pounds per hour on January 25. The feed rate was increased to make up the deficiency in crude feed for the month.

The lube oil coolers in all buildings in Plant I have been bypassed, as a means for increasing the lube oil temperatures. The increased temperatures will result in a lower viscosity of the oil as it passes through the pump shaft bearings and thereby effect a savings in power required by the stage motors.

An investigation has been undertaken to determine the effect of fluorine in a system containing no recoverable "T" material. A preliminary TF_6 recovery run was begun on cells 2 and 3 in K-312-1 on December 1, 1947.

Analyses of the samples taken from these cells this month are listed in the following table:

	Cell 2		Cell 3	
Date	% C-616	% C-216	% C-616	% C-216
1-5-48	1.080	66.7	28.03	49.2
1-9-48	1.14	62.5	29.35	46.5
1-15-48	1.17	62.5	32.23	41.9

The analyses shown in the table indicate that TF_6 recovery in cell 2 reached an equilibrum during the second week in January. Cell 2 was therefore evacuated, purged, and recharged with a mixture having the following approximate analysis.

74.25 % N_2
25.00 % TF_6
0.75 % F_2

No results have been obtained from this run as yet.

Utilities and Auxiliaries

The M-5 Carrier compressor, from which the second and third stages have been removed, is supplying the present ambient air demand at a header pressure of 3 psig. This single stage unit requires an energy input of 150 H.P. When the ambient air header pressure was being maintained at 12 psig, maximum ambient air demands necessitated the simultaneous operation of two 700 H.P. recirculating Carrier compressors and five 600 H.P. make-up units. Thus, ambient air compression has decreased from approximately 5000 H.P. during peak demands to the present 150 H.P. Also, the refrigeration load has been reduced from approximately 900 H.P. to 100 H.P. and the power requirements of the other auxiliaries in the ambient air system have been decreased proportionately.

The ambient air hydryers are being scheduled for 72 hours operation between activations, unless the dewpoint increases to -80°F. The original design for these units specified only 12 hours service between activations. Present dewpoints average approximately 40°F lower than the lowest dewpoints experienced during the initial operation of the unit.

The steam flow at K-1501 averaged 110 M.p.p.h. this week, with condensate return accounting for greater than 65% of the total boiler feed water used.

Electrical Systems Operation

The program for reinsulating the core and yoke bolts in the K-25 variable frequency transformers began last week. The Westinghouse Electric Corporation is supplying the insulation and bearing the expense for its installation. Carbide and Carbon Chemicals Corporation is paying for the labor involved in the disconnection and removal of the transformers from service as well as for the reinstallation of the transformers in the system after they have been repaired. Four transformers in Vault 13 and 1 transformer in Vault 14 have been repaired and returned to normal service to date.

The variable frequency feeder duct flushing program was continued in Plant III this week.

The following tables are attached:

I Weekly Production Report

II Cascade Cell Off-Stream Time and Labor Man Hours

III Utilities and Auxiliaries

IV Cascade Services

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Enclosures (4)

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TABLE I

WEEKLY PRODUCTION REPORT
From 0700 January 19 to 0700 January 26, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	210899	- 1.4
K-27 Product Concentration	192221	0.5
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-3 (Side)	4096	- 7.3
Conc. C-616 in Purge Cascade		
Top	4.4×10^{-5}	63.0
Side	1.0×10^{-6}	0.0

C-216 Operations		Total This Period (Lbs.)	
Previous Inventory		503	
Produced		146	58.7
Consumed	K-300	58	- 38.1
	Oxide Conversion	22	- 4.3
	K-1400	0	0.0
	K-1004	1	
	Y-12	0	
Inventory		568	12.9

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	5069	759	-	-	847	-	468	7143
G-74 Pipe Line	3422	466	4	1	-	-	-	3893
G-74 Cylinder	-	119	-	-	-	79	-	198
Total	8491	1344	4	1	847	79	468	11234
% Increase from Previous Week	2.0	- 3.0	-73.3	0.0	13.8	0.0	- 28.9	0.93

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TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
0800 January 19 to 0800 January 25, 1948

A. Cell off-stream time this week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Stage Pumps	21.83	1.77	-29.53	1	.88	-1
Stage Motors	12.61	1.02	-26.31	2	1.77	-2
Stage Pump Seals	66.74	5.41	-.98	6	5.31	-1
Inst. & Auto Valves	5.01	.41	1.89	3	2.66	1
Converters	32.08	2.60	32.08	1	.88	1
L.R. Inleakage Tests	1.22	.10	-9.77	3	2.66	-4
Excessive Inleakage	24.00	1.94	-81.50	1	.88	-4
Miscellaneous	1071.27	86.75	1070.27	96	84.96	95
TOTAL	1234.76	100.00	956.15	113	100.00	85

Weekly Stream Efficiency 98.72%
Weekly Stream Efficiency Last Week 99.71%
Weekly Line Recorder Stream Efficiency 94.14%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947, to January 25, 1948.

	Accumulated Labor (Man Hours)	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Stage Pumps	27.00	43.83	.62
Stage Motors	438.00	120.72	3.63
Stage Pump Seals	1476.25	543.35	2.72
Inst. & Auto Valves	65.00	13.71	4.74
Lube Oil System	8.00	7.20	1.11
Coolant System	109.00	55.00	1.98
Excessive Inleakage	408.00	280.41	1.46
TOTAL	2531.25	1064.22	2.38

TABLE III

UTILITIES AND AUXILIARIES
From 0700 January 16 to 0700 January 23, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal./D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	84.08	1.10	76.5°F	103,140	42.94	0.93	75.1°F
Increase from Previous Week	2.63%	- 6.14%	1.5°F	12.8%	- 1.44%	- 0.74%	0.0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow Storage (Mn. Gal/D)	3.763	1.54
Flow to Distribution (Mn. Gal/D)	3.763	1.54
Volume in Storage (Mn. Gal)	2.390	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	4,600	- 101°F	4,785	- 110°F
Increase from Previous Week	0.00%	2°F	- 0.04%	0.0°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	18,491	1,102	4,023	6,527	12,217	1,029
% Increase from Previous Week	13.23	8.09	20.55	13.69	19.46	22.93

TABLE IV

CASCADE SERVICES
January 19 through January 25, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. and Heads	Leaks Found
Vacuum Testing	0	0	1	2	90 Heads	7
Pressure Testing	1	1	1	1	90 Heads	21
CO_2 Testing	0	0	---	---	---	0
C-816 Testing	---	---	103	---	---	89

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	0	---	0	0 Gms	0 Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	8	8	---	---	---
C-816 Storage	---	---	---	---	---	15 Lbs.	---	---
Field Decon.	---	1	1	---	---	---	4	17

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	3	13	11	13

	Total Samples	Total Determinations
Chemical Analysis	347	221

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K/EM-130/PT5

SANITIZED VERSION OF K-151, PART 5
PROCESS DIVISION WEEKLY REPORT
Issued 2/4/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

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PROCESS DIVISION
Process Engineering
Production Engineering Section

PROCESS DIVISION WEEKLY REPORT

A.P. Huber

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By

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K 151 PT5 10 A

C cy. 1. Barnet, S. C.
2. Center, C. E.
3, 4, 5. Chief, Clinton
6, 7. Clement, Mrs. A. ..
8, 9. Margrave, Mrs. H. F.
Att. Cromer, S.
Garrett, S. C.
10. Preston, C. M.
Att. Korsmeyer, R. B.
11, 12. Randall, G. E.
13, 14. Schiffman, S. D.
(K-25 Lab. Central Files)
Att. Beck, C. K.
Hurd, F. W.

Cook, M. L.
Dahler, R.
Hartman, W. C.
Huber, A. P.
Jordan, R. G.
Levin, R. W.
Marshall, J. A.
Schwenn, M. F.
Seyfried, M. F.
Sheldon, G. T. E.
Willson, L. C.

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OCT 20 1952
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Classification changed to: C - [illegible] (level and category)
By authority of: CG-PGD-4 (classification guide)
JDMc Ganyh ADC 4/26/94
ADC or ADD signature (first reviewer) Date
Sam Wahlfort 5/4/94
ADD signature (final reviewer) Date

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To: Mr. S. C. Barnett
Location: K-1001

Copy To: Attached Distribution

Date: February 3, 1948

Answering Letter Date

Subject: Process Division Weekly Report Ending 0800 February 2, 1948

Cascade Operation

A complete plant inventory was taken, as scheduled, at 1300 on January 30. Crude feed and waste condensation operations were discontinued between 1245 and 1345 while the inventory measurements were being made.

K-402-8.5 was off-stream for 5 hours on January 27, while a new coolant circulating pump shaft and lantern ring were being installed. The old shaft had warped and was causing the pump to run hot. Also, while the cell was shut down, the coolant cooler was removed for inspection and a new cooler was installed in its place.

An examination of the water side of the coolant cooler removed from K-402-8.5 revealed a scale formation varying from zero at the water inlet to a thickness of approximately 1/8" at the water outlet. A sample of the scale is being analyzed to determine what corrective measures can be taken in cooling water treatment to eliminate this type of formation.

K-302-1.8 was isolated from the cascade and shut down at 1255 on January 29, when the 5B pump failed. During the process of purging the cell to the cascade, a failure of the 4A pump was indicated. The 4A and 5B pumps were replaced and the cell was restored to normal operation at 1450 on January 30.

K-402-1.2 was off-stream from 0515 on January 28 to 0340 on January 29, while the 4A and 4B seals were being changed and gaskets were being replaced in 6 other seals.

K-305-9.3 experienced a total off-stream time of 25 hours this week while 6 faulty seals were being identified and either replaced or repaired.

The high side pressures in cells 5,6,7 and 8 of K-310-3, were returned to normal at 1000 after the transformer replacement program was temporiarly postponed.

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The crude feed rate was adjusted several times this week in order to meet feed commitments for the month.

The flexible hose connection to the #2 waste cylinder at K-631 ruptured at 0900 on January 31, allowing C-616 to escape to the atmosphere. Crude feed and waste condensation operations were discontinued between 0900 and 0930 while the leak was being isolated and the area in the immediate vicinity of the break was being cleared of C-616. A thorough investigation is being conducted of the circumstances involved in the failure.

The cross-over lines and housings between the existing manifolds have been installed in all line recorder stations in Plant II. Also, the trial installations for operation with one metal tube rack per two buildings have been completed in line recorder stations K-402-7 and 8, K-303-4 and 5 and K-305-8 and 9.

The load and voltage micromaxes were moved from the Electrical Systems Operation office to the K-25 central control room this week. The micromaxes were installed in the existing instrument panels at points convenient to the particular section of the cascade which they serve. High and low alarm mechanisms, removed from spare line recorder micromaxes, are being installed in these recorders. Both a visual and an audible alarm will occur when any of the recorded loads or voltages exceed the range for normal operating conditions. The relocation of the micromaxes will result in a better over-all control of cascade operations.

Utilities and Auxiliaries

This week the steam flow at K-1501 averaged 117 M.p.p.h. The steam was supplied by a maximum of three large boilers and one small boiler. Condensate return is continuing to account for better than 65% of the total boiler feed water used.

Results of a test which was run on No. 3 boiler during the week of January 19th, indicate that the unit is operating at an efficiency somewhat in excess of 80%. Similar tests will be conducted on the other boilers as soon as additional weighed railroad cars of coal are received from the Diamond Coal Company. Since there are no facilities at the steam plant for weighing the coal which is removed from the stock pile for boiler feed, it is necessary to establish coal feed to a boiler from a weighed railroad car in order to run an efficiency test on the unit.

Electrical Systems Operation

The frequencies on all of the variable frequency networks dropped 0.2 cycles at 0922 on January 27, when instrument trouble developed in the master combustion control at the K-25 Power House causing a reduction in the steam pressure. The situation was corrected and the frequencies were restored to normal by 0935.

Three transformers were removed from Vault 7 this week for re-insulation of the core and yoke bolts.

The electrical feeder duct flushing program has been completed in Vaults 15 through 18 in Plant III.

The following tables are attached:

I. Weekly Production Report

II. Cascade Cell Off-Stream Time and Labor Man Hours

III. Utilities and Auxiliaries

IV. Cascade Services

A. P. Huber
A. P. Huber

LLThacker/ga

Enclosures (4)

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 January 26 to 0700 February 2, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	192109	1.0
K-27 Product Concentration	192248	2.4
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	4142	1.1
Conc. C-616 in Purge Cascade		
Top	3.8×10^{-5}	-13.6
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Period (Lbs.)	
Previous Inventory	568	
Produced	99	-32.2
Consumed - K-300	46	-20.7
Oxide Conversion	32	45.5
K-1400	0	0.0
K-1004	1	0.0
Y-12	0	0.0
Inventory	588	3.5

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	4803	1248	-	-	795	-	295	7141
G-74 Pipe Line	3004	151	18	1	-	-	-	3174
G-74 Cylinder	-	126	-	-	-	158	-	284
Total	7807	1525	18	1	795	158	295	10599
% Increase from Previous Week	- 8.1	50.39	350.0	0.0	- 6.1	100.0	-37.0	-5.7

TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
0800 January 26 to 0800 February 2, 1948

A. Cell Off-stream time this week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase In Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Stage Pumps	45.67	37.02	23.84	2	9.52	1
Stage Motors			-12.61			-2
Stage Pump Seals	47.59	38.57	-19.15	5	23.81	-1
Inst. & Auto Valves	4.75	3.85	- .26	2	9.52	-1
Coolant System	5.42	4.39	5.42	1	4.77	1
Converters			-32.08			-1
L. R. Inleakage tests	12.37	10.03	11.15	9	42.86	6
Excessive Inleakage			-24.00			-1
Miscellaneous	7.58	6.14	-1063.69	2	9.52	-94
Total	123.38	100.00	-1111.38	21	100.00	-92

Weekly Stream Efficiency.....99.87%
Weekly Stream Efficiency Last Week.....98.72%
Weekly Line Recorder Stream Efficiency.....95.42%

B. Man Hours of Labor for Work Orders Completed on Off Stream Cells from November 9, 1947 to January 31, 1948.

	Accumulated Labor (Man Hours)	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Stage Pumps	27.00	43.83	.62
Stage Motors	455.00	128.25	3.55
Stage Pump Seals	1614.25	584.61	2.76
Inst. & Auto Valves	65.00	13.71	4.74
Lube Oil System	8.00	7.20	1.11
Coolant System	109.00	55.00	1.98
Excessive Inleakage	506.00	348.59	1.45
Total	2784.25	1181.19	2.36

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 January 23 to 0700 January 30, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn.Gal/D	Section 830 Make-Up Water Mn.Gal/D	Section 830 Avg. Supply Temp.
This Week	86.07	1.22	76.3°F	109,140	43.49	1.09	75.3°F
Increase from Previous Week	2.36%	11.43%	-0.2°F	5.81%	1.28%	16.54%	0.2°F

SANITARY WATER

	This Week	% Increase From Prev. Week
Flow to Storage (Mn. Gal/D)	4,015	6.69
Flow to Distribution (Mn. Gal/D)	4,015	6.69
Volume in Storage (Mn. Gal)	2.390	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm.	Dry Air Dewpoint
This Week	4600	-98°F	5,010	-108°F
Increase from Previous Week	0.00%	3°F	4.70	2°F

SECTION 1500 - STEAM PLANT

	Total Steam M. Lbs	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	18,415	1,125	3,903	7,037	12,96	1,112
% Increase From Prev. Week	-0.41	2.08	2.98	7.81	6.10	8.06

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TABLE IV

CASCADE SERVICES
January 26 through February 1, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. and Heads	Leaks Found
Vacuum Testing	0	0	0	3	100 Heads	6
Pressure Testing	0	3	0	1	100 Heads	18
CO_2 Testing	0	0	---	---	---	0
C-816 Testing	---	---	15	---	---	10

Special Materials Handling

	Cells	Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	0	---	0	0 Gms.	0 cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	8	8	---	---	---
C-816 Storage	---	---	---	---	---	0 Lb.	---	---
Field Decon.	---	3	0	---	---	---	8	24

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	3	15	15	31

	Total Samples	Total Determinations
Chemical Analysis	347	217

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K/EM-130/PT6

SANITIZED VERSION OF K-151, PART 6
PROCESS DIVISION WEEKLY REPORT
Issued 2/11/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:

Technical Information Officer 5/31/95
Date
Oak Ridge K-25 Site

Oak Ridge K-25 Site
Oak Ridge, Tennessee 37831-7101
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under Contract DE-AC05-84OR21400

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Approved for issue: A. P. Huber
Date of issue: February 11, 1948

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Report Number: K-151, Part 6

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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION
Process Engineering
Production Engineering Section

PROCESS DIVISION WEEKLY REPORT

A. P. Huber

#84161

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2. Center, C. E.
3, 4, 5. Chief, Clinton F
6, 7. Clement, Mrs. A. T.
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Marshall, J. A.
Rader, D. H.
Schwenn, M. F.
Seyfried, M. F.
Sheldon, G.T.E.
Willson, L. C.

Classification changed to: C (level and category)
By authority of: CG-PGD-4 (classification guide)
J DMcGarry 4/26/94
ADC or ADD signature (first reviewer) Date
Sam W. Wohlfort 5/4/94
ADD signature (final reviewer) Date

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To: Mr. S. C. Barnett
Location: K-1001

Copy To: Attached Distribution

Date: February 11, 1948

Answering Letter Date

Subject: Process Division Weekly Report Ending 0800 February 9, 1948

Cascade Operations

K-305-1.7 was taken off-stream at 1740 on February 3, with a 450 Scf/D air inleakage. As the cell was being evacuated to the cascade, the 5B motor burned and a 5B pump failure was indicated. After a new pump and motor assembly was installed, the cell was returned to normal operation at 2355 on February 4.

K-303-1.7 was isolated from the cascade at 1255 on February 3, when the 6B pump failed. The 6B pump impeller ring was badly scored. A new pump was installed and the cell was returned to the cascade at 1745 on February 4.

K-302-1.2 was off-stream for 13 hours on February 7, while a faulty 1B pump was being replaced.

A defective valve on crude feed cylinder MD-381 at K-131 developed a small leak on February 3. The escaping gas actuated the C-616 alarm system and the leak was stopped when a spray of cold water was automatically released on the feed cylinders. The crude feed operations were transferred to the furnace room while the normal feed room was being decontaminated. A second C-616 release occurred on February 5, when the bellows of a valve in the temporary crude feed line from the furnace room failed. Crude feed was discontinued for approximately 15 minutes while valving re-arrangements were being made to isolate the leak. The crude feed room was decontaminated and normal crude feed operations were resumed at 0800 on February 6.

The inter-plant flow from K-25 to K-27 was partially restricted between 0930 and 1640 on February 5, and between 1030 and 1400 on February 6, while the flow control instrumentation was being recalibrated and new P.B.M's were being installed on the K-311-1 intersectional cell "A" and "B" pumps. The restricted flows to K-27 resulted in a general lowering of the K-27 concentration

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gradient, and therefore, it was necessary to change the K-27 feed point

The frequency on the orchid network decreased 0.8 cycles and the load dropped 2.5 megawatts at 0720 on February 7, when the stem broke on one of the admission valves to the #2 turbine at the K-25 Power House. Generators #4 and #6 picked up that portion of the load which was dropped by #2 generator and the frequency was returned to normal by 0745. Generator #9 was started and switched into the orchid network at 1005, after which #2 generator was shut down for repair of the valve.

At 0915 on February 5, the evaporator, which is located between turbines #3 and #4, was changed from turbine #4 to turbine #3. This change resulted in a frequency drop of 0.2 cycles on generator #3 and bus #6 (K-301-K-309 "B" motors). The frequency was restored to normal by 0935.

Utilities and Auxiliaries

The steam flow at K-1501 averaged slightly in excess of 109 M p.p.h. this week. Three large boilers supplied the load during the greater part of the week. After it became necessary to use wet coal, as a result of weather conditions, however, an additional small boiler was put into operation.

This week the fire water pumpage increased to 134 M.G.P.P. A leak in Fire Hydrant J-1 partially accounts for the increased flow.

Electrical Systems Operation

A test is being conducted to determine the feasibility of operating the "B" motors in the K-301 and K-309 sections at increased voltages. The tap positions on the four variable frequency transformers serving the "B" motors in cells 5 and 6 in K-301-2 and cells 5 and 6 in K-301-3 were changed this week to effect a 5% increase in voltage on the network. As the voltage is increased, the current drawn by the stage motors will tend to decrease and thus lower the operating temperatures of the motors. No results from this test have been reported as yet.

The duct flushing program continued in Plant III this week.

The following tables are attached:

I. Weekly Production Report

II. Cascade Cell Off-Stream Time and Labor Man Hours

III. Utilities and Auxiliaries

IV. Cascade Services

A. P. Huber

A. P. Huber

LLThacker/ga

Enclosures (4)

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TABLE I

WEEKLY PRODUCTION REPORT

From 0700 February 2 to 0700 February 9, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	192112	0.3
K-27 Product Concentration	192248	0.0
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	4161	0.5
Conc. C-616 in Purge Cascade		
Top	4.2×10^{-5}	10.5
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Period (Lbs.)	
Previous Inventory	588	
Produced	0	0.0
Consumed - K-300	45	2.2
Oxide Conversion	12	-62.5
K-1400	1	0.0
K-1004	0	0.0
Y-12	3	0.0
Inventory	527	-10.4

G-74 Operations	Consumption in Gallons of L-28							
Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	4879	907	-	-	954	-	244	6984
G-74 Pipe Line	3104	267	0	0	-	-	-	3371
G-74 Cylinder	-	129	-	-	-	158	-	287
Total	7983	1303	0	0	954	158	244	10642
% Increase From Prev. Week	2.3	-14.6	0.0	0.0	20	0.0	-17.3	.04

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TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
0800 February 2 to 0800 February 9, 1948

A. Cell Off-Stream time this week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase In Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Stage Pumps	30.41	23.74	- 15.26	2	14.29	-
Stage Pump Seals	61.79	48.23	14.20	7	50.00	2
Inst. & Auto Valves			- 4.75			- 2
Lube Oil System	1.00	.78	1.00	1	7.14	1
Coolant System			- 5.42			- 1
L.R. Inleakage Tests	1.00	.78	- 11.37	2	14.29	- 7
Excessive Inleakage	30.16	23.54	30.16	1	7.14	1
Miscellaneous	3.75	2.93	- 3.83	1	7.14	- 1
Total	128.11	100.00	4.73	14	100.00	- 7

Weekly Stream Efficiency.....99.87%
Weekly Stream Efficiency Last Week.....99.87%
Weekly Line Recorder Stream Efficiency.....94.94%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to February 9, 1948

	Accumulated Labor (Man Hours)	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Stage Pumps	51.50	49.25	1.05
Stage Motors	480.00	150.42	3.19
Stage Pump Seals	1767.50	621.24	2.85
Inst. & Auto Valves	93.50	16.13	5.80
Lube Oil System	12.00	8.20	1.46
Coolant System	109.00	55.00	1.98
Excessive Inleakage	506.00	348.59	1.45
Total	3,019.50	1,248.83	2.42

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 January 30 to 0700 February 6, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Water Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	83.92	1.29	75.0°F	134,290	42.79	1.07	75.0°F
Increase from Prev. Week	- 2.49%	5.73%	1.3°F	23.04%	- 1.81%	- 1.83%	0.3°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4,000	- 0.37
Flow to Distribution (Mn. Gal./D)	4,000	- 0.37
Volume in Storage (Mn. Gal.)	2,390	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	4,950	- 99°F	5,035	- 107°F
Increase from Previous Week	7.60%	- 1°F	0.49%	1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	19,627	1,200	3,004	6,813	11,648	1,046
% Increase from Prev. Week	6.58	6.66	- 23.07	3.18	- 10.14	- 5.93

TABLE IV

CASCADE SERVICES
February 2 through February 8, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. and Heads	Leaks Found
Vacuum Testing	0	0	0	7	87 Heads	4
Pressure Testing	0	4	0	2	87 Heads	14
CO_2 Testing	0	0	---	---	---	0
C-816 Testing	---	---	37	---	---	22

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
*C-616 Charging	0	---	0 Gms	0 Cyls	---	---	---	---
Carbon and Alumina Traps	---	---	---	6	6	---	---	---
C-816 Storage	---	---	---	---	---	0 Lb.	---	---
Field Decon.	---	4	2	---	---	---	8	11

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	3	51	13	39

	Total Samples	Total Determinations
Chemical Analysis	242	207

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K/EM-130/PT7

SANITIZED VERSION OF K-151, PART 7
PROCESS DIVISION WEEKLY REPORT
Issued 2/18/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:
Technical Information Officer
Oak Ridge K-25 Site
Date

Oak Ridge K-25 Site
Oak Ridge, Tennessee 37831-7101
managed by MARTIN MARIETTA ENERGY SYSTEMS, INC.
for the U.S. DEPARTMENT OF ENERGY
under Contract DE-AC05-84OR21400

Downgrade to C-RD
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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION
Process Engineering
Production Engineering Section

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PROCESS DIVISION WEEKLY REPORT

A.P. Huber

K 151 PT7 13 A

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Cys. 1. Barnett, S.C.
2. Center, C.E.
3, 4, 5. Chief, Clinton Prod. Div.
6, 7. Clement, A.T.
8. Humes, W.B.
9, 10. Randall, G.E.

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(Margrave, H.F.)
Att. Cromer, S.
Garrett, G.A.
(Preston, C.M.)
Att. Korsmeyer, R.B.

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(Schiffman, S.D.)
Att. Beck, C.K.
Hurd, F.W.

Att. Carnes, H.W.
Dahler, R.
Hartman, W.C.
Huber, A.P.
Jordan, R.G.
Levin, R.W.
Marshall, J.A.
Rader, D.H.
Schwenn, M.F.
Seyfried, M.P.
Sheldon, G.T.E.
Willson, L.C.

Classification changed to: C-RD
(level and category)
By authority of: CG-PGD-4
(classification guide)
J D McGaugh 4/26/94
ADC or ADD signature (first reviewer) Date
Sam W. Wohlfort 5/4/94
ADD signature (final reviewer) Date

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. S.C. Barnett
Location K-1001

Date February 18, 1948

Answering Letter Date

Attention
Copy to Attached Distribution

Subject Process Division Weekly Report Ending 0800 February 16, 1948

Cascade Operations

The withdrawal of top product continued through the week with no major difficulties being encountered. The total amount of X material in this week's production is 12% greater than the X in the average weekly production for the past six months. Several cascade disturbances occurred in Plants I and II; however, they were not reflected in tops production.

The abnormally large production for this week is probably a result of changes that have been made in the product withdrawal operation. Beginning with February 9, 1948, the average tops concentration has been maintained as close to 1113200 as possible, whereas, prior to this date, the concentration of X in product averaged 1113300. Thus an apparent increase in productivity will occur while the concentration gradient in the top of the cascade is decreasing to conform with the lower value of the tops concentration. A second operational change which may have affected this week's production figure to some extent was initiated during the week ending February 8, 1948, and involved the schedule for withdrawing tops material from the cascade. Previous to this month, product was being withdrawn on the first five days in each week. Now, however, product is withdrawn on a seven day a week basis. No change was made in the practice of withdrawing material on the day shift only.

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In preparation for the converter replacement program in Plant II, all building block valves, building inverse recycle valves and cell block valves in K-302-4 and K-302-5 have been tested for seat leakage. The valves were checked in groups of four by closing two adjacent valves in the "A" stream and the corresponding two valves in the "B" stream and running a 15 minute leak rate test on the four valves simultaneously. Thus the cascade was necessarily split during the period that each leak rate was being made. The valve testing program started at 1755 on February 9, and continued intermittently until 0330 on February 11. The "A" spare and the "A" normal building outlet valves as well as five cell block valves in K-302-5 were found to have bad seats. All block valves in K-302-4 were in satisfactory condition.

The inter-plant flow to K-27 was increased from 9200 to an average of 9900 pounds per day on February 12, in order to move the extra inventory from the K-309-3 surge drums which had accumulated while the flow to K-27 was partially restricted for instrument recalibration last week. The flow was returned to normal at 1640 on February 14. This extended period of increased flow resulted in a general rise in the K-27 concentration gradient which made it necessary to lower the crude feed point

A program of enriched feed began in Plant I this week. Fourteen cylinders of Y-12 material are to be fed to the cascade. To date, 5 cylinders have been fed to various The O-616 in these 6 cylinders amounted to 28.219 Kg. T at an average concentration of 210889.

An inventory shift down cascade started at 1430 on February 15, and continued through 2030 before leveling off. This movement of material resulted in an increased inventory in the K-309-3 surge drums of approximately 200 pounds. The shift was evidently caused by a rise in the atmospheric temperature. Cell stage temperatures in the K-302 and K-303 sections increased slightly during this period.

At 2250 on February 10, K-302-5.3 was tripped off by over-current relay action when the stage 2 control valve stuck closed. Since the cascade was split at K-302-4.5 bottom block valves for seat leakage tests, this cell and the cells immediately above were automatically evacuated causing a load surge of approximately 1 megawatt. After K-302-5.3 had been isolated, it was determined that the stuck control valve could be operated manually, so the cell was returned to the cascade at 0030 on February 11 with the stage 2 valve on manual control.

A C-816 inleakage to the cascade of approximately 450 pounds per day appeared on February 11. Several cells were isolated on inverse recycle before the leak was located in K-301-5.6 About 60 pounds of C-816 actually entered the cascade. The first test on the cell identified the stage 5 cooler as a source of inleakage. Two tubes in this cooler were plugged; however, a subsequent check revealed two additional leaks in the stage 2 cooler. After the faulty tubes in the stage 2 cooler were welded, the cell was returned to normal operation at 1050 on February 13. While cell 6 was shut down, the coolant cooler was removed for inspection and a new cooler was installed in its place.

K-310-2.6 was off-stream for 31 hours this week while a small leak in the instrument line to the venturi in the discharge of the 5A pump was being located and repaired. A metal identification tag which was attached to the line had rubbed a hole in the copper tubing.

K-303-6.7 was taken off-stream at 0835 on February 12, with a 50 SCFD air inleakage. The 4B seal froze to the shaft and the 4B pump baffle ring was badly damaged. After the pump had been changed, the cell was restored to normal operation at 0100 on February 13.

K-305-2.7 was off-cascade from 0515 to 2150 on February 10, for a scheduled 4B pump change. The pump was vibrating excessively.

Three motor failures occurred this week: K-306-4.13 4A motor, K-310-1.5 6A motor and K-306-7.9 5B motor.

Utilities and Auxiliaries

The ambient air header pressure was lowered from 3 to 2 psig this week. Decreased leakage, as a result of the lower pressure, dropped the weekly average ambient air load to 4,800 SCFM. Also, the ambient air dewpoints have improved to some extent since the reduction of the header pressure. This improvement may be the result of a decreased air velocity through the hydryers, which would tend to increase adsorption efficiency. Operation at the lower pressure has resulted in a decreased power demand of 11% for a one-stage Carrier compressor and 14.8% for a two-stage Carrier compressor. The refrigeration load has dropped 11%. The total power required to operate the Ambient Air System is itemized as follows:

Refrigeration Compressor	59 HP
Refrigeration Exciter	5 HP
Carrier Compressor	144 HP
Brine Pump	50 HP
Activation (average)	10 HP
Total	268 HP

Steam flow at K-1501 this week averaged 87 M pph. A minimum of three boilers was in operation during the week and a fourth boiler was in service part of the time, while efficiency tests were performed on the #3 boilers. Results of the tests indicate that the efficiency of the unit is approximately 77%.

Electrical Systems Operation

Variable frequency feeder #282 tripped out of service at 0822 on February 13, when the phase #3 cable shorted to ground between manhole K-JM3 and transformer 15V10A. The faulty section of the cable has not been pulled for replacement and inspection as yet.

In conjunction with the tests to determine the feasibility of operating the "B" motors in the K-309 and K-301 sections at increased voltages, it has been determined that a reduction in motor operating temperature of 3 to 5°F, results when the voltage is increased 5%.

The following tables are attached:

I. Weekly Production Report.

II. Cascade Cell Off-Stream Time and Labor Man Hours.

III. Utilities and Auxiliaries.

IV. Cascade Services.

LLThacker:bcd

for A.P. Huber

Enclosures (4)

TABLE I

WEEKLY PRODUCTION REPORT

From 0700 February 9 to 0700 February 16, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	192114	0.2
K-27 Product Concentration	192255	0.6
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	3877	-6.8
Conc. C-616 in Purge Cascade		
Top	4.3×10^{-5}	2.4
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Period (Lbs.)	
Previous Inventory	527	
Produced	0	0.0
Consumed - K-300	26	-42.2
Oxide Conversion	18	50.0
K-1400	22	-
K-1004	0	0.0
Y-12	0	0.0
Inventory	461	-12.5

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	4844	930	-	-	829	-	-289	6314
G-74 Pipe Line	3404	220	0	0	-	-	-	3624
G-74 Cylinder	-	92	-	-	-	0	-	92
Total	8248	1242	0	0	829	0	-289	10030
% Increase From Previous Week	3.3	-4.7	0	0	-13.1	0	-	-5.8

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TABLE II
SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
0800 February 9 To 0800 February 16, 1948

A. Cell off-stream time this week.

REASONS	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase in No. of Times Over Prev. Week
Stage Pumps	38.16	19.83	2.75	2	7.69	-
Stage Motors	12.12	7.25	12.12	3	11.54	3
Stage Pump Seals	36.91	22.07	-24.88	2	7.69	-5
Inst. & Auto Valves	16.60	9.93	16.60	9	34.62	9
Lube Oil System			- 1.00			-1
L.R. Inleakage tests	4.00	2.39	3.00	6	23.08	4
Excessive Inleakage	64.42	38.53	34.26	4	15.38	3
Miscellaneous			- 3.75			-1
TOTAL	167.21	100.00	39.10	26	100.00	12

Weekly Stream Efficiency.....99.83%
Weekly Stream Efficiency Last Week.....99.87%
Weekly Line Recorder Stream Efficiency.....96.30%

B. Man Hours of Labor
for Work Orders Completed
on Off-Stream Cells From November 9,
1947 to February 16, 1948.

	Accumulated Labor (Man Hrs.)	Accumulated Cell Hrs. Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Stage Pumps	51.50	49.25	1.05
Stage Motors	510.00	159.17	3.20
Stage Pump Seals	1938.50	672.49	2.88
Inst. & Auto Valves	130.00	18.21	7.14
Lube Oil System	12.00	8.20	1.46
Coolant System	109.00	55.00	1.98
Excessive Inleakage	506.00	348.59	1.45
TOTAL	3,257.00	1,310.91	2.48

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 February 5 to 0700 February 12, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	85.55	1.29	75.0°F	123,430	43.09	1.06	75.0°F
Increase from Prev. Week	1.94%	0.23%	0.0°F	- 8.08%	0.70%	- 1.11%	0.0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	3.747	- 6.32
Flow to Distribution (Mn. Gal/D)	3.747	- 6.32
Volume in Storage (Mn. Gal)	2.390	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm.	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	4,800	- 98°F	4,990	- 109°F
Increase from Prev. Week	- 3.03%	1°F	- 0.89%	- 2°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	14,723	906	2,990	6,066	9,675	823
% Increase Previous Week	- 24.98	- 24.50	- 0.46	- 10.96	- 16.93	- 21.31

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TABLE IV

CASCADE SERVICES
February 9 through February 15, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	----	----	----	2	90 Heads	4
Pressure Testing	1	2	1	1	90 Heads	27
CO_2 Testing	1	----	----	----	----	1
C-616 Testing	----	----	39	----	----	23

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	PG Spills	Excess Alpha
C-616 Charging	6	----	----	41,731.9gms	6 Cyls.	----	----	----
Carbon and Alumina Traps	----	----	----	2	2	----	----	----
C-816 Storage	----	----	----	----	----	0 lb.	----	----
Field Decon.	----	1	----	----	----	----	3	25

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	3	38	19	11

	Total Samples	Total Determinations
Chemical Analysis	244	156

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K/EM-130/PT8

SANITIZED VERSION OF K-151, PART 8
PROCESS DIVISION WEEKLY REPORT
Issued 2/25/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:

Technical Information Officer
Oak Ridge K-25 Site

5/31/95
Date

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Approved for issue: A. P. Huber
Date of issue: February 25, 1948

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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION
Process Engineering
Production Engineering Section

PROCESS DIVISION WEEKLY REPORT

A. P. Huber

K 151 PT8 13 A

K 151 PT8 13 A

Cy. 1. Barnett, S. C.
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3, 4, 5. Chief, Clinton Prod. Div.
6, 7. Clement, A. T.
8. Humes, W. B.
9, 10. Randall, G. E.
11, 12, 13. Eng. Div. Central Files
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Rader, D. H.
Schwenn, M. F.
Seyfried, M. P.
Sheldon, G. T. E.
Willson, L. C.

Classification changed to: U (level and category)
By authority of: C.G. Pitt-4 (classification guide)
Date: 4/26/94
Verified by: J. L. McCart (classification reviewer)
Date: 5/4/94
(Signature of ADD signature (final reviewer)) Sam W. Wallace

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. S.C. Barnett
Location K-1001

Date February 25, 1948

Answering Letter Date

Attention To Attached Distribution

Subject Process Division Weekly Report Ending 0800 February 23, 1948

Summary

The withdrawal of top product continued throughout the week at an X rate 4.9% greater than the previous week's average and 17.6% better than the average for the past six months.

Cell off-stream time for the week was small and was confined primarily to seal changes. Cascade operations were generally smooth with a few disturbances of a minor nature occurring in Plants I and II.

The K-101 coolant removal unit was put into operation on February 18.

Initial operation of the fluorothene plant began this week.

Cascade Operations

The product withdrawal X concentration control point was lowered from 1113200 to 1113100 this week, and as explained in last week's report, an apparent increase in productivity may be expected following a reduction in the tops concentration. Since the tops concentration was also lowered during the previous week, the large production for this week may be an additive effect of both concentration reductions.

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When operation of the K-101 removal unit was discontinued on January 15, 1948, the C-816 in the cascade amounted to about 20 pounds. By February 12, normal inleakage plus three major cell leaks (K-309-2.2, K-301-4.7 and K-301-5.6) had increased the cascade C-816 inventory to approximately 110 pounds. The K-101 coolant removal unit could not be operated at that time, however, because changes were being made in its equipment. Startup of the unit was therefore postponed until after the mid-month plant inventory on February 17. Charging of the equipment began at 2200 on February 18

Two instances of disturbance to the cascade occurred during the week as a result of operational difficulties encountered with the unit. Feed to K-101 was discontinued for one hour on February 19, while approximately 150 pounds of excess C-616 were being flashed back to the cascade. This excess material had accumulated in the still as a result of faulty liquid level indications. On February 21, difficulty was experienced in maintaining the reboiler temperature, resulting in shifts in the tower inventory. These shifts produced cascade inventory fluctuations of 75 to 100 pounds as determined from the K-309-3 surge drum pressures. No withdrawal of C-816 from the reboiler has been made as yet; however, the C-816 cascade inventory shows a decrease of approximately 80 pounds.

The crude feed rate was lowered to 200 pounds per hour at 2245 and reduced further to 150 pounds per hour at 2315 on February 16, when abnormally high waste assays were obtained from a series of faulty waste samples. The feed rate was returned to normal at 0130 on February 17, after resampling indicated normal waste concentrations.

A cascade "T" and "X" inventory was taken at 1300 on February 17. The crude feed and waste condensation operations were discontinued between 1245 and 1405 while inventory measurements were being made. Crude feed was resumed at a rate sufficient to make up the deficiency incurred during the inventory and the temporary reduction in the feed rate on February 16.

The enriched feed program which began last week was completed at 0940 on February 20. The material fed to the cascade this week amounted to 31.41 Kg. T at an average assay of 192166.

These changes were made as the K-27 concentration gradient returned to normal after the effects of the increased inter-plant flows mentioned in last week's report.

Cascade tops purge was discontinued between 1520 and 1610 on February 18, while the line which normally conducts the flow from K-312-1 to K-312-2 was being used to purge K-312-2.2 directly to the Beach Russ pumps.

A change in the method of obtaining admittance to the Plant III restricted area was established this week. The practice of exchanging badges at Portals 2 and 5 was not altered; however, pass entried are now restricted to Portal 2 only. Under the new system, authorization by telephone has been discontinued. Instead, all maintenance and service personnel are permitted immediate entry by supplying the approval clerk with information concerning their destination and reason for entry and by exchanging their plant badge for a numbered button and written pass. After a person has entered the restricted area, the approval clerk will contact Plant III Supervision and verify the information used to gain admittance.

In conjunction with the program to determine stage pump temperature rise characteristics, a preliminary test is being conducted in K-311-1.6 to determine the difference between the temperature of the gas stream and the temperature at the outside surface of the process piping. Thermocouples have been installed on the outside of the piping and the cell is being operated at various combinations of high side pressures, stage temperatures and ambient temperatures. This is being done in order to obtain a calibration curve for the thermocouple readings versus the temperature of the process stream as measured by the thermal elements presently installed. Initial results indicate excellent correlation between the pipe and gas temperatures at high operating pressures At low pressures, however, the effects of radiation are larger and the error between the two temperatures increases. Also, a study is being made of the possibilities of accurately calculating this temperature differential.

The cross-over lines and housings between line recorder manifolds have been installed in all stations except the upper two stations in Plant III. One of the remaining tube racks in each station in Plants I and II have been shut down and placed in standby condition. Thus these areas are now operating with one machine per two buildings. A total of 16 metal tube racks are in the process of fabrication or have been completed.

Chemical Operations

Production of monomer at the fluorothene plant began at 0800 on February 21, 1948. Previous to this time a preoperational run was made using Freon-12. By 1300 on February 22, two bombs had been loaded and placed in the reaction tank for the eight-day polymerization period. To date, 280 pounds of crude monomer and 70 pounds of refined monomer have been produced. Sixty pounds of the refined monomer were charged into the two bombs.

The acid spray tank in K-1303 is being operated in conjunction with the Engineering and Development Division to develop a method for decontaminating converters that have been removed from the cascade. A calcium nitrate-aluminum nitrate-nitric acid solution was sprayed on a disassembled converter for a 10 minute period. The unit was cleaned externally to within the alpha tolerance limits. An internal check of several tubes, however, revealed counts above tolerance. This test converter had been fluorinated after its removal from service; and therefore, the data obtained is not necessarily indicative of expected results for converters to be removed from operation in the future. Another run is planned in which a converter that has not been fluorinated after its removal from the cascade will be used.

The first shipment of 14 gallons of liquid nitrogen to the Fairchild NEPA Laboratories was made this week.

Utilities and Auxiliaries

Combined recirculating water pumpage at K-802 decreased 1.5 Mn. G.P.D. this week. The average return temperatures of the "A" and "B" loops were 90.1°F. and 81.6°F. respectively. The "B" loop return temperature is somewhat above normal and is the result of the flow of approximately 4 M.G.P.M. of hot water from the "A" to the "B" return header through the recently installed 30" cross-over line.

Ambient air usage this week averaged 4,000 SCFM. Tests indicate that approximately 1,000 SCFM of ambient air is being lost as leakage in the production and distribution system. The actual flow to Process is therefore in the order of 3,000 SCFM.

Electrical Systems Operation

Coal feeder #1 - 2 jammed at 1140 on February 22, causing a momentary reduction in the steam pressure. The frequencies of the variable frequency networks dropped approximately 0.2 cycles before being returned to normal at 1141.

The faulty section of variable frequency feeder cable #282, which failed on February 13, has been replaced. There was very little evidence of electrolytic or chemical corrosion on the cable sheath. The failure appeared to have resulted from a damage inflicted in the lead covering, probably during the original installation.

The following tables are attached:

I. Weekly Production Report.
II. Cascade Cell Off-Stream Time and Labor Man Hours.
III. Utilities and Auxiliaries.
IV. Cascade Services.

LLThacker:bd

A.P. Huber

A.P. Huber

Enclosures (4)

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 February 16 to 0700 February 23, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	192108	- 0.6
K-27 Product Concentration	192252	- 0.3
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	4325	11.6
Conc. C-616 In Purge Cascade		
Top	4.2×10^{-5}	- 2.3
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Period (Lbs.)	
Previous Inventory	461	
Produced	0	0.0
Consumed - K-300	75	188.5
Oxide Conversion	22	22.2
K-1400	22	0.0
K-1004	1	-
Y-12	1	-
Inventory	340	-

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	S-50	K-1004	Y-12	Losses	Total
L-28	4950	889	-	14	1016	-	384	7253
G-74 Pipe Line	3073	320	0	-	-	-	-	3393
G-74 Cylinder	-	184	-	-	-	158	-	342
Total	8023	1393	0	14	1016	158	384	10988
% Increase from Previous Week	- 2.7	12.2	0.0	0.0	22.6	-	-	9.6

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TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
0800 February 16 to 0800 February 23, 1948

A. Cell Off-stream time this week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. Of Times Off Cascade	% of Total No. of Times Off	Increase in No. of Times Over Prev. Week
Stage Pumps			-33.16			- 2
Stage Motors			-12.12			- 3
Stage Pump Seals	37.86	85.23	.95	4	57.14	2
Inst. & Auto Valves			-16.60			- 9
L.R. Inleakage	1.84	4.14	- 2.16	2	28.57	- 4
Excessive Inleakage	4.72	10.63	-59.70	1	14.29	- 3
Total	44.42	100.00	-122.79	7	100.00	-19

Weekly Stream Efficiency.....99.95%
Weekly Stream Efficiency Last Week.....99.83%
Weekly Line Recorder Stream Efficiency.....92.81%

B. Man Hours of Labor for Work Orders Completed on Off-Stream cells from November 9, 1947 to February 23, 1948.

	Accumulated Labor (Man Hours)	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Stage Pumps	51.50	49.25	1.05
Stage Motors	522.00	162.54	3.21
Stage Pump Seals	1,938.00	693.23	2.87
Inst. & Auto Valves	130.00	18.21	7.14
Lube Oil System	12.00	8.20	1.46
Coolant System	109.00	55.00	1.98
Excessive Inleakage	506.00	348.59	1.45
Total	3,319.00	1,335.02	2.49

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 February 12 to 0700 February 19, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	83.97	1.23	75.0°F	106,860	43.69	0.96	75.0°F
Increase from Previous Week	- 1.84%	- 4.65%	0.0°F	- 13.42%	0.21%	- 8.76%	0.0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal./D)	3.656	- 2.42
Flow to Distribution (Mn. Gal./D)	3.656	- 2.42
Volume in Storage (Mn. Gal.)	2.390	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	4,000	- 98°F	5,135	- 109°F
Increase from Previous Week	- 16.66%	0.0°F	2.90%	0.0°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M.Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	13,204	816	3,033	5,900	8,337	662
% Increase from Previous Week	- 10.31	- 9.93	1.47	- 2.73	- 13.82	- 19.56

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TABLE IV

CASCADE SERVICES

February 16 through February 22, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	--	--	---	2	104 Heads	4
Pressure Testing	--	--	---	--	104 Heads	17
CO_2 Testing	1	--	---	--	---	1
C-816 Testing	--	--	20	--	---	2

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	PG Spills	Excess Alpha
C-616 Charging	4	---		41,000 Gms.	8 Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	4	4	---	---	---
C-816 Storage	---	---	---	---	---	0 Lbs.	---	---
Field Decon.	---	---	---	---	---	---	10	33

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	3	5	14	39

	Total Samples	Total Determinations
Chemical Analysis	317	190

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SANITIZED VERSION OF K-151, PART 9
PROCESS DIVISION WEEKLY REPORT
Issued 3/3/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

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Production Engineering Section

MAR 1952
J. P.

PROCESS DIVISION WEEKLY REPORT

A. P. Huber

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. W. B. Humes
Location K-1001

Date March 3, 1948

Answering Letter Date

Attention To Attached Distribution

Subject Process Division Weekly Report Ending 0800 March 1, 1948

Summary

The withdrawal of top product continued through the week at a daily average X rate approximately 2.3% less than last week's average but still 15.0% greater than the average for the past six months.

A complete plant inventory was taken on February 27, 1948.

The frequency to the "A" motors in the K-301 and K-309 sections was reduced from 65 to 55 cycles for a six hour period this week.

Operations in the K-101 C-816 removal unit were discontinued on February 23, 1948.

The converters in K-302-4.4 were replaced with units containing DL type barrier.

Cascade Operations

The average top concentration was lowered 191200% again this week, from 1113100 to 1113000. On February 27, 16 cylinders of product were withdrawn before the monthly plant inventory was taken at 1300. The average concentration of this material was 1112920 and its X content was 5.3%

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greater than the daily X withdrawal average for the week. The product concentration for the two remaining days in the week was allowed to rise to approximately 1113040.

Despite the fact that the tops concentration was lowered during the week, this week's X production was 2.3% less than the previous week. This is understandable, however, when it is recalled that production during the previous week was abnormally high.

The frequency to V.F. bus 5 was reduced from 65 to 55 cycles for approximately six hours on February 25, while an annual inspection of bus tie breaker 16W was being made. Bus 5 supplies power to the "A" motors in the K-309 and K-301 sections. The reduction was accomplished in steps of one cycle every fifteen minutes beginning at 0545 and ending at 0835. The load on bus 5 averaged 12 MW during the period of reduced frequency. After the breaker had been inspected and cleaned, the frequency was returned to normal. This operation began at 1315 and was completed by 1515.

A complete plant inventory was taken at 1300 on February 27. The crude feed and waste condensation operations were discontinued between 1249 and 1350. The crude feed rate had been lowered from 250 to 245 pounds per hour approximately 20 hours previous to the inventory time. After the inventory, however, the normal feed rate of 250 pounds per hour was resumed.

The pressure in the K-309-3 surge drums increased steadly from 3.6 to 6.2 between February 21 and February 26. This increased inventory in the surge drums resulted in a general lowering of the concentration gradient in K-27. Thus it became necessary to move the crude feed point

after the interplant flow to K-27 had been adjusted to compensate for the accumulation of material in the surge drums.

The converter replacement program in Plant II began this week. The converters in K-302-4.4 were replaced with units containing DL type barrier which was fabricated at the K-1037 barrier plant. In addition, the seat in the cell "B" inverse valve was changed. K-302-4.4 was isolated from the cascade at 0200 on February 26, and purged to a negative C-616 analyses with nitrogen. Actual replacement of the converters began at 0725 and was completed by 1640. After the cell had been pressure tested and conditioned, it was returned to normal operation at 0505 on February 27.

An important aspect of the converter change in K-302-4.4 was the alpha contamination investigation which was made during the time the cell was down. All personnel working in the immediate area were provided with complete protective equipment and the area was roped off. A total of 60 samples was obtained in order to determine the airborne alpha contamination in the cell housing and immediate vicinity. It was found that all equipment surfaces were clean and that no airborne contamination exceeded 0.6 counts per square foot per minute. It was, therefore, decided that, in this instance, the alpha contamination was not a serious problem.

The K-101 C-816 removal unit was isolated from the cascade on February 23, when the booster pump in the lube system of the "W" pump failed. Although the C-816 inventory in the cascade was somewhat larger than that immediately prior to previous shut downs, it was decided to leave the unit isolated to allow the cascade to reach an equilibrum for the monthly inventory. During this operating period, approximately 92 pounds of C-816 were withdrawn from the reboiler.

K-301-3.2 was isolated from the cascade at 1110 on February 25, with a C-816 inleakage of approximately 89 pounds per day. By pressure testing, the leak was located in a tube in the stage 3 gas cooler. The faulty tube was plugged, after which the cell was returned to the cascade at 1643 on February 26.

K-402-1.8 and K-402-1.10 were off-stream for approximately 7 hours each while the 50 and 100 HP motors on the "A" and "B" pumps respectively were being replaced with 75 and 150 HP units.

K-305-5.10 was off cascade from 1125 on February 23, to 0840 on February 25, while the 4B pump, which had failed, was being replaced.

Two motor failures occurred this week: K-402-9.1 2B motor and K-402-6.1 2B motor.

Chemical Operations

Considerable trouble was encountered in decontaminating the ventilating ducts removed from the K-631 building following the recent release. Several solutions were tried in an attempt to remove the contaminating material. It was possible to remove all visible contamination using a solution of 10% sodium carbonate at 60°C. However, most sections retained a surface count above tolerance. It was not possible to use an acid solution in this case because of the possibility of removing the protective zinc oxide coating from the galvanized iron duct work. Following the removal of the visible contamination the ducts were returned with the advice that they should be painted.

To date, a total of 1929 pounds of crude monomer have been produced at the K-413 fluorothene plant. In addition, 38 bombs have been charged with 30 pounds of refined monomer per bomb and placed in the reaction tank for the eight day polymerization period. It is planned that the first six of these bombs will be stripped and unloaded on March 1, 1948.

Utilities and Auxiliaries

The average flow of recirculating water at K-832 decreased 1.2 Mn. G.P.D. this week. The return water temperature averaged 93.1°F, which is 0.4°F higher than last week's average. Since the heat load in K-27 was relatively unchanged, an improvement in the heat transfer efficiencies of the coolant coolers is indicated by the decreased flows and higher return temperatures. Chlorine feed to the recirculating water has been increased and a residual of slightly less than 1 p.p.m. is now being maintained. This increase in chlorine feed may have destroyed some organic growth and resulted in the improved heat transfer.

The steam flow at K-1501 averaged 76 M.p.p.h. this week, which is a slight decrease from last week's average usage. Condensate return accounted for 59% of the total feed water added to the system.

Electrical Systems Operation

At 0810 on February 27, a frequency swing of 0.3 cycle occurred on bus 7-8 which supplies V.F. power to the K-310 and K-311 buildings. There were slight frequency swings of smaller magnitude during the entire period generator 5 and bus 7-8 were isolated from the V.F. network so that bus tie breaker 31 W could be inspected and cleaned. Bus 7-8 was isolated from 0720 to 1110 on February 27.

At 1037 on February 28, boiler #1 was removed from service for an annual overhaul.

Duct flushing continued this week in Vault 21.

The following tables are attached:

I. Weekly Production Report
II. Cascade Cell Off-Stream Time and Labor Manhours.
III. Utilities and Auxiliaries.
IV. Cascade Services.

A. P. Huber

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Enclosures (4)

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TABLE I

WEEKLY PRODUCTION REPORT

From 0700 February 23 to 0700 March 1, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	192112	0.4
K-27 Product Concentration	192252	0.0
Purge Rates Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	3834	- 11.4
Conc. C-616 In Purge Cascade		
Top	5.6×10^{-5}	33.3
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Period (Lbs)	
Previous Inventory	340	
Produced	145	0.0
Consumed - K-300	54	- 28.0
Oxide Conversion	18	- 18.2
K-1400	19	- 13.6
K-1004	1	0.0
Y-12	0	0.0
Inventory	393	15.6

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	S-50	K-1004	Y-12	Losses	Total
L-28	4617	683	-	-	-	903	-	- 278	5925
G-74 Pipe Line	3636	229	-	1	-	-	-	-	3866
G-74 Cylinder	-	145	-	-	-	-	0	-	145
Total	8253	1057	-	1	-	903	0	- 278	9936
% Increase From Prev. Week	2.9	- 24.1	-	-	-	- 11.1	-	-	- 9.3

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TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
0800 February 23 to 0800 March 1, 1948

A. Cell Off-Stream Time this week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Stage Pumps	20.50	9.48	20.50	1	5.00	1
Stage Motors	32.86	15.20	32.86	5	25.00	5
Stage Pump Seals	102.99	47.63	65.13	7	35.00	3
Lube Oil System	1.50	.69	1.50	1	5.00	1
Converters	27.08	12.52	27.08	1	5.00	1
L.R. Inleakage Tests	1.98	.91	.14	4	20.00	2
Excessive Inleakage	29.34	13.57	24.62	1	5.00	
Total	216.25	100.00	171.83	20	100.00	13

Weekly Stream Efficiency.....99.77%
Weekly Stream Efficiency Last Week.....99.83%
Weekly Line Recorder Efficiency.....92.32%

B. Man Hours of Labor for Work Orders Completed on Off-Stream cell from November 9, 1947 to February 29, 1948.

	Accumulated Labor (Man Hours)	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Stage Pumps	51.50	49.25	1.05
Stage Motors	522.00	162.54	3.21
Stage Pump Seals	2,072.50	752.27	2.75
Inst. & Auto Valves	130.00	18.21	7.14
Lube Oil System	12.00	8.20	1.46
Coolant System	109.00	55.00	1.98
Excessive Inleakage	511.50	353.31	1.45
Total	3,408.50	1,398.78	2.44

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TABLE III

UTILITIES AND AUXILIARIES

From 0700 February 19 to 0700 February 26, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	81.82	1.29	75.0°F	109,140	42.46	1.10	75.0°F
Increase from Prev. Week	- 2.56%	4.87%	0.0°F	2.15%	- 2.81%	13.94%	0.0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	3.811	4.21
Flow to Distribution (Mn. Gal/D)	3.811	4.21
Volume in Storage (Mn. Gal)	2.390	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,375	- 94°F	5,028	- 108°F
Increase from Prev. Week	- 15.62%	4°F	- 2.08%	1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	12,734	783	3,505	5,570	8,014	625
% Increase from Prev. Week	- 3.55	- 4.05	15.56	- 5.59	- 3.87	- 5.58

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TABLE IV

CASCADE SERVICES
February 23, through February 29, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	-	-	-	4	109 Heads	2
Pressure Testing	1	1	1	0	109 Heads	23
CO_2 Testing	-	-	---	---	---	-
C-816 Testing	---	---	14	---	---	3

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	-	---	-	Gms.	- Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	11	11	---	---	---
C-816 Storage	---	---	---	---	---	- Lb.	---	---
Field Decon.	---	1	1	---	---	---	1	38

	Beta Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	2	6	9	97

	Total Samples	Total Determinations
Chemical Analysis	372	218

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PROCESS DIVISION WEEKLY REPORT
Issued 3/10/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

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A. P. Huber

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. W. B. Humes
Location K-1001

Attention To Attached Distribution

Date March 10, 1948

Answering Letter Date

Subject Process Division Weekly Report Ending 0800 March 8, 1948

Summary

Top product withdrawal continued through the week at a daily X rate approximately 5.7% less than the previous week's average. Average production for the week, however, was still 5.5% greater than the average for the past six months.

C-816 leaks in the stage 1 and stage 5 gas coolers in K-301-5.5 were located and repaired.

Cascade Operations

The average tops concentration during the week was maintained at the same level as during the previous week, 1113000. As expected, total X production for the week was less than that withdrawn during the previous week, since the tops concentration was not lowered this week.

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The flow control instrumentation in the interplant line to K-27 was recalibrated on March 5. Several subsequent adjustments in the flow rate were made in an effort to re-establish the correct interplant flow.

K-301-5.5 was isolated from the cascade at 1545 on March 3, with a C-816 inleakage of approximately 29 pounds per day. By pressure testing the cell, two leaks were located, one in the stage 5 cooler and the other in the stage 1 cooler. In both cases the leaks occurred in a cooler tube which was located adjacent to a baffle plate installed at the back of the tube sheet. A review of the major C-816 leaks to the cascade since February 1947, revealed that in every instance except one the leaks occurred in cooler tubes of a similar location. An inspection of the dismantled stage 6 cooler in K-301-4.7, which developed a C-816 leak on January 17, indicated that this baffle was loose and had probably ruptured the tube as a result of vibration. It was suspected, therefore, that the baffles in the two coolers in cell 5 were loose and had caused the tube failures. In order to eliminate the possibility of future tube failures resulting from this cause, it was decided to plug the 8 tubes adjacent to the suspected loose baffle in each cooler. After the repairs had been completed, the cell was returned to normal operation at 0240 on March 6. The decreased capacity of the stage 5 cooler resulted in an increased stage temperature of approximately 2°F. The stage 1 temperature was unaffected, however, since the upflow portion of the entering stream is partially cooled by the aftercooler of the cell below.

K-302-4.9 was off-stream for 36 hours this week while an air inleakage of approximately 100 Scfd was being located and repaired. The leak occurred in an instrument line to the venturi in the discharge of the 5A pump. The copper tubing had cracked behind one of the supporting clamps.

K-311-1.10 was taken off-stream at 0105 on March 5, when the 3A seal failed. As the cell was being evacuated to the cascade, the 1B pump failed also. After both the pump and seal had been changed, cell 10 was returned to the cascade at 2110 on March 5.

One of the two remaining tube racks in each line recorder station in the K-304 section was shut down and placed in stand-by condition this week. All areas of the cascade except the K-305 and K-306 sections are now operating with one tube rack per two buildings.

A Poppy survey meter (Alpha detector) has been installed in the K-305-9 change house entry to the RR area. All personnel leaving the RR area are required to check their hands. If any readings above tolerance are observed, the person must wash his hands until the counts are reduced to less than tolerance. At present, clothing and shoes are spot checked on the day shift only.

Tests are being conducted in Plants I and II to determine the possibility of removing scale from the coolant coolers by treatment with slightly acid cooling water. Several cells have either been backwashed or operated with different pH cooling water solutions. Varied increases in heat transfer have been observed; however, no overall conclusions have been made as yet.

Chemical Operations

A size 4 converter and a "W Pump" were decontaminated in the K-1303 acid spray tank this week. A solution containing 3 parts by weight of calcium nitrate, 2 parts by weight of aluminum nitrate and enough nitric acid to maintain a pH of 0.1 was used. The converter

parts and the "W Pump" sections were cleaned to below tolerance count at the end of a 10 minute spraying time. Initial alpha counts were as high as 50,000 and some beta and gamma radiation had been detected on the "W Pump" parts. At present, it appears that monel, brass and nickel which are not severely attacked by the acid can be decontaminated with this type of solution. Plain carbon steel parts still present a problem, however, since high alpha counts remained even though the metallic surfaces are dissolved.

2,495 pounds of raw monomer were produced at the fluorothene plant during the past week. Also, 21 cores were made amounting to approximately 137 pounds of finished fluorothene. Recovery of monomer from these 21 cores amounted to 231 pounds. To date, only two finished aores have been tested. The results of the No Strength Tests for the two cores were 307°C and 310°C which proved the plasic to be of MFP-10 quality.

Utilities and Auxiliaries

The recirculating water flow at K-800 has decreased approximately 3% per week for the past two weeks. The majority of this water flow reduction is attributed to the change from winter to summer operating conditions in certain auxiliary equipment. During the winter months, a flow of water is allowed to pass through equipment which is maintained in stand-by condition to prevent freezing in these units. With the approach of warm weather, this flow is discontinued.

Results of tests which were made this week indicate that it is now possible to supply the ambient air from the instrument air header in cases of emergency. The flow of air from the instrument to the ambient system passes through the 2" automatic dump valve and the recently installed 4" by-pass line between the two air headers. Instrument air is maintained at 40 psig from the 110 psig plant air system. The ambient air system, however, is normally held at 2 psig with a centrifugal compressor in K-1101. Thus continuous operation using high pressure air to maintain the ambient system is not economical since an extra energy input of approximately 495 H.P is required for the higher compression.

Electrical Systems Operation

The total K-25 constant frequency power load decreased approximately 7.2% this week. The greater portion of this reduction may be attributed to the decreased constant frequency consumption at the K-25 Power House as a result of the shut down of the #1 boiler and its auxiliary equipment on February 28, 1948.

The program for replacement of the core and yoke bolt insulation in the process variable frequency transformers continued this week. Six transformers were removed from service for this purpose.

The following tables are attached:

I. Weekly Production Report.

II. Cascade Cell Off-Stream Time and Labor Man Hours.

III. Utilities and Auxiliaries.

IV. Chemical Operations.

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Enclosures (4)

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TABLE I

WEEKLY PRODUCTION REPORT
From 0700 March 1 to 0700 March 8, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	192111	- 0.1
K-27 Product Concentration	192250	0.2
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	3826	- 0.2
Conc. C-616 In Purge Cascade		
Top	4.4×10^{-5}	- 21.4
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Period (Lbs.)	
Previous Inventory	393	
Produced	151	4.1
Consumed - K-300	54	0.0
Oxide Conversion	17	5.6
K-1400	27	42.1
K-1004	1	0.0
Y-12	0	0.0
Inventory	445	13.2

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	4946	874	-	-	982	-	444	7246
G-74 Pipe Line	3476	257	0	2	-	-	-	3735
G-74 Cylinder	-	105	-	-	-	158	-	263
Total	8422	1236	0	2	982	158	444	11244
% Increase From Prev. Week	2.0	16.9	0	100	8.7	0.0	-	13.2

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TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 March 1 to 0800 March 8, 1948

A. Cell Off-Stream Time This Week

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase In Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Stage Pumps			-20.50			-1
Stage Motors	11.00	6.38	-21.86	2	11.76	-3
Stage Pump Seals	58.67	34.05	-44.32	5	29.42	-2
Inst. & Auto Valves	2.92	1.70	2.92	2	11.76	2
Lube Oil System			-1.50			-1
Converters			-27.08			-1
L.R. Inleakage Tests	.97	.57	-1.01	2	11.76	-2
Excessive Inleakage	93.56	54.30	64.22	3	17.65	2
Miscellaneous	5.17	3.00	5.17	2	17.65	3
Total	172.29	100.00	-16.88	17	100.00	-3

Weekly Stream Efficiency.....99.82%
Weekly Stream Efficiency Last Week.....99.77%
Weekly Line Recorder Stream Efficiency.....92.64%

B. Man Hours of Labor for Work Orders Completed from November 9, 1947 to March 8, 1948

	Accumulated Labor Man Hours	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off Stream Hours
Stage Pumps	51.50	49.25	1.05
Stage Motors	573.50	181.17	3.17
Stage Pump Seals	2,232.00	776.05	2.88
Converters	150.00	27.08	5.54
Inst. & Auto Valves	130.00	18.21	7.14
Lube Oil System	16.00	9.70	1.65
Coolant System	109.00	55.00	1.98
Excessive Inleakage	511.50	353.31	1.45
Total	2,773.50	1,469.77	2.57

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 February 26 to 0700 March 5, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	79.17	1.30	75.0°F	140,290	42.57	1.15	75.0°F
Increase From Prev. Week	- 3.24%	0.76%	0.0°F	28.54%	0.26%	4.55%	0.0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	3.972	4.22
Flow to Distribution (Mn. Gal/D)	3.972	4.22
Volume in Storage (Mn. Gal)	2.390	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,375	-97°F	5,114	- 109°F
Increase	0.00%	- 3°F	1.71%	- 1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	10,265	644	4,286	4842	5,821	357
% Increase From Prev. Week	- 19.39	- 17.75	22.28	- 13.07	- 27.36	- 42.88

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TABLE IV

CHEMICALS OPERATIONS
March 1 through March 7, 1948

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	-	-	1	6	94 Heads 2 Cyls.	7
Pressure Testing	1	1	1	2	94 Heads	13
CO_2 Testing	1	12	---	---	-- ---	0
C-816 Testing	---	---	37	---	---	9

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	-	---	-	--Gms.	- Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	8	10	---	---	---
C-816 Storage	---	---	---	---	---	5686 Lbs.	---	---
Field Decon.	---	1	-	---	---	---	5	46

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	3	59	6	107

	Total Samples	Total Determinations
Chemical Analysis	270	201

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SANITIZED VERSION OF K-151, PART 11
PROCESS DIVISION WEEKLY REPORT
Issued 3/17/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:
Technical Information Officer
Oak Ridge K-25 Site
Date

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Oak Ridge, Tennessee 37831-7101
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for the U.S. DEPARTMENT OF ENERGY
under Contract DE-AC05-84OR21400

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Date of issue: March 17, 1948

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Report No. K-151, Part 11

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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION

Process Engineering
Production Section

PROCESS DIVISION WEEKLY REPORT

A. P. Huber

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. W. B. Humes
Location K-1001

Attention To Attached Distribution

Date March 17, 1948

Answering Letter Date

Subject Process Division Weekly Report Ending 0800 March 15, 1948

Summary

The withdrawal of top product continued throughout the week at an X rate 0.2% less than the previous week's average and 5.0% better than the average for the past six months.

A voltage disturbance on V.F. bus #6 on March 9, caused approximately 60% of the cells in the K-301 and K-309 sections to be shut down for a short period.

A number of tests were conducted on K-302-4.4 during the week to determine the characteristics of DL type barrier under plant operating conditions.

Cascade Operations

Top product withdrawal operations were temporarily interrupted at 1200 on March 14, when a small UF_6 vapor release occurred from a faulty head gasket in a product cylinder. The personnel in the immediate vicinity of the release were sent to the dispensary for a supervisory check while both the product withdrawal and coded chemicals rooms were being decontaminated. Withdrawal of product was started again at 1350.

The average product concentration for the week was 1113007.

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The voltage to V.F. bus #6, which serves the "B" motors in the K-309 and K-301 sections, dropped to about one-half normal bus voltage at 1050 on March 9, while the source of excitation to the field of #3 generator was being switched from the electric to the steam driven unit. As the voltage was being returned to normal, approximately 60% of the cells in the two sections tripped out by overload relay action. All buildings in the affected sections were immediately isolated on inverse recycle. Re-starting of the cells began at 1100 and was completed by 1205. In several cells, the interlock arrangement between the "A" and "B" motors failed to function; and the "A" motors continued to operate after the "B" motors had stopped. This continued operation of the "A" motors resulted in a cascade inventory shift considerably larger than that normally experienced during a power failure.

The interplant flow to K-27 was adjusted several times during the week in order to maintain desired pressures in the K-309-3 surge drums.

The K-101 C-816 removal unit was started and tied into the cascade at 1500 on March 9. After a few hours operation the "W" pump failed, necessitating the isolation of the unit on total reflux. Further inspection of the equipment revealed the presence of several leaks in the separating column. It was decided, therefore, to shut down the unit for repairs.

Two cells were taken off-stream during the week as a result of failures in instrument lines. K-302-5.4 was off-stream from 0340 to 0715 on March 11, while a leak was being located and repaired in the stage 3 high side pressure instrument line. K-402-3.5 was off-stream for six hours while a failure in the copper tubing to the venturi in the discharge of the 6A pump was repaired.

K-303-5.9 was taken off-stream at 0945 on March 12, when the 1B pump failed. The pump impeller had been rubbing against the casing and had dislodged three spacer bolts. The pump replacement was completed and the cell returned to normal operation by 0240 on March 13.

After the installation of the DL type barrier in K-302-4.4 on February 26, a considerable change occurred in the C-816 concentration gradient in K-302-3, 4 and 5. The improved barrier tends to move C-816 up

stream and thus a new concentration peak was established in the top of cell 4. Several tests were conducted this week to determine the possibility of moving this C-816 down stream past the DL barrier. The first test consisted of raising the "coolant in" temperature in cell 4 to 150°F. During a second test, the cell 4 "B" by-pass valve was opened. Increasing the temperature in the cell effected a slight movement of C-816 down cascade. A somewhat larger shift occurred when the "B" by-pass valve was opened; however, a large movement of C-816 down stream was obtained only after cell 4 had been completely by-passed and isolated Additional tests were also conducted on this cell during the week to determine the normal flow characteristics of DL barrier under plant operating conditions.

Two general changes in Process personnel assignments have recently been made. First, a consolidation of building shift supervision coverage in areas III and IV, has been effected. The supervision of the operations and hourly personnel in each of these areas is now maintained by two building shift supervisors; whereas previously three building supervisors were assigned to each of the two areas. The eight supervisors affected by the change were transferred to the Chemical Operations Department. At present the cascade is divided into five operating areas with the shift organization at the area level consisting of one area shift supervisor and two building shift supervisors per area per shift. A second personnel change has been made in connection with the installation of the cross-overs between the line recorder manifolds. As the extra tube rack in each line recorder station has been placed in stand-by condition, one of the two crew leaders regularly assigned to the station and the two buildings which it serves has been assigned other duties. The hourly operating personnel in each group of two buildings will eventually consist of one crew leader and two operators per shift.

The tests for improving heat transfer by flushing the coolant coolers with acid solutions were continued in Plant I throughout the week. All of the coolant coolers in K-402-9 have been acid cleaned.

In general, after acid flushing, the water control valves have changed from a completely open position to a 35-40% closed position. The building outlet water temperature for K-402-9 has increased from 87°F to 99°F.

At present, a controlled experiment is being conducted in K-402-8.6 wherein the pH is being maintained at a constant value of 6.0 and the rate of cleaning determined at various temperatures.

Chemical Operations

A size 1 converter head was decontaminated to below alpha tolerance this week, using a dilute sulphric acid solution.

Stage pump sections, except for the back plates, are now being decontaminated with the calcium nitrate-aluminum nitrate-nitric acid solutions. The back plates are decontaminated with a soda ash solution. The acid spray tank in K-1303 is being used for equipment that does not have finely machined surfaces.

During the week, sixty-nine cores were stripped at the fluorothene plant. These cores amount to approximately 690 pounds of raw fluorothene. All of the fluorothene produced to date has met the specifications for MFP-10 plastic.

Utilities and Auxiliaries

The average flow of recirculating water at K-832 decreased 2.5% this week. In addition, the average return water temperature increased 0.4°F above last week's average. This combination of decreased flow and increased return water temperature is a reflection of the improved heat transfer in K-402-9 resulting from the coolant cooler cleaning program.

Steam production at K-1501 increased approximately 20% this week. Three small boilers were required to supply the demand. Condensate return accounted for slightly less than 60% of the total boiler feed water used.

Electrical Systems Operation

The #2 synchronous condenser at the K-25 Switch House tripped out of service at 0818 on March 13, due to faulty automatic regulation, resulting in a momentary drop of 400 volts on the 14.0 KV constant frequency bus. The condenser was restored to service by 0827.

The following tables are attached:

I. Weekly Production Report

II. Cascade Cell Off-Stream Time and Labor Man Hours

III. Utilities and Auxiliaries

IV. Chemical Operations.

A. P. Huber
A. P. Huber

LLThacker/ga

Enclosures (4)

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 March 8 to 0700 March 15, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	192105	- 0.6
K-27 Product Concentration	192250	0.0
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	3937	2.9
Conc. C-616 In Purge Cascade		
Top	4.6×10^{-5}	4.5
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Period (Lbs.)	
Previous Inventory	445	
Produced	181	19.9
Consumed - K-300	45	- 16.7
Oxide Conversion	18	5.9
K-1400	28	3.7
K-1004	14	-
Y-12	0	-
Inventory	521	17.1

G-74 Operations	Consumption in Gallons of L-28								
Type	K-300	K-1400	K-1405	K-1300	Misc.	K-1004	Y-12	Losses	Total
L-28	4247	833	-	-	-	1116	-	664	6860
G-74 (Pipe Line)	3529	288	0	1	-	-	0	-	3818
G-74 (Cyl.)	-	234	-	-	8	-	-	-	242
Total	7776	1355	0	1	8	1116	0	664	10920
% Increase from Prev. Week	- 7.7	9.6	-	- 50.0	-	13.6	0	49.5	- 2.9

TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 March 8 to 0800 March 15, 1948

A. Cell Off-Stream Time this Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase In Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Stage Pumps	16.67	17.33	16.67	1	2.17	1
Stage Motors			- 11.00			- 2
Stage Pump Seals	36.46	37.68	- 22.21	4	8.70	- 1
Inst. & Auto Valves	1.15	1.19	- 1.77	1	2.17	- 1
Electrical Power Equip.	23.68	24.47	23.68	33	71.75	33
L.R. Inleakage Tests	14.00	14.47	13.03	5	10.87	3
Excessive Inleakage	3.55	3.67	- 90.01	1	2.17	- 2
Miscellaneous	1.25	1.29	- 3.92	1	2.17	- 2
Total	96.76	100.00	- 75.53	46	100.00	29

Weekly Stream Efficiency.....99.90%
Weekly Stream Efficiency Last Week.....99.82%
Weekly Line Recorder Stream Efficiency.....93.42

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to March 15, 1948.

	Accumulated Labor Man Hours	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Stage Pumps	51.50	49.25	1.05
Stage Motors	1074.50	206.40	5.21
Stage Pump Seals	2450.50	837.37	2.93
Converters	498.50	27.08	1.84
Inst. & Auto Valves	164.50	21.13	7.79
Lube Oil System	16.00	9.70	1.65
Coolant System	191.00	75.50	2.53
Excessive Inleakage	560.00	408.79	1.37
Total	5006.50	1635.22	3.06

TABLE III

UTILITIES AND AUXILIARIES
From 0700 March 5 to 0700 March 11, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Dal/D	Section 830 Avg. Supply Temp.
This Week	77.71	1.30	75.0°F	147,140	41.50	1.10	75.0°F
Increase From Prev. Week	- 1.84%	0.00	0.0°F	4.88%	- 2.51	- 4.35	0.0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	3.953	- 0.48
Flow to Distribution (Mn. Gal/D)	3.953	- 0.48
Volume in Storage (Mn. Gal)	2.390	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,375	- 99°F	5,164	- 110°F
Increase From Prev. Week	0.00	- 2°F	0.98	- 1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	12,320	763	3,844	4775	6855	458
% Increase From Prev. Week	20.02	18.48	- 10.31	- 1.38	17.76	28.29

TABLE IV

CHEMICAL OPERATIONS
March 3 through March 14, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	---	---	---	2	113 Heads	8
Pressure Testing	---	1	---	2	113 Heads	32
CO_2 Testing	2	3	---	---	---	2
C-816 Testing	---	---	88	---	---	13

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-816 Charging	---	---	---	Gms.	--- Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	2	2	---	---	---
C-816 Storage	---	---	---	---	---	--- Lbs.	---	---
Field Decon.	---	1	1	---	---	---	2	56

	Beta-Gamma	Carbon Traps	Alpha Air Samples: Regular	Alpha Air Samples: Special
Radiation Survey	6	36	23	12

	Total Samples	Total Determinations
Chemical Analysis	294	276

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PROCESS DIVISION WEEKLY REPORT
Issued 3/24/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

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Oak Ridge K-25 Site Date

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PROCESS DIVISION

Process Engineering
Production Section

PROCESS DIVISION WEEKLY REPORT

A. P. Huber

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PLANT RECORDS K-1036

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By

INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. W. B. Humes
Location K-1001

Date March 24, 1948

Answering Letter Date

Attention
Copy To Attached Distribution

Subject Process Division Weekly Report Ending 0800 March 22, 1948

Summary

Top product withdrawal continued through the week at a daily X rate approximately 1.5% less than the previous week's average and 3.1% greater than the average for the past six months.

Several shifts in the cascade inventory occurred during the week as a result of high ambient temperatures.

The concentration gradient in K-27 increased during the week, resulting in higher plant waste concentration.

The side purge building (K-312-2) was shut down for four hours on March 17, while the motor generator set was being repaired.

The midmonth plant inventory was taken on March 15.

Cascade Operations

Several shifts in the K-25 cascade inventory occurred during the latter part of the week as a result of high ambient temperatures. The K-802 cooling towers were

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still set up for winter operation; and unseasonably high ambient temperatures and dew points decreased the cooling capacity of the units resulting in increased cooling water temperatures. During the day shift on March 20, the stage temperatures in the lower part of Plant II rose approximately 10°F. increasing the inventory in the K-309-3 surge drums by approximately 200 pounds. The temperatures returned to normal during the evening shift; however, on the following day the supply water temperature increased again reaching a maximum of 78°F. The supply water pressure was increased 5 psia at 1340 on March 21, after which the cell stage temperatures returned to normal. Additional fans on the cooling towers are being placed in service to conform with summer operating conditions.

The K-25 bottoms concentration increased from an average of 192110 during the first part of the week to an average of 192125 on March 21. This increase in the Plant II waste concentration was probably a result of the shifts in the cascade inventory.

The level of the concentration gradient in Plant I increased during the week as evidenced by increased plant waste and K-27 tops concentrations. Several factors contributed to the rise in the gradient. The pressure in the K-309-3 surge drums decreased from 4.0 to 3.3 psia between 0700 and 2300 on March 16, due to faulty flow control instrumentation in the interplant line to K-27. This fast movement of inventory from the surge drums increased the amount of X material in the downflow to K-27. In addition, a gradual reduction of the pressure in the K-309-3 surge drums was begun on March 17, and continued throughout the week in order to make available sufficient capacity for purging the cells in K-302-5 in preparation for the scheduled converter changes on March 23. The planned reduction of the surge drum pressures would not have greatly affected the K-27 gradient had the K-25 waste concentration remained normal. The increased feed to K-27 from K-25 at the higher assays, however, added abnormally large amounts of X to the Plant I buildings. As the concentration gradient rose, the crude feed point was lowered

The midmonth plant inventory was taken at 1300 on march 15. The crude feed and waste condensation operations were discontinued for one hour while inventory measurements were being made.

The side purge building (K-312-2) was shut down between 0910 and 1325 on March 17, in order to install new brushes in the motor generator set. Prior to the isolation of K-312-2, six cells in the tops purge building (K-312-1), which are normally maintained in stand-by condition, were started in order that this building could purge to the atmosphere. During the period that K-312-2 was down, normal upflow into the K-306 section was maintained by restricting the flow in K-305-12. The upflow of light gases usually purged by K-312-2 was allowed to accumulate below the point of restriction in K-305-12 before being evacuated into the Plant III surge for purge system. Normal operations in the K-312 section were resumed by 1845.

K-303-5.5 was off-stream for twenty-six hours this week while the 3B pump which had failed was being replaced.

Three motor failures occurred during the week: K-306-3.4 2A motor, K-306-4.3 1A motor and K-402-6.1 2B motor.

A test was conducted in K-303-1 this week to investigate the possibilities of removing scale from the coolant coolers on a building basis by the addition of acid to the cooling water. Twenty-six gallons of 32% hydrochloric acid containing 1% Rodine inhibitor were fed to the supply water header over a ten hour period. No improvement in heat transfer was noted since the water control valve positions remained relatively the same. Further tests are planned for next week in which larger quantities of acid will be used.

Chemical Operations

The calcium nitrate-aluminum nitrate-nitric acid solution was removed from the decontaminating spray tank in K-1303 this week and drummed. The spray tank was recharged with a hot 8% soda ash solution. This solution was used to decontaminate the feed cylinders and AC pump backplates on hand. Sodium carbonate was used in order that the uranium could be recovered in the water media recovery unit.

Production of raw fluorothene this week amounted to 765 pounds. 287 grams of promotor were also made during the week.

Utilities and Auxiliaries

The average ambient air production increased 3.7% this week. This increas was due to the part time operation of the Worthington instrument air compressor which takes its suction from the ambient air system. Also, the average ambient air dewpoints increased 6°F. The higher dewpoints are probably the results of the increased moisture loads encountered during the warmer weather. During the winter months, when low absolute humidities exist, the hydryers are operated three days between activations. Beginning this week, however, the hydryers will be activated after two days service.

Electrical Systems Operation

Variable frequency feeder 44 tripped out of service by ground relay action at 1037 on March 19. As the thermal converters on this feeder were being checked, the test plug contacts on one of the phase current transformers failed to close causing the fault. The feeder was restored to service by 1320.

Nine process VF transformers were removed from service this week for replacement of the core and yoke bolt insulation. Seven transformers were returned to service after being repaired.

The following tables are attached:

I. Weekly Production Report
II. Cascade Cell Off-Stream Time and Labor Man Hours
III. Utilities and Auxiliaries
IV. Chemical Operations.

A. P. Huber

A. P. Huber

LLThacker/ga

Enclosures (4)

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 March 15, to 0700 March 22, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	192118	1.3
K-27 Product Concentration	192264	1.2
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	3802	- 3.4
Conc. C-616 in Purge Cascade		
Top	3.3×10^{-5}	- 28.3
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Period (Lbs.)	
Previous Inventory	521	
Produced	156	- 13.8
Consumed - K-300	69	53.3
Oxide Conversion	20	11.1
K-1400	18	- 35.7
K-1004	1	-
Y-12	0	-
Inventory	569	9.2

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	S-50	K-1004	Y-12	Losses	Total
L-28	4433	994	-	-	14	952	-	849	7242
G-74 Pipe Line	3553	436	0	1		-	-	-	3990
G-74 Cylinder	-	158	-	-		-	158	-	316
Total	7986	1588	0	1	14	952	158	849	11,548
% Increase from Prev. Week	2.7	17.2	-	0.0	-	- 14.7	-	27.9	5.8

TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 March 15, to 0800 March 22, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Stage Pumps	25.47	30.85	8.80	1.	11.11	-
Stage Motors	24.00	29.07	24.00	3	33.33	3
Stage Pump Seals	27.33	33.11	-9.13	3	33.33	-1
Inst. & Auto Valves	4.00	4.85	2.85	1	11.11	-
Electrical Power Equip			-23.68			-33
L.R. Inleakage Tests	1.75	2.12	-12.25	1.	11.11	-4
Miscellaneous			- 1.25			
Total	82.55	100.00	-14.21	9	100.00	-37

Weekly Stream Efficiency.....99.91%
Weekly Stream Efficiency Last Week.....99.90%
Weekly Line Recorder Stream Efficiency.....95.05%

B. Man Hours of Labor For Work Orders Completed on Off-Stream Cells from November 9, 1947 to March 22, 1948.

	Accumulated Labor Man Hours	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor To Accumulated Cell Off-Stream Hours
Stage Pumps	477.50	79.66	5.99
Stage Motors	1074.50	206.40	5.21
Stage Pump Seals	2,702.00	873.83	3.09
Converters	502.50	27.08	18.56
Inst. & Auto Valves	180.50	26.28	6.87
Lube Oil System	16.00	9.70	1.65
Coolant System	191.00	75.50	2.53
Excessive Inleakage	654.00	467.71	1.40
Total	5,798.00	1,766.16	3.28

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 March 11 to 0700 March 18, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	79.06	1.30	75.0°F	114,290	40.06	1.10	75.0°F
Increase From Prev. Week	1.74%	0.00	0.0°F	- 22.33%	- 3.47%	0.0%	0.0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4.080	3.21
Flow to Distribution (Mn. Gal/D)	4.080	3.21
Volume in Storage (Mn. Gal)	2.390	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,500	- 93°F	5,236	- 109°F
Increase From Prev. Week	3.70%	6°F	1.39%	1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	12,353	766	3,773	4,805	6,965	477
% Increase From Prev. Week	.27%	.39%	- 1.85%	.63%	1.60%	4.15%

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TABLE IV

CHEMICAL OPERATIONS
March 15 through March 21, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	--	--	---	3	93 Heads	4
Pressure Testing	--	1	---	4	93 Heads	19
CO_2 Testing	--	--	---	---	---	--
C-816 Testing	---	---	---	---	---	--

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	--	---	--	-Gms.	-Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	11	9	---	---	---
C-816 Storage	---	---	---	---	---	--Lb.	---	---
Field Decon.	---	1	2	---	---	---	1	48

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	4	24	9	68

	Total Samples	Total Determinations
Chemical Analysis	286	106

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K/EM-130/PT13

SANITIZED VERSION OF K-151, PART 13
PROCESS DIVISION WEEKLY REPORT
Issued 3/31/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:

Technical Information Officer
Oak Ridge K-25 Site

5/31/95
Date

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Approved for issue by: A. P. Huber
Date of issue: March 31, 1948

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Report No. K-151, Part 13

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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION

Process Engineering
Production Section

Classification changed to: C-RD (level and category)
By authority of: CG-PGD-4 (classification guide)
4/27/94
Date
5/41
Date

Q88163

PROCESS DIVISION WEEKLY REPORT

A. P. Huber

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K 151 PT13 25 A

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2. Center, C. E.
3, 4, 5. Chief, Oak Ridge Prod. Div.
6, 7. Clement, A. T.
8. Humes, W. B.
9, 10. Randall, G. E.

11, 12, 13. Eng. Dev. Div. Central Files
(Margrave, H. F.)
Att. Cromer, S.
Garrett, G. A.

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14, 15. K-25 Lab. Central Files
(Schiffman, S. D.)
Att. Beck, C. K.
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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. W. B. Humes
Location K-1001

Attention
Copy To Attached Distribution

Date March 31, 1948

Answering Letter Date

Subject Process Division Weekly Report Ending 0800 March 29, 1948

Summary

The withdrawal of top product continued throughout the week at a daily X rate approximately 2.2% less than last week's average and 0.5% greater than the average for the past six months. The average concentration of this week's production was 1112988.

The converters in five cells in K-302-5 were replaced with units containing the improved DL type barrier this week. Also, P-10 plastic seats were installed in the principal cascade valves in this building.

The K-101 C-816 removal unit was put into operation on March 25.

Cascade Operations

The converter replacement program in Plant II continued this week with the installation of units containing DL type barrier in cells 1, 3, 5, 8 and 10 in K-302-5. Also, the rubber seats in all building block valves, all cell block valves and eighteen other valves in the process system in K-302-5 were replaced with P-10 plastic seats during the converter change period. Purging of the equipment in K-302-5 began at 1910 on March 22, after the building had been evacuated to the cascade. All cells were

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purged of process gas by 0520 on March 23, and removal of the converters was begun at 0640. By 0330 on March 24, the cell by-pass lines were ready for use and cells 3, 4, 9 and 10 were put on stream. The remaining five cells were returned to the cascade within the next six hours. While K-302-5 was shut down, new coolant coolers were installed in cells 3 and 7; and general repairs were made to all cell coolant and lube oil systems. To date, a total of six cells have been equipped with the improved barrier: the above five cells in K-302-5 and cell 4 in K-302-4. The converters in the other thirteen cells in these two buildings will be changed as sufficient quantities of DL barrier tubes are fabricated at the K-1037 barrier plant.

A thorough monitor for alpha contamination and HF hazards was maintained in the vicinity of K-302-5 during the period that the building was down. The results of the alpha airborne surveys were generally below tolerance. During the day shift on March 23, the restrictions for the protection of personnel against alpha airborne contamination were lifted in all areas except in those cell enclosures where above tolerance conditions existed and within a five foot radius of valve bonnets being removed for seat change. Normal protection against alpha surface contamination was maintained throughout the entire period.

The evacuation of K-302-5 in preparation for the converter and valve seat changes caused a shift in the cascade inventory down stream of approximately 700 pounds as indicated by increased pressure in the K-309-3 surge drums. Prior to the evacuation, the pressure in the surge drums had been reduced to provide capacity for this material. The large shift in the process inventory resulted in a general increase in the concentration gradient in the lower part of Plant II; and it was necessary to change the interplant feed points several times during this period in order to maintain matched concentrations.

In order to supply the additional "T" and "X" inventories necessary for these

pressure increases, the crude feed rate was raised from 250 to 260 pounds per hour on March 26, and was raised further to 275 pounds per hour on March 27.

The increased level of the concentration gradient in Plant I last week was attributed to the enlarged down flow from K-25 to K-27. The concentration gradient in K-27 took a reversed trend during the week, however, when the net up flow to K-25 was increased in conjunction with the pressure raising program in Area III. As the Plant I gradient gradually decreased, the crude feed point was moved to maintain crude feed to the cascade at the correct concentration point.

Due to the fact that DL barrier tends to move C-816 up stream, the C-816 concentration peak shifted into the top of cell 8 in K-302-5 as this building was being charged after the converter changes. On March 25, the equipment in the K-101 building was started and valved into the process stream in order to remove the C-816 from the cascade. Feed to the unit was taken from the "B" by-pass line between cells 4 and 6 in K-302-5 with column tops flow returning to the "B" inlet line to K-302-5. No withdrawal of material from the reboiler has been made as yet; however, the inventory of C-816 in the cascade has decreased approximately 45 pounds since the start up of the unit.

At 0131 on March 27, overhead feeder 319 tripped out of service by neutral gound relay action probably as a result of a lightning strike. The feeder outage caused a 1500 volt sag in the constant frequency system which tripped the Beach Russ pumps in K-312-2 and the air compressors in K-1200 as well as other auxiliary equipment. Normal operations in K-312-2 and K-1200 were restored by 0140.

Chemical Operations

During the week, 48,606 grams of T_3O_8 were produced at the water media recovery unit. To date, 7,223 liters of filtrate have been discarded since after the lime floc treatment this material has contained less than 1 p.p.m. of uranium.

Production of raw fluorothene this week amounted to 566 pounds. The polymerization reaction of monomer to polymer has been averaging approximately 30%. All product tested during the week proved to be of MFP-10 quality.

Utilities and Auxiliaries

The temperature control point for the recirculating water was raised from 75°F to 77°F on March 22, in preparation for summer operating conditions. Following this increase in temperature, the supply water pressure was raised from 48 to 55 psig in order to increase the amount of cooling water supplied to the coolant coolers. These operational changes account for the larger water flows this week.

The average ambient air dewpoints were 8°F lower this week than during the previous week. This improvement in the dewpoints is a result of the change from a 3 to 2 day activation cycle for the hydryers.

Electrical Systems Operations

Following a general review of the electrical feeder duct flushing program, it was decided to leave the ducts in vaults 22 through 29 unflushed in order that a comparison can be made between flushed and unflushed ducts. Also, it was decided to reflush a number of the ducts in Plant I to determine the efficiency of the original flushings. Vaults 8, 9 and 10 were chosen as the test vaults for this program. The ducts in vault 10 were reflushed during the past week and work was begun on the ducts in vault 9.

The following tables are attached:

I. Weekly Production Report
II. Cascade Cell Off-Stream Time and Labor Man Hours
III. Utilities and Auxiliaries
IV. Chemical Operations.

LLThacker/ga

Enclosures (4)

A. P. Huber
A. P. Huber

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 March 22 to 0700 March 29, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	192114	- 0.4
K-27 Product Concentration	192252	- 1.0
Purge Rates - Scf/Day		
K-312-1 (Top)	4.4×10^{-5}	33.3
K-312-2 (Side)	1.4×10^{-6}	40.0
Conc. C-616 in Purge Cascade		
Top	-	-
Side	4212	10.8

C-216 Operations	Total This Period (Lbs.)	
Previous Invenotry	569	
Produced	0	-
Consumed - K-300	102	47.8
Oxide Conversion	19	- 5.0
K-1400	15	- 16.7
K-1004	0	-
Y-12	0	-
Inventory	433	- 23.9

G-74 Operations	Consumption in Gallons of L-28							
Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	4756	1031	-	-	945	-	- 194	6538
G-74 Pipe Line	3506	508	0	0	-	-	-	4014
G-74 Cylinder	-	145	-	-	-	158	-	303
Total	8262	1684	0	0	945	158	- 194	10855
% Increase from Previous Week	3.5	6.0	-	-	- 0.7	0	- 122.9	- 6.0

TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 March 22, to 0800 March 29, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Stage Pumps			- 25.47			- 1
Stage Motors	4.08	.75	- 19.92	1	5.26	- 2
Stage Pump Seals	14.75	2.71	- 12.58	2	10.53	- 1
Inst. & Auto Valves			- 4.00			- 1
Converters	509.33	93.58	509.33	9	47.37	9
L.R. Inleakage Tests	5.17	.95	3.42	5	26.32	4
Excessive Inleakage	4.50	.83	4.50	1	5.26	1
Miscellaneous	6.42	1.18	6.42	1	5.26	1
Total	544.25	100.00	461.70	19	100.00	10

Weekly Stream Efficiency.....99.43%
Weekly Stream Efficiency Last Week.....99.91%
Weekly Line Recorder Stream Efficiency.....94.94%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to March 29, 1948.

	Accumulated Labor (Man Hours)	Accumulated Cell Hrs. Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Stage Pumps	477.50	79.66	5.99
Stage Motors	1,107.00	221.65	4.99
Stage Pump Seals	2,765.00	894.66	3.91
Converters	502.50	27.08	18.56
Inst. & Auto Valves	180.50	26.28	6.87
Lube Oil System	16.00	9.70	1.65
Coolant System	191.00	75.50	2.53
Excessive Inleakage	714.00	498.21	1.43
Total	5,953.50	1,832.74	3.25

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 March 18 to 0700 March 25, 1948

PROCESS WATER

	Section 800				Section 830		
Period	Total Flow Mn. Gal/D	Make-Up Water Mn. Gal/D	Avg. Supply Temp.	Fire Water Gal/D	Total Flow Mn. Gal/D	Make-Up Water Mn. Gal/Day	Avg. Supply Temp.
This Week	80.78	1.35	76.4°F	107,140	43.67	1.18	75.9°F
Increase From Prev. Week	2.18%	3.85%	1.4°F	- 6.26%	9.01%	7.27%	0.9°F

SANITARY WATER

	This Week	% Increase From Previous Week
Flow to Storage (Mn. Gal/D)	4.148	1.67
Flow to Distribution (Mn. Gal/D)	4.148	1.67
Volume in Storage (Mn. Gal)	2.390	0.00

1100 AND 1200 SECTIONS

	Ambient Air		Dry Air	
Period	Scfm	Dewpoint	Scfm	Dewpoint
This Week	3,625	- 101°F	5,543	- 109°F
Increase From Prev. Week	3.57%	- 8°F	5.86%	0.0°F

SECTION 1500 - STEAM PLANT

	Total Steam	Coal		Treated Water	Condensate Returned	Equiv. Steam In Condensate
Period	M. Lbs.	Used Tons	In Stock Tons	M. Lbs.	M. Lbs.	M. Lbs.
This Week	9,647	596	3,177	4,377	5,546	367
% Increase From Prev. Week	- 21.91%	- 22.19%	- 15.80%	- 8.91%	- 20.37%	- 23.06%

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TABLE IV

CHEMICAL OPERATIONS
March 22 through March 28, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	---	---	---	73	98 Heads 1 Cyl.	9
Pressure Testing	6	---	5	---	104 Heads	21
CO_2 Testing	2	---	---	---	---	0
C-816 Testing	---	---	71	---	---	52

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	---	---	--Gms.	--- Cyls.	---	---	---	---
Carbon and Alumina Traps	---	---	---	3	1	---	---	---
C-816 Storage	---	---	---	---	---	5656.5 Lbs	---	---
Field Decon.	---	---	55	---	---	---	4	22

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	2	23	17	213

	Total Samples	Total Determinations
Chemical Analysis	262	275

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SANITIZED VERSION OF K-151, PART 14
PROCESS DIVISION WEEKLY REPORT
Issued 4/7/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:

Technical Information Officer
Oak Ridge K-25 Site

6/31/95
Date

Oak Ridge K-25 Site
Oak Ridge, Tennessee 37831-7101
managed by MARTIN MARIETTA ENERGY SYSTEMS, INC.
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INVENTORIED OCT 8 1951 By

Approved for issue by: A. P. Huber
Date of issue: April 7, 1948

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Report No. K-151, Part 14

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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION

Process Engineering
Production Section

PROCESS DIVISION WEEKLY REPORT

A. P. Huber

DIST K 151 PT14 26 A

K 151 PT14 26 A

Cy. 1. Barnett, S. C.
2. Center, C. E.
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9, 10. Randall, G. E.

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J D McGaugh 4/27/94
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INVENTORY
OCT 8 1951
By

INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. W. B. Humes
Location K-1001

Date April 7, 1948

Answering Letter Date

Attention
Copy To Attached Distribution

Subject Process Division Weekly Report Ending 0800 April 5, 1948

Summary

Top product withdrawal continued through the week at a daily X rate approximately 1.8% greater than the previous week's average and 1.9% greater than the average for the past six months.

New converters containing the improved DL type barrier were installed in K-302-5,7 this week.

A program for feeding partially depleted material to the cascade was begun on March 29.

The K-101 C-816 removal unit continued in operation throughout the week. A total of 62 pounds of C-816 was withdrawn from the reboiler.

Ambient air has been substituted for G-74 as the source of supply to the building datum systems in Plant III.

A complete "T" and "X" inventory was taken on March 31.

Cascade Operations

The converters in cell 7 in K-302-5 were replaced with units containing the improved DL type barrier this week. The cell was isolated and evacuated to the cascade at 0200 on April 1. A C-616 analysis of 2 p.p.m. was obtained by 0625 after which removal of the converters

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was begun. After the new converters had been installed, the cell was conditioned with C-216 before being returned to the cascade at 0245 on April 2.

The crude feed rate, which had been increased to 275 pounds per hour on March 27 to supply the additional "X" inventory necessary for the pressure increases in the DL barrier cells, was returned to the normal rate of 250 pounds per hour on March 30. To supplant this extra crude feed which was supplying the increased inventories, a program for feeding partially depleted material was initiated. The depleted material is being fed to the cascade at a rate sufficient to maintain the plant waste concentration at 156000 ± 155505. At times when the tails concentration exceeds 156005, the feed is discontinued until the waste assays drop to within the specified range. Some of the depleted material is contaminated with C-816 which tends to move up stream and is being removed from the cascade with the equipment in the K-101 building.

The interplant flows between Plant I and Plant II were discontinued from 0929 to 1055 on April 1, while a sample connection was being installed in the line to K-27. Also, the flow to K-27 was adjusted several times during the week in order to increase the inventory in the K-309-3 surge drums.

The K-101 C-816 removal unit continued in operation throughout the week. During the early part of the week some trouble was encountered with C-616 plugs in the return line to the cascade. Also, trouble was experienced in maintaining a constant reflux flow. These operational difficulties were overcome, however, and the unit performed satisfactorily during the latter part of the week. Sixty-two pounds of C-816 were withdrawn from the reboiler this week; and the C-816 concentration at the feed point (K-302-5.4) has been reduced to 0.15%.

A complete "T" and "X" inventory was taken at 1300 on March 31. Crude feed and waste condensation operations were discontinued for 45 minutes while inventory measurements were being made. Also, the K-101 building was isolated from the cascade between 0955 and 1630 as a means for obtaining a more accurate inventory.

Several cells in K-27 were isolated on inverse recycle for short periods this week in the process of locating an air leak to the cascade. The source of inleakage was found to exist in the "A" normal line between the K-402-1 and K-402-2 building block valves. This section of line has been isolated and purged of C-616. The leak will be repaired next week.

Six cells were shut down during the week for seal repairs. These cells constitute a total cell off-stream time of 44 hours. In addition, six other cells in Area IV were isolated from the cascade for approximately two hours each while instrument alignments were being made.

One motor failure occurred during the week; K-306-2.2 2A motor.

Ambient air was connected into the building inverting booster relays, which control the pressure in the datum systems, in Plant III this week and preparations are being made for similar changes in Plant II next week. It has been determined that a saving of approximately $9,000 per year will be realized by supplying ambient air instead of G-74 to the building datum pressure systems. In addition, use of ambient air allows more flexibility in the operation of the datum systems. For an example, in case of an air failure, ambient air will be supplied to the inverting booster relays for a considerable period of time after the failure. This is true since the reserve volume of the ambient air system is larger than that of the G-74 system. Also, in case of an extended air failure, the cell stand-by datum systems can be valved into the G-74 supply to prevent variations in the datum.

On March 25, a test was begun to determine the feasibility of removing scale from the coolant coolers in K-27 by lowering the pH of the Plant I recirculating water system. The reduction in the pH is being ac-

complished by the addition of sulphuric acid to the cooling water at the K-832 pump house. An attempt is being made to lower the pH of the complete water system to 7.5 from an original value of 8.6. The acid is added intermittently and strict precautions are being maintained to assure thorough mixing of the acid in the water. The stage temperatures in cell 7 in each of buildings K-402-2, 3, 5 and 7 have been increased 10°F to observe the effect of the lowered pH on heat transfer.

Chemical Operations

In order to have sufficient converters available for the converter change program in Plant III, 118 size 4 units will have to be decontaminated for retubing. In view of this fact, experiments have been started to determine the best method for decontaminatig a size 4 converter. On April 2, a size 4 converter was disassembled and placed in the K-1303 spray tank. The parts were sprayed with a hot 10% soda ash solution which effected a successful decontamination. This work will be continued next week after several changes are made in the decontamination equipment.

The production figures for the fluorothene plant are listed in the attached Table I and will continue to be reported in this table in the future.

Utilities and Auxiliaries

The combined pumpage of recirculating water for the "A" and "B" loops at K-802 averaged 84.4 Mn. G.P.D. this week, which was an increase of 3.6 Mn. G.P.D. above last week's figure. Also, the average return water temperature decreased 0.4°F for the "A" loop and 0.5°F for the "B" loop this week despite the fact that the average supply temperatures increased 0.4°F and 0.8°F for the "A" and "B" loops respectively. The above pumpage figures are the first reported for a seven day operating period since the supply water pressure was raised from 48 to 55 psig. This 7 psi increase in pressure caused the larger water flows and the drop in the return water temperatures. An additional 700 H.P. pump was put into service in order to supply the increased flows.

Pumpage of recirculating water at K-832 this week averaged substantially the same as that reported last week. The average supply water temperature to K-27 was 1.1°F higher than last week; however, the return water temperature increased only 0.8°F. These data indicate a decrease in the heat load of approximately 1.5% which may be a result of the test being conducted in Plant I to remove scale from the coolant coolers.

Electrical Systems Operations

The total variable frequency load increased 2.7% this week. A large part of this increase is attributed to the higher operating pressures being maintained in the cells containing DL barrier.

Nine process transformers were removed from service this week for replacement of the core and yoke bolt insulation; and eight transformers were returned to service after the installation of new insulation.

The following tables are attached:

I. Weekly Production Report
II. Cascade Cell Off-Stream Time and Labor Man Hours
III. Utilities and Auxiliaries
IV. Chemical Operations.

A. P. Huber

A. P. Huber

LLThacker/ga

Enclosures (4)

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 March 29, to 0800 April 5, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	210881	-3.3
K-27 Product Concentration	192218	-3.0
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	4318	-2.5
Conc. C-616 in Purge Cascade		
Top	3.4×10^{-5}	-22.7
Side	1.0×10^{-6}	-28.6

C-216 Operations	Total This Week (Lbs.)	% Increase Over Previous Week
Previous Inventory	433	
Produced	45	-
Consumed	107	-21.3
Inventory	371	-14.3
Fluorothene Operations		
Raw Fluorothene Produced	748	32.2
Raw Monomer Produced	1,875	-19.5
Refined Monomer Loaded in Bombs	2,286	-6.5
Monomer Recovered	1,158	6.9

G-74 Operations

Consumption in Gallons of L-28

Type	K-300	K-1409	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	4672	939	-	-	829	-	-418	6022
G-74 Pipe Cyl.	3198	239	133	-	-	-	-	3568
G-74 Cyl.	-	92	-	-	-	158	-	250
Total	7870	1268	133	-	829	158	-418	9840
% Increase from Prev. Week	-4.7	-24.7	-	-	-12.3	0.0	-	-9.4

TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 March 29, to 0800 April 5, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Stage Motors	12.95	12.14	8.87	2	7.41	1
Stage Pump Seals	43.62	40.88	28.87	6	22.23	4
Converters	24.75	23.20	-484.58	1	3.70	-8
Inst. & Auto Valves	14.25	13.36	14.25	8	29.63	8
Lube Oil System	.25	.23	.25	1	3.70	1
L. R. Inleakage Tests	5.54	5.19	.37	8	29.63	3
Excessive Inleakage	5.33	5.00	.83	1	3.70	
Miscellaneous			-6.42			-1
Total	106.69	100.00	-437.56	27	100.00	8

Weekly Stream Efficiency.....99.89%
Weekly Stream Efficiency Last Week.....99.43%
Weekly Line Recorder Stream Efficiency.....95.76%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to April 5, 1948

	Accumulated Labor (Man Hours)	Accumulated Cell Hrs. Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Stage Pumps	477.50	79.66	5.99
Stage Motors	1,145.50	230.40	4.97
Stage Pump Seals	2,896.50	929.95	3.11
Converters	502.50	27.08	18.56
Inst. & Auto Valves	215.25	30.53	7.05
Lube Oil System	16.00	9.70	1.65
Coolant System	191.00	75.50	2.53
Excessive Inleakage	714.00	498.21	1.43
Total	6,158.25	1,881.03	3.27

TABLE III

UTILITIES AND AUXILIARIES
From 0700 March 25 to 0700 April 1, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	84.42	1.29	77.0°F	100,000	43.69	1.26	77.0°F
Increase From Prev. Week	4.51%	-4.44%	0.6°F	-6.66%	.05%	6.78%	1.1°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4.338	4.58
Flow to Distribution (Mn. Gal/D)	4.338	4.58
Volume in Storage (Mn. Gal)	2.390	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,550	-102°F	5,332	-110°F
Increase From Prev. Week	-2.07%	-1°F	-3.81%	-1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	10,392	636	2,342	4,529	6,336	404
% Increase From Prev. Week	7.72	6.71	-19.99	3.47	14.24	10.08

TABLE IV

CHEMICAL OPERATIONS
March 29 through April 4, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	- - -	- -	- - - -	1	89 Heads 9 Cyls.	4
Pressure Testing	1	- -	- - - -	4	89 Heads	13
CO_2 Testing	3	- -	- - - -	- - -	- - -	1
C-816 Testing	- - -	- -	53	- - -	- - -	13

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P. G. Spills	Excess Alpha
C-616 Charging	- - -	- - -	- -	- Gms	- Cyls.	- - -	- - -	- - -
Carbon and Alumina Traps	- - -	- - -	- -	17	17	- - -	- - -	- - -
C-816 Storage	- - -	- - -	- -	- - -	- - -	7750 Lbs.	- - -	- - -
Field Decon.	- - -	- -	2	- - -	- - -	- - -	7	46

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	6	11	16	90

	Total Samples	Total Determinations
Chemical Analysis	346	229

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SANITIZED VERSION OF K-151, PART 15
PROCESS DIVISION WEEKLY REPORT
Issued 4/14/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:

Technical Information Officer
Oak Ridge K-25 Site

Date

Oak Ridge K-25 Site
Oak Ridge, Tennessee 37831-7101
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Approved for issue by: A. P. Huber
Date of issue: April 14, 1948

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Report No. K-151, Part 15

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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION

Process Engineering
Production Section

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(classification guide)

J D McGaugh 4/27/94
ADC or ADD signature (first reviewer) Date

Sam W. Wohlfort 5/4/94
ADD signature (final reviewer) Date

PROCESS DIVISION WEEKLY REPORT

A. P. Huber

K 151 PT15 18 A

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OCT 8 1951
By

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. W. B. Humes
Location K-1001

Date April 14, 1948

Answering Letter Date

Attention
Copy to Attached Distribution

Subject Process Division Weekly Report Ending 0800 April 12, 1948

Summary

The withdrawal of top product continued through the week at a daily X rate approximately 0.4% greater than last week's average and 2.3% greater than the average for the past six months.

A power interruption in the TVA system on April 8, resulted in considerable disturbance to the cascade operations in K-25 and K-27.

New converters containing DL type barrier were installed in cells 4, 6 and 9 in K-302-5 this week.

A program for feeding enriched material to the cascade was begun on April 7.

The "coolant in" temperatures in all cells in Plant I have been increased from 105°F to 110°F.

Cascade Operations

At 0150 on April 8, a combined voltage and frequency decrease occurred on the East Tennessee section of the TVA system which resulted in considerable disturbance to K-25 and K-27 cascade operations. All cells in the K-309 and K-301 sections tripped off by overcurrent relay action due to variations in the voltage on VF bus 6. The buildings in these two sections were isolated on inverse recycle at 0151 and the cells were restarted and returned to the cascade between 0210 and 0245. Also, fourteen cells in the K-310 section tripped off due to

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overload. The three buildings in K-310 as well as K-311-1 were isolated on inverse recycle when the power disturbance was first noted. The cells in K-310 were returned to normal service by 0250 and K-311-1 was valved into the cascade again at 0305. The momentary drop in the TVA frequency caused a sudden shift in the cascade inventory in Plant I which overloaded and tripped six cells in K-402-1. These cells were restarted by 0200. Three seal failures in Area II and three motor failures (K-310-1.6, 3B and 4A motors and K-402-1.4, 2B motor) occurred shortly after the cells were restarted following the shut down. Also, at 0255 the electrical feeders to cell 6 in K-310-1 burned at the point of attachment to the 2V6A switchgear which made it necessary to shut down, in addition to cell 6, the three other cells on this network. These four cells were off-cascade for an extended period as a result of the cable failures. The total cell off-stream time resulting from the interruption, including the time necessary to replace the damaged equipment, was 182 hours. The interplant flows were shut off from 0150 to 0320 and crude feed was discontinued between 0155 and 0300.

The converters in cells 4, 6 and 9 in K-302-5 were replaced with units containing DL type barrier this week. Each cell was off-stream for approximately twenty-six hours while the new converters were being installed. K-302-5 is now completely equipped with DL barrier; and it is planned to conduct a barrier performance (ψ) test in this building next week. To date, DL barrier converters have been installed in ten cells in the K-302 section: nine cells in K-302-5 and K-302-4.4.

A program for feeding some enriched K-25 recovered UF_6 was begun on April 7, and continued through the week. The total amount of enriched material fed to the cascade amounted to 22.366 KgT at an average assay of 129658. Also, the program, which was initiated last week, for feeding partially depleted material during periods when the plant waste concentrations are low was continued this week.

The "coolant in" temperatures in all cells in Plant I have been increased from 105 to 110°F at the request of the Special Hazards Group. The coolant temperatures were raised between 0900 and 1430 on April 7; and resulted in stage temperature increases of approximately 4°F. The reduced heat loads caused a drop of about 10 Mn. G.P.D. in the K-27 recirculating water flow.

The K-101 unit was isolated at 0930 on April 6 in order that a test could be made to check the C-616 - C-816 inventory in the building. While the still was operating on total reflux, normal inventory measurements were made after which the material in the equipment was drained into containers, weighed and sampled. The intention was to flash the inventory back into the column and take another set of instrument readings. However, as the material was being vaporized into the column, a valve seat failed which allowed some of the material to escape back into the cascade. It is planned to conduct the test again next week using a slightly different procedure.

At 1145 on April 5, generator #14 which is on the high frequency electrical system, began rejecting load probably as a result of faulty governor action. Since the two other generators on the system could not supply all of the load dropped by #14 generator, it was necessary to reduce the frequency from 120 to 115 cycles. Cell 13 in K-306-4 tripped out on overcurrent relay action during this period; however, it was restarted by 1220. A subsequent check on #14 generator revealed no faults in the central equipment.

Two cell stage pump failures occurred during the week: K-302-5.9, 4A pump and K-305-12.9, 3B pump. Also, five stage motors failed this week in addition to the three failures which were caused by the power disturbance on April 8.

Chemical Operations

Normal decontamination operations at K-1303 were discontinued during the week in order that special tests could be conducted on the decontamination of cell converters. In the first test, an attempt was made to

decontaminate a converter tube bundle by using live steam; however, little success was obtained with steam as a cleaning agent. In another run, a tube bundle was exposed to recirculating hot water which resulted in a very effective decontamination.

Pre-operational runs were made on the equipment in the alcohol recovery unit at the fluorothene plant this week. The filter press performed satisfactorily, however, difficulties were encountered in supplying sufficient heat to the recovery still.

Utilities and Auxiliaries

The addition of chlorine to the K-25 recirculating water system, which had been discontinued during the winter months, was resumed on April 8, at a rate of fifty pounds per day. Chlorine is fed to the cooling water during warm weather to inhibit the growth of algae.

Steam production at K-1501 averaged slightly over 50 M p.p.h. this week, which is the lowest weekly average for the year. Operations at the steam plant were unusually difficult, however, due to wet coal; and an extra boiler was kept in service most of the time in order to hold the header pressure at 100 psig.

Electrical Systems Operations

Twice during the past week, the capacities of the boilers in the K-25 Power House, were temporarily reduced due to the necessity of using extremely wet coal. At 1512 on April 7, the high pressure steam header dropped to about 1000 psig after it became impossible to feed sufficient quantities of coal to the boilers. The decreased header pressure necessitated a reduction in the K-25 load which was accomplished by lowering the frequencies as follows: K-304, K-303, K-310 and K-311 - 2 cycles; K-305, K-302, K-309 "A" motors and K-301 "A" motors - 1½ cycles; K-309 "B" motors, K-301 "B" motors - 3 cycles. The steam pressures and frequencies were restored to normal by 1650. Again on April 10, trouble developed in the feeders to #3 boiler as a result of wet coal which required a average reduction of one-half cycle on the K-25 systems for a ten minute period.

The following tables are attached.

I Weekly Production Report

II Cascade Cell Off-stream Time and Labor Man Hours

III Utilities and Auxiliaries

IV Chemical Operations

A. P. Huber

A. P. Huber

LLThacker/ga

Enclosures (4)

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 April 5, to 0700 April 12, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28808.20	-0.9
K-25 Waste Concentration	210896	1.5
K-27 Product Concentration	192231	1.2
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	4472	3.6
Conc. C-616 in Purge Cascade		
Top	12.3×10^{-5}	26.2
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Week (Lbs)	% Increase Over Previous Week
Previous Inventory	371	-14.3
Produced	152	-
Consumed	182	70.1
Inventory	341	-8.1
Fluorothene Operations		
Raw Fluorothene Produced	849	13.5
Raw Monomer Produced	1469	-21.7
Refined Monomer Loaded in Bombs	2366	3.5
Monomer Recovered	970	-16.2

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	4407	1079	-	-	918	-	1420	7824
G-74 Pipe Line	3485	170	117	1	-	-	-	3773
G-74 Cyl.	-	198	-	-	-	-	-	198
Total	7892	1447	117	1	918	-	1420	11795
% Increase from Prev. Week	0.3	14.1	-12.0	-	10.7	-	-	19.9

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TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 April 5, to 0800 April 12, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No of Times Off	Increase In No. of Times Over Prev. Week
Stage Pumps	50.58	11.69	50.58	2	1.56	2
Stage Motors	39.71	9.17	26.76	5	3.91	3
Stage Pump Seals	95.33	22.02	51.71	6	4.69	-
Converters	78.41	18.11	53.66	3	2.34	2
Inst. & Auto Valves	4.67	1.08	-9.58	4	3.13	-4
Lube Oil System			-.25			-1
Electrical Power Equip.	144.10	33.29	144.10	99	77.34	99
L.R. Inleakage Tests	2.67	.62	-2.87	5	3.91	-3
Excessive Inleakage	12.67	2.93	7.34	1	.78	-
Miscellaneous	4.72	1.09	4.72	3	2.34	3
Total	432.86	100.00	326.17	128	100.00	101

Weekly Stream Efficiency.....99.55%
Weekly Stream Efficiency Last Week.....99.89%
Weekly Line Recorder Stream Efficiency.....95.20

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to April 12, 1948

	Accumulated Labor Man Hours	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Stage Pumps	477.50	79.66	5.99
Stage Motors	1,173.00	239.85	4.89
Stage Pump Seals	3,110.50	984.19	3.16
Converters	528.50	27.08	19.52
Inst. & Auto Valves	278.25	36.95	5.53
Lube Oil System	16.00	9.70	1.65
Coolant System	191.00	75.50	2.53
Excessive Inleakage	765.75	501.76	1.53
Total	6,540.50	1,954.69	3.35

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 April 1 to 0700 April 8, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp
This Week	84.38	1.29	77.0°F	96,860	42.27	1.28	77.0°F
Increase From Prev. Week	-0.05%	0.00%	0°F	-3.14%	-3.25%	1.59%	0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4.118	-5.07
Flow to Distribution (mn. Gal/D)	4.134	-4.70
Volume in Storage (Mn. Gal)	2.279	-4.64

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,700	-101°F	5,446	-110°F
Increase From Prev. Week	4.23%	1°F	2.14%	0.0

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	8,670	536	2,005	4,533	5,090	277
% Increase From Prev. Week	-16.5%	-15.72	-21.13	0.09	-19.67	-31.44

TABLE IV

CHEMICAL OPERATIONS
April 5, through April 11, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. and Heads	Leaks Found
Vacuum Testing	---	--	---	1	92 Heads 1 Cyl.	10
Pressure Testing	4	2	3-	5	93 Heads	26
CO_2 Testing	1	--	---	---	---	11
C-816 Testing	--	--	88	---	---	19

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	6	--	--	67,965 Gms	9 Cyls.	--	--	--
Carbon and Alumina Traps	--	--	--	8	8	--	--	--
C-816 Storage	--	--	--	--	--	59 Lbs.	--	--
Field Decon.	--	2	--	--	--	--	10	47

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	3	0	21	139

	Total Samples	Total Determinations
Chemical Analysis	316	186

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K/EM-130/PT16

SANITIZED VERSION OF K-151, PART 16
PROCESS DIVISION WEEKLY REPORT
Issued 4/21/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:

Technical Information Officer — Date
Oak Ridge K-25 Site

Oak Ridge K-25 Site
Oak Ridge, Tennessee 37831-7101
managed by MARTIN MARIETTA ENERGY SYSTEMS, INC.
for the U.S. DEPARTMENT OF ENERGY
under Contract DE-AC05-84OR21400

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Date of issue: April 21, 1948

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By authority of: CG - PGD-4
(classification guide)

J D McGarry 4/27/94
ADC or ADD signature (first reviewer) Date

Sam W. Wohlfort 5/4/94
ADD signature (final reviewer) Date

CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION

Process Engineering
Production Section

Plant Records Department Vault
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PROCESS DIVISION WEEKLY REPORT

J. P. Murray

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2. Center, C. E.
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6, 7. Clement, A. T.
8. Humes, W. B.
9, 10. Randall, G. E.

11, 12, 13. Eng. Dev. Div. Central Files
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14, 15. K-25 Lab. Central Files
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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. W. B. Humes
Location K-1001

Date April 21, 1948

Answering Letter Date

Attention
Copy To Attached Distribution

Subject Process Division Weekly Report Ending 0800 April 19, 1948

Summary

Top product withdrawal continued through the week at a daily X rate approximately 1.1% greater than the previous week's average and 3.3% greater than the average for the past six months.

A barrier performance (Ψ) test was conducted in K-302-5 this week.

The converters in cells 2 and 6 in K-302-4 were replaced with units containing DL barrier during the week.

A C-816 leak of approximately 8 pounds per day was located and repaired in K-301-2.1.

The midmonth plant inventory was taken on April 16.

Cascade Operations

On April 13 and 14, a barrier performance (Ψ) test was conducted in K-302-5, which has recently been equipped with the new DL type barrier. The test was divided into four runs with each run consisting of isolating K-302-5 on direct recycle and operating the cells at the following conditions on high side pressure and stage temperature:

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During each run, K-302-5 was operated on direct recycle for a three hour period to allow the conditions in the building stream to reach an equilibrium before samples were taken from cells 1 and 6 to determine the separation performance for the run. After each run the building was placed on cascade for a short period before the next test was begun. In order to meet the specified pressure conditions for the fourth run, it was necessary to remove approximately two-thirds of the inventory from the building. This excess material was evacuated into the K-303-1 surge drums and stored until the run was completed. Immediately following the last run, K-302-5 was allowed to remain on direct recycle for an additional three hour period in order to determine the movement of C-816 through the improved barrier at high light contaminant concentrations. Nitrogen was bled into the top cells; and C-816 scans were made with the line recorder. Normally DL barrier tends to move C-816 up stream; however, it was found that the C-816 did not pass up through the large concentrations of light gases but rather formed a C-816 concentration peak at the point of approximately 25% nitrogen. The total cell off-stream time involved in the test amounted to approximately 231 hours.

The converters in cells 2 and 6 in K-302-4 were replaced with units containing DL barrier this week. A total cell off-stream time of 52 hours was required to make the new installations. Nine hours after cell 6 had been returned to the cascade following the converter change, it was isolated again with an air inleakage of approximately 100 SCFD. The cell was purged of process gas and by pressure testing the leak was located in a welded connection in the "B" outline line of the #3 converter. After the leak had been repaired, cell 6 was restored to normal service.

K-301-2.1 was taken off-stream at 0730 on April 13, with a C-816 inleakage of approximately 8 pounds per day. The leak was found to exist in an inside row tube in the stage 5 cooler. Since the faulty tube was located in the inside row, it was decided that the baffle plate which is installed at the back of the tube sheet was probably loose and had caused the tube failure due to vibration. To prevent any further leaks that could result from the suspected loose baffle, the eight inside tubes in the upper half of the tube sheet were plugged before cell 1 was returned to the cascade at 1935 on April 14.

The program for feeding enriched material, which was begun on April 7, was continued this week. The total amount of enriched material fed to the cascade during the week amounted to 11.375 KgT at an average assay of 192241. Also, partially depleted material was fed to the cascade during periods when the plant waste concentrations were low.

A complete "T" and "X" inventory was taken at 1300 on April 16. The crude feed and waste condensation operations were discontinued between 1245 and 1345 while inventory measurements were being made.

Four cells were shut down during the week as a result of stage pump seal failures. A total cell off-stream time of 52 hours was necessary to replace the faulty seals.

Chemical Operations

Another experimental decontamination run was made in K-1303 this week on a size 4 converter, using water as a decontaminating agent. Particular emphasis was given to controlling the pH during this run. It was found that as long as the water was maintained neutral or slightly acidic, it

proved to be a successful cleaning agent. When the water became basic, however, a dark coating was formed on the surface of the metal which seemed to prevent further alpha removal. A sample of this coating has been sent to the laboratory for an analysis.

Production in the water media recovery unit amounted to 92.7 pounds of T_3O_8 this week. K-25 laboratory waste solutions are being processed at the present time. These solutions contain a large amount of uranium; and therefore, they cannot be appreciably evaporated since a "salting out" effect takes place in the evaporators. During the week 1,500 liters of filtrate from the lime floc unit met the "dumping" specifications and were discarded.

Utilities and Auxiliaries

The average flow of recirculating water at K-832 was 32.15 Mn. G.P.D. this week as compared with last week's flow of 42.27 Mn G.P.D. This substantial decrease in the cooling water flow is a result of the 5°F increase in the "coolant in" control point temperature which was established in Plant I on April 7. The average return water temperature in K-27 increased 4.8°F above last week's figure.

The distribution of sanitary water increased approximately 6.3% this week. The major part of this increase is attributed to a larger demand for make-up water at the K-802 recirculating water plant.

Electrical Systems Operation

The feed water regulator stuck closed on the #1 boiler at the K-25 Power House between 1305 and 1315 on April 12, which caused a decrease in the steam pressure. It was necessary to reduce the frequency 0.2 cycles on all variable frequency generation during this period. Another decrease in variable frequency generation occurred for a two minute period on April 16, when trouble developed in the #3 coal feed mill to the #3 boiler.

The reflushing of electrical feeder ducts continued in Vaults 9 and 12 this week.

The following tables are attached:

I. Weekly Production Report

II. Cascade Cell Off-Stream Time and Labor Man Hours

III. Utilities and Auxiliaries

IV. Chemical Operation.

J. P. Murray

J. P. Murray

LLThacker/ga

Enclosure

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 April 12, to 0700 April 19, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.9
K-25 Waste Concentration	210891	-0.5
K-27 Product Concentration	192230	-0.1
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	4240	-5.2
Conc. C-316 in Purge Cascade		
Top	12.9×10^{-5}	4.9
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Week (Lbs.)	% Increase Over Previous Week
Previous Inventory	341	
Produced	148	-2.6
Consumed	147	-19.2
Inventory	342	0.3
Fluorothene Operations		
Raw Fluorothene Produced	802	-5.5
Raw Monomer Produced	1506	2.5
Refined Monomer Loaded in Bombs	1,172	-8.2
Monomer Recovered	1,234	27.2

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	X-10	K-1004	Y-12	Losses	Total
L-28	5153	727	-	-	826	-	1641	8347
G-74 Pipe Line	3516	81	4	-	-	-	-	3601
G-74 Cyl.	-	279	-	11	-	158	-	448
Total	8669	1087	4	11	826	158	1641	12396
% Increase from Prev. Week	9.8	-24.9	-	-	-10.0	-		5.1

TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 April 12, to 0800 April 19, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Stage Pumps			-50.58			-2
Stage Motors			-39.71			-5
Stage Pump Seals	51.67	12.41	-43.66	4	8.00	-2
Converters	50.80	12.21	-27.61	2	4.00	-1
Inst. & Auto Valves			-4.67			-4
Electrical Power Equip.			-144.10			-99
L.R. Inleakage Tests	2.17	.52	-.50	4	8.00	-1
Excessive Inleakage	73.21	17.59	60.54	2	4.00	1
Special Engr. Tests	230.65	55.41	230.65	36	72.00	36
Miscellaneous	7.75	1.86	3.03	2	4.00	-1
Total	416.25	100.00	-16.61	50	100.00	-78

Weekly Stream Efficiency..... 99.57%
Weekly Stream Efficiency Last Week..... 99.55%
Weekly Line Recorder Stream Efficiency..... 94.02%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to April 19, 1948.

	Accumulated Labor Man Hours	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Stage Pumps	603.00	121.74	4.95
Stage Motors	1,292.00	291.10	4.44
Stage Pump Seals	3,533.50	1,110.18	3.18
Converters	1,339.50	535.96	2.50
Inst. & Auto Valves	336.75	41.62	8.09
Lube Oil System	16.00	9.70	1.65
Coolant System	191.00	75.50	2.53
Excessive Inleakage	765.75	501.76	1.53
Total	8,077.50	2,687.56	3.01

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 April 8 to 0700 April 15, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	86.30	1.44	77.0°F	105,710	32.15	1.25	77.1°F
Increase from Prev. Week	2.28%	11.63%	0°F	9.14%	-23.94%	-2.34%	.1°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage	4.392	6.65
Flow to Distribution (Mn. Gal/D)	4.392	6.24
Volume in Storage (Mn. Gal)	2.279	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	4,000	-100°F	5,589	-109°F
Increase from Prev. Week	8.11%	1°F	2.63%	1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	8,219	509	1,497	4,944	3,923	207
% Increase From Prev. Week	-5.20	-5.04	-25.34	9.07	-22.93	-25.27

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TABLE IV

CHEMICAL OPERATIONS
April 12, through April 18, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	0	0	0	3	106 Heads	26
Pressure Testing	2	0	2	0	106 Heads	10
CO_2 Testing	1	0	---	---	---	0
C-816 Testing	---	---	0	---	---	0

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	3	---	0	21,780 Gms.	3 Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	12	12	---	---	---
C-816 Storage	---	---	---	---	---	0	---	---
Field Decon.	---	---	0	3	---	---	---	33

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	6	33	28	69

	Total Samples	Total Determinations
Chemical Analysis	383	157

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SANITIZED VERSION OF K-151, PART 17
PROCESS DIVISION WEEKLY REPORT
Issued 4/28/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

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Asst Technical Information Officer 5/31/95
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PROCESS DIVISION

Process Engineering
Production Section

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PROCESS DIVISION WEEKLY REPORT

J. P. Murray

K 151 PT17 14 A

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2. Conter, C. E.
3, 4, 5. Chief, Oak Ri
6, 7. Clement, A. T.
8. Huber, A. P.
9. Humes, W. B.
10, 11. Randall, G. E.

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Classification changed to: C-RD
(level and category)
By authority of: CG-PCD-4
(classification guide)
J D McGarry 5/3/94
ADC or ADD signature (first reviewer) Date
Sam W. Wohlfort 5/4/94
ADD signature (final reviewer) Date

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. W. B. Humes
Location K-1001

Attention
Copy To Attached Distribution

Date April 28, 1948

Answering Letter Date

Subject Process Division Weekly Report Ending 0800 April 26, 1948

Summary

The withdrawal of top product continued through the week at a daily X rate approximately 0.5% less than the previous week's average but still 2.4% greater than the average for the past six months.

New converters containing DL type barrier were installed in cells 8 and 10 in K-302-4 this week.

The crude feed rate was increased 15 pounds per hour on April 19 in order to make up the crude feed deficiency for the month.

Cascade Operations

The converters in cells 8 and 10 in K-302-4 were replaced with units containing DL type barrier this week. The cells were off-stream for a total of 47 hours while the changes were being made. To date, a total of fourteen cells at the following locations have been equipped with DL barrier:

K-302-5 .....All cells
K-302-4..... cells 2, 4, 6, 8, and 10

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Therefore, a work order has been issued to install ventilating ducts to these motors in K-302-4 and K-302-5 as well as to the "B" motors in the escape alley in cells 2 and 4 in K-302-3. The ducts will be of the double-ended type similar to those installed in K-27 last summer. A double-end duct arrangement directs a stream of cooling air into both ends of the motor parallel to the rotating axis.

The interplant flow to K-27 was reduced at 1705 on April 20 to increase the inventory in the K-309-3 surge drums. This was done in preparation for a possible electrical emergency due to trouble at the K-25 Power House. The #1 boiler had developed a feed water leak in the economizer; and, if the situation had become appreciably worse, it would have been necessary to isolate the boiler and reduce the variable frequency generation to K-25. Sufficient time was available, however, to start up #2 boiler, which was down for an annual overhaul, before #1 boiler was taken off the line at 0550 on April 21. The interplant flow was increased again at 0645.

The crude feed rate was increased from 250 to 265 pounds per hour at 1015 on April 19. It is planned to maintain this increased rate until the end of the month in order to make up the crude feed deficiency for April.

The program for feeding enriched UF_6 to the cascade was continued this week. A total of 235.527 KgT of enriched material was fed at an average assay of 192531.

The two converters in cell 9 in the tops purge building (K-312-1) were replaced with units containing WB type barrier this week. The originally installed Whitehead barrier in this cell had shown abnormal plug indications. Results of building scans run in K-312-1 indicated that cell 9 had little effect on the overall separation of the building.

Four cell motor failures occurred during the week; three in Plant II and one in Plant I. The three failures in Plant II resulted from bad motor bearings. An investigation of the faulty motor in K-27 (K-402-1.6 - 4B motor) indicated that the wind deflector ring had broken loose causing the failure.

The K-101 C-816 removal unit was charged and tied into the cascade at 1545 on April 21. After only 45 minutes operation, however, a leak was noted in the reflux drum sight gauge; therefore, the unit was shut down and purged of process gas in order that the leak could be repaired. Following the repairs to the faulty sight gauge, the equipment was recharged and valved into the cascade a second time at 2030 on April 22. The building remained on stream until 0445 on April 23, when the "W" pump bellows cracked necessitating another shut down. While the system was down it was seen that one of the glasses in the tower sight gauge had cracked; and a new glass is now being installed.

A work order was initiated this week to fabricate 60 gravity type oil filters and to install one of these units in each of the process buildings in the K-300 and K-400 sections. The filters will be located in the charge line to the lube drain drums and will be used to reclaim the oil drippings from the stage pump shaft bearings. The design for the units was developed from tests recently conducted in K-303-4 and consists essentially of a lintless flannel cloth filter media in conjunction with a 0.002" Purolator filter unit. The purity of the filtrate from this type of filter system has been

shown to compare favorably with oil reclaimed by the existing method as well as with samples of new oil. It is estimated that in less than four months the savings gained by using the filters will pay for the complete construction and installation of the units.

Chemical Operations

A special converter decontamination pilot plant is being designed for installation in K-1303. The spray tank, which recently has been used for experimental test on the decontamination of converters, is now being employed for normal decontamination services. During the week, 583 miscellaneous items were decontaminated in the spray tank.

A total of 145 pounds of T_3O_8 were produced in the water media recovery unit this week. The laboratory waste solutions being processed at present contain a high uranium concentration. Due to this high concentration, difficulties are experienced at times in precipitating the uranium from the ammonium diuranite filtrate solutions with gaseous ammonia since the ammonia feed line tends to plug with the precipitate. Additional difficulties are being encountered in removing the last traces of uranium from the filtrate solutions with the lime floc unit.

Utilities and Auxiliaries

The combined recirculating water flow in the "A" and "B" loops at K-802 increased approximately 2% this week; however, the return water temperatures remained relatively the same as during the previous week. A supply water temperature of 77°F and a supply pressure of 55 psig were maintained throughout the week.

Although the make-up water added to the K-25 recirculating system averaged 1.32 Mn. G.P.D. this week, there was no blow-down at K-802. Evaporation over the towers and losses within the system account for this make-up demand. The dissolved solids content

in the K-25 system has been shown to be less than 300 p.p.m. indicating that sufficient losses exist to make it unnecessary to blow-down additional water at K-802.

Electrical Systems Operation

The program for reflushing electrical feeder ducts in vaults 8, 9 and 10 has been completed.

The progress to date on the program for installing new core and yoke bolt insulation in the process electrical transformers is outlined in the table below:

		Number of Transformers
1)	Removed from service this week for reinsulation	6
2)	Restored to service this week after reinsulation	4
3)	Reinsulation work in progress	8
4)	Total completed to date	62

The reinsulation program is now approximately 25% complete.

The following tables are attached:

I. Weekly Production Report
II. Cascade Cell Off-Stream Time and Labor Man Hours
III. Utilities and Auxiliaries
IV. Chemical Operations.

J. P. Murray

J. P. Murray

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Enclosure

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 April 19, to 0700 April 26, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	210884	-0.7
K-27 Product Concentration	192227	-0.3
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	3909	-7.8
Conc. C-616 in Purge Cascade		
Top	11.9×10^{-5}	-7.8
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Week (Lbs.)	% Increase Over Previous Week
Previous Inventory	342	-
Produced	155	4.7
Consumed	131	-10.9
Inventory	366	-7.0
Fluorothene Operations		
Raw Fluorothene Produced	711	-11.3
Raw Monomer Produced	859	-43.0
Refined Monomer Loaded in Bombs	2341	99.7
Monomer Recovered	1331	7.9

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	4833	775	-	-	898	-	1950	8456
G-74 Pipe Line	3113	197	0	1	-	-	-	3311
G-74 Cyl.	-	92	-	-	-	158	-	250
Total	7946	1064	0	1	898	158	1950	12017
% Increase from Previous Week	-8.3	-2.1	-	-	8.7	-	-	-3.1

TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 April 19, to 0800 April 26, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Stage Motors	19.85	23.28	19.85	4	33.33	4
Stage Pump Seals	14.25	16.72	-37.42	2	16.67	-2
Converters	47.08	55.23	-3.72	2	16.67	-
Instrumentation	1.58	1.85	1.58	1	8.33	1
L.R. Inleakage Tests	.66	.77	-1.51	2	16.67	-2
Excessive Inleakage	-		-73.21			-2
Coolant Inleakage	1.83	2.15	1.83	1	8.33	1
Special Engr. Tests			-230.65			-36
Miscellaneous			-7.75			-2
Total	85.25	100.00	-331.00	12	100.00	-38

Weekly Stream Efficiency.....99.91%
Weekly Stream Efficiency Last Week.....99.57%
Weekly Line Recorder Stream Efficiency.....94.05%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to April 26, 1948.

	Accumulated Labor Man Hours	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Stage Pumps	603.00	121.74	4.95
Stage Motors	1,337.50	310.48	4.31
Stage Pump Seals	3,645.50	1,164.94	3.13
Converters	4,544.00	639.12	7.11
Instrumentation	336.75	41.62	8.09
Lube Oil System	16.00	9.70	1.65
Coolant System	191.00	75.50	2.53
Electrical Power Equip.	16.00	2.47	6.48
Excessive Inleakage	765.75	501.76	1.53
Total	11,455.50	2,867.33	4.00

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 April 15 to 0700 April 22, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	88.18	1.32	77.0°F	94,580	32.07	1.26	77.0°F
Increase From Prev. Week	2.18%	-8.33%	0°F	-10.53%	-0.25%	0.80%	-0.1°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4.378	-0.32
Flow to Distribution (Mn. Gal/D)	4.362	-0.68
Volume in Storage (Mn. Gal)	2.390	4.87

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,850	-97°F	5,575	-109°F
Increase From Prev. Week	-3.75%	3°F	-0.25%	0°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	8,096	506	990	5,121	4,568	230
% Increase From Prev. Week	-1.50	-0.59	-33.87	3.58	16.44	11.11

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TABLE IV

CHEMICAL OPERATIONS
April 19, through April 25, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	0	0	0	0	105	6
Pressure Testing	3	0	3	0	105	21
CO_2 Testing	0	0	---	---	---	0
C-816 Testing	---	---	60	---	---	72

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	4	---		156,275 Gms	7 Cyls	---	---	---
Carbon and Alumina Traps	---	---	---	0	0	---	---	---
C-816 Storage	---	---	---	---	---	0	---	---
Field Decon.	---	0	58	---	---	---		58

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	4	52	34	63

	Total Samples	Total Determinations
Chemical Analysis	415	302

DISTRIBUTION

1. K-25 Site Records (RC)
2. ChemRisk/Shonka Research Associates
3. DOE Public Reading Room
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K/EM-130/PT18

SANITIZED VERSION OF K-151, PART 18
PROCESS DIVISION WEEKLY REPORT
Issued 5/5/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:
Asst Technical Information Officer
Oak Ridge K-25 Site
5/30/95
Date

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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION

Process Engineering
Production Section

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By

PROCESS DIVISION WEEKLY REPORT

J. P. Murray

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Cy. 1. Center, C.
2, 3, 4. Chief, Oak
5, 6. Clement, A.
7. Huber, A. P.
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11, 12, 13. Eng. Dev. Div. Central Files
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14, 15. K-25 Lab. Central Files
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Daniel, R.
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Classification changed to: C-RD (level and category)
By authority of: CG-PGD-4 (classification guide)
ADC or ADD signature (first reviewer) Date 5/3/94
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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. A. P. Fuber
Location K-1001

Date May 5, 1948

Answering Letter Date

Attention

Copy To Attached Distribution

Subject Process Division Weekly Report Ending 0800 May 3, 1948

Summary

The withdrawal of top product continued through the week at a daily X rate approximately 1.6% less than the previous week's average and 2.5% greater than the average for the past six months.

New converters containing DL type barrier were installed in cell 9 in K-302-4 this week.

The lube oil temperature control point was raised from 110°F to 130°F in Area 3 on April 27.

A complete plant "T" and "X" inventory was taken on April 30.

Cascade Operations

The converters in cell 9 in K-302-4 were replaced with units containing DL type barrier this week. To date all cells in K-302-5 and cells 2, 4, 6, 8, 9 and 10 in K-302-4 have been equipped with the improved barrier. Present plans call for the installation of DL barrier in the remaining cells in K-302-4 and cells 2 and 4 in K-302-3.

The program for feeding K-25 recovered partially depleted material to the cascade continued through the week until 2030 on May 2, when the feed unit was shut

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down to check for an air inleakage. Depleted feed has not been resumed because of high plant waste concentrations.

A complete plant "T" and "X" inventory was taken at 1300 on April 30. The crude feed and waste condensation operations were discontinued between 1245 and 1430 while the inventory measurements were being made. Prior to the time of the inventory, the crude feed rate was adjusted several times in order to make up the crude feed deficiency for the month. At 1430, however, the normal crude feed rate of 250 pounds per hour was resumed.

K-303-8.6 was taken off-stream at 1450 on April 29 with an air inleakage through the 1B seal. Upon further inspection it was found that the 1B pump was also bad; therefore, a new pump was installed. As the cell was restarted following the pump change, it was noted that the newly installed 1B pump vibrated excessively and the cell was shut down again for the second installation of a new pump in the 1B position. In both instances, a distortion of the pump casing had caused the impeller to rub resulting in the failure. Cell 6 was returned to normal service at 1810 on May 2.

K-402-5.9 was off-stream for approximately twenty-three hours this week while a 75 ScfD air inleakage was being located and repaired. The greater portion of the air was entering the cell through a defective seal although a leak was also located in the seal feed system.

One motor failure occurred during the week: K-402-2.3 - 2B motor. A subsequent inspection of this motor revealed that the wind deflector ring was loose and had probably caused the failure by forming a short circuit between the rotor and the windings.

After the reinstallation of the W pump, which failed last week, the K-101 C-816 removal unit was put on stream at 1750 on April 28. Feed to the unit was taken from the bottom cell in K-303-1 with column tops material being returned to the top cell in K-302-5. The equipment performed satisfactorily until 0350 on April 30 when the J-609 pump failed, probably due to a broken bellows. At present the still is operating isolated on total reflux while a spare J pump is being installed.

On April 27, the lube oil temperature control point was raised from 110°F to 130°F in Area 3. This change was made in order to decrease stage motor loads by reducing the visosity of the oil flowing through the pump shaft bearings. A comparison of the loads carried by the electrical feeders serving the K-303 Section at the two temperature levels revealed that an average reduction in the power consumption of approximately 5 KW per cell resulted from the increased lube temperature. A lube oil temperature of 130°F is now being maintained in all sections of the cascade except in Area 2. It is planned to raise the lube temperatures in Area 2 following a series of lube system leak tests.

A test was conducted in cells 4 and 6 in K-304-2 this week to determine the power restrictions for the K-304 Section. The test was made at this time in order to investigate the maximum high side pressure at which the cells in the K-304 Section may be operated after the installation of DL barrier. Cells 4 and 6 were operated at various combinations of high side pressures and stage temperatures while motor load data were being recorded. Results of the test indicated that motor current, which reached 115% of rated at a high side pressure of 2.2 psia and a stage temperature of 145°F is the limiting factor. Transformer, motor feed cable, and bus tap cable ratings will not be exceeded with both the "A" and "B" motors drawing 115% of rated current. Actually it may be possible to operate at a slightly higher pressure with the DL barrier since the improved barrier is expected to have a lower permeability which will effect some decrease in cell loads.

On April 23, the K-402-9 line recorder slave micromax located in the K-27 control room was connected into the spare slave recorder on the K-310-2 panel in the K-25 control room. No new cable installations were required for this change since two pairs of existing telephone cables between the two control rooms were employed for the connection. By rearrangeing other existing PAX cables between the control rooms, it will be possible to have a second Plant I line recorder tied into the K-25 control room. These changes, while involving relatively little expense, will considerably aid the K-25 control room supervisors in detecting abnormal operating conditions in the K-27 cascade.

Following the installation of the first 6 all metal line recorder tube racks, considerable mechanical difficulties were encountered with the operation of the mass spectrometer tubes as well as with the auxiliary equipment connected with these units. The on stream efficiencies for the metal tube racks for weeks ending April 19 and April 26 were 94.1% and 89.7%, respectively. This week's metal tube rack efficiency is shown in the attached Table II and will continue to be reported in this table in the future. The on stream efficiency for the glass tube racks was 97.31% during the week as compared with a metal tube rack efficiency of 90.73%.

The investigation begun on March 19 in Area 3 to determine the feasibility of removing the scale deposited on the water side of the coolant coolers by treatment with acid solutions is showing some promising results. The most effective procedure developed to date consists of closing the water inlet valve to a cooler and pumping 70 gallons of 7% H_2SO_4 into the unit. So far, the tests have been confined to the largest type of cooler (water side volume - 170 gallons). Since the acid solution is added to the cooler through the drain line, it displaces an equal volume of the water trapped in the cooler when the inlet valve was closed. This displaced water is forced from the unit through the discharge line. The acid solution is allowed to remain in the cooler for a fifteen minute period before being flushed by opening the water inlet valve.

To date, four cell coolers have been given the above acid treatment: cells 8 and 10 in K-302-4 and cells 4 and 5 in K-302-5. An average increase in the overall heat transfer coefficient of approximately 115% has been indicated for these cells as a result of the acid cleaning. The K-302-4.10 cooler was removed from service after the acid wash for an inspection, and it was found that the scale had been effectively removed in those areas which had come into immediate contact with the strong acid. Little or no detrimental effects to the metal surfaces were noted as a result of the exposure to the acid. At present a larger pumping system is being constructed which will make it possible to completely fill the water side of a cooler with the acid solution.

Chemical Operations

No decontamination work was accomplished in K-1303 this week, since the unit is shut down pending the installation of the pilot plant equipment for the decontamination of converters. All obsolete decontamination tanks have been removed from service.

145 pounds of MFL type oil and 225 pounds of freon were recovered during the week.

Utilities and Auxiliaries

Due to the present extremely low production of ambient air, it has been decided that four of six hydryers will be sufficient to handle the load. Therefore, the #6 hydryer has been blanked off from the system and the #5 hydryer is now in the process of being similarly isolated. A large portion of the decrease in ambient air usage shown for this week (an average of 100 cfm) is attributed to the isolation of these units.

The steam flow at K-1501 averaged 35.6 M p.p.h. this week. Two small boilers supplied the load during the greater part of the time. This reduced steam flow is in line with expected production during the summer months.

Electrical Systems Operation

After the electrical feeder duct flushing program had been completed in transformer Vaults 1 through 21, a general review was made of the entire flushing program. At that time it was decided that in order to determine the efficiency of the original flushing, a twofold investigation would have to be made as follows:

1) Reflush a number of cable ducts. (The ducts in Vaults 8, 9 and 10 as well as a few other special ducts were chosen for this purpose)

2) Resample the water in both the reflushed ducts and the ducts in Plant III which had been given only the initial flushing.

The first part of this investigation is now complete; and a schedule has been prepared which will require approximately six weeks to accomplish the resampling. Upon completion of the second part of the investigation, an overall analysis of the data will be made and recommendations will be given regarding future cable duct flushing.

The electrical transformer core and yoke bolt reinsulation program continued this week as follows:

		Number of Transformers
1)	Removed from service this week for reinsulation	5
2)	Restored to service this week after reinsulation	5
3)	Reinsulation work in progress	8
4)	Total completed to date	67

The reinsulation program is now approximately 30% complete.

The following tables are attached:

I Weekly Production Report
II Cascade Cell Off-Stream Time and Labor Man Hours
III Utilities and Auxiliaries
IV Chemical Operation

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J. P. Murray

Enclosure

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 April 26 to 0700 May 3, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	210884	0.0
K-27 Product Concentration	192224	-0.3
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	4209	7.7
Conc. C-816 in Purge Cascade		
Top	3.1×10^{-5}	-73.9
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Week (Lbs.)	% Increase Over Previous Week
Previous Inventory	366	-
Produced	114	-26.5
Consumed	85	-35.1
Inventory	395	7.9
Fluorothene Operations		
Raw Fluorothene Produced	808	13.8
Raw Monomer Produced	1189	38.4
Refined Monomer Loaded in Bombs	1818	-22.3
Monomer Recovered	1224	-8.0

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	4634	819	-	-	791	-	1157	7401
G-74 Pipe Line	3261	193	0	1	-	-	-	3455
G-74 Cyl.	-	132	-	-	-	0	-	132
Total	7895	1144	0	1	791	0	1157	10988
% Increase from Prev. Week	-0.6	7.5	-	-	-11.9	-	-	-8.6

TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 April 26 to 0800 May 3, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Converter Changes	20.55	9.00	-26.53	1	5.00	-1
Seal Failure	94.90	41.55	80.65	10	50.00	8
Engineering Test	-			-		-
Light Contam. Inleakage	23.50	10.29	23.50	2	10.00	2
Miscellaneous	-			-		-
Instrumentation	-		-1.58	-		-1
Stage Motor Failure	10.17	4.45	-9.68	1	5.00	-3
Elect. Power Equip.	-			-		-
Stage Pump Failure	75.34	75.34	75.34	1	5.00	1
Lube System Repair	-			-		-
Coolant Inleakage	-		-1.83	-		-1
Coolant System	-			-		
L.R. Inleakage Checks	3.92	1.72	3.26	5	25.00	3
Total	228.38	100.00	143.13	20	100.00	8

Weekly Stream Efficiency.....99.76%
Weekly Stream Efficiency Last Week.....99.91%
Weekly Line Recorder Stream Efficiency (Glass Tube Racks).....97.31%
Weekly Line Recorder Stream Efficiency (Metal Tube Racks).....90.73%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to May 3, 1948.

	Accumulated Labor (Man Hours)	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Converter Changes	4720.50	760.08	6.21
Seal Failure	3716.50	1310.78	1.31
Engineering Test	-	-	
Excessive Inleakage	785.92	789.25	1.00
Miscellaneous	-	-	
Instrumentation	336.75	65.55	5.14
Stage Motor Failure	1420.50	278.44	5.10
Elect. Power Equipment	16.00	2.47	6.48
Stage Pump Failure	643.50	372.66	1.73
Lube System Repair	16.00	5.92	2.70
Coolant System	191.00	75.55	2.53
Total	11,846.67	3,660.70	3.24

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 April 22 to 0700 April 29, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	87.56	1.58	77.0°F	97,700	32.38	1.38	77.0°F
Increase From Prev. Week	-0.70%	19.70%	0°F	3.30%	1.00%	9.52%	0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4.599	5.05
Flow to Distribution (Mn. Gal/D)	4.631	6.17
Volume in Storage (Mn. Gal)	2.168	-9.29

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,750	-98°F	5,525	-107°F
Increase From Prev. Week	-2.60%	-1°F	-0.90%	2°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	5,972	369	621	2,031	3,254	153
% Increase From Prev. Week	-26.24	-27.08	-37.27	-40.81	-28.77	-33.48

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TABLE IV

CHEMICAL OPERATIONS
April 26, through May 2, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	0	0	0	0	93 Heads	2
Pressure Testing	1	1	1	1	93 Heads	26
CO_2 Testing	1	0	---	---	---	0
C-816 Testing	---	---	114	---	---	29

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	4	---		138.35 Lbs.	4 cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	12	12	---	---	---
C-816 Storage	---	---	---	---	---	5920 Lbs.	---	---
Field Decon.	---	2	---	---	---	---	3	31

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	3	45	28	70

	Total Samples	Total Determinations
Chemical Analysis	342	260

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SANITIZED VERSION OF K-151, PART 19
PROCESS DIVISION WEEKLY REPORT
Issued 5/13/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

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PROCESS DIVISION
Process Engineering
Production Section

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PROCESS DIVISION WEEKLY REPORT

J. P. Murray

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corporation LOCATION Post Office Box Oak Ridge, Tenn

To Mr. A. P. Huber
Location K-303-7

Date May 12, 1948

Answering Letter Date

Attention
Copy To Attached Distribution

Subject: Process Division Weekly Report Ending 0800 May 10, 1948

Summary

The withdrawal of top product continued through the week at a daily X rate approximately the same as during the previous week but 2.4% greater than the average for the past six months.

New converters containing DL type barrier were installed in cells 5 and 7 in K-302-4 this week.

The K-101 C-816 removal unit was put on stream May 5 and continued to operate satisfactorily during the remainder of the week.

Cascade Operations

The converter change program continued this week with the installation of DL barrier converters in cells 5 and 7 in K-302-4. These changes bring to a total of seventeen the number of cells which have been equipped with the improved barrier: all cells in K-302-5 and cells 2, 4, 5, 6, 7, 8, 9 and 10 in K-302-4.

The resulting increase in the operating motor loads in these cells has necessitated a revision in the procedure to be followed in K-302-4 and 5 in the event

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of electrical contingencies. Consequently, a new electrical contingency procedure is being issued.

Due to difficulties encountered with the operation of the crude feed automatic flow control instrumentation in K-131, it was necessary to make several adjustments in the crude feed rate during the week. At present, repair work is in progress on the flow control instrumentation.

The program for feeding partially depleted material to the stripping section of the cascade during periods of low plant waste concentrations was continued through the week.

K-303-3.1 was taken off-stream at 0350 on May 3 with an air inleakage of approximately 100 SCFD through the 4B seal. As the cell was being restarted following the 4B seal change, the 3A pump impeller seal ring broke loose from the pump shaft; and a portion of the seal ring passed through the connecting pipe into the suction of the 4B pump. In addition to installing a new 3A pump, it was necessary to remove the 4B pump while the broken parts of the seal ring were being cleaned from the suction line. Cell 1 was restored to normal service at 1320 on May 5.

K-310-3.8 was shut down at 1645 on May 5 when the 3A motor bearing failed. Upon attempting to restart the cell after the replacement of the 3A motor, it was found that the 5A motor was frozen and would not rotate. A new 5A motor was installed; and cell 8 was returned to the cascade after having been off-stream for approximately seven hours.

K-301-5.4 was isolated from the cascade at 1730 on May 3 due to excessive air inleakage through the 2A and 4B seals. Since the blow out preventers on these seals would not hold, it was necessary to purge the cell of process gas.

The installation of the new "J" pump in K-101, which was begun last week, was completed; and the building was put on stream at 2215 on May 3. The unit was isolated again, however, at 1125 on May 4 to replace the suction valve on the fourth stage of the "W" pump. Following the valve change, the C-816 removal unit was tied into the cascade at 1220 on May 5 and continued to operate satisfactorily during the remainder of the week. When K-101 was put on stream on May 5, the C-816 concentration in the feed cell (K-302-5.4) was 1.08%. By 0800 on May 10 the concentration in this cell had been reduced to 0.25 % C-816.

The liquid nitrogen normally used in the main cold traps of the line recorder glass tube racks was replaced with a trichloroethylene - dry ice slush mixture in a number of tube racks during the latter part of the week. This was done as a measure for conserving liquid nitrogen in preparation for the anticipated railroad strike. Also, a switch was made to the slush mixture as a cooling media in the product withdrawal unit in K-306-7 on May 6. The slush mixture in the revised withdrawal operation does not come into direct contact with the withdrawal cylinders, since the actual chilling of the product cylinders is accomplished with pure trichloroethylene which has previously been cooled by passing through a coil immersed in the dry ice trichloroethylene slush Tests are being conducted on the unit at present and if the use of dry ice and trichloroethylene should prove to be more economical then the use of liquid nitrogen, it is probable that the current method of operation will be adopted as standard. The prolonged use of slush in the line recorder cold traps in the past has not been found to be as satisfactory as liquid nitrogen due to the larger mass spectrometer tube residuals associated with the higher slush temperatures. However, tests are being conducted on the tube racks now operating with slush to determine the feasibility of continuing the use of slush in these units.

A general review of the metal tube rack and high sensitivity preamplifier installation program was made this week and the following course of action was decided upon:

1. High Sensitivity Preamplifiers

   a) The X1 and X5 sensitivity ranges are to meet the specifications previously set up.

   b) The X12.5 and X25 sensitivity ranges are to be installed at this time, but no specifications are to be met and no preamplifiers are to be rejected because of faulty high sensitivity ranges.

   c) The stabilization of the X12.5 and X25 ranges is a separate and long range problem and is to be investigated later.

2. Metal Tube Rack

   a) As soon as spare racks are available, installations will be made in the bottom of Plant III, the bottom of Plant II and then in K-402-9. When these installations are completed, tube racks will be installed in every other line recorder station in Plant III.

   b) The large amount of refrigeration trouble occurring in Plant I is being investigated.

Utilities and Auxiliaries

Ambient air production this week was approximately 12% less than during the previous week. This reduction is attributed to the elimination of leakage in the Case III hydryer section which has been isolated from the remainder of the ambient air system.

The Sanitary Water Plant was shut down for four hours on May 5 for planned repair work. The use of sanitary water was not curtailed during this period, and 1.4 Mm gallons remained in storage when operations were resumed. During the following sixteen hours operation the storage volume was brought up to the normal value of 2.3 Mm gallons of water.

Chemical Operations

All normal decontamination work in K-1303, except for clothing decontamination, has been discontinued to facilitate the installation of the new converter decontamination equipment.

T_3O_8 production in the water media recovery unit amounted to 55.2 pounds this week; 3,436 liters of filtrate from the lime floc unit met the discarding specifications and were dumped.

The difficulties encountered several weeks ago in obtaining less than 1 p.p.m. of uranium in the lime floc filtrate have been overcome by eliminating the use of hydrochloric acid in the water media recovery filtrate and by using larger quantities of lime. The lime slurry is now agitated for 20 to 30 minutes instead of the usual five minutes.

Electrical Systems Operations

The electrical feeder duct resampling continued in Vault 17 this week. This work is part of the new duct resampling program mentioned in last week's report.

The transformer core and yoke bolt reinsulation program continued this week as follows:

	Number of Transformers
1) Removed from service this week for reinsulation	4
2) Restored to service this week after reinsulation	3
3) Reinsulation wotk in progress	8
4) Total completed to date	70

The reinsulation program is now approximately 32% complete.

The following tables are attached:

I Weekly Production Report

II Cascade Cell Off-Stream Time and Labor Man Hours

III Utilities and Auxiliaries

IV Chemical Operations

LLThacker/ ga

Enclosures (4)

J. P. Murray

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TABLE I

WEEKLY PRODUCTION REPORT
From 0700 May 3 to 0700 May 10, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28834.20	0.0
K-25 Waste Concentration	210872	-1.2
K-27 Product Concentration	192213	-1.0
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	4126	-2.0
Conc. C-616 in Purge Cascade		
Top	2.9×10^{-5}	-6.5
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Week (Lbs.)	% Increase Over Previous Week
Previous Inventory	395	-
Produced	116	1.8
Consumed	126	48.2
Inventory	385	-2.5
Fluorothene Operations		
Raw Fluorethene Produced	600	-25.8
Raw Monomer Produced	1,111	-6.6
Refined Monomer Loaded in Bombs	2,354	29.5
Monomer Recovered	1,074	-12.3

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	3344	840	-	-	782	-	928	5894
G-74 Pipe Line	3143	255	122	1	-	-	-	3521
G-74 Cyl.	-	53	-	-	-	158	-	211
Total	6487	1148	122	1	782	158	928	9626
% Increase from Prev. Week	-17.8	0.3	-	0.0	-1.1	-	-	-12.4

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TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 May 3 to 0800 May 10, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase In Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Seal Failures	62.20	38.32	-32.70	3	23.08	-7
Stage Motor Failures	7.17	4.42	-3.00	1	7.69	-
Stage Pump Failures	23.08	14.22	-52.26	1	7.69	-
Converter Replacement	47.01	28.97	26.46	2	15.39	1
Elect. Power Equip.	6.33	3.90	6.33	1	7.69	1
Inleakage Checks	1.13	.70	-2.79	3	23.08	-2
Light Contaminant Inleakage	12.13	7.47	-11.37	1	7.69	-1
C-816 Inleakage	-		-	-		-
Instrumentation	-		-	-		-
Lube System Repair	-		-	-		-
C-816 System Repair	3.25	2.00	3.25	1	7.69	1
Engineering Tests	-		-	-		-
Miscellaneous	-		-	-		-
Totals	162.30	100.00	-66.08	13	100.00	-7

Weekly Stream Efficiency.....99.83%
Weekly Stream Efficiency Last Week.....99.76%
Weekly Line Recorder Stream Efficiency (Glass Tube Racks)...93.20%
Weekly Line Recorder Stream Efficiency (Metal Tube Racks)...82.06%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to May 10, 1948.

	Accumulated Labor (Man Hours)	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Seal Failures	3,806.75	1,372.98	2.77
Stage Motor Failures	1,497.00	285.61	5.24
Stage Pump Failures	644.00	395.74	1.63
Converter Replacement	4,726.50	807.09	5.86
Electrical Power Equipment	16.00	8.80	1.82
Excessive Inleakage	806.42	801.38	1.01
Instrumentation	336.75	65.55	5.14
Lube System Repair	16.00	5.92	2.70
C-816 System Repair	191.00	82.05	2.33
Totals	12,022.42	3,825.12	3.14

TABLE III

UTILITIES AND AUXILIARIES
From 0700 April 29 to 0700 May 3, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	85.01	1.43	77.0°F	99,430	31.70	1.40	77.1°F
Increase From Prev. Week	- 2.91%	- 9.49%	0°F	1.77%	- 2.10%	1.45%	.1°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4.384	- 4.67
Flow to Distribution (Mn. Gal/D)	4.400	- 4.99
Volume in Storage (Mn. Gal)	2.057	- 5.12

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,289	- 97°F	5,500	- 109°F
Increase From Prev. Week	- 12.29%	1°F	- 0.45%	- 2°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	5,693	353	326	3,545	3,062	159
% Increase From Prev. Week	- 4.67	- 4.34	- 47.50	16.93	- 5.90	3.92

TABLE IV

CHEMICAL OPERATIONS
May 3, through May 9, 1948

Leak Testing

	Cells	Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	0	0	0	1	97 Heads	2
Pressure Testing	1	3	1	2	97 Heads	24
CO_2 Testing	1	0	---	---	---	0
C-816 Testing	---	---	82	---	---	16

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	8	---		438.7#	8 Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	1	3	---	---	---
C-816 Storage	---	---	---	---	--- Rec'd	54.5 Lbs.	---	---
Field Decon.	---	2		---	---	---	5	21

	Beta - Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	7	38	28	68

	Total Samples	Total Determinations
Chemical Analysis	284	178

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PROCESS DIVISION WEEKLY REPORT
Issued 5/20/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

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Report Number: K-151, Part 20

CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION
Process Engineering
Production Section

PROCESS DIVISION WEEKLY REPORT

J. P. Murray

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corporation LOCATION Post Office Box 1 Oak Ridge, Tenn.

To Mr. A. P. Huber
Location K-1029

Attention

Copy To Attached Distribution

Date May 19, 1948

Answering Letter Date

Subject Process Division Weekly Report Ending 0800 May 17, 1948

Summary

The withdrawal of top product continued through the week at a daily X rate approximately 38.3% less than the previous week and 37.2% less than the average for the past six months. The disturbances to the cascade caused by the power generation difficulties contributed to this low production figure.

A series of disturbances to the cascade occurred this week caused by steam generating equipment failures at the K-25 Power House.

New converters containing type DL barrier were installed in cell 1 of K-305-3 this week.

A C-816 removal test was run during the week utilizing the K-101 C-816 removal unit.

Cascade Operations

During the week a series of equipment failures occurred at the K-25 Power House which necessitated several changes in the variable frequency power generation.

At 1120 on May 10 the Power House reported a feed-water leak in the economizer of Boiler #1. Boiler #2 was in normal service while Boiler #3 was shut down for an annual overhaul. It was necessary to shut Boiler #1 down for repairs and, in order to bring the load within

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the capacity of Boiler #2, the variable frequency generation was reduced from 65 to 45 cycles between 1143 and 1238 in all sections of the K-25 cascade, except the K-306 section which remained at 120 cycles. Boiler #1 was shut down at 1230.

As a result of the decrease in frequency and the subsequent decrease in stage pump motor speed, it was necessary to provide increased inventory for the K-25 cascade. This was accomplished by cutting off the inter-plant flow from K-25 to K-27, increasing the flow from K-27 to K-25, increasing the crude feed rate, and resuming the feeding of partially depleted material during the period of frequency reduction and for approximately two hours thereafter. The feed points were changed during this period in order to maintain matched concentrations. Because of the decreased pump speed caused by the frequency reduction, it was difficult to move light contaminants through the K-305 section to the side purge building. This situation was further complicated by excessive inleakages from several seal failures which occurred as a result of the frequency reduction. Therefore, the cell pressures of K-305-12 and the top four cells of K-305-11 were increased to facilitate the movement of these light contaminants. The cell pressures were returned to normal by 1530 on May 11. It was also necessary to isolate the K-101 C-816 removal unit due to the frequency reduction.

More difficulty with power generation was encountered on May 11 when the Power House reported a leak in the economizer of Boiler #2 at 1005 while Boilers #1 and #3 were down for repairs. In order to reduce the load further on Boiler #2, the buses serving the K-304 and K-305 sections were isolated from their respective networks and the frequency, which was still at 45 cycles, was raised to 60 cycles. T.V.A. power was then connected to these buses, making it possible to shut down their respective generators

At 0300 on May 12, repairs having been completed, Boiler #3 was placed back in service and operations were begun at 0327 to bring the frequency back to normal by raising it one cycle every five minutes. At 0428 a voltage sag from 11.8 to 5.1 KV, attributed to unstable generator conditions, occurred, which caused a loss of power to the K-303, K-310, and K-311 sections and the K-309 - K-301 "B" motors. The Power House personnel tripped out the K-309 -K-301 "A" motors. Power was restored and all sections were re-

started by 0555 and running at a frequency of 60 cycles, T.V.A. having been disconnected from the K-304 and K-305 section buses, except the K-309 - K-301 "B" motors, which were at their normal frequency of 55 cycles. The inter-plant flows and the crude feed were stopped from 0428 to 0615 during the power failure.

By 1200 on May 12 the leak in the economizer of Boiler #2 had increased to such an extent that it was decided to remove the boiler from service. Accordingly, in order to reduce the load to within the generating capacity, the frequency of the power to all sections was reduced from 60 to 48 cycles. This included the K-309 - K-301 "B" motors which had been at 55 cycles, but did not include the K-309 - K-301 "A" motors which had been connected to T.V.A. power on their isolated bus at 60 cycles. Boiler #2 was shut down at 1356.

Due to difficulty in operating the K-309 - K-301 sections with a 12 cycle difference between the frequencies of the "A" and "B" motors, the frequency of the power to the network supplying the K-309 - K-301 "B" motors and the K-305 and K-302 sections was increased from 48 to 50 cycles at 1530. To compensate for this increased load, the frequency of the power to the remaining sections (K-304, K-303, K-310 and K-311) was reduced from 48 to 46 cycles.

The power generation continued in this manner until May 13 at 0602 when Boiler #1 was placed back in service, repairs having been completed on the economizer. The frequency increase was started immediately and by 0843 all sections except K-309 - K-301 "B" motors and K-306 section were operating at the normal 65 cycles. The bus serving the K-309 - K-301 "B" motors was isolated at 0653 when the normal 55 cycles were reached. The K-306 section power was not affected and remained at 120 cycles during the entire period of power difficulty. T.V.A. power was disconnected from the K-309 - K-301 "A" motors at 0815 when K-25 Power House was connected in.

A total of seven cells was isolated from the cascade due to seal failures, one cell was isolated for a stage pump change, and one cell was isolated with a C-816 leak

during this time. The C-816 leak is discussed in detail in a later section of this report.

In addition to the generally disturbed condition of the cascade during the first part of the week, two specific factors contributed to the week's relatively low production. During the evening shift on May 12 an abnormally large upflow of light contaminants was allowed to pass the side purge point at K-305-12 and enter the K-306 section due to the K-306-1 line recorder, which monitors the upflow of light contaminants into the K-306 section, being approximately 40% below calibration, thus exceeding the G-74 control point of 5%. Also, a seal failure in K-306-1.9, which was not discovered for some time because of the high upflow of light contaminants, contributed to the large concentration of contaminants in the K-306 section. The excessive light contaminants accumulated in the top of K-306, completely filling K-306-7 and partially filling K-306-6. Due to the difficulty of purging such a large concentration of contaminants, it was not possible to withdraw product on May 13.

A slight loss in production resulted from the evacuation to the cascade on May 14 of 0.42# of crude feed being used in a consumption test in cell 2, K-312-1. The evacuation was due to mis-valving in the line recorder station at K-312-1.

The converter change program continued this week with the installation of type DL barrier converters in cell 1 of K-305-3. This is a trial installation to determine the effect of DL barrier on the cascade C-816 gradient.

In connection with the above installation of DL barrier, a test was run on May 13 between 1230 and 2230 to determine the feasibility of stopping C-816 from any future C-816 leaks below K-302-5 from entering Plant III. The test consisted of splitting the cascade at the top of K-301-5 and at K-303-1.3 and feeding 482 gms. of C-816 into K-302-1.8 between 1230 and 1430. The purpose of the test was to attempt to bring the C-816 to a peak at K-302-5.4 so that the C-816 withdrawal unit might be valved in to withdraw the C-816. Due to the fact that the C-816 did not move upstream as fast as had been anticipated, the peak was not reached at K-302-5.4 until 1800. The C-816 removal unit was valved in and the C-816 peak dropped from 0.66% at 1800 to 0.23%, the normal value, at 2230. The cascade was not completely rejoined until 0120 on May 14.

An opportunity to apply the procedure of this test to an actual C-816 leak was presented when K-301-2.5 was isolated from the cascade at 2220 on May 13 with a C-816 leak of approximately 100 #/day. An estimated 5# of C-816 leaked into the cascade which gave a peak of 3.0% C-816 at K-302-5.4. The cascade was split at K-303-1.3 at 0155 on May 14 and the C-816 removal unit was valved in at 0245. K-101 C-816 removal unit was isolated at 0955 with a C-816 concentration of approximately 2.0%, due to the high concentration of light contaminants caused by the split cascade. Because of the fact that the C-816, as in the test, moved more slowly than anticipated, the cascade was not rejoined until 1137. In order to eliminate any possibility that the C-816 might be carried into Plant III, K-305-3.1 was evacuated and isolated from 0845 to 1658 on May 14.

Because of the long periods of time during which it was necessary to split the cascade to prevent C-816 from being carried into Plant III, an alternate procedure has temporarily been placed in effect: K-305-3.1 and K-303-6.9 (containing WB barrier which tends to draw C-816 up cascade and was isolated for a stage pump change during the tests) are to be isolated in the event of a large C-816 leak until the K-101 C-816 removal unit has brought the C-816 concentration at K-302-5.4 down to its normal value of 0.2%.

The K-101 C-816 removal unit was in operation intermittently during the week due to the power disturbances and the C-816 test which was conducted on May 13 and 14. Also, the unit was isolated from the cascade and shut down at 2025 on May 14 to repair a cracked sight glass on the reflux drum. After repairs had been made, the unit was returned to the cascade at 1815 on May 15 and continued in operation through the end of the week.

During the week the program of feeding partially depleted material to the stripping section of the cascade during periods of low waste concentration was continued.

68.639 KgT of enriched feed at an average concentration of 138412 were fed to the cascade.

A consolidation of shift operations supervision has been effected in Areas 1 and 3 by reassigning the two Building Shift Supervisor's jobs to allow Area coverage by the Shift

Supervisor and an Assistant. No changes were made in the hourly personnel coverage of one crew leader and two operators for each group of two buildings.

As a result of recent consolidations in the Process Division, it was feasible to reduce forces by 22 monthly and 6 hourly personnel. These changes will be completed by June 10, 1948.

Utilities and Auxiliaries

The flow of recirculating water to the K-25 cascade averaged approximately 15% below the flow for last week. This can be accounted for by the power disturbances which occurred to the cascade during the week, resulting in wide variations in the Process heat load for this period.

Chemical Operations

Work on the new converter decontamination unit at K-1303 is progressing satisfactorily with the work approximately 5% complete.

In an attempt to increase the polymerization rate at the K-413 fluorothene plant, the temperatures of the two reaction tank baths were increased last week to 4°F from 2°F and -2°F, respectively. At the end of the usual eight day polymerization period there was no appreciable change in polymerization rate. Therefore, a second attempt to increase the rate was made this week by increasing to 5% the promoter concentration in Freon 11 and increasing the amount of charge from 6 to 7 grams per bomb. Since the eight day polymerization period had not been completed by the end of the week, no results are yet available.

Electrical System Operations

The electrical feeder duct re-sampling program continued this week in line with the re-evaluation of the duct flushing program.

The transformer core and yoke bolt reinsulation program continued this week as follows:

	Number of Transformers
1) Removed from service this week for reinsulation	6
2) Restored to service this week after reinsulation	7
3) Reinsulation work in progress	7
4) Total completed to date	78

The reinsulation program is now approximately 34.6% complete.

The following tables are attached:

I. Weekly Production Report

II. Cascade Cell Off-Stream Time and Labor Man Hours

III. Utilities and Auxiliaries

IV. Chemical Operations

J. P. Murray

J. P. Murray

REMorang, Jr.
LLThacker / ga

Enclosures (4)

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 May 10 to 0700 May 17, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28836.20	0.1
K-25 Waste Concentration	192100	2.9
K-27 Product Concentration	192230	1.5
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	5085	23.2
Conc. C-616 in Purge Cascade		
Top	3.5×10^{-5}	20.7
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Week (Lbs.)	% Increase Over Previous Week
Previous Inventory	385	-
Produced	143	23.3
Consumed	88	-30.2
Inventory	440	14.3
Fluorothene Operations		
Raw Fluorothene Produced	765	27.5
Raw Monomer Produced	1,995	79.6
Refined Monomer Loaded in Bombs	2,366	0.5
Monomer Recovered	1,264	17.7

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	1978	563	-	-	839	-	261	3641
G-74 Pipe Line	3346	376	53	1	-	-	-	3776
G-74 Cyl.	-	224	-	-	-	-	-	224
Total	5324	1163	53	1	839	-	261	7641
% Increase From Prev. Week	-17.9	1.3	-56.6	0.0	7.3	-	-	-20.6

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TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 May 10, to 0800 May 17, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase In Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Seal Failures	225.59	42.04	163.39	14	6.86	11
Stage Motor Failures			-7.17			-1
Stage Pump Failures	57.92	10.79	34.84	1	.49	-
Converter Replacement	46.67	8.70	- .34	1	.49	-1
Electrical Power Equip.	167.44	31.21	161.11	176	86.28	175
Inleakage Checks	2.53	.47	1.40	7	3.43	4
Light Contaminant Inleakage	4.58	.85	-7.55	1	.49	-
C-816 Inleakage	30.87	5.75	30.87	2	.98	2
C-816 System Repair			-3.25			-1
Miscellaneous	1.00	.19	1.00	2	.98	2
Total	536.60	100.00	374.30	204	100.00	191

Weekly Stream Efficiency.....99.44%
Weekly Stream Efficiency Last Week.....99.83%
Weekly Line Recorder Stream Efficiency (Glass Tube Racks).....96.97%
Weekly Line Recorder Stream Efficiency (Metal Tube Racks).....93.61%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to May 17, 1948.

	Accumulated Labor Man Hours	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Seal Failures	3,992.25	1,598.57	2.50
Stage Motor Failures	1,521.00	285.61	5.33
Stage Pump Failures	644.00	453.66	1.42
Converter Replacement	4,767.00	853.76	5.58
Electrical Power Equip.	16.00	10.27	1.56
Excessive Inleakage	809.92	836.83	.97
Instrumentation	336.75	65.55	5.14
Lube System Repair	16.00	5.92	2.70
C-816 System Repair	196.00	82.05	2.39
Total	12,298.92	4,192.22	2.93

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 May 3, to 0700 May 10, 1948

PROCESS WATER

Period	Total Flow Mn. Gal/D	Make-Up Water Mn. Gal/D	Avg. Supply Temp.	Fire Water Gal/D	Total Flow Man. Gal/D	Make-Up Water Mn. Gal/D	Avg. Supply Temp.
This Week	72.36	1.24	77.0°F	99,700	30.63	1.36	77.0°F
Increase From Prev. Week	-14.88%	-13.29%	0°F	0.27%	-3.38%	-2.86%	-0.1°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4.360	-0.55
Flow to Distribution (Mn. Gal/D)	4.376	-0.55
Volume in Storage (Mn. Gal)	1.945	-5.44

1100 AND 1200 SECTIONS

Period	Ambient Air		Dry Air	
	Scfm	Dewpoint	Scfm	Dewpoint
This Week	3,468	-94°F	5,518	-108°F
Increase From Prev. Week	5.44%	3°F	0.33%	1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	6,917	426	491	3,605	3,548	185
% Increase From Prev. Week	21.50	20.68	50.61	1.69	15.87	16.35

TABLE IV

CHEMICAL OPERATIONS
May 10, through May 16, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	0	0	0	7	96 Heads	4
Pressure Testing	3	1	1	0	96 Heads	19
CO_2 Testing	1	0	---	---	---	1
C-816 Testing	---	---	17	---	---	8

Special Materials Handling

	Cells	Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	2	---		223.8 Lbs.	3 Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	1	1	---	---	---
C-816 Storage	---	---	---	---	---	800 Lbs.	---	---
Field Decon.	---	1	3	---	---	---	1	26

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	0	0	27	51

	Total Samples	Total Determinations
Chemical Analysis	307	138

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SANITIZED VERSION OF K-151, PART 21
PROCESS DIVISION WEEKLY REPORT
Issued 5/27/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:

Asst Technical Information Officer 5/3/95
Oak Ridge K-25 Site Date

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PROCESS DIVISION
Process Engineering
Production Section

PROCESS DIVISION WEEKLY REPORT

J. P. Murray

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. A. P. Huber
Location K-1029

Attention
Copy To Attached Distribution

Date May 26, 1948

Answering Letter Date

Subject Process Division Weekly Report Ending 0800 May 24, 1948

Summary

The withdrawal of top product continued through the week at a daily X rate approximately 25.1% greater than the previous week and 21.1% less than the average for the past six months.

Converters containing type DL barrier were installed in cells 5, 7 and 9 of K-305-3, cell 2 of K-304-2, and cell 10 of K-306-7.

A test was started in K-305-3, cells 5, 7 and 9 on May 22 to determine the C-816 separation characteristics of the newly-installed DL barrier at different operating temperatures and pressures.

The mid-monthly plant "T" and "X" inventory was taken on May 17.

The K-101 C-816 removal unit operated satisfactorily during the week.

Cascade Operations

The program of replacing existing converters with converters containing the new type DL barrier was continued this week with the installation of these converters in the following cells: K-304-2.2, K-305-3.5.7 and 9 and K-306-7.10. In addition, K-304-2.4 was undergoing a converter change at the end of the week.

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This brings to twenty-three the number of cells with the new DL barrier which have been installed in the plant. Besides the above cells, this includes all cells in K-302-5 and cells 2, 4, 5, 6, 7, 8, 9 and 10 in K-302-4.

Following the installation of the DL barrier in K-305-3, it was found that the C-816 did not move up-stream as fast as had been anticipated. As a result, an investigation was started on May 22 to determine the separating characteristics of the DL barrier for mixtures of C-816 and C-616 at various pressures and temperatures.

Readings of high-side pressure, stage temperature, control valve position and coolant temperature as well as C-816 percentages were taken for the above cells. By the end of the report period, 8 of a series of 12 runs had been completed. Therefore, no results are available.

The problem of the removal of C-816 from Plant III has also been investigated and two methods are being considered. The first, a distillation tower, similar in principle to the K-101 unit, is being designed to remove C-816 from Plant III. This is necessary because the K-101 installation does not meet special hazards specifications for isotopic concentrations existing in Plant III. The second method is to install DL barrier in the top of K-306-7 so that the C-816 may be concentrated and removed with the product. The converters in K-306-7,10 were replaced with units containing DL barrier this week in order to determine the feasibility of this method for removing C-816 from the cascade.

The rate of product withdrawal this week was 25.1% above the rate for last week but was still 21.1% below the average for the past six months. This is due to the losses incurred by inventory shifts and mixing which were experienced during the power difficulties of last week.

The crude feed point was changed several times during the week to maintain the correct feed point as the K-27 gradient changed.

The mid-monthly plant "T" and "X" inventory was taken at 1300 on May 17. The waste condensing and crude feed were cut off from 1245 to 1345.

The K-101 C-816 removal unit was in continuous operation throughout the week, except on May 22 from 2130 to 2325, when it was isolated to withdraw 52# of concentrated C-816.

The tests being conducted, using a dry ice-trichloroethylene slush mixture as a refrigerant for the line recorder glass tube rack cold traps, which were reported in the weekly report of May 12, have resulted in the conversion of cold traps in Areas I, II and III to this type of refrigeration. A considerable saving of liquid nitrogen has been effected by the conversion to slush. It was found that in Areas IV and V where the C-816 concentration is of the order of 3.5% and higher, the use of slush results in high C-816 residual readings, which interfere with the C-816 signals. However, two tube racks, K-305-6 and K-305-10, are still using the slush mixture as a continuance of the test.

The installation of forced-air ducts on the "B" motors in the escape alley side of the cells in K-310 section was begun this week with the installation of ducts on cells 1, 2, 3 and 4 of K-310-3. As outlined in the weekly report of April 28, it will be necessary to provide forced-air cooling to the "B" motors on the escape alley side of those cells operating at a high pressure in order not to exceed the temperature ratings of these motors during the hot summer months. The ducts take air from the building ventilation system and direct it into the motor axially from both ends.

There were 8 seal failures, 1 stage pump failure, and 1 stage pump motor failure during the week. The stage pump and motor failure occurred as the cell (K-303-9.6) was being re-started following a seal change and therefore appear in the "Cell-Off-Stream Time" table under "Seal Failures".

Utilities and Auxiliaries

The flow of recirculating water in the "A" and "B" loops returned to normal this week after having been below average during last week due to the power difficulties which occurred to the K-25 cascade.

A series of tests has been conducted since March 25 in an attempt to remove the accumulated calcium carbonate scale formation from the tubes of the coolant coolers in Plant I and thus increase heat transfer. This consisted of adding small amounts of 98% sulfuric acid to the recirculating water system at K-832 in order to maintain the pH of the system between 7.0 and 7.5, thus reducing the alkalinity of the system and allowing the scale to be dissolved. It was found that intermittent addition of acid lowered the pH for a short time only. Therefore, the addition of acid has been continuous since May 10. Since that date it has been possible to maintain the desired pH, while the dissolved solid content has remained nearly the same, even though the blowdown and make-up water have been substantially increased, indicating that the calcium carbonate scale is being dissolved. For the past week the acid feed has averaged approximately 50 gallons/day.

Chemical Operations

The converter decontamination unit at K-1303 is progressing in a satisfactory manner with construction approximately 50% completed.

Sampling of the four reactors of the oxide conversion unit when they are operated in series has indicated that no fluorination of the oxide occurs in the fourth reactor during the first six hours of operation. Another series of sampling tests will be conducted with the reactors operating in parallel in an attempt to correct this situation.

Electrical Systems Operations

A total of eight electrical feeders were out of service for short periods during the week for duct flushing in line with the duct re-sampling program.

The transformer core and yoke bolt reinsulation program continued this week as follows:

		Number of Transformers
1)	Removed from service this week for reinsulation	4
2)	Restored to service this week after reinsulation	3
3)	Reinsulation work in progress	7
4)	Total completed to date	81

The reinsulation program is now approximately 36% complete.

The following tables are attached:

I Weekly Production Report

II Cascade Cell Off-Stream Time and Labor Man Hours

III Utilites and Auxiliaries

IV Chemical Operations

REMorang, Jr./ga

J. P. Murray
J. P. Murray

Enclosures (4)

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 May 17 to 0700 May 24, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28797.20	-1.4
K-25 Waste Concentration	210894	-0.6
K-27 Product Concentration	192233	0.3
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	4797	-5.7
Conc. C-616 in Purge Cascade		
Top	2.4×10^{-5}	-31.4
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Week (Lbs.)	% Increase Over Previous Week
Previous Inventory	440	-
Produced	0	-
Consumed	129	46.6
Inventory	311	-29.3
Fluorothene Operations		
Raw Fluorothene Produced	659	-13.9
Raw Monomer Produced	1255	-37.1
Refined Monomer Loaded in Bombs	2202	-6.9
Monomer Recovered	1011	-20.0

G-74 Operations

			Consumption in Gallons of L-28					
Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	1905	627	-	-	890	-	707	4129
G-74 Pipe Line	3273	57	-	-	-	-	-	3330
G-74 Cyl.	-	-	-	-	-	158	-	158
Total	5178	684	-	-	890	158	707	7617
% Increase from Prev. Week	-2.7	-41.2	-	-	6.1	-	-	-0.3

TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 May 17, to 0800 May 24, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase In Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Seal Failures	147.53	44.17	-78.06	8	29.63	-6
Stage Motor Failures	-	-	-	-	-	-
Stage Pump Failures	-	-	-57.92	-	-	-1
Converter Replacement	147.46	44.15	100.79	6	22.23	5
Electrical Power Equip.	-	-	-167.44	-	-	-176
Inleakage Checks	6.68	2.00	4.15	11	40.74	4
Light Contaminant Inleakage	16.34	4.89	11.76	1	3.70	0
C-816 Inleakage	-	-	-30.87	-	-	-2
Instrumentation	-	-	-	-	-	-
Lube System Repair	-	-	-	-	-	-
C-816 System Repair	16.00	4.79	16.00	1	3.70	1
Engineering Tests	-	-	-	-	-	-
Miscellaneous	-	-	-1.00	-		-2
Total	334.01	100.00	-202.59	27	100.00	-177

Weekly Stream Efficiency.....99.64%
Weekly Stream Efficiency Last Week.....99.44%
Weekly Line Recorder Stream Efficiency (Glass Tube Racks).....94.36%
Weekly Line Recorder Stream Efficiency (Metal Tube Racks).....95.81%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to May 24, 1948.

	Accumulated Labor Man Hours	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Seal Failures	4,225.50	1,746.10	2.42
Stage Motor Failures	1,521.00	285.61	5.33
Stage Pump Failures	700.50	453.66	1.54
Converter Replacement	4,839.50	1,001.22	4.83
Electrical Power Equip.	52.00	10.27	5.06
Excessive Inleakage	903.92	853.17	1.06
Instrumentation	336.75	65.55	5.14
Lube System Repair	16.00	5.92	2.70
C-816 System Repair	196.00	98.05	2.00
Total	12,791.17	4,519.55	2.83

TABLE III

UTILITIES AND AUXILIARIES
From 0700 May 13 to 0700 May 20, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	87.72	1.32	77.0°F	109,430	30.22	1.54	77.0°F
Increase From Prev. Week	21.23%	6.45%	0°F	9.76%	-1.34%	13.24%	0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4.477	2.68
Flow to Distribution (Mn. Gal/D)	4.477	2.31
Volume in Storage (Mn. Gal)	1.945	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,260	-96°F	5,468	-109°F
Increase From Prev. Week	-6.00%	- 2°F	-0.91%	- 1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	5,707	339	623	3,647	2,992	151
% Increase From Prev. Week	-17.49	-20.42	26.88	1.25	-15.67	-18.38

TABLE IV

CHEMICAL OPERATIONS
May 17, through May 23, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	0	0	0	5	56 Heads	3
Pressure Testing	6	0	5	3	56 Heads	33
CO_2 Testing	0	0	---	---	---	0
C-816 Testing	---	---	122	---	---	54

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	0	---	0	0 Lbs.	0 Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	12	12	---	---	---
C-816 Storage	---	---	---	---	---	23 Lbs.	---	---
Field Decon.	---	0	1	---	---	---	9	23

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	2	26	30	96

	Total Samples	Total Determinations
Chemical Analysis	415	187

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PROCESS DIVISION WEEKLY REPORT
Issued 6/3/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:

Technical Information Officer
Oak Ridge K-25 Site

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Post Office Box P
Oak Ridge, Tennessee

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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION
Process Engineering
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PROCESS DIVISION WEEKLY REPORT

J. P. Murray

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tennessee

To Mr. A. P. Huber
Location K-1020

Date June 3, 1948

Answering Letter Date

Attention
Copy To Attached Distribution

Subject Process Division Weekly Report Ending 0800 May 31, 1948

Summary

The withdrawal of top product continued through the week at a daily X rate approximately 27.5% greater than the previous week and 0.6% greater than the average for the past six months.

Converters containing type DL barrier were installed in cells 4, 6 and 8 of K-304-2, cell 3 of K-302-4, and cell 14 of K-306-6.

The test which was started last week to determine the C-816 separation characteristics of the newly installed DL barrier in K-305-3 was completed this week.

A complete plant "T" and "X" inventory was taken on May 28.

The K-101 C-816 removal unit operated satisfactorily during the week.

Cascade Operations

The converter changing program continued this week with the installation of converters containing DL barrier in cells 4, 6 and 8 of K-304-2, cell 3 of K-302-4, and cell 14 of K-306-6. This brings to 28 the total number of cells in which converters containing DL barrier have been installed since the start of the program on February 26. This total

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includes, in addition to the above cells, all cells in K-302-5, all cells except cell 1 in K-302-4, K-304-2.2, K-305-3.1.5.7 and 9 and K-306-7.10. This represents approximately 10.3% of the total number of cells included in the present barrier replacement program.

The test which was started last week to determine the C-816 separation characteristics of the newly installed DL barrier in K-305-3 was completed this week.

A complete plant "T" and "X" inventory was taken at 1300 on May 28. The crude feed and waste condensation operations were suspended between 1245 and 1430.

At 1912 on May 25, K-309-2.1 was isolated with a C-816 leak to the cascade of approximately 7.5 pounds per day. This leak added an estimated 0.3 pounds of C-816 to the cascade C-816 inventory. Also two flashbacks of material from the K-302-5 cold trap containing C-816 increased the C-816 inventory in the cascade. This material was removed by the K-101 C-816 removal unit.

The K-101 unit was in operation the entire week except between 1920 and 2315 on May 30. During this period the unit was on total reflux in order to withdraw 82 pounds of concentrated C-816.

The investigation to determine the feasibility of removing scale from the water side of the coolant coolers in the K-25 cascade by acid-washing, which was outlined in the report of May 5, has resulted in the construction of a pumping unit with enough capacity to service the largest size of coolant coolers found in the plant. This unit is being used in a program of acid-washing coolant coolers which is now in progress in the lower part of Plant II. Up to the end of the report period, coolant coolers in K-310 and K-309 sections and in buildings K-301-1 and K-301-2 have been acid-washed. Heat balances show that heat transfer has been increased an average of approximately 150% in the K-310 section and approximately 60% in the K-309 section and buildings K-301-1 and K-301-2.

The program will be continued in the remaining K-301 section buildings and K-311-1 during the coming week.

The K-302-5 cold trap was out of service from 0800 on May 28 to 0430 on May 29 to replace the seats and bellows of the suction valves on #2 and #3 Beech-Russ pumps and the "B" trap outlet valve. All three valves had failed during normal operation of the cold trap. The failure of the two suction valves resulted in wet air being pumped through the cold traps, causing the "B" trap to plug. The plug was broken by charging C-216 into the "B" trap. During the period of repairs to the cold trap, the K-302-5 Purge and Product Room was in operation from 1500 to 2400 on May 28.

A total of 85.716 KgT of recovered material at an average assay of 129676 was fed to the cascade during the week.

The usage of liquid nitrogen in the K-300 section increased approximately 18% this week due to the fact that product withdrawal operation was changed back to liquid nitrogen from the cold trichloroethylene which has been in use following the tests mentioned in the report of May 12. The change to liquid nitrogen was made due to the increased concentration of light contaminants at the top of K-206-7.

There were 6 seal failures, 1 stage pump motor failure, and one C-816 leak during the week involving approximately 73.38 hours of cell off-stream time. The converter replacements accounted for 108.87 cell hours of off-stream time.

A consolidation of shift operations supervision has been effected in Areas 2, 4 and 5 by reassigning the two Building Shift Supervisors' jobs to allow area coverage by the Area Shift Supervisor and an assistant. This makes shift supervision uniform in all areas, since Areas 1 and 3 supervision has already been consolidated in this manner as mentioned in the report of May 19.

Utilities and Auxiliaries

The addition of sulfuric acid to the K-27 recirculating water system at K-832, as reported last week, was continued this week at a continuous rate of 46 gallons per

day. The pH of the water was maintained at approximately 7.3. A laboratory report on the desirability of a further decrease in pH value is awaited before an attempt is made to remove more scale from the coolant coolers.

During the week a new section of line was placed in service in the sanitary water system between the old and new storage areas, making a complete dual system of water lines for this entire system.

Chemical Operations

The construction of the converter decontamination unit at K-1303 is approximately 65% complete.

No U_3O_8 was produced in the water media recovery unit this week due to the failure of the ammonium diuranate pump. Since it was found that there was no replacement shaft available, a new pump shaft had to be fabricated.

Electrical Systems Operations

During the week a design change was completed in Vault 29, serving K-312-3, which disconnected the constant frequency system from the ring bus in this vault. Formerly, either the constant frequency system at 60 cycles or the variable frequency motor-generator set located in the vault could supply power to the Valley Iron Pump motors. However, these pump motors no longer normally run at a frequency of 60 cycles, the power being supplied by the motor-generator set. This change will also be made in Vaults 27 and 28. After the design change is completed, the motor-generator set of any building can supply power, if necessary, to the cell motors of both of the K-312 buildings which are in operation, thus enabling maintenance work to be performed without any interruption in building operations. Since only two buildings of the purge section are in normal operation (K-312-1 and K-312-2), one motor-generator set will be in reserve at all times.

The transformer core and yoke bolt reinsulation program continued this week as follows:

		Number of Transformers
1)	Removed from service this week for reinsulation	2
2)	Restored to service this week after reinsulation	5
3)	Reinsulation work in progress	4
4)	Total completed to date	87

The reinsulation program is now approximately 38.7% complete.

The following tables are attached:

I. Weekly Production Report

II. Cascade Cell Off-Stream Time and Labor Man Hours

III. Utilities and Auxiliaries

IV. Chemical Operations

J. P. Murray

J. P. Murray

REMorang, Jr./ga

Enclosures (4)

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 May 24 to 0700 May 31, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28748.20	-1.8
K-25 Waste Concentration	210895	0.1
K-27 Product Concentration	192234	0.1
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	4456	-7.1
Conc. C-616 in Purge Cascade		
Top	2.1×10^{-5}	-12.5
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Week (Lbs.)	% Increase Over Previous Week
Previous Inventory	311	-
Produced	165	-
Consumed	208	61.2
Inventory	268	-13.8
Fluorothene Operations		
Raw Fluorothene Produced	817	24.0
Raw Monomer Produced	1,439	14.7
Refined Monomer Loaded in Bombs	2,136	-3.0
Monomer Recovered	1,130	11.8

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	2838	704	-	-	870	-	746	5158
G-74 Pipe Line	3277	148	-	1	-	-	-	3426
G-74 Cyl.	-	224	-	-	-	158	-	382
Total	6115	1076	-	1	870	158	746	8966
% Increase From Prev. Week	18.1	57.3	-	-	-2.2	-	5.5	17.7

TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
FROM 0800 May 24, to 0800 May 31, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase In Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Seal Failures	41.30	20.13	-106.23	6	24.00	-2
Stage Motor Failures	5.00	2.44	5.00	1	4.00	1
Stage Pump Failures	-	-	-	-	-	-
Converter Replacement	108.87	53.07	-38.59	5	20.00	-1
Electrical Power Equip.	-	-	-	-	-	-
Inleakage Checks	21.40	10.43	14.72	10	40.00	-1
Light Contaminant Inleakage	-	-	-16.34	-	-	-1
C-816 Inleakage	27.08	13.20	27.08	1	4.00	1
Instrumentation	-	-	-	-	-	-
Lube System Repair	.17	.08	.17	1	4.00	1
C-816 System Repair	-	-	-16.00	-	-	-1
Engineering Tests	-	-	-	-	-	-
Miscellaneous	1.33	.65	1.33	1	4.00	1
Total	205.15	100.00	-128.86	25	100.00	-2

Weekly Stream Efficiency.....99.79%
Weekly Stream Efficiency Last Week.....99.64%
Weekly Line Recorder Stream Efficiency (Glass Tube Racks).....92.44%
Weekly Line Recorder Stream Efficiency (Metal Tube Racks).....94.49%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to May 31, 1948.

	Accumulated Labor Man Hours	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Seal Failures	4,501.50	1,787.40	2.52
Stage Motor Failures	1,521.00	290.61	5.23
Stage Pump Failures	725.50	453.66	1.60
Converter Replacement	5,131.50	1,091.84	4.70
Electrical Power Equip.	52.00	10.27	5.06
Excessive Inleakage	903.92	853.17	1.06
Instrumentation	336.75	65.55	5.14
Lube System Repair	16.00	6.09	2.63
C-816 System Repair	214.00	125.13	1.71
Total	13,402.17	4,683.72	2.86

TABLE III

UTILITIES AND AUXILIARIES
From 0700 May 20, to 0700 May 27, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	88.87	1.33	77.0°F	114,570	30.38	1.61	77.0°F
Increase From Prev. Week	1.31%	0.76%	0°F	4.70%	0.53%	4.55%	0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4.605	2.86
Flow to Distribution (Mn. Gal/D)	4.573	2.14
Volume in Storage (Mn. Gal)	2.168	11.47

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,435	-97°F	5,789	-109°F
Increase From Prev. Week	5.37%	- 1°F	5.87%	0°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	5,411	308	479	3,606	2,845	141
% Increase From Prev. Week	-5.19	-9.14	-23.11	-1.12	-4.91	-6.62

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TABLE IV

CHEMICAL OPERATIONS
May 24, through May 30, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Prod. Cyls. And Heads	Leaks Found
Vacuum Testing	0	0	0	3	93 Heads 42 Cyls.	5
Pressure Testing	5	0	7	13	123 Heads	21
CO_2 Testing	1	12	---	---	---	0
C-816 Testing	---	---	18	---	---	12

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	8	---	0	278 Lbs.	11 Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	7	7	---	---	---
C-816 Storage	---	---	---	---	---	0 Lbs.	---	---
Field Decon.	---	0	6	---	---	---	9	26

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	3	15	24	55

	Total Samples	Total Determinations
Chemical Analysis	462	242

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Issued 6/9/48

Compiled by
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Environmental Management Division
OAK RIDGE K-25 SITE
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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION
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PROCESS DIVISION WEEKLY REPORT

J.P. Murray

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(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. A. P. Huber
Location K-1029

Attention
Copy To Attached Distribution

Date June 9, 1948

Answering Letter Date

Subject Process Division Weekly Report Ending 0800 June 7, 1948

Summary

The withdrawal of top product continued through the week at a daily X rate approximately 2.4% greater than the previous week and 3.0% greater than the average for the past six months. The above is based on production figures which are uncorrected for contaminants.

Converters containing type DL barrier were installed in cells 5,7,9 and 10 of K-304-2 during the week.

A test was conducted in cells 5 and 7 of K-305-3 this week to determine the power load requirements for various cell high side pressures with the recently installed DL barrier in these cells.

Cascade Operations

The converter replacement program continued this week with the installation of converters containing type DL barrier in cells 5,7,9 and 10 of K-304-2. Also, K-304-2,3 was undergoing a converter change at the end of the report period. These latest replacements make a total of thirty-two cells in which converters containing DL barrier have been installed. This total represents approximately 11.7% of the total number of cells to be included in the present barrier replacement program.

During the week a test was run in cells 5 and 7 in K-305-3 to determine the power requirements of the cells with newly installed DL barrier, using cell high side pressures of

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The results show that the load curve of kilowatts versus high side pressure is approximately parallel to the load curve for K-305-3 with NDA type barrier and is at a lower level, due to the lower permeability of the DL barrier.

The C-816 removal unit in K-101 was in continuous operation during the week with no off-stream time being recorded. Two C-816 leaks to the cascade occurred from the coolant systems of K-301-2.2 and K-301-2.4. These leaks released approximately eight pounds of C-816 to the cascade. Also, the K-302-5 cold trap returned approximately 4.1 psia of material containing C-816 to the cascade. This C-816 was removed by the K-101 unit.

No recovered material was fed to the cascade this week.

At 1004 on June 6 constant frequency feeder #309 tripped out on neutral ground relay action. This was due to a flock of birds which landed on the bus structure at the K-26 substation, causing the feeder to arc phase to phase and phase to ground, resulting in a voltage sag of 9000 volts on the constant frequency bus. The voltage drop caused a power failure to K-312-2. The building was isolated from the cascade from 1004 to 1050. This loss of feeder #309 also caused the sanitary water plant to be isolated from 1004 to 1200 and K-1004, K-1037 and K-1401 were affected for a short period of time.

The program of acid-washing coolant coolers in Plant II, which was reported last week, continued this week with the coolant coolers in K-301-2, K-301-3, K-301-4 and K-301-5. The program will continue during the coming week.

The cell off-stream time this week is accounted for in part by ten seal failures, two stage pump failures, two stage motor failures and two C-816 leaks which contributed a total of 247.85 cell hours. The replacement of converters in four cells accounted for a total of 84.97 cell hours of off-stream time.

Utilities and Auxiliaries

The feed of sulfuric acid to the K-27 recirculating water system continued during the week with 338 gallons of acid

being added. The pH was maintained at the desired value of 7.3. The make-up water was increased by approximately 12% which should continue to lower the dissolved solids content.

The steam demand at the K-1501 steam plant averaged 5% below that of last week and is continuing to drop as the ambient temperature increases. The reduced usage of coal coupled with increased coal receipts has allowed the coal stock-pile to be increased approximately 63% over last week.

Chemical Operations

The construction of the converter decontamination unit at K-1303 is now approximately 85% complete. Also, work was started this week on the uranium recovery system which is to be used in conjunction with the converter decontamination unit.

The operation of the fluorothene plant at K-413 was suspended this week for a design change to be made on the secondary still. This design change will provide improved refluxing of the monomer.

Electrical Systems Operations

A total of four feeders were out of service during the report period for duct re-sampling.

The transformer core and yoke bolt reinsulation program continued this week as follows:

		Number of Transformers
1)	Removed from service this week for reinsulation	6
2)	Restored to service this week after reinsulation	4
3)	Reinsulation work in progress	6
4)	Total completed to date	91

The reinsulation program is now approximately 40.4% complete.

The following tables are attached:

I. Weekly Production Report

II. Cascade Cell Off-Stream Time and Labor Man Hours

III. Utilities and Auxiliaries

IV. Chemical Operations

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Enclosures (4)

J. P. Murray

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TABLE I

WEEKLY PRODUCTION REPORT
From 0700 May 31 to 0700 June 7, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28837.20	3.3
K-25 Waste Concentration	210898	0.3
K-27 Product Concentration	192233	0.1
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	4654	4.4
Conc. C-616 in Purge Cascade		
Top	2.4×10^{-5}	14.3
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Week (Lbs.)	% Increase Over Previous Week
Previous Inventory	268	
Produced	123	-25.5
Consumed	102	-51.0
Inventory	289	7.8
Fluorothene Operations		
Raw Fluorothene Produced	*	
Raw Monomer Produced		
Refined Monomer Loaded in Bombs		
Monomer Recovered		

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	2983	613	-	-	867	-	298	4761
G-74 Pipe Line	3808	269	-	1	-	-	-	4078
G-74 Cyl.	-	79	-	-	-	158	-	237
Total	6791	961	-	1	867	158	298	9076
% Increase from Prev. Week	11.1	-10.7	-	-	-0.3	-	-	1.2

* Refer to Chemical Operations section of this report.

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TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 May 31 to 0800 June 7, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase in Time Off Over Prev. Week	No. of Times Off Cascade	% of Total No. of Times Off	Increase In No. of Times Over Prev. Week
Seal Failures	127.24	36.38	85.94	10	26.32	4
Stage Motor Failures	26.16	7.48	21.16	2	5.26	1
Stage Pump Failures	41.95	11.99	41.95	2	5.26	2
Converter Replacement	84.97	24.29	-23.90	5	13.16	-
Electrical Power Equip.	.58	.17	.58	1	2.63	1
Inleakage Checks	15.95	4.56	-5.45	13	34.21	3
Light Contaminant Inleakage	-	-	-	-	-	-
C-816 Inleakage	52.80	15.01	25.42	4	10.53	3
Instrumentation	-	-	-	-	-	-
Lube System Repair	-	-	- .17	-	-	-1
C-816 System Repair	-	-	-	-	-	-
Engineering Tests	-	-	-	-	-	-
Miscellaneous	.42	.12	- .91	1	2.63	-
Total	349.77	100.00	144.62	38	100.00	13

Weekly Stream Efficiency.....99.64%
Weekly Stream Efficiency Last Week 99.79%
Weekly Line Recorder Stream Efficiency (Glass Tube Racks).....95.59%
Weekly Line Recorder Stream Efficiency (Metal Tube Racks).....96.17%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to June 7, 1948

	Accumulated Labor (Man Hours)	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Seal Failures	4,832.00	1,914.64	2.52
Stage Motor Failures	1,524.00	316.77	4.81
Stage Pump Failures	893.00	495.61	1.80
Converter Replacement	5,553.00	1,176.81	4.72
Electrical Power Equipment	52.00	10.85	4.79
Excessive Inleakage	1,114.42	901.17	1.24
Instrumentation	336.75	65.55	5.14
Lube System Repair	18.00	6.09	2.96
C-816 System Repair	216.00	125.13	1.73
Total	14,539.17	5,012.62	2.90

TABLE III

UTILITITES AND AUXILIARIES
From 0700 May 27, to 0700 June 3, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	87.81	1.32	77.0°F	112,866	30.86	1.80	77.0°F
Increase From Prev. Week	-1.19%	-0.75%	0°F	-1.49%	1.58%	11.80%	0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4.589	- 0.35
Flow to Distribution (Mn. Gal/D)	4.621	1.05
Volume in Storage (Mn. Gal)	1.945	-10.29

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,382	-96°F	5,643	-109°F
Increase From Prev. Week	-1.54%	1°F	-2.52%	0°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	5,135	297	782	3,564	2,722	118
% Increase From Prev. Week	-5.10	-3.57	63.26	-1.16	-4.32	-16.31

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TABLE IV

CHEMICAL OPERATIONS
May 31, through June 6, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Leaks Found
Vacuum Testing	0	0	0	2	*
Pressure Testing	4	2	7	4	28
CO_2 Testing	1	0	---	---	1
C-816 Testing	---	---	30	---	8

* A test of the K-304-3 Seal Exhaust header disclosed numerous leaks in fittings.

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	0	---	0	0 Lbs.	0 Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	5	5	---	---	---
C-816 Storage	---	---	---	---	---	6,916 Lbs.	---	---
Field Decon.	---	2	0	---	---	---	7	20

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	1	13	19	43

	Total Samples	Total Determinations
Chemical Analysis	276	114

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SANITIZED VERSION OF K-151, PART 24
PROCESS DIVISION WEEKLY REPORT
Issued 6/17/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release to the public by:
Technical Information Officer
Oak Ridge K-25 Site
5/31/95
Date

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PROCESS DIVISION WEEKLY REPORT
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J. P. Murray
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PROCESS DIVISION WEEKLY REPORT

J. P. Murray

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(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tennessee

To Mr. A. P. Huber
Location K-1029

Attention

Copy To Attached Distribution

Date June 16, 1948

Answering Letter Date

Subject Process Division Weekly Report Ending 0800 June 14, 1948

Summary

The withdrawal of top product continued through the week at a daily X rate approximately 0.20% greater than the previous week and 5.4% greater than the average for the past six months. The above is based on figures corrected for contaminants which have collected at the top of the cascade since the installation of DL barrier in K-306-7.10.

The converter replacement program continued this week with the installation of converters containing DL barrier in cells 1 and 3 of K-304-2 and cells 2,4,6 and 8 of K-304-1.

A barrier performance (ψ) test was begun in K-304-2 during the week.

A program of optimizing cell pressures in line with the change in the cascade gradient associated with the converter replacement program was initiated this week with pressure changes in the K-302 and K-303 sections and building K-304-2.

Cascade Operations

The converters in K-304-2.1 and 3 and K-304-1.2.4.6 and 8 were replaced with converters containing DL barrier this week, continuing the converter replacement program. K-304-1.10 was undergoing a converter change at the end of

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the report period. This brings to thirty-eight the number of cells in which DL barrier has been installed during the current replacement program and represents approximately 13.9% of the total number of cells included in the program.

On June 11 a barrier performance test was begun in K-304-2 to determine the separation characteristics of the newly installed DL barrier. The test will be completed during the coming week. Prior to the test all cells in K-304-2 were given static instrument alignments.

The C-816 inventory in the cascade was increased considerably by a leak from one cell and a return from the K-302-5 cold trap which contained C-816. In addition, 192 pounds of material, which had been drained from the K-101 removal unit in April to check the inventory, were fed back in to the column.

K-301-2.4 was isolated from the cascade on June 11 with a large C-816 leak. The leak was located on stage six in the fourth tube from the top of the inside row. This was the same tube which had been repaired following a C-816 leak on June 4. In an attempt to eliminate any further leaks from this cell, the inside row of tubes in the upper half of all of the stage coolers was plugged. The majority of the C-816 leaks, all of which have occurred in the K-309 and K-301 sections, have been located in the upper half of the inside row of tubes and have been attributed to vibration of a loose gas baffle at the converter inlet, next to this upper inside row.

The K-302-5 cold trap returned a mixture of C-616 and C-816 to K-301-3.1 on June 12 which also increased the cascade

C-816 inventory as evidenced by an increase in C-816 concentration in K-302-5.4 from 1.0% to 2.0%.

The K-101 removal unit was on stream continuously during the week except for a short period on June 7 and again on June 12 when it was on total reflux to remove concentrated C-816. A total of 116.4 pounds was withdrawn.

A design change in electrical vault 27, serving K-312-1, was completed this week. This is the same type of change which was made in vault 29, serving K-312-3, and was explained in the report of June 3. The change involved a total of approximately 15.25 hour of off-stream time on June 9 and June 10, during which K-312-1 was isolated and shut down. The upflow of light contaminants to the K-306 section was stopped by splitting the cascade at K-306-1. The light contaminants originating in the K-306 section were stored in the top of K-306-7 during the shut-down by raising the pressures of cells 4 through 14. The withdrawal of top product was not interrupted, operations to fill the daily quota being carried on during the 12-8 shift while the shut-down was scheduled on the 8-4 shift on both days.

The coolant coolers of all cells in K-311-1 and all cells except cell 8 in K-302-1 were acid-washed this week in line with the present program which was outlined in the report of June 3. The pumping unit was shut down on June 9 for repairs. The unit will be returned to service next week.

A design change in the recirculating water system was made this week. The line which connects the "A" and "B" supply loops between Plants II and III was cut off by the installation of a by-pass around the point where the line joins the "B" loop in Plant III. This was done in anticipation of increased cell pressures at the completion of the barrier replacement program in Plant III. It is planned to use the Plant II return water as the supply for the Plant III coolant coolers. Since this will raise the supply water temperature from 77°F to 95°F, it should eliminate the possibility of condensation of process gas in the event of increased stage pressures combined with open water control valves and the attendant critical mass hazard.

Utilities and Auxiliaries

Due to high ambient temperatures on June 12 and June 13 it was necessary to raise the supply water pressures of the "A" and "B" and the "C" loops from 55 and 50 psig respectively to 60 psig for short periods in order to maintain a supply temperature of 77°F. This is the first time this year that ambient temperatures have increased enough to affect the recirculating water supply to both the K-25 and K-27 systems.

The sanitary water plant at K-1515 was shut down for approximately four hours on June 7 to allow repairs to be made to Feeder #309 which was damaged on June 6. During the shut-down, sanitary water for the K-25 plant was supplied from storage capacity. This loss in storage volume was regained during the following twenty-four hours.

On June 10 a steam usage check was made to determine demand by the Process area, the usage being calculated at 12,000 pounds per hour. The previous day a check of steam demand of the Air Plant hydryer showed a usage of 2800 pounds per hour. An additional check is being made to determine whether the remaining 9200 pounds per hour contains any unwarranted usage of steam.

The coal stockpile at K-1501 was increased substantially this week in an effort to build up and maintain a supply large enough to meet any emergency.

Chemical Operations

During the week 18.3 pounds of T_3O_8 were processed in the water media recovery unit while 844 liters of lime floc filtrate were discarded. Since this operation was started on March 9, approximately 31,000 liters of filtrate have been dumped.

The new converter decontamination unit at K-1303 is now approximately 90% complete. Work has begun on the uranium recovery unit, with the component parts being fabricated in the shops.

The design change at the K-413 fluorothene plant was completed and the unit was started up on June. 11. This change provides for increased condensing capacity with a resulant in-

crease in production. By the end of the report period the design change appeared to be giving the desired results.

Electrical Systems Operations

Repair of the damage to the bus structure of Feeder #309, which occurred on June 6, was completed on June 7.

As a result of the increased cell pressures in the K-302 section with the resulting increase in transformer loads, the transformer fans in the vaults serving this section were placed on manual operation.

The transformer core and yoke bolt reinsulation program continued this week as follows:

		Number of Transformers
1)	Removed from service this week for reinsulation	6
2)	Restored to service this week after reinsulation	4
3)	Reinsulation work in progress	5
4)	Total completed to date	95

The reinsulation program is now approximately 42.2% complete.

The following tables are attached:

I. Weekly Production Report

II. Cascade Cell Off-Stream Time and Labor Man Hours

III. Utilities and Auxiliaries

IV. Chemical Operations

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TABLE I

WEEKLY PRODUCTION REPORT
From 0700 June 7 to 0700 June 14, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28841.20	0.5
K-25 Waste Concentration	210875	-2.3
K-27 Product Concentration	192216	-1.5
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	5307	14.0
Conc. C-616 in Purge Cascade		
Top	1.9×10^{-5}	-20.8
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Week (Lbs.)	% Increase Over Previous Week
Previous Inventory	289	-
Produced	208	69.1
Consumed	165	61.8
Inventory	332	14.9
Fluorothene Operations		
Raw Fluorothene Produced	277	* -
Raw Monomer Produced	220	-
Refined Monomer Loaded in Bombs	510	-
Monomer Recovered	391	-

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	2812	732	-	-	942		114	4,600
G-74 Pipe Line	3568	319	82	1	-	-	-	3,970
G-74 Cyl.	-	105	-	-	-		-	105
Total	6380	1156	82	1	942		114	867[illegible]
% Increase from Prev. Week	-6.1	20.3	-	0	8.7	-	-	-4.[illegible]

* No production last week. Design change.

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TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 June 7, to 0800 June 14, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase In Time Off Over Prev. Week	No. Of Times Off Cascade	% Of Total No. Of Times Off	Increase In No. o Times Ov Prev. We
Seal Failures	95.29	25.35	-31.95	8	17.39	-2
Stage Motor Failures	23.25	6.19	- 2.91	1	2.17	-1
Stage Pump Failures	-		-41.95	-	-	-2
Converter Replacement	151.30	40.26	66.33	7	15.22	2
Electrical Power Equip.	-		- .58	-	-	-1
Inleakage Checks	4.67	1.24	-11.28	10	21.75	-3
Light Contaminant Inleakage	-		-	-	-	-
C-816 Inleakage	35.00	9.31	-17.50	1	2.17	-3
Instrumentation	8.48	2.26	8.48	8	17.39	8
Lube System Repair	-		-	-	-	-
C-816 System Repair	-	-	-	-	-	-
Engineering Tests	57.83	15.39	57.83	11	23.91	11
Miscellaneous	-	-	- .42	-	-	-1
Total	375.82	100.00	26.05	46	100.00	8

Weekly Stream Efficiency.....99.61%
Weekly Stream Efficiency Last Week.....99.64%
Weekly Line Recorder Stream Efficiency (Glass Tube Racks).....97.99%
Weekly Line Recorder Stream Efficiency (Metal Tube Racks).....97.29%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to June 14, 1948.

	Accumulated Labor Man Hours	Accumulated Cell Hours Off-Stream	Ratio: Accumulate Labor to Accumulate Cell Off-Stream Hou
Seal Failures	5,006.50	2,009.99	2.49
Stage Motor Failures	1,551.00	340.02	4.56
Stage Pump Failures	918.50	495.61	1.85
Converter Replacement	6,021.75	1,327.55	4.54
Electrical Power Equip.	52.00	10.85	4.79
Excessive Inleakage	1,248.67	936.17	1.33
Instrumentation	336.75	74.03	4.55
Lube System Repair	18.00	6.09	2.96
C-816 System Repair	216.00	125.13	1.73
Total	15,369.17	5,325.44	2.89

TABLE III

UTILITIES AND AUXILIARIES
From 0700 June 3 to 0700 June 10, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	84.30	1.60	77.0°F	112,290	31.51	1.57	77.1°F
Increase From Prev. Week	-4.00%	21.21%	0°F	-0.51%	- 2.11%	-12.78%	.1°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4.573	-0.35
Flow to Distribution (Mn. Gal/D)	4.541	-1.73
Volume in Storage (Mn. Gal)	2.168	11.47

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,136	-97°F	5,654	-107°F
Increase From Prev. Week	-7.27%	- 1°F	0.19%	2°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensat M. Lbs.
This Week	5,203	323	1,738	3,231	2,339	99
% Increase From Prev. Week	1.32	8.75	122.25	-9.34	-14.07	-16.10

TABLE IV

CHEMICAL OPERATIONS
June 7, through June 13, 1948

Leak Testing

	Cells	A C Pumps	Cell C-816 System	Misc. Equip.	Leaks Found
Vacuum Testing	0	0	0	5	27
Pressure Testing	7	0	7	2	15
CO_2 Testing	1	12	---	---	2
C-816 Testing	---	---	40	---	19

Special Materials Handling

	Cells	A C Pumps	Equip	Charged	Discharged	Issued	P. G. Spills	Excess Alpha
C-616 Charging	0	---	0	0 Lbs.	0 Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	5	5	---	---	---
C-816 Storage	---	---	---	---	---	48 Lbs.	---	---
Field Decon.	---	0	11	---	---	---	6	28

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	0	61	31	3

	Total Samples	Total Determinations
Chemical Analysis	241	100

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SANITIZED VERSION OF K-151, PART 25
PROCESS DIVISION WEEKLY REPORT
Issued 6/24/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

This document has been approved for release
to the public by:
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PROCESS DIVISION WEEKLY REPORT

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PROCESS DIVISION WEEKLY REPORT

J. P. Murray

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INTER-COMPANY CORRESPONDENCE

(Insert Name) COMPANY Carbide and Carbon Chemicals Corp. LOCATION Post Office Box P Oak Ridge, Tenn.

To Mr. A. P. Huber
Location K-1029, Rm. 27

Attention

Copy To Attached Distribution

Date June 24, 1948

Answering Letter Date

Subject Process Division Weekly Report Ending 0800 June 21, 1948

Summary

The withdrawal of top product continued through the week at a daily X rate approximately 11.8% less than the previous week and 7.1% less than the average for the past six months.

The converter replacement program continued this week with the installation of converters containing DL barrier in cells 3, 5, 7, 9 and 10 of K-304-1 and cell 8 of K-305-12.

The barrier performance (ψ) test which was begun last week in K-304-2 was completed this week.

Several more pressure changes were made this week to obtain optimum conditions for the newly installed DL barrier in the K-304, K-305 and K-306 sections.

A mid-monthly cascade "T" and "X" inventory was taken on June 15.

Cascade Operations

The converter replacement program was continued this week with the installation of converters containing DL barrier in K-304-1.3.5.7.9 and 10 and K-305-12,8, In addition, K-305-12.10 was undergoing a converter replacement at the end of the report period. The number of cells whose converters have been replaced

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with converters containing DL barrier during the present replacement program now totals 44, which is approximately 16.1% of the total number of cells included in the program.

During the time that K-305-12.8 was isolated for the converter change, a 4" line was installed connecting the 1B pump discharge and the cell utility riser. The installation of this new line will add six stages to the light contaminant stripping section above the take-off point whenever this point is moved from cell 6 to cell 8, a situation which occurs during abnormal upflows of light contaminants into K-305-12. Formerly, moving the take-off point from cell 6 to cell 8 added only two stages to the stripping section, since cell 6 already has a similar line installed from the 1B pump discharge to the utility riser. This also provides a spare system to be used in the event that cell 6 should be isolated for maintenance work.

The barrier performance (γ) test to determine the separation performance characteristics of the newly installed DL barrier in K-304-2, which was begun last week, was completed on June 14.

During each run the building was isolated on direct recycle for a three-hour equilibrium period, after which samples were withdrawn from cells 1 and 4 to determine the separation characteristics of the barrier. The total cell off stream time involved in the test was approximately 106 hours.

The mid-monthly plant "T" and "X" inventory was taken on June 15 at 1300. The crude feed was suspended between 1230 and 1400 and waste condensing was stopped from 1235 to 1345 during inventory measurements.

The withdrawal of top product this week was below that of last week and less than the six months average. The low production figure is attributed to the effect of the pressure increases which were made in conjunction with the installation of DL barrier in several sections.

The program of feeding partially depleted material to the stripping section of the cascade during periods of low waste concentration was resumed on June 19. The

The K-101 C-816 removal unit was in continuous operation during the week except between 1120 and 1455 on June 14 when it was isolated on total reflux in order to withdraw 96.15 pounds of C-816 - C-616 mixture. The concentration of C-816 at K-302-5.4 decreased from 1.06% on June 14 to 0.10% on June 20, at which time material containing C-816 was returned from the K-302-5 cold trap to K-301-3.1, increasing the C-816 concentration to 0.58%. By the end of the report period it had been reduced to 0.41%.

There were three minor disturbances to the variable frequency power system during the week. On June 14 the frequency of the power to all sections of the K-25 cascade, except K-306 and the K-309-K-301 "B" motors was reduced from 65 to 59 cycles between 1656 and 1713 due to the stoppage of #1-3 coal mill by a steel ball, causing reduced steam generation. After repairs were made, the frequency was returned to normal between 1717 and 1748. At 0605 on June 15, the same mill was stopped by a bolt. The frequency of all networks, with the same exceptions as before, was lowered to 59 cycles from 0605 to 0626 and returned to the normal 65 cycles between 0700 and 0730 after repairs had been completed. The third instance occurred on June 16 when a frequency drop of 0.5 cycle was experienced between 1113 and 1118 when an electrical feeder to coal mill #2-1 tripped out after the mill jammed and overloaded. None of the three power disturbances affected the cascade materially and no cells were lost as a result of the frequency reduction.

The installation of forced air ducts on the B motors in the escape alleys of the K-310, K-309 and K-301 section buildings, which was described in the report of May 26, was continued this week after a period of several weeks when no installations were made due to a shortage of parts. Air ducts have now been installed in K-310 and K-309 sections and buildings K-301-1, K-301-2 and five cells of K-301-3.

The coolant coolers of all but seven cells in the K-302 section were acid-washed this week with a resulant average increase in heat transfer of approximately 125%. The program will be continued in the K-303 section during the coming week.

The recirculating water supply flow was changed during the week in accordance with the proposed change which was outlined in last week's report. On June 16 the "B" loop was isolated from the "A" loop and the "A" loop return was valved into the "B" loop supply at a temperature of 95°F. This step was taken to eliminate the possibility of condensation of process gas, a possible critical mass hazard, in Plant III cells in the event of a combination of high cell pressures with open water control valves. An investigation of this possibility was made during the week when the water control valves on the coolant coolers of twelve cells of the K-304 and K-305 sections were opened completely until the coolant "in" temperatures had leveled off.

Utilities and Auxiliaries

The change in the recirculating water system mentioned above resulted in an increase in the flow to Plant III due to the higher supply temperature and the subsequent decrease in heat transfer.

The recirculating water supply pressures were changed several times during the week at K-802 and K-832, due to the increase in ambient temperatures, in an attempt to maintain the desired supply temperatures.

An investigation into the feasibility of reducing the process steam header pressure from 12 psig to 5 psig has revealed that a substantial reduction in line losses may be effected.

Chemical Operations

The converter decontamination unit at K-1303 is nearly complete while the associated uranium recovery equipment is approximately 10% complete.

The water media recovery unit produced 10.8 pounds of T_3O_8 during the week while 3,211 liters of lime floc filtrate were discarded.

Electrical Systems Operations

During the week feeders 52, 53 and 54 at K-27 were out of service for removal of fire-proofing and installation of rat proofing as part of the lead cable corrosion mitigation program. This change should reduce corrosion by allowing the cable to "breathe", thereby drying it out.

The transformer core and yoke bolt reinsulation program continued this week as follows:

		Number of Transformers
1)	Removed from service this week for reinsulation	6
2)	Restored to service this week after reinsulation	4
3)	Reinsulation work in progress	8
4)	Total completed to date	99

The reinsulation program is now approximately 44% complete.

The following tables are attached:

I. Weekly Production report
II. Cascade Cell Off Stream Time and Labor Man Hours
III. Utilities and Auxiliaries
IV. Chemical Operations

J. P. Murray

J. P. Murray

REMorang, Jr./ga
Enclosures (4)

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 June 14 to 0700 June 21, 1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28839.20	- 0.1
K-25 Waste Concentration	210854	- 2.2
K-27 Product Concentration	192192	- 2.2
Purge Rates - Scf/Day		
K-312-1 (Top)	-	-
K-312-2 (Side)	4714	-11.2
Conc. C-616 in Purge Cascade		
Top	2.8×10^{-5}	47.4
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Week (Lbs.)	% Increase Over Previous Week
Previous Inventory	332	-
Produced	199	- 4.3
Consumed	152	- 7.9
Inventory	379	14.2
Fluorothene Operations		
Raw Fluorothene Produced	688	
Raw Monomer Produced	1,908	
Refined Monomer Loaded in Bombs	2,337	
Monomer Recovered	841	

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	2813	867	-	-	884	-	1,031	5595
G-74 Pipe Line	3323	620	49	1	-	-	-	3993
G-74 Cyl.	-	171	-	-	-	-	-	171
Total	6136	1658	49	1	884	-	1,031	9759
% Increase from Previous Week	-3.8	43.4	-40.2	0	-6.2	-	-	12.5

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TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 June 14 to 0800 June 21, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase In Time Off Over Previous Week	No. of Times Off Cascade	% of Total No. of Times Off Cascade	Increase In No. of Times Over Previous Week
Seal Failures	31.75	13.31	- 63.54	3	7.89	-5
Stage Motor Failures	4.00	1.68	- 19.25	1	2.64	0
Stage Pump Failures	-	-	-	-	-	-
Converter Replacement	145.33	60.90	- 5.97	6	15.79	-1
Electrical Power Equip.	-	-	-	-	-	-
Inleakage Checks	8.58	3.60	3.91	14	36.84	4
Light Contaminant Inleakage	-	-	-	-	-	-
C-816 Inleakage	-	-	- 35.00	-	-	-1
Instrumentation	-	-	- 8.48	-	-	-8
Lube System Repair	.95	.39	.95	3	7.89	3
C-816 System Repair	-	-	-	-	-	-
Engineering Tests	48.00	20.12	- 9.83	11	28.95	0
Miscellaneous	-	-	-	-	-	-
Total	238.61	100.00	-137.21	38	100.00	-8

Weekly Stream Efficiency..... 99.75%
Weekly Stream Efficiency Last Week..... 99.61%
Weekly Line Recorder Stream Efficiency (Glass Tube Racks)..... 94.16%
Weekly Line Recorder Stream Efficiency (Metal Tube Racks)..... 91.17%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to June 21, 1948.

	Accumulated Labor Man Hours	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Seal Failures	5,296.00	2,041.74	2.59
Stage Motor Failures	1,586.00	344.02	4.61
Stage Pump Failures	1,010.00	495.16	2.04
Converter Replacement	6,214.25	1,472.38	4.22
Electrical Power Equip.	52.00	10.85	4.79
Excessive Inleakage	1,330.17	936.17	1.42
Instrumentation	437.50	74.03	5.91
Lube System Repair	18.00	7.04	2.56
C-816 System Repair	216.00	125.13	1.73
Total	16,159.92	5,507.02	2.93

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TABLE III

UTILITIES AND AUXILIARIES
From 0700 June 10 to 0700 June 17, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	72.25	1.37	78.3°F	99,430	32.98	1.61	77.5°F
Increase From Prev. Week	-14.29%	-14.38%	1.3°F	-11.45%	4.67%	2.55%	0.4°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4.688	2.51
Flow to Distribution (Mn. Gal/D)	4.688	3.24
Volume in Storage (Mn. Gal)	2.168	0.00

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	3,421	-96°F	5,964	106°F
Increase From Prev. Week	9.09%	1°F	5.48%	1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	4,906	305	3,182	2,966	2,159	88
% Increase From Prev. Week	-5.71	-5.57	83.08	-8.20	-7.70	-11.11

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TABLE IV

CHEMICAL OPERATIONS
June 14, through June 20, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Leaks Found
Vacuum Testing	0	0	0	3	15
Pressure Testing	7	0	6	0	26
CO_2 Testing	1	12	---	---	0
C-816 Testing	---	---	9	---	5

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	0	---		0 Lbs.	0 Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	6	5	---	---	---
C-816 Storage	---	---	---	---	---	0 Lbs.	---	---
Field Decon.	---	0	9	---	---	---	10	17

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	4	12	10	123

	Total Samples	Total Determinations
Chemical Analysis	355	145

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PROCESS DIVISION WEEKLY REPORT
Issued 7/1/48

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 1995

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J. P. Murray

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To Mr. A. P. Huber
Location K-1029, Rm. 27

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Date June 30, 1948

Answering Letter Date

Subject Process Division Weekly Report Ending 0800 June 28, 1948

Summary

The withdrawal of top product continued through the week at a daily X rate approximately 12.8% less than the previous week and 19.0% less than the average for the last six months.

The program of replacing existing converters with converters containing DL barrier continued this week with converter replacements in cells 1, 3, 5, 7, 9, and 10 of K-305-12.

Cell high side pressures in all but eight cells of K-27 were reduced by 0.1 psi this week.

The side purge building, K-312-2, was shut down for a short period during the week in order to complete the change from the constant frequency to the variable frequency ring bus in the electrical vault which serves this building.

A test was run in K-304-1 to determine the electrical power required for various cell pressures.

Cascade Operations

The low withdrawal of top product this week is attributed to the effect of the pressure increases in the K-302, K-303, K-304, and K-305 sections which were made in conjunction with the DL barrier installation program. The pressure increases have steepened the cascade gradient, resulting in a smaller upflow of X.

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The effect of this decreased upflow is reflected in the below-average production figures for the last two weeks.

The converter replacement program continued during the week with the installation of converters containing DL barrier in K-305-12.1, 3, 5, 7, 9, and 10, completing the scheduled changes in this building, since cells 4 and 6 normally serve as a light contaminant stripping section. At the end of the week a converter change was in progress in K-305-10.2. Since the beginning of the program, a total of 50 cells have undergone converter replacements. This represents approximately 18.3% of the total number of cells scheduled for replacements.

The high side pressure of all cells in K-402-9 through K-402-2 and cells 2 and 4 in K-402-1 in K-27 on June 25 in order to lower the temperatures of the "B" motors. Tests had shown that the "B" motors were overheating due to high ambient temperatures, thus tending to shorten the life of the motors. This pressure reduction will be in effect only during the hot summer months. The reduction in power load associated with the pressure reduction

The side purge building, K-312-2, was isolated and shut down a total of 15.75 hours on June 23 and June 24 in order to make a design change on the electrical bus in Vault 28 which supplies power to K-312-2. This is the same design change which has been completed in Vaults 27 and 29 and which was described in the reports of June 3 and June 16. These changes now make it possible for the motor-generator set in any K-312 section vault to supply power to any of the purge buildings if necessary. The shut-down of K-312-2 did not affect cascade operations to any appreciable extent, since the Plant III surge for purge system was used to accumulate the light contaminants from the side purge point.

A test was run in K-304-1.9 and 10 on June 25 to determine the power requirements at various high side pressures for the cells in the K-304 section with newly installed DL barrier.

The results of the test indicate that approximately 10% to 15% less power is required for the DL barrier than for the former NDA barrier over the pressure range used in the test.

A total of 47.040 Kg T of enriched feed at an average assay of 299552 was fed to the cascade during the week. Of this amount, 44.999 KT was K-25 recovered material while 2.041 Kg T was received from Y-12.

The K-101 C-816 removal unit was in operation during the week except between 1810 on June 24 and 0115 on June 26 when it was isolated for minor repairs. During the time that the unit was isolated, the K-302-5 cold trap returned material containing C-816 to building K-302-5, increasing the cascade C-816 inventory slightly. By the end of the report period the unit had removed most of the C-816 which had been returned. There were no C-816 leaks during the week.

The program of acid-washing coolant coolers in Plant II was continued this week with the coolant coolers of K-302-5, K-303-1, and K-303-2. In addition, the coolant coolers of buildings K-304-1 through K-305-11 in Plant III were back-washed according to the usual backwashing procedure in order to increase heat transfer.

Operations were begun in K-27 during the week in preparation for the series operation of K-25 and K-27. The K-27 C-616 return line and the crude feed header were purged at the end of the week in preparation for maintenance work involving these two lines. The crude feed was changed over to the PDF header in order to free the crude feed header for this work. It is estimated that the operation of K-27 in series with K-25, inserted between K-310-2 and K-310-3, should result in an increase in top production of approximately 3.0%.

The cell off-stream time this week is accounted for in part by seven seal failures, seven stage motor failures, and two stage pump failures. One stage pump failure, the 6A pump of K-301-1.8, occurred under rather unusual circumstances. The pump apparently failed at about 0430 on June 22 but did not cause a disturbance to the cascade. It was suspected that there was either a plugged sixth stage or a faulty 6A pump when the control valve of the next stage upstream tended to close and the pump showed a higher suction pressure than discharge pressure. A check of individual motor loads on this cell showed a reading of 18.5 amps as compared with a normal load of 60 amps for this particular pump motor. When the pump was removed, it was found that the front plate and vanes of the impeller had shattered into small pieces which were found distributed around the pump casing. The back plate was the only part of the impeller still attached to the pump shaft.

Utilities and Auxiliaries

The supply temperatures of the "A" and "C" recirculating water supply loops went above the control points several times during the week, caused by the high ambient temperatures. This necessitated increasing the supply pressures in order to return the temperatures to the control points, causing an increase in flow of approximately 18% in the "A" loop to Plant II and 8% in the "C" loop to Plant I. The supply conditions of the "B" loop to Plant III remained constant at a pressure of 50 psig and a temperature of 95° F during the entire week. The ambient conditions also caused an increased flow in the sanitary water distribution system.

The ambient air flow increased this week as a result of the addition of approximately 1000 scfm of dry air for use in the ventilation system of the K-303-7 offices. The increased cost of this air for ventilation will amount to approximately fifty dollars per month. The ventilation is necessary only during the hot summer months.

The steam load at K-1501 decreased approximately 5.2% this week. This was due in part to a decrease in the Process steam header pressure from 12 psig to 5 psig. A check was made on June 26 to determine the exact load reduction due to the pressure reduction. The results indicate a saving of approximately 1500 pounds of steam per hour.

Chemical Operations

The construction work on the new converter decontamination unit at K-1303 is now approximately 95% complete while the work on the associated uranium recovery equipment is about 50% complete.

The mercury recovery unit, which had been removed to make room for the new converter decontamination unit, has been re-installed in a different location in K-1303, with operation of the mercury stills awaiting electrical installations. The installation of the ventilation system for the mercury recovery unit prevented any production of T_3O_8 in the water media recovery unit since its ventilation system was affected by the above installation.

Electrical Systems Operations

Feeder No. 309 was tripped out of service at 1858 on June 27 by neutral relay action due to a lightning stroke. The feeder was re-energized and restored to service by 1918. The sanitary water plant was out of service during this period as a result of the outage of feeder No. 309. The fire alarm system was out of service from 1900 to 2140 due to the same storm which caused feeder No. 309 to trip out.

The K-27 power load presented in Table I is shown as bus load instead of transformer load this week in order to bring this figure in line with the actual power consumed and the figure which is used in the monthly report.

The transformer core and yoke bolt reinsulation program continued this week as follows:

	Number of Transformers
1) Removed from service this week for reinsulation	2
2) Restored to service this week after reinsulation	3
3) Reinsulation work in progress	7
4) Total completed to date	102

The reinsulation program is now approximately 45.3% complete.

The following tables are attached:

I. Weekly Production Report
II. Cascade Cell Off-Stream Time and Labor Man Hours
III. Utilities and Auxiliaries
IV. Chemical Operations

J. F. Murray

J. F. Murray

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Enclosures (4)

TABLE I

WEEKLY PRODUCTION REPORT
From 0700 June 21 to 0700 June 28,1948

Interplant Flow	Daily Average This Week	% Increase Over Previous Week
KgT	28746.90	-3.3
K-25 Waste Concentration	210854	0
K-27 Product Concentration	192192	0
Purge Rates - Scf/Day		
K-312-1 (Top)	-	
K-312-2 (Side)	4539	-3.7
Conc. C-616 in Purge Cascade		
Top	3.3×10^{-5}	17.9
Side	1.0×10^{-6}	0.0

C-216 Operations	Total This Week (Lbs.)	% Increase Over Previous Week
Previous Inventory	379	14.2
Produced	144	-27.6
Consumed	131	-13.8
Inventory	392	3.4
Fluorothene Operations		
Raw Fluorothene Produced	807	17.3
Raw Monomer Produced	1698	-11.0
Refined Monomer Loaded in Bombs	2063	-11.7
Monomer Recovered	1163	38.3

G-74 Operations — Consumption in Gallons of L-28

Type	K-300	K-1400	K-1405	K-1300	K-1004	Y-12	Losses	Total
L-28	2203	980	-	-	939	-	1140	5262
G-74 Pipe Line	3441	140	134	1	-	-		3716
G-74 Cyl.	-	66				158		224
Total	5644	1186	134	1	939	158	1140	9202
% Increase from Previous Week	-8.0	-28.4	-	0	6.2	-	10.6	-5.7

TABLE II

SEPARATING CASCADE
CELL OFF-STREAM TIME AND LABOR MAN HOURS
From 0800 June 21 to 0800 June 28, 1948

A. Cell Off-Stream Time This Week.

Reasons	Time Off Cascade (Hours)	% of Total Time Off	Increase In Time Off Over Previous Week	No. of Times Off Cascade	% of Total No. of Times Off Cascade	Increase In No. of Times Over Previous Week
Seal Failures	69.50	23.64	37.75	7	19.44	4
Stage Motor Failures	29.22	9.94	25.22	7	19.44	6
Stage Pump Failures	45.99	15.64	45.99	2	5.57	2
Converter Replacement	135.00	45.92	-10.33	7	19.44	1
Electrical Power Equip.	-			-		
Inleakage Checks	7.91	2.69	- .67	8	22.22	-6
Light Contaminant Inleakage	-			-		
C-816 Inleakage	-			-		
Instrumentation	-			-		
Lube System Repair	1.39	.47	.44	4	11.11	1
C-816 System Repair	5.00	1.70	5.00	1	2.78	1
Engineering Tests			-48.00			-11
Miscellaneous						
Total	294.01	100.00	55.40	36	100.00	-2

Weekly Stream Efficiency..... 99.69%
Weekly Stream Efficiency Last Week..... 99.75%
Weekly Line Recorder Stream Efficiency (Glass Tube Racks)..... 96.33%
Weekly Line Recorder Stream Efficiency (Metal Tube Racks)..... 81.34%

B. Man Hours of Labor for Work Orders Completed on Off-Stream Cells from November 9, 1947 to June 28, 1948.

	Accumulated Labor Man Hours	Accumulated Cell Hours Off-Stream	Ratio: Accumulated Labor to Accumulated Cell Off-Stream Hours
Seal Failures	5,413.00	2,111.24	2.56
Stage Motor Failures	1.586.00	366.86	4.32
Stage Pump Failures	1,010.00	541.15	1.87
Converter Replacement	6,319.25	1,607.88	3.93
Electrical Power Equip.	52.00	10.85	4.79
Excessive Inleakage	1,366.67	936.17	1.46
Instrumentation	473.50	74.03	6.40
Lube System Repair	23.00	7.61	3.02
C-816 System Repair	216.00	130.95	1.65
Total	16,459.42	5,786.74	2.84

TABLE III

UTILITIES AND AUXILIARIES
From 0700 June 17 to 0700 June 24, 1948

PROCESS WATER

Period	Section 800 Total Flow Mn. Gal/D	Section 800 Make-Up Water Mn. Gal/D	Section 800 Avg. Supply Temp.	Section 800 Fire Water Gal/D	Section 830 Total Flow Mn. Gal/D	Section 830 Make-Up Water Mn. Gal/D	Section 830 Avg. Supply Temp.
This Week	85.03	1.59	86.6°F	118,290	35.63	1.66	78.5°F
Increase From Prev. Week	17.69%	16.06%	8.3°F	18.97%	8.04%	3.11%	1.0°F

SANITARY WATER

	This Week	% Increase from Previous Week
Flow to Storage (Mn. Gal/D)	4.908	4.69
Flow to Distribution (Mn. Gal/D)	4.955	5.70
Volume in Storage (Mn. Gal/D)	1.834	-1.54

1100 AND 1200 SECTIONS

Period	Ambient Air Scfm	Ambient Air Dewpoint	Dry Air Scfm	Dry Air Dewpoint
This Week	4,196	-97°F	5,843	-107°F
Increase From Prev. Week	22.65%	- 1°F	-2.03	- 1°F

SECTION 1500 - STEAM PLANT

Period	Total Steam M. Lbs.	Coal Used Tons	Coal In Stock Tons	Treated Water M. Lbs.	Condensate Returned M. Lbs.	Equiv. Steam In Condensate M. Lbs.
This Week	4,649	273	3,464	3,435	2,486	100
% Increase From Prev. Week	-5.24	-10.49	8.86	15.81	15.15	13.64

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TABLE IV

CHEMICAL OPERATIONS
June 21, through June 27, 1948

Leak Testing

	Cells	AC Pumps	Cell C-816 System	Misc. Equip.	Leaks Found
Vacuum Testing	0	0	0	2	1
Pressure Testing	16	2	6	4	12
CO_2 Testing	1	2	---	---	1
C-816 Testing	---	---	57	---	73

Special Materials Handling

	Cells	AC Pumps	Equip.	Charged	Discharged	Issued	P.G. Spills	Excess Alpha
C-616 Charging	6	---		Approx. 69,340 Gms.	6 Cyls.	---	---	---
Carbon and Alumina Traps	---	---	---	5	4	---	---	---
C-816 Storage	---	---	---	---	---	3,339 Lbs.	---	---
Field Decon.	---	2	6	---	---	---	7	27

	Beta-Gamma	Carbon Traps	Alpha Air Samples Regular	Alpha Air Samples Special
Radiation Survey	2	0	4	138

	Total Samples	Total Determinations
Chemical Analysis	526	357

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DISTRIBUTION

1. K-25 Site Records (RC)
2. ChemRisk/Shonka Research Associates
3. DOE Public Reading Room
4. S. G. Thornton (K-25 EMD)