4060

~~SECRET~~

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NOTEBOOK NO. C.L. 884

ISSUED TO: W. A. Rodger

ISSUED BY: Mary M. Erwin

DATE: 4/4/45

Bldg 706 D start-up tests

Re: Al vacuum and offgas flow rates, see page 43.

"This document consists of 201 pages. No. 1 of 1 copies, Series A"

correct documentation as of 7/6/60

~~"This document consists of 200 pages. No. 1 of 1 copies, Series A"~~

p184: 1 hot slug used.

Dummy Run #1; see pages 41-48
Dummy Run # D-2; see pages 48-
Dummy Run # D-3; see pages 68-
Dummy Run # D-4; see pages 100-
Dummy Run # D-5; see pages 183-

~~RESTRICTED DATA~~

~~This document contains restricted data as [redacted] any manner to an unauthorized [redacted] is prohibited.~~

~~SECRET~~

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Box T-269

CLASSIFICATION CANCELLED

Ted Davis 7-8-96

ADD signature Date

Single rereview of CCRP-declassified documents was authorized by DOE Office of Declassification memo of August 22, 1994.

Classification Cancelled

~~Or Changed~~ To

By Authority Of

By AT6 Date SEP 22 1971

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

Darryl C. Hamm 7/8/96

Technical Information Officer Date

ORNL Site

~~SECRET~~

4/2/45 Non-operating areas turned over with minor exceptions to Operations. WAR

4/3/45 Began setting up Chemistry Laboratory and using Office #

4/5/45 ACV Please ask McClellan and Newton to stop in to see Peterson and me here in this office first thing in morning. We will get transportation arranged and pay overtime if we keep them past 8:20 hrs. WAR.

ACV

4-6-45 12-8 W.A.R

The following tanks have been cleaned out, calibrated and tagged: All open flame on these tanks are covered with cloth.

M-1, M-2, M-4, M-6, M-8, M-10
T-1, T-2, T-3, T-4, T-5, T-6, T-7
T-8 And T-9.

I believe that T-8 and T-9 should be propped up on side opposite outlet to improve drainage.

Steam lines to T-1 & T-2 need lagging

1. A key to the H.P. Room (#11) has been turned over to Farmakes.

2. A key to the janitor's room (#7) has been turned over to them.

3. Bert N. checked on the oil & grease feed line to A-5 agitator, they were steel & are going to be changed over to Stainless Steel.

4-8-45

All the M tanks were filled to overflowing with cold water. All overflows functioned OK. All pumps were tested on cold water. All delivered water satisfactorily, but pump M-7 was noisy. Millwrights are investigating cause. The trash was swept out of the M pit. Water runs into the pit is sucked out very slowly by small jet installed for this purpose.

M-1 was 2/3 filled with water (satisfactory filling rate ~ 15 min for 2/3 of tank). Air sparger was turned on. Agitation is very vigorous, and sensitive to valve setting. Steam sparger also tried out. Noisy, but can be operated wide open safely. Air sparger valve leaks slightly. Water was heated from about 60 to about 75°F (estimated by feel) in about 15 minutes.

The M pumps were used to pump up to the T-tanks in order to see if valves leaked and if T overflows can take full pump delivery. The Pb valve on the bottom of T-4 leaked. The NaOH storage tank (T-6) overflow is too small to take the full flow of its pump, and water sprayed out from under the top gasket. T-3 and T-5 overflows took full pump delivery with no difficulty. T-4 could not be tested because of the noisy pump. Water was also pumped from the M room into M-10 (about 50 gals.)

The safety shower outside the M room was tested and found OK.

Further works to be done:

1. Test T-4 overflow capacity against max pumping rate
2. Test all pumps, measuring delivery rate
3. Calibrate M-1
4. Calibrate M-10
5. Test T-4 cooling coil connections from leaks.

Maxwell was told it is OK to open up B-3 to see if sp.gr. tubes are too close together (Thinks they may be 3" instead of 4") if CWM approves.

M. C. Linnett 1:30 pm

Note:

Operations now is free to operate all equipment in M & T areas, but no chemicals may be brought into the areas, and no liquids or other materials can be put into cells A or B. KDW estimates all work in Cell A complete Wednesday nite.

LMN says his men find flanges unbolted when left bolted at close of work on day previous, in cell A. If necessary to unbolt flanges for inspection operations should notify LMN and leave such flanges clearly tagged so they will be pulled up tight again.

Not approved installation of steel ladder in Cell A for maintenance purposes.

Has requested all plugs in top of cells be sealed with mastic when all eqpt has been installed.

4/8 ACV — 1. In the basket under this book are drawings you made need for task

2. Determine & list after checking what each switch in Elect Bxes F & G operate. Make up this list so that it can be typed on the card provided in the box.

ACV

3. On the panel board drawings all bubbles are numbered. I have also prepared a list to be filled in so that I can complete a list for name plates.

4. See how much can be done as listed (1–5) on page 3 by MCL

W.P.B.

4-9-45 12-8

MADE UP A LIST OF SWITCHES ON BOTH F AND G PANEL. CHECKED THE LIST AND ALL WERE O.K. WITH THE EXCEPTION OF THREE SWITCHES.

FILLED OUT THE LIST OF BUBBLES.

CALIBRATED M-1 & CALCULATED M-12 CALIBRATION.

WAS UNABLE TO CHECK FOR LEAKS IN T-4 COILS BECAUSE PRESSURE BAKED

4-10

T-6 OVERFLOW LINE. PROBABLY NEED VALVE IN LINE FROM T-6 TO OVERFLOW.

UNABLE TO CHECK T-4 OVERFLOW CAPACITY AND PUMP DELIVERY RATES, BECAUSE CURRENT WAS OFF.

ACV

8-4 ACV

Please note memo on wall in re shift work. Would be glad to talk to you and your crew about that for a few minutes at about 7⁵⁵ in the AM.

ACV

Looks like a slight lull tonight -- before storm -- Pls check entire M and T areas carefully once more. Check against attached list and in addition list anything you are unsatisfied with. We are OK'd to operate the pumps if you find them with juice on or can talk someone into putting juice on for you. Don't run them without liquid in them of course.

WAR

7-10-45 12-8

Operated all equipment in lab make-up room and third floor tank room.

Test M-pumps and measured delivery rate. (in pounds)

Tried to check calculated calibration M-10 tank. Put 1800 # water in and found some discrepancy in manometer system. Turned up air pressure, but was unable to increase bubbler rate appreciably.

Calibrated M-1 thermometer, with standard thermometer. Temperature discrepancy was so slight that gauge temperature can probably be used directly.

AW

8-4

NOTE:

Do not use S.S. chemical buckets from 205 until H.P. has checked for product inside & out. Same instructions apply to all other equipment from 205.

MCL 11-15-45

4-11-45 Painting of valves, in proper colors, is commencing. Procedure:

G.H. will mark each valve its proper color. The non-Tech. men are to paint the valves on all 3 shifts. Paints are being issued in Shift Supv's' office. Extra brushes in desk. Cheesecloth provided. Please keep all of the paint on the valves. The whole valve body is to be painted as well as the handle. We are to paint all service valves, including the chem. labs. All steam valves to be red.

Code:

Hot water	—	Black
Cold water	—	Green
Distilled "	—	White
Steam	—	Red
Air	—	Orange
Gas	—	Blue
Vacuum	—	Yellow
Bleeds & Vents	—	Brown

Tech. men please valves check for mistakes.

4/11/45

LEM.

All lines inside and out of cell A, all lines in 1st floor make-up, and all lines on 3rd floor trunks are to be checked to see that they are made of the specified matl. Black iron will be quite evident, but distinction between stainless and any possible (?) use of monel will have to be checked by HVG

acid drop test (mould will fizzle). Dropping bottles & acid (70% conc. HNO_3) are provided in shift supv. office. Also gloves. Print CL-7060 — 114 is to be used for searching out each line and checking that matl. is as specified. Use column marked "Matl." and check when O.K. This is a job for 2 - one Tech. & one non-Tech. Priority on this job is higher than valve painting. Would like to get inside cell A checked A.S.A.P.

LRM.

4/11/45 We take over Cell A at 4:00 PM today. In this book there is a handwritten copy of procedure to follow in checking tanks A1-A6. Do not go after A8, A9, A10 for the present. Try to finish everything through section (h) by 8:00 4/12/45. I do not think this can be done but try anyway. Do not start section (i) until after 8:00 tomorrow AM as we will get the scales checked then.

ACV -- please expand your check list to give a place to check off the items in my attached list. Parts (a), (b), and (c) need not be included in this expansion.

From here on out do not hesitate to call me (5-3764) at any time when you are in doubt as to meaning of instructions or lack of same. We are shooting for starting dummy runs this week end.

W. a. R.

4-12-45 12-8

Tested every line and accessible parts of equipment with HNO_3 to determine its composition. Magnet was not very effective. However lines which were supposed to be 18-8, were actually 25-12.

Part d. All service piping in operating area from P.S. #1, was not tagged out since construction turned on service to P.S. Anyway there was no "Do Not Operate" sign available.

Part e. All lines between cell A & cell B were broken and were tagged out on panel board.

Part f & g. Service piping in P.S. #1 was blown out. Cooling coils were blown out all the way to drain.

The following lines were blown out to drain.

LINES: 13, 17, 60, 25, 31, 28, 203, 22, 69, 8, 134, 136, 48, 55, 50

The following lines were blown out to drain

LINES: 34, 35, 36, 37, 42

All completed lines were tagged.

The following piping has not been completed in cell A.

LINES, 97, 98, 101, 110, 111, 112.

Delivery rates of pumps in ACP make-up room are:

M-3	162 # PER MIN.
M-5	100 # PER MIN.
M-7	101 # PER MIN.
M-9	106 # PER MIN.

These are all average values.

Calibration of M-1 Temperature gauge.

STANDARD THERMOMETER	—	TEMP. GAUGE
59° F	—	57° F
72.5°	—	71°
88°	—	88°
111°	—	110°

4-12-45 Started calibration of A-1 and corresponding
8-4 ring balance. Leak in instrument + work
JRW. proceeds slowly.

Cell A Testing
Completed Section "g"
~~[illegible]~~
Section "i" was completed as far as possible with condition of piping as it is. A list of repair items on all equipment was turned in to U.A.R. and when some of these items are repaired, testing of all tanks A1 thru A6 with exception of A2 jacket should be started over again.
Section "h"
Started taking apart flanges inside cell to to jets for purging of lines inside of cell. Check these lines to see if the right ones are off since one of the ~~[illegible]~~ non-technical men has been working on these. All valves leading to the jets are tagged out at PB-1

4-12 Put no acid in cell A tonite. O.K. to
LM. start on PB-2 with WAR's written procedure LM/WAR.

We are to make a carbon copy of all calibration records, jet delivery performances, etc. (for J. T. Weills).

PB-2 has air to bubblers, so that A-8, A-9 can be calibrated tonite. Instrument man will not be needed on this job as it is merely a case of reading the manometer. For calibration of large tanks we use both funnels (if there are 2) to reduce the time required. A-1 was partly MTied to W-11 after calibration (jets 1.4 gal/min) steam turned on. Temp. rise was slow, air sparging is required for mixing. It looks like 15# steam will barely do the job, if at all. The following jets will have been disconnected from steam line and the steam line purged by midnite:

A1 - W11 ✓ A5 - A5 ✓ A1 - A6 ✓
A5 - W11 ✓ A5 - A5A ✓ A1 - A9A ✓
A6 - W11 A1 - A9 ✓

AC ✓ All the rest of the jets in cell A remain to be disconnected and purged.

The metal tags being put on PB pieces will need to be edited (e.g. WLL for W-11). At least one is in wrong place.

Calibration of A5 is completed, A6 is ready to be calibrated. ~~in progress~~

A-1 is cooling. When cool, P/s. jet to W-11, making second test on jet delivery rate.

WAR. P/s. make arrangements for use of cell fan tomorrow nite ??? steam condenses!

A-13 ~~45~~ 12-8

JET LINE A-6 TO A-5 (77) IS PLUGGED SOMEWHERE BETWEEN STRAINER AND JET. METAL FILINGS AND SCALE WERE FOUND ON INLET SIDE OF STRAINER. 4/13 Ej

LINE A-6 FROM NO. 2 PANEL BOARD TO JET A-5 TO A-8 IS INCOMPLETE.

WITH THE HELP OF THE INSTRUMENT DEPARTMENT TANK A-6 IS IN THE PROCESS OF BEING CALIBRATED. 4/13/45

ALL REMAINING JET LINES INSIDE CELL A HAVE BEEN BROKE, PREPARATORY TO PURGING.

SERVICES TO NO. 2 PANEL BOARD WERE TURNED ON.

PANEL BOARD NO. 1		PANEL BOARD NO. 2	
LINES PURGED	LINES NOT.	LINES PURGED	LINES NOT.
			46
A-1 → A-5	60	A-8 → A-8	142
A-5 → A-6	70	A-8 → A-9	123
A-6 → A-6	A-6 → W-9	A-9 → A-8 9A	196
A-8 → A-5 9A		A-9 → A-8 9B	150
A-8 → A-5 B		A-9 → A-8 C	181
			163
			169
			165
			167
			171, 186

JETTED 29¾" WATER FROM A-1 TO W-11 C
600 AM. JETTING TIME 6 MIN.

WE'LL NEED MORE BLANK TAGS.

ACV

4/13/45 1. Cleaned out all strainers in steam lines
E of W outside east wall, both floors.
2. Lines that were left not purged by
12-8 are still to be done. Lines which
were purged, but were left disconnected,
have been put together.

(See Page 16 — continued)

4/13/45 ▷ Starting with 4-12 this afternoon
the following will hold:
a) operators from semi works will
join shifts. Rest of shift will join starting Sat AM.
▷ b) all calibrations of tanks, tests of
jets and other equipment are to be
recorded on Form 7060-1 which at
present is repose in the second
drawer of the left in the Shift Supervisors
office.
c) You may move into your
lockers any time. Keys available
from Bigler. (Left on desk in Rm 12)
d) Clothing will be available on
Monday and all clothing restrictions
other than the use of trucks
in the operating areas will
go into effect then. We should

(cont. on page 17)

4/13/45
8-4
Fam:

4/13/4

Work done: —

Completed calibration of A-6. Tank remains full of water. Checked overflow.

Calibrated A-8 as shown — all that remains

done — is checking overflow volume & what it syphons back to.

Work to do —

Calibrate A-9 & check overflow. A-9 has

done — 2.3" water in it — ????? Remove & start calibration.

Tank A-6 was not checked for where the lower level ⊔ tube starts — Consequently when tk is MT — remove blank flange & suck off all excess water & check initial ⊔ tube. Who F— — this up???

There are some jet lines that have been blown out to cell that have not been connected up again, therefore the list given to us by 12-8 shift was not complete. Check these if you find time.

Jet lines A6-A5 (line 77) which was discovered plugged by 12-8 shift is in process of being fixed. Please check.

There are numerous leaks in jet line flanges which were not discovered while purging — ???

No lines purged on 8-4 shift.

cont. from page 15

4/13/45 turn in lockers and clothing issued in 706A to Bradshaw

The pop valve on A1 is being set at 40#. Should be reinstalled by 8:00 PM. If so continue checking A1 jacket. A5 will be set at 30# but A6 will have to remain as is.

If A1 is completed do the following to it: fill jacket with water then have one man inside cell watching and another outside to turn on steam slowly. See if jacket will take it without hammering too much. Also turn on as much water as A5 and A6 will take (with by-pass on trap open) then turn on steam to A1 and see if the outlet header on west face cell A hammers. Also fill A1 with 250 # of H_2O See how long it takes to heat (100°) or if it boils. Also how long to cool. See what difference the use of the trap on the exit side makes in heating and cooling cycle.

Do not start the use of acid in the cell yet. Wait to

get Maintenance pretty well out of these before we start that.

Shift supervisors please sign all time cards that turn in to me as I wish to keep a record of this overtime you fellows are putting in.

WAR.

The line and jet A6 to W9 was tested this evening. Both jet and vent work all right. Shine is a leak at last flange before W9.

WAR

ACV -- Pls return pencil sharpener to MDP office and reinstall. There is one on my desk for this purpose. Pls confine sharping to our enemies and not our friends.

WAR

Notes on calibration to date are in 2nd drawer of file cabinet in Rm 12 mentioned before. As soon as you shift supervisors get time pls try to start setting up your office on a working basis.

4-13

WP

WAR

WAR

4-13-45 LRM. Steam lines to jets purged:

A5 - A8
A6 - A5
A9 - B1A
A9 - B1B
A9 - B1DC
A9 - B1DD
A9 - B12
A5 - A5
A5 - A6
AD - A5

This completes purging of all steam lines to all jets in cell A.

Thermocouples to discharge sides of jets checked on:

A5 - A5A
A5 - A5B
A6 - A6
A8 - A5DA
A8 - A8
A9 - A8DA
A9 - A8DB
A9 - B1A

These thermos are installed, but their proper operation is not checked.

WPB Slug chute does have a hole near top.

WAR Who is to plug open pipes with corks???

The lack of slope into headers and in lines to B12, B1 has not yet been corrected.

Where are the scopes? where is top of A9 Agitator??

WAR Some makeshift will have to be devised to make the Sp. Gr. instruments read. The vertical difference must be 4" ± 1/64". This we know is not the case, esp. in B-3. Suggest that

a sol'n be sought early. It may be necessary to rework the lines in B-3. May have to make new graduated dials for gravity instruments."

All purged jets in cell A are reconnected.

Tank A-9 is being calibrated. Many readings were taken in small part of tank, 1# increments, etc. Hg manometer for A-9 keeps picking up oil from somewhere. A-9 contains 85# H_2O at 12°. Readings not taken due to leak search. The oil draining into Hg manometer is causing erroneous readings. Some way must be found to stop the drainage into the Hg. manometer before calibration is continued.

4-14-45 12-8 EMPTIED A-6 TO W-11 140#

7100 # JETTED OUT IN 52 MINUTES. 4/1

W.A.R. RETURNED PENCIL SHARPENER. Thank you!

CHECKED POP OFF VALVES ON A-1 AND A-5. BOTH POPPED AT 17 lbs PRESSURE.

FILLED A-1 JACKET WITH WATER AND THEN TURNED ON STEAM. NO HAMMERING EVEN WHEN TURNED ON FULL PRESSURE.

ALSO TURNED ON WATER TO A-5 AND A-6 THEN STEAM TO A-1. LINE STILL DID NOT

HAMMER.

FILLED A-1 WITH 25# H_2O AND DETERMINED HEATING AND COOLING RATES. USING TRAP. AND ALSO BY-PASSING TRAP.

HAD A LOT OF TROUBLE WITH MANOMETER FOR A-9 TANK. OIL FELL DOWN ON TOP OF MERCURY AND CAUSED INCORRECT READINGS. INSTRUMENT MAN TOOK LINES APART AND FLUSHED OUT WITH CCl_4. THEN A LEAK DEVELOPED AFTER HOOKING MANOMETER UP. MANOMETER IS O.K. NOW. 7:30 AM HOWEVER BELIEVE CALIBRATION WILL HAVE TO BE STARTED ALL OVER AGAIN, AS READINGS ARE PROBABLY OFF DUE TO LEAK.

LINE 20 IS LEAKING.
A-2 COIL 2 P.S.I GAUGE COCK LEAKS.

ACV

4/14/45 ① Tank A-9 filled thru suction line 144 of A9-, A-78 jet. Now ready for recalibration when heel is checked for this suction line. Jaary — you have these figures no doubt.

② A8, A5, A6 have water to be jetted to W11. Check T.F. operators.

③ Pop-off valves to jackets working ok now (for a while). Valve to A1 opens up at 35 lb/in² A5 at about 23 lb/in² and A6 at about 22 #/in². We are now ready to test jackets over again

(4) Transfer line A6-W9 checked and appears to have no leaks now. The vent in this line works OK in cutting off the flow. 4-14 4-1 4AM

(5) There is an open blank flange on top of A9. Somebody who took off this flange didn't even cover up the hole to keep out dirt from open sleeves in cell roof. The men who are cleaning up these sleeves may have put some crap in. EJW

Try to get cell A checking complete up to introduction of Acid into cell by 8^00 AM Sunday.

ACV -- Pls bring your check list of work done up to date by Tomorrow AM and leave me a detailed report. WAR

Check Bull. Board for shift schedules.

WAR. WAR

4-14-45
4-12
HM.

Completed Cell A piping check vs. Brown notebook. The following items remain incomplete and should be run down by someone on day shift, with pipe crew, and completed:

ESW

1. Samplers & drains for A1, A5, A6, A8, A9
2. Sol'n from roof AR-C-6. Needs funnel.
3. " " " AR-A11 " "
4. A-16 exhaust to 706 D stack not tied into auxiliary fan in fan house.
5. No plug in strainer AW-E6.
6. Rubber stoppers not in spares, both inside and out.
7. Jet AO-A5 disconnected.

With these, Cell A is complete EXCEPT for instrumentation checking.

Valve painting continues ..... ???
PB-1 completed.

WAR

We need name plates on P.B.-1 for lines 19, 68, 90, the three vents from jackets of A1, A5, A6.

WAR

Tank A-9 is calibrated. Do we graph # or Kg ??? A-9 left full.

WAR

4-15-45

12-8 ALL SERVICE VALVES ARE NOW PAINTED ON P.B. NO. 1, 2, 4, 5. HOWEVER ON P.B. NO. 1 THE AIR LINES ARE BEING PAINTED ORANGE INSTEAD OF YELLOW. Why? Because Air is orange WPB.

ACV

4/15/

8-

EJ

WHILE TESTING OUT SOME JETS IN CELL A, A-1 TO A-5 WAS FOUND PLUGGED; WHEN DISMANTLED IRON SHAVINGS WERE FOUND PLUGGED IN JET. MIGHT BE A GOOD IDEA TO PULL OUT STRAINERS ON ALL JETS BEFORE STARTING UP.

SAFETY HAZARD: THE DRAIN PIPE ON EAST-SIDE OF BUILDING PASSING BY NO. 1 P.B. SHOULD BE LAGGED AS IT STAYS HOT (TEMP.).

4/15/45 8-4 EJW

1. Started calibration of jets and completed A9-A8C and A9-A8DA. A9-A8DB was only partially calibrated because the starting pressure was about 110 lb (Valve wide open) and with a cold line. It would not start at all when line was hot. We should run another operating pressure, now that line is cold, however flow must be started with full pressure.

2. Testing of jackets should be started again now that maintenance men have repaired many leaks again.

3. See attached note from W.A.R. — add about 1500 ml water to A9 (after jetting out all water from A9), then jet out the 1500 ml to bottle and measure.

All jet calibration sheets and jacket calibration sheets attached to clip-board. All instructions for testing, from W.A.R. are also on clip board.

(See ...

For tonight try to finish up testing of jackets including A8, A9. Should be OK now. Most maintenance items are supposed to be complete. Also attempt to complete testing of all jets in cell A.

Pls attempt to get the resultant volume when 1500 cc are pulled from A9 to B1 or B12 thru the transfer lines. Don't do this as long as any maintenance men are in cell B. (Maybe after 8:00 P.M.)

Not running at 6:00 apparently power off

Don't worry too much about leaks on Panel B and piping. Mark them in chalk. We are to get from Nelson in A1 a pipe fitter and helper who will work under our direction fixing leaks and making minor repairs w/o any red tape.

Would like to start the acid rinse of cell A in morning.

Pls plug both ends of the gone lines, which are not welded, with rubber stoppers. Don't plug the vent lines which read cell pressure.

Maintenance points out that with the malleable fittings we have we

should try to avoid letting the lines with sudden application of steam. So turn steam on slowly unless absolutely necessary.

Pls try to get J in habit of turning a valve back 1/4 turn after completely opening it so it does not stick in the open position.

The A5 agitator is running. Check every half hour to make sure it is not overheating. Do not run long with A5 less than half full water.

Not running at 6:00 pm apparently power off

The 205 steam jet is also running. Call 100 area supervisor (6312) when ready to turn it off. Also call them if you want to keep it running past midnight. The vac pulled on the A1,2,3,4 — A5 system is not adequate; try playing with it some to see if it can be improved.

WAR

Duplicates need not be kept on data sheets from now on.

WAR

4-15-45 It will be necessary soon to have
-12 } graphs on A5, A6, A9 etc & their
-3 } relationship to direct readings on ring
NC balance charts. Rates for jets (except for
A1 where we used a roughly drawn graph)
were not calculated instead direct readings
from ring balance indicators were
taken & shown on the data sheets.

In order to facilitate testing of various pieces
of equipment it would be most advantageous to
have all of the gages, meters, etc labeled. Could this
be done promptly to save delays of reference to prints?

Cell A has been "rubber stoppered" completely to
the present state of completion and the cell has
been cleaned out of dirt and hosed down. Rubber
stoppers in lines 401 + 402 join the PB-1 ring balance
PB-1-5 Cell A diff. press. and the inclined manometer
immediately to its left. They don't have stoppers in the line.

All micromaks in use at the present have temporary
cards designating selector switch or recorder number assigned
various pieces of equipment attached to.

A-9 to B-1, B-12 + B-3 — B-1 is tied in
solid so it is impossible to get flow deletion without a
B-1 calibration. A-9 - B-12 jet has foreign material
in the line. Plugged at the end of the shift and was
broken. Is open now but no time to check. Sgd to B-3

Maintenance shut off power to the cells
so A-5 motor did not run beyond 6 PM. We
did not attempt to operate panel board.

A-1 No leaks in jacket. Safety pops at 30#/□". No leaks in piping. Slight hammer once when steam at 12#/□" press. applied to tank having 40° water in it.

A-5 No leaks in jacket. Safety pops at 20#/□". Leaks in piping marked. No hammer when steam admitted into jacket after cooling water. Heating and cooling rates taken.

A-6 No leaks in jacket. Safety pops at 21#/□". Leaks in piping marked. Pronounced hammer in panel board but none in cell when changing from water to steam.

A-8 ASAFU. Steam at 5#/□" gage maximum obtainable. Water give no pressure indication although flowing. Safety pops at 5#/□". Manometer for A-8 doesn't work. No leaks apparent after what testing was possible under these conditions.

A-9 No leaks in jacket. Safety pops at 10-15#/□". Leaks in piping marked. Excessive hammering in jacket when changing from water to steam. Changing from water to steam at elevated tank temperatures the hammering is less pronounced and occurs at 45-60 sec intervals for a few minutes. Heating and cooling rates taken.

30

These feeds have been tested

— A9-A8DC leak at PB
✓ A1-W11 no comment
✓ A5-A6 R.B. readings "
✓ A9-A8DA manometer readings on A-9
✓ A9-A8C " " " " on A-9
✓ A9-A8DB → inoperable ←
✓ A8-A5B R.B. readings on A-5 spasmodic flow
✓ A5-W11 " " " "
✓ A6-W11 " " " A-6
✓ A1-A9A " " " A-1
✓ A-1-A9B " " " " "
✓ A-5-A-6 " " " A-5 + A-6
✓ A6-A-5 " " " " " "
✓ A8-A9 manometer readings A9
✓ A1-A5 RB readings on A-1
✓ A1-A6 " " " " " PB leak
✓ A8-A5DA " " " A-5 unions leak

— A5A6 → is disconnected

— ADA5 to be tested ????

Suction for A-1-2-3-4-5 system traced to 205 Bldg. No open lines anywhere. Jet at 205 carried about 2.2" Hg all night. Couldn't increase suction anyway. Just possible that a great loss may occur thru spacing about A-5 agitator shaft as steam rises thru this opening very easily ????

[illegible]

4-16-45 REPAIRED LEAK IN M-10 MANOMETER.
8-4
ACV

THE FOLLOWING JETS HAVE BEEN TESTED DONE

A5 TO A5 A — 5 MIN
A5 TO A5 B — 5 MIN
A6 TO A6 — 6 MIN

ALL INFORMATION PERTAINING TO JETS A-1, A-5, A-6, A-8, A-9 HAVE BEEN CLIPPED TOGETHER. THIS WAY WE CAN TELL WHAT'S BEEN DONE

THIS LEAVES THE FOLLOWING JETS TO BE TESTED HOWEVER THEY CAN'T BE DONE NOW AT LEAST

A9 TO B1A
A9 TO B1B
A9 TO B1C
A9 TO B1D
A9 TO B12

A5 TO A8
A8 TO A8
A9 TO A8 & B

✓ A5 TO A6 —
✓ A5 TO A5
✓ A9 TO A5
A6 TO W9 —

THIRD FLOOR FUNNELS WERE TRACED AND CHECKED. PAINTER MARKED THEM

HEATING AND COOLING RATES HAVE BEEN DONE FOR A-1 AGAIN.

HEATING AND COOLING RATES FOR A-8 AND A-9 HAVE BEEN STARTED.

WE NOW HAVE A PIPEFITTER TO TIGHTEN ALL LEAKS, ETC ON PANEL BOARD AND CELL A. PLEASE LEAVE A LIST AND WE'LL TAKE CARE OF THEM TO MORROW.

ACW

Want to start during runs at 4:00 PM Tuesday, April 17 unless something drastic happens. Therefore try to finish the following tonite.

a) Rinse all tanks with 10% acid.

b) Use all possible transfer jets and check for leaks using acid. WEAR FACE SHIELD.

c) Collect acid in A5 and then run neutralization in A5 in relatively small batches (Don't fill A5 more than half full at end of neutralization if you can help it. Send to Will calling tank farm boys.

d) Rinse all tanks with water. Spot test calibration charts.

Please lock Cell A door. Shift Sup. keep key. From now on no Maint (or anybody else for that matter including (Bill Miles, and myself) is to go into cell without checking with shift supervisor. Maintenance men are to be accompanied at all times by one of our men.

On days tomorrow we will make a final check of cell and draw up calibration curves.

It will be necessary to get some 50% caustic from platform up hill. Use SW truck.

Pls turn on A5 agitator and run whenever you have more than a foot of water in A5.

WAR

12-8 pls call TF about the 150 g/hr of water from A4. Continue A1 test all night.

4/16/44
4-12
Cy W

1) An attempt was made to check dilution jet transfers from A9 to cell B. The line A9-B12 was used but instead of getting dilution a loss of about 10% in volume was gotten. Checking the lines revealed that when jetting A9-B12, the discharged liquid backs up into the three other lines connected to the same line near B12 and the liquid goes over into B1 and B3. There are many more similar connections in cell B and we can anticipate a great deal of trouble in the present piping setup.

This dilution test is therefore not yet complete and we are at a loss as to which line to test next without cutting off some transfer line.

2) Completed testing of A8 jacket with orifice in outlet and completed testing this same jacket without orifice. At the present time the orifice is out of the line and is located in right hand top drawer of WAR's desk.

3) There are about 1000 lb of 10% HNO_3 in A1. This acid is ready for jetting around and testing [illegible]

4) Jets A5-A8, A8-A8, and A9-A[illegible] are ready to be calibrated (data sheet on clipboard). These jets have been taken apart and cleaned out.

done

5) According to UAR A6 jacket needs no thorough calibration

6) Please read ACV's note on maintenance work and UAR's latest instructions

7) A-8 is fully water to be dumped before jetting acid around

done

4-17-45
12-8

We have one drum of 50% NaOH at the east entrance. How about setting up a storage space on the concrete and giving transportation the task of keeping a certain No. of drums on hand at all times?

What is now in M-10 — or is the manometer off??

Rinsing of tanks with HNO_3 is in progress. A schedule of jetting has been set-up & started, which will use each jet in the cell. Possible exceptions: A5-A5 and A5-A6. Check with the powers about these two

PB 1-12 is in need of adjustment.
PB 1-11 does not show zero when tank is MT.

What kind of calibration do we have on A-6 ??? It would have been nice to have recorded the ring balance inches during calibration! Also, no zero point recorded.

Leaks noted so far in acid jetting:

OK 1. Nozzle C - A5 - flange.
OK 2. Top flange of jet A5-A5A (rear of A5).
3. Steam union to jet and discharge union from jet A5-A8.
4. Two leaks on jet A5-A8 delivery line; One at entrance to header on side closest to wall; the second at delivery line header entrance into flange (nozzle E) on side closest to wall.
OK 5. Jets A9-A8DA and ~~A9-A8DB~~ A9-A8C are plugged.

Jet A9-A8DB was plugged, is now partially open. All three jets should be cleaned.
OK None of above items are repaired.

A9 is being jetted to A8 via A9-A8DB at 8^00 AM.

Scrubber water shut off at 8^00 AM.

4-17-46
8-4
Acid

LRM - SURE LIKE THAT SETTING SCHEDULE YOU ALL SET. THIS WAY WE CAN FOLLOW ACID WASHING CARE FULLY.

THANKS FOR THE NOTE ON LEAKS. ALL WERE CHECKED AND TIGHTENED.

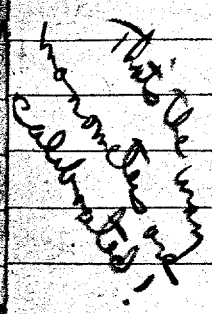
WAS PLANNING TO USE VACUUM CLEANER TO CLEAN OUT SLUG CHUTE, BUT ON LIFTING OFF CAP, WE FOUND IT CLEAN.

THOUGHT WE'D BE ABLE TO FINISH UP ACID JETTING IN CELL A BY 4 PM, BUT MAINTENANCE WANTED TO GET INTO CELL TO WELD THERMO COUPLE LINES.

ATTN: H.C.

Re: A-9 Calibration Chart -

why should inches Hg and inches H_2O be identical at same wt. H_2O? Pls. draw graph for small manometer covering range of ~200# H_2O, I have already drawn graph covering capacity of A-9 -

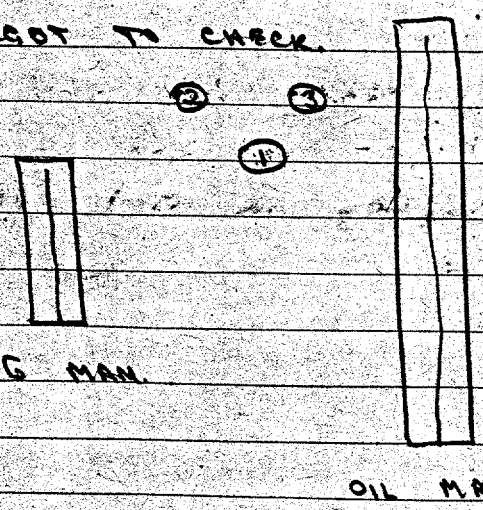


BROUGHT OVER 500 # Na_2CO_3 FROM SEMI-WORK WITH SEMI WORKS TRUCK. MADE UP ENOUGH 20% Na_2CO_3 (1200 #) TO NEUTRALIZE 10% HNO_3 NOW IN CELL A. USED TWO BAGS.

THERE ARE STILL 4 - Na_2CO_3 BAGS OVER AT SEMI-WORKS WHICH CAN BE BROUGHT OVER AND PUT WITH OTHER BAGS IN DECONTAMINATION ROOM.

PAINTED VALVES A SECOND COAT ON PB-1 AND PB-2 PAINTED PB-3, PB-4A, PB-5

IMPT HAD A LITTLE TROUBLE ON A-9 MANOMETERS, WHEN JETTING A-9 → A-8C GUESS VALVES ON PANEL BOARD WERE SET WRONG. I FORGOT TO CHECK.



WHEN READING THE OIL MANOMETER 2 + 3 ARE OPEN AND 1 IS SHUT. WHEN YOU WANT TO CUT OUT THE OIL MANOMETER AND READ THE HG MANOMETER, FIRST SHUT OFF 2 + 3 TOGETHER THEN OPEN 1. WHEN GOING DOWN THE SCALE FROM THE HG MANOMETER TO THE OIL MANOMETER FIRST OPEN UP 2

THEN CLOSE ① AND OPEN ②.

IT MIGHT BE A GOOD IDEA TO HAVE ② AND ③ CLOSED ALL THE TIME AND ① OPENED. THIS WILL PREVENT BLOWING OUT OF THE OIL MANOMETER.

GOT 6 DRUMS OF 50% NaOH TODAY ONE CARBOY OF 60% HNO_3 & ONE CARBOY OF H_2SO_4. STORED CARBOYS IN DECONTAMINATION ROOM.

STATUS SOLUTION STATUS AT 4 PM

ALL TANK RINSED WITH ACID. ALL 10% HNO_3 IN A-6. SEE JETTING SCHEDULE.
1200 # 20% Na_2CO_3 IN M-1 READY TO GO.
AIR SPARGER ON

ACD

4-18-45
12-8

Blank Flanges are left open on A-8, A9 for inspection, as per WAR.

Dummy Run is started. Can get only 4" vacuum on A-1, according to ring Bal. Checked flow rates from 205 back to A-1. The steam line as installed is inadequate for heating A-1 — 93° seems to be the limit.

The tank farm operator should be available at 6/7/4 between 5 min. of and 5 min. after the hour. At 5 AM, 6 AM, 7 AM, he could not be obtained. WPB has about contacting Harris and

WPB →

4/17/45 ① Job left undone (for WAR.)
4-12 Drop extension cord into A9 and A8
E.J.W through blank flanges on top of
tanks and look in to determine
whether or not there is still crap
on the bottom.

WAR-NOTE ② As instructed by WAR. the line
A9 – B12 was disconnected at
union near B12 and all obstruction
taken out to make it straight
discharge. In jetting through, there
was still a lot of water blowing
back into B1 just as before.

③ Preparation for dummy run.
(a) HNO_3 is in T5 (1 carboy)
(b) The 2 drums of 50% NaOH have
been pumped into M10 and made up
with water to about 65" in M10.
According to the latest calibrations,
the level in M10 should be about
90" for 3000 gal. At 65" the tank
sounds full and we hesitated in
putting in more water for fear of
over-running it. The manometer
in the make-up room or the
calibration appear to by screwy.
Please check before adding more water.
(c) No NaOH is yet in T6.

4-19
cont

4-18
8-
AC

(4) Leak:
PB-1 at gauge A6-A5.

Electricians held up solution make-up by playing with pump switches until 11:00PM.

4-18-45 cont. and let us know the story?
Heating of A-1 was tried both using jacket trap and using by-passed trap. One hours' heat treatment at 92-96 completed at 7:50. A1 ~~[illegible]~~ left heating at 8:00 AM.
A-1 seems to have a leak at bolt hole on lid (under counter, amplifier). Please tighten up after A-1 is cooled.

4-18-45 8-4 ACV REPAINTED ALL VALVES ON PANEL BOARDS.

DUMMY RUN HELD-UP SINCE 9 AM BECAUSE MCL WANTED TO CHECK VACUUM ON A-1, 2, 3, 4 SYSTEM AND CHECK NEW 25 # STEAM TO A-1 JACKET.

MADE-UP 4300 # 30% Na_2CO_3 IN M-1. ABOUT 6" SOLID Na_2CO_3 ON BOTTOM. AIR SPARGER LEFT ON.

LRM GOT 8 OPERATING DESKS AND PUT ONE ON THIRD FLOOR, ONE BY PB-1 AND ONE BY PB-2.

WE ONLY PUT ONE ON THIRD FLOOR USING 35' MONORAIL. NELSON DIDN'T LIKE THIS.

STATUS AT 1 PM.

1- COATING REMOVAL SOLUTION IN A-1 COOLING TO 40°C, STEP 25.

2- 1300 # 30% Na_2CO_3 IN M-1.

3- 6" 50% NaOH IN M-2

4- 84" 3% NaOH IN M-10.

BELIEVE THE ELECTRIC CLOCKS ON PANEL BOARDS SHOULD BE EITHER MOUNTED IN THE CENTER OF THE PANEL-BOARD OR OVER OPERATING DESK. HOW ABOUT THIS ??

ACJ

Report on Testing by MCL & BCN 4-18-45.

1. Rodger reported that suction on A-1 had inexplicably dropped during nite of 4-17 - 4-18. Investigation showed

a) A1 pressure recorder & A2 pressure manometer agreed at all times within 0.2" water. Hence both probably correct.

b) Pressure survey by BCN using manometer

On top A1	6.2" water
A1 slug chute	6.2"
Pipe between A2 & A3	6.2"
Top A3	6.2
Δ Across A4	3.2 (From PB1 instrument)
Top A4	8.5"
Valve pit outside 706D	10.5"
Trap N. 706C:	~19"
S. end of 4" line, 205 Area	36"

Flow rate recorded by 204 recorder 50-60 cfm.
A5-A3 vent valve closed during above measurements.

c) Turning on A1 sparger reduced A1 suction markedly. With A5-A3 vent valve closed and A1 sparger on at rate to give 1" water suction in A1, a Volometer test showed air thru sparger about 30 cfm. Hence not surprising that vigorous sparging reduces A1 suction.

Conclude must use sparger sparingly. Cannot reconcile high suction values observed on 4-16 & 4-17 with 6.2" suction registered today. Hmmm, may be due to leakage in thru jets etc.

2. Rodgers reported that coating solution could not be got above about 96°C on night of 4-17 & 4-18. Instrument group checked recording thermometer, found it 1.5°C low and adjusted. Lo press stm. was raised to 25 psi. With Al sparger on, and coating solution in Al, max. temp. was attained in 45-60 min. and was 94° (started ~25°C) When sparger was turned off temp rose to 100°C in 15 min. When trap by-pass (closed up to now) was opened the temperature rose in 10 min to 102°C. While sparger was operating it was at rate such that Al pressure was 4-5" H_2O, B5-B3 vent valve closed. Believe reaction temperature can be maintained during dissolving.

4/18/45 ① Re: N.C.L.'s instructions on cell B jet testing. All jets to cell B have been labelled with chalk on panel board in preparation for this job.
4-12
EJW

② Running run #1 — Slugs are being dissolved. We are to proceed with the run and further than dilution of metal solution, the diluted solution to be held in A1 until tomorrow.

③ The calibration chart for A1, which was supposed to be photostated is N.G. The correct chart is on desk at PB1.

④ We are to periodically check pump M3 (NaOH to A4) for leak through packing. Maintenance men have tightened the packing but it still has slight drip.

⑤ There is 60% HNO_3 in T5 and M4. Please empty T5 before pumping up more since there is no liquid level gauge on this tank.

⑥ Please check out of carbonate phosphate solution in A5. The level is 24" and Sp. Gr. is 1.38. I can't locate the A5 calibration.

46

4-19-45 12-8 Sp. Gr. of A-1 has refused to rise as expected. Liq. Ht. has dropped down a small amt. WAR says - heat A-1 til 9 AM, cool slightly, noting change in Gravity reading, if any, and dilute.

Cell B jet testing is done & recorded on tablet. Only one case of runback was found. Since B tanks are not calibrated, we could not check delivery rates or dilution rates.

Hom's about the instrument group giving us the OK to calibrate cell B tanks? Tempus ist fugiting.

4-19-45 8-4 STATUS AT 4 PM

DUMMY RUN STANDS IN A-1 WITH STEP 19 DONE. READY FOR STEP 20 WHENEVER O.K. IS GIVEN. MCL HELD-UP UNTIL 4:03 PM

EMPTIED OUT A-5 TO W-11. THOUGHT JET WAS PLUGGED, BECAUSE RING BALANCE DID NOT DROP OFF TO ZERO. CHECKED JET. O.K. INSTRUMENT DEPT. CHECKED CHART. NO REMARKS !!!

What happened?

TESTING A-9 & JETS BY MCL

A-9 FULL OF WATER.

A-8 PARTIALLY FULL.

60% HNO_3 STILL IN M-4 & T-5.

4300 # 80% Na_2CO_3 STILL IN M-7

24" IN M-10

T-6 DRAINED AND WASHED OUT, SO MAINTENANCE COULD CHANGE OUTLET VALVE TO T-8 & T-9. IF LEFT IN THIS CONDITION MAINTENANCE WILL GET IT TOMORROW.

HOW DO YOU ALL LIKE NEW OFFICE SET-UP? PICTURE FRAMES ARE DRYING. WE'LL PUT THEM UP TOMORROW.

AOD

CELL A KEYS IN WAR'S COFFIRE

P.S. THEY JUST TOOK OUT A-9 TO A-8 DB JEX

4/19/45 Run No D-1 Status.
Eg W ① Metal soln in A9
② 6% $Pb(NO_3)_2$ in T2 and in 4 liter graduate under T2.
③ 50% H_2SO_4 + 2% HNO_3 soln in T9 (430 lb).
④ A9 tank calibration chart in desk at PB2
Extraction ready to start.

Tanks B1, B3, & B6 are calibrated and left full of water to the overflow. Do not MT. Instrument men want to check spargers in the AM and want tanks full. Calibrations in log book.

Run D-2 Status
Coating removal going on now.
You'll need 3% NaOH in M-10 very soon, better shag your fannies on this solution make-up.

There is some small quantity of 90% H_2SO_4 in T4 now, also some in
?? M6, 60% HNO_3 in T5 and 50% NaOH in
?? → T6. Please check these volumes before adding more to these tanks.

① Slow down due to maintenance [illegible]

Five jets leading to cell B at PB-2 tagged off "do not operate". You can use these jets, after taking off the tags, if no maintenance men work in the cell. L.R.M., I think you know what I mean.

ACV If work on day shift is slowed down as usual ① suggest tackling some of the following jobs: (any shift which hits a lull can do likewise.)

1) Make up stock solutions for extraction, metathesis, and cell B. Have them analyzed by analytical department and labeled giving the date made up, by whom, composition, sp. gr.

2) Stock the 3rd floor make up area with reagents, beakers, hot plates, balances (see Rm 1, 706A) stirring rods, tongs, etc.

3) Provide storage for sample containers near each sampling station.

4) Get larger supply of rubber gloves and face shields and provide storage near M and T areas.

5) Procure set of hydrometers for Tarea and M room.

① Slow down due to maintenance obviously !!

6) Make up tables of sp. gr. vs comp. for various reagent we use.
7) Replace 2 lbs in blank flange off gas line pit.

On matters of official HS:

1) Pls count heads at least once each shift -- preferably twice once before eating and once before going home. This will become mandatory soon anyway.

2) Also pls be more careful about use of rubber gloves and face shields while handling acid and alkalies. Both should be used whenever more than 100cc of any corrosive liquid is handled. Will have a more nearly adequate supply of both available today.

4-20-45
12-8
HM

Dissolver is running D-2 sans PB1-2 micromax (N.G. and on the fritz). Please get an instrument man to fix it once and for all today. It has failed on both runs just at reaction time. Dissolving started about 6 A.M.

Run D-1 in A-9 is on 4 hour settling after PbSO4 pption. Reading at 9:15. Decantation at 9:15. A-9 agitator tagged out so settling will not be disturbed.

EJW. Those cocktails in T2 + T4 sure hit the spot.

WPB → Shift inventory sheets for all tanks are badly needed. All will be FUBAR soon.

Small amt. of HNO_3 left in T-5. T4 left untouched, also M-6. One bbl. of NaOH was diluted in M-10. We need some carboys of HNO_3. A1 sampler was plugged. Unplugged with air.

4-20-45 A-9 TO A-8 D B LEAKS AT UNION AS WELL
8-4 AS BAD LEAK ON WELDED DELIVERY LINE TO A-8
ACD ACID SPRAYED OVER WEST WALL OF CELL.

Program for 4-20-45

ACD 1) Transfer Extraction liquor from A9 → A8 and sample A8. (Get Pb, T analyses)

2) Wash Extraction cake thru lines to A8
ACD 3) Wash down cell & have 2 leaks repaired, check for plugged jet, A9 → A8
4) Proceed with metathesis, and metathesis cake solution. Catch metathesis cake solution in bucket and reserve for inspection.
5) Neutralize metal solution from A8
6) Add trace to A1 solution, agitate 30 min., sample & transfer to A9. (FGR sample
(Get Ba, ...)

4/2

7) Proceed with extraction in A9.
8) Add Acid to A1, but sample (1/2 hr. agitation) before proceeding with dissolving. Get Ba* content.

M. C. Linnett 4-20-45
11:00 Am.

A-9 TO A-8 DA APPEARED PLUGGED. TOOK JET OFF AND IT WAS CLEAN. HAD A LEAK ON THE OUTLET SIDE OF JET. THIS WAS TAKEN CARE OF. COULD BE THAT SOLUTION WAS TOO HOT.

USED A-9 TO A-8 D.B. JET. WORKED O.K. HAD TO COOL A-9 SOLUTION WHILE DECANTING.

INSTRUMENT BOYS CHECKED POINTS 3 AND 4 FOR A-9 TEMP. ONE READ 74° C THE OTHER 60° C. THIS IS A HECK OF A LOT OF DIFFERENCE FOR A 6" DEPTH DIFFERENCE. ACTUALLY THE THERMOCOUPLES ARE 12" APART.
NO. 3 POINT RECORDS THE LOWER THERMOCOUPLE
NO. 4 POINT RECORDS THE HIGHER THERMOCOUPLE.

MICROMAX ON P. 8, NO. 1 WAS FIXED.

WE COULD ONLY GET 1" H_2O VACUUM ON A-8 WITH SPARGER OFF. THIS WAS PROBABLY DUE TO OPEN LINES IN CELL B.

4/20/45 ① Floor drains on 3rd floor plugged

② 7% $Pb(NO_3)_2$ and 40% K_2CO_3 have been made up and sampled according to WAR instructions. The lab results are not in yet but we're using the solutions anyway. Please check chemist on 12-8 shift.

Run Status D1

Metathesis digestion at 12M in A9. Metal waste in A8 ready for neutralization. Phosphate carbonate solution is in A5.

According to MCL. We are proceed as far as dissolution of metathesis cake and transferring the solution through A9 - B12 transfer line and catching in beaker to measure dilution.

Run Status D2

Not touched on this shift. Metal solution (diluted) still in A1.

Tank Farm phone - 6194
" " office 101 Bldg - 6174.

The system of filling M tanks ~~and~~ with NaOH is hazardous. When do we get a vacuum or air jet system for both HNO_3 + NaOH?

T-5 was calibrated and 2 charts drawn.

The "40%" K_2CO_3 was 35.5% according to lab. It was used, calculating deficiency. More K_2CO_3 sol'n was made up, 38.2%. Apparently the Baker K_2CO_3 is 80-90%.

The splash plate on B-1 has been knocked out of line from sol'n inlet. Important that this be fixed.

line 617, jet B6-B3, is plugged.

Program for 8-4, 4-12 shifts 4-21-45 and 12-8 shift 4-22-45

① Proceed with extraction, cake wash + metathesis of D-2a, but do not dissolve D-2b until given clearance by MCL. This probably will come after most of construction is out of building — 4-12 shift most probably.

② Make no transfers from cell A into cell B of any kind until further notice.

③ Use tracer as instructed on pp 51-52 in D-2a

④ During extraction, cake wash and metathesis of D-2a have man in cell during each transfer or addition of solutions to look for leaks. Have him wear rubbers, acid goggles, hard hat & rubber gloves.

M. C. Lumett 4-21-45
10:15 AM

In addition to above pls swab out viewer holes on cell A so that a test of the type A pineapple may be made. Amount of grease which should be left is about like the film which makes a good coat on a stop cock. McL wishes to watch the test of the viewer pls contact him before inserting same.

Hand counts are not being recorded!!

WAR 4/21/45
10:20 AM

(1) Please observe the sampling notations to be used on Run samples. If in doubt ask WAR or W.P.B. Fill out Shift inventory complete. Also show raw Materials.

(2) Check A 6 Calibration chart sometime soon as is convenient with Run plans.

(3). Whenever going into 706-C (Except the counting room), be sure personel from 706-D wear rubbers.

(4) H.P. Can be had at night or Sun. by calling either W.H. Ray or K.Z. Morgan.

(4a) No Eating in 706-D !!!

(5) Check that Bulliten is read daily and every man gets a hand count daily.

WPB 4/21 4 00 P.

4-21-45 8-4 AOD

Cell A Survey at 4 P.M.

A-1 - 60 mr at 4".

A-6 - 8 mr at 6"

D-1 Metal waste in A-6 all neutralized ready to be dumped to W-9 as soon as jet is replaced at W-9.

D-2A - in A-9 ready to start extraction

D-2B in A-1 reading to start

metal solution.

Fixed up rack for sample & inventory sheets.

Put up all M & T tank charts up.

PUT IN TRACER INTO A-1 (D-2A) AND SAMPLED.

To 4-12 shift 4-21-45 and 12-8 & 8-4 shifts 4-22

① Continue runs D-2 thru metathesis cake solution. Catch cake solution in bucket in cell A (not in cell B) by disconnecting union on jet from A-9

② Pls. make clear notes on all changes you think should go into operating procedure. These may be made on run sheets, either at foot or on backs.

M. C. Lunnett 4-21-45
5:05 PM

During dissolving D-2b found that NO fumes came out of A4-W11 vent pipe when NaOH rate was 95 on PB1-8. Fumes still present when reading was 120, disappeared at 180, did not reappear at 150. Recommend setting NaOH

rate at 150-165 on PB1-8.

4/21/45 ① Sample code-sheets in desk at PB2

E J W ② LRM — Newton will not be

4-12 in tonight — mother ill.

Please

WAR PLEASE NOTE

Will every man weighing reagents in T8 and T9 make an attempt to not overweigh. We're sending too much out to sewers in order to empty them for next reagent to be weighed.

Reagent delivery line to A9 was plugged solid when $Pb(NO_3)_2$ was added — South Funnel. It took us about 1½ hours to unplug it sufficiently to drain out the solution that was poured into the funnel. The balance of the reagents were added through north funnel.

Maintenance please correct

Put tracer into D2-B no sooner than 1 hr before transfer is made from A1 to A9 — instructions from W.A.R. — Tracer is ready in [illegible]

Leak in stainless valve in line T4 to T8 (in bonnet)

Run Status

D2A - Extraction Cake settling until 3:08 AM

D2B - Diluted UNH waiting for A9 to be MT'd

WCB - Metathesis Cake solns of run D1 taken from 3rd floor and put in south hot lab.

4-22-45
12-8

Jet A9-A80A very slow, ~~possibly~~ partially plugged.

Came within .1 RCH of metathesizing D2A, as per MCL pages 54, 55. But with deep regret, used A.G. Bell's invention and averted a blunder.

D2B, C, D instructions call for full amt. of $Pb(NO_3)_2$. According to flow sheet B, C, D get .15 gal. or 565 cc. Flow sheet will be followed.

WAR

Since tracer soln for D2B left in lab was labelled "D-3" + chemist knew nothing more about it than to give it to us, we sampled A-1 30 min. after addition of tracer. Sample - 1MABB.

Run Status:

D 2 A — Ready for step 25 in A8. See Note on P.61 concerning 16# heel left in A-9.

D 2 B — Ready for step 20. ~~290# HNO_3 in T-5.~~

4/22

D 2 C — not started. 290# HNO_3 in T-5.

When jetting A9-A8DA, the delivery rate was very slow + the jet thermocouple stayed at 98° during transfer A9 temp at start of jetting 35° - at end - 62°. Steam valve was off. Tank had just been cooled to 36°. Looks like jacket steam valve leaks + should be replaced. When Hg. manometer registered 0, jet was continued 5 min. and bubblers turned on + switch made to oil 24" manometer. This man. then showed 46" level, or about 16# Hg. man. checked this. There is indication from this that we may have

trouble knowing when we are through decanting especially when a jet is partially plugged and the resulting high thermocouple reading does not show a sharp rise when transfer is completed. The Hg. man. did not hold its level, dropped to zero before tank was decanted. The bubblers were shut off at 7 A.M. so that A-9 contents would be settled one hour at 8 AM & day shift can decide whether to settle & decant or to put D-2B from A-1 on top & carry out 2nd extraction.

4/22/45 The trouble noted above on the A9-A8 transfer is due, I believe, to the fact that the soln was hot during transfer. Remember we are cooling A9 without agitation. This solution is of low diffusivity and the TC's are located near the bottom of the tank. Therefore they will read 30°C long before the bulk of the solution is cold. So lets try on D2B cooling for 30 min after a temp of 35°C is reached on the higher TC. Also leave cooling water on jacket during transfer.

Some confusion has resulted from incorrect labelling of samples and discrepancies in asking for various types of analyses. There

follows a table of standard samples thru metallurgical. Pls be careful about giving Run # and Batch #. If a sample is taken again, the resample is given the same code name with a "-2" after it.

	Sample	Size	Run For
Batch A	1MA	25 cc	Metal, free acid, Ba*
	8WMA	50 cc	Pb, Ba*
Batch B	1MB	25	T, acid, Ba*
	8WMB	50	Pb, Ba*
Batch C	1MC	25	T, acid, Ba*
	8WMC	50	Pb, Ba*
Batch D	1MD	25	T, acid, Ba*
	8WMD	50	Pb, Ba*
[illegible]	1WCA	50	Pb, Ba*
	1WCB	50	Pb, Ba*
	1P		Pb, Ba*

Note that the 9M samples are no longer to be taken. The blank on the sample record which says Run for ____ need not be filled out as long as it does not deviate from the above table. This info is also posted on the B.B. and is circulated to the Shift Sup.

4-22-
8-
Aor

Tracer was added to Batches A and B. This is sufficient activity for analytical purposes so do not add any more tracer on run D2.

Pls do not turn in any sample

4-22-45
8-4
ACW

RUN STATUS AT 4 PM

D-2A NEUTRALIZED, AND IN A-6 READY TO DUMP TO W-9

D-2B STEP 14 SETTLING 4 HOURS OVER AT 7:40 PM

D-2C READY FOR STEP 13 DILUTION 155 # WATER IN T-9 - READY FOR STEP 1

NOTE: SAMPLING INFORMATION FOR DUMMY RUNS ON CLIP BOARD,

WILL YOU FILL OUT ENCLOSED SHIFT SCHEDULE. ACW

WAR

64

4/22/45 4-12

① Capacity of water distilling equipment is much too low. We can expect to lose time in our operation unless it is stepped up.

② M7 pump failed during 50% H_2SO_4 make-up. Maintenance men are lined up to work on it after 12 M. We had to carry up our acid for the make-up besides carrying water from 3rd floor storage tank.

③ Maintenance items:

Tag above A9 jacket gauge should read "A9 jacket steam-water" and not "steam-air"

Some of the shifts, maybe ours, are using the wrong jets in decanting from A9 to A8. As I understand it, we are to use A9-A8DB for the first 3 batches (990cc heel) and A9-A8DA for the last one (580cc heel). Is this or is this not correct ??

④ Tank farm operators are quite scarce when you need them at times — suggestion — in making their rounds have them stop in here to check us on estimates for the next two hours

WAR

4/23/45 12-8 EJW

① It was a pleasure relieving such a good 4-12 shift. Everything is in such good shape! Nothing screwed up.

② How about changing calibration charts to show point of overflow and run them out far enough to show higher volumes.

③ H_2SO_4 pump OK, orifice at T4 was plugged.

④ We need some more Soda Ash. Carrying it from semi-works is tough work.

W aR

⑤ May I suggest some instructions on how to read and evaluate sample results so we know how to judge a good from a bad separation.

⑥ Water distilling outfit practically out of commission now.

⑦ Ran out of 3% NaOH at 7:30 AM. We had 67" at beginning of batch but it did not last as expected since we are now using 150-165 rotameter units.

⑧ Please check inventory sheet for the next make-up of 50% H_2SO_4. It's been in process of making up since 4:00 PM because of the water shortage.

(9) Run Status :-

D2-C — metal waste, neutralized in A5, cooling until 8:00 AM.

D2-D — Dissolving, should be finished shortly after shift change, dilution water weighed up in T8.

4-23-45
9-4
LRM.

The "50%" H_2SO_4 in T-9 was Gr. 1.522 ..... E.J.W.

A gravity manometer should be installed on T-4 for make up of 50% H_2SO_4. Present system bad. Have to reach into T-8 to get sample for gravity. The always present possibility of having to dilute in scale tanks, as in T-9 above, raises corrosion on scale tanks. (Also no agitation available for scale tks).

E.J.W. — correct on decanting A9-A8. For first 3 batches, use A9-A8DB (heel 990). For 4th waste, cake washes, and metathesis wastes, use A9→A8DA (heel 580 cc.).

D2C is in A6. Dump when D2D is neutralized.

D2D settling til 5^50 P.M. Step 14. ←

Program for Evening

① Continue Run D2 until metathesis is complete, break line into cell B in cell A and catch product soln in bottle.

→ DO NOT PUT ANY SOLUTION

→ INTO CELL B. Sample and store in anal lab BUT tell the analysts what you want to do and store it where they direct.

② Get 200 slugs from 100 area. They will be unjacketed and in boxes and cool. Handle with gloves and throw same in hot cans afterward.

OK Acr

③ Skip coating removal but give slugs one rinse with water — jet to W11.

④ Start D3A dissolving as soon as you like. Put tracer in D3A about 1 hour before ready to transfer A1 → A9

⑤ Before transferring any of D3 to A1 rinse out A9 with water.

W. A. Rodger

4-23-45
4-12
AUD

BOY THAT SURE IS A NEAT CURVE FOR A-9!

RUN STATUS:

D-2D - PAGE 14-3 STEP 1 SETTLING FOR 30 MINUTES.

D-2C NEUTRALIZED IN A-8 WAITING FOR D-2D WASTE.

D-3A - 200 SLUGS IN A-1, 303 # 60% HNO3 IN ALSO. WATER ON JACKET, WATER THROUGH A-4. WAITING FOR START-UP.

WE DIDN'T START UP D-3A BECAUSE WERE UNABLE TO GET ENOUGH VACUUM ON A-1. ONLY 4" LEAKAGE DUE TO SLUG CHUTE COVER. AT FIRST WE DIDN'T GET ANY VACUUM THEN AFTER MOVING COVER AROUND A BIT 4" VACUUM CAME.

WAR → MIGHT SUGGEST A RUBBER GASKET FIT AROUND EDGE OF COVER TO SEAL A-1 TIGHTER.

HAD TROUBLE WITH A-9 → A-8 D2A JET. BELIEVED SOLUTION GOT TOO HOT TO JET, SINCE 4 L. WATER WASHES DECANTED EASILY (THREE MINUTES).

WAR → MIGHT SUGGEST THAT ON DECANTING:

IN STEP 18, USE BOTH DB JET AND DA JET. DB JET WOULD BRING IT DOWN TO 990 cc AND DA WOULD FINISH IT OFF DOWN TO 580 cc.

4/24/45 12-8 EJW

WAR

Dear LRM.

In reference to your note concerning the 50% H_2SO_4 left for you in the scale tank yesterday morning, I would like to have you know that this was not a mistake in make-up because we make our final adjustment in specific gravity in the scale tank. If you and your crew had enough experience in making up solutions (you see, we have), you would understand that this is the easiest way of doing this. It took us about 4 hours to make up this batch so it would be ready for your crew. It is very obvious that your shift must be finding things in good order if you cannot find greater fault than you have in the past.

(2) What is the new set-up on jetting A6 to W9. — 2 batches ??

(3) Metathesis supernatant decanted to A8 thru A9-A8 DA instead of to B1. Volume too large to decant to bucket

under impression that T-4 has orifice, feed leaking, and cooling coil for specific purpose of mixing H_2SO_4. Is this correct ??? LRM.

(9) The line A9-B1A was disconnected in Cell A for dissolving D2 metathesis cake and jetting into bucket. We attached a bent pipe to the union to facilitate catching solution.

Run Status

D3-A in A1, diluted UNH but no tracer added ready for A9 after addition of tracer.

D2 — metathesis (2nd), settling to 8:30 AM in A9

— 1st metathesis supernatant in A8.

4-24-45
8-4
HRM

D2 metath. completed. Stored in S. hot lab. 11 mr./hr. Sampled.

D3A is diluted in A-1. No tracer added. Do not proceed until given O.K. by WAR or MCL. Waiting on D-2 results, may have to unplug soln funnel, may have to rinse out T-8 - T-9. See WAR.

At 3^{35} we started to get 1 case fuming HNO_3, one case HNO_3, one case H_2SO_4 from 706A. Pls. put these on 3rd floor at lab table. See WPB.

Smaller orifice installed on T-8. Two new slide rules in desk.

Program -

NW ① Rinse A9 and A8 with water. Jet to W11.

② Put 1×10^9 counts total in A1. Agitate 1/2 hour. Turn sampler on for 15 min. allowing agitation in A1 to continue.

NW ③ Jet to A9 and start extraction D3A. Follow flow sheet except for

a) Settle 6 hours -- cooling during the last two hours. Break flange on top A9 and drop in a TC connected to a potentiometer if you can find one or a Weston Thermometer (not a glass thermometer) and see if top of solution is cold. If not -- cool further.

b) Decant carefully using A9-A8DB

④ Dissolve batch D3B but hold in A1 without tracer until 8^{00} AM

⑤ Pls check Cell B piping against LRM list when

maint gets out of cell B also when they get out check all the stainless with HNO_3 and magnet.

4-24-45 Run Status

4-12 EXTRACTION

ACM D-3A - IN A-9 STEP 11 IN PROGRESS OVER AT 12:35 AM.

D-3B - IN A-1 STEP 10 HEATING UP, STARTING METAL SOLUTION.

HAD A LOT OF TROUBLE MAKING UP 50% H_2SO_4 FOR EXTRACTION. STILL DOESN'T PUT OUT VERY FAST. SEE MCL's NOTE FOR MAKING UP.

① D3B ACM

4/25/45 12-8 Just before reaction took off (at about 100°C) we noticed nitric fumes coming out of vent to jet A1-W11 at PB-1. All conditions in A1, including 8" vacuum, appeared normal. All conditions in cell A also appeared normal. The fumes disappeared after about one minute. Although we did not notice it at the time, there is a slight possibility that the other vents may have fumed also.

73

160 336 645

DON'T SAY IT — WRITE IT

TO ACV

FROM MCL

DATE 4-24

Re: H_2SO_4 dilution & addition in extraction

After adding $Pb(NO_3)_2$ & rinsing line:

Put exactly 100 lbs. H_2O in T4. Get exact amount by draining out any excess and discarding. Put 79 lbs. H_2O into A9 (previously heated to 80°C). Add 15 lbs 60% HNO_3 to T4, and pump up 236 lbs. 91% H_2SO_4 from M room into T4, agitating & cooling T4 meanwhile. When cooled run into T8,

separately [illegible] between [illegible] Hatches

20 a R

(2) (3) N.A.R. (4) (5) (6) D

1634

DON'T SAY IT — WRITE IT

6266

DATE

eigh, determine sp gr. and adjust concentration
correct value. Run slowly (over ½ hr.)
nto A9, maintaining temperature. This solution
ntains 65% H_2SO_4 and 27% HNO_3. Its
p gr @ 30°C = 1.545 approx.
40°C = 1.536 "
50°C = 1.528 "

separate final and A9
between photelis

20 a R

(2) Re: Attached M&L's instructions on acid make up

The acid was made up according to instructions with one exception, the nitric was not added to T4 but to weigh tank T9 since there are no facilities for adding acid directly to T4.

(3) A gang of maintenance men worked in cell B all night — couldn't check pipes.

N.A.R. (4) For information on cooling during settling of extraction cake please check date written in on PB2-7 recorder during the cooling period.

(5) T9 contains 65% H_2SO_4 + 27% HNO_3 (approx) Sample in lab awaiting analysis

(6) Run Status

D3-B — completed and diluted in dissolver, no tracer added

D3A — extraction cake in A9

" — extraction supernatant in A8, ready to be sampled

Program

D3 will be run as 4 separate batches each to be carried thru metathesis separately. Rinse A8 and A9 between batches.

W.A.R.

All D-3 batches to be given following treatment — (unless changed later which they probably will be)

1 hour agitation hot (as previously)

~~1 hour~~ cooling with agitation to 35°

4 hours settling cold.

(METATHASIS, WASHING, or WHAT???)

as per note bottom page 73

Result on D3A waste

12.4% loss, as received

of which 2.2% loss in clarified soln.

Lab analysis of H_2SO_4-HNO_3 mixture in T9 — 61.2% H_2SO_4

2.4% HNO_3

→ Take a Sample on A9 after transferring A1-A9 before adding any $Pb(NO_3)_2$ or H_2SO_4. Then take the regular 8 WMA (B,C,+D) Do this for every batch rather than any 1MA (B,C,D). WPB 3 15/p 4/25/45

706-C dissolver is being decontaminated in decontam. Room. Let sit over nite.

K_2CO_3 made up - 41%+

Status:

D3A - 1st H_2O extraction cake wash settling tel 4 08

D3B - in A-1 Tracer in.

they say they will !!!

If construction gets out of cell B before morning start items:
1a, 1, 2, 3, 4, 5 on enclosed list. Also check piping against LRM records.

W. A. Rodger

4-25-45
4-12
ACD

RUN STATUS:

D-3A IN A-9 STEP 29 METATHESIS

706-C DISSOLVER DECONTAMINATION PROCEEDING

INSTEAD OF SITTING OVER NITE WE HAVE TO DECONTAMINATE UNTIL READING AT TOP OF DISSOLVER IS 50 mr/hr.

FIRST READING 130 mr/hr.

AFTER 3 CARBOYS OF 60% HNO_3 AND WATER, AND AIR AGITATED FOR TWO HOURS WE JETTED OUT TO POND, READING WAS 100 mr/hr.

NOW WE ARE JETTING DRUM OF 50% NaOH INTO TANK. MIGHT BE A GOOD IDEA TO STEAM SPARGE IT AN HOUR OR SO; AND PUT SOME NaOH INSIDE DISSOLVER AS WELL AS OUT.

WE BROKE A-9 TO B1 DD LINE TO JET OUT SUPERNATE OF METATHESIS 1 WCA. PUT LINE TOGETHER AGAIN.

ACD

4/26/45 12-8 EJW

① We've been decanting our metathesis supernatant into A8 instead of B1 as written on sheets. The reason for not catching it into bucket is the large volume (about 4 gallons) which would be hard to handle near Cell A ceiling and would splash all over. If you want this procedure other than the way we do it now, please let us know.

② Who is supposed to change charts on Ring Balance? Operations or instrument. Sept

③ We could not start cell B testing in the order written up by M C L. Maintenance men were in cell part of the night and when they did leave they left behind their tools strewn all over the cell. Instead, we started blowing out steam lines to cell B jets after fabricating necessary pipes to attach to steam lines so that the steam would not buckle up the linoleum. Jets blown out for 30 min each to strainer areas follows.

B1-B12A B1-B5D
B1-B12B B6-B3D
B5-A5A
B5-A5B
B1-B6D

(4) Decontamination of 706-C dissolver with NaOH which was started on 4-12 shift was completed after boiling it for about 6 hours. After getting out the caustic, it is still about 150 MR/hr at outside surface of tank.

There is still some caustic left in bottom of the dissolver and the outside tank so please get rid of it before adding any acid for further decontamination.

(5) Run Status:

D3B — Extraction cake settling until 10:00 AM

D3C — Dissolving

WPB. I left some of G. Phillips' new shorts and undershirts in the right bottom drawer of your desk. They are too small and he wants them exchanged for a size 38, or size 40 if 38 is not available.

4-26-45 8-4 LAM. All steam lines as far as strainers (cell B) have been blown out for 30 min.

All steam jets have been disconnected in cell B. When instrument men have thermocouples enclosed, OK to blow steam.

Jackets of B1, B6, B12 tested with water. 4 leaks noted at inlet & outlets. To be repaired by Satchell.

Run Status:
D3B ready for metathesis
D3C in A-1. No tracer added.

Acid testing on pipes for 18,8 25-12, black iron, monel is about ½ completed. Checking against print No. 231. An "X" indicates negative acid test. A "✓" indicates pipe is 18-8 or 25-12 as shown by blue paint or lack of same. Acid, maget, inc., is in cell B.

The sample ports on B1, B3, B6 have been removed preparatory to hosing out. Hose has reducer fitting for more pressure.

O.K. now to purge all steam jet lines.

Program — Try to get all preliminary work in cell B (items 1a, 1, 2, 3, 4, 5, 11) on MCL list done by 8:00 AM. Leave remainder of pipe check for LRM on days.
Finish D3B. Attempt to set up a system involving a rubber hose whereby the metathesis wastes are caught in a bucket on floor of cell A. Sample the IP in a bottle.
Please try to stick to

standard sample code, the boys in lab get all mixed up. Rinse A9 and A8 between runs. Add tracer to D3C and jet to A9. Make up solutions for extraction but don't start.

UR

PROGRAM CONTINUED BY PHONE –

ADD TRACER TO D-3C IN A-1 ONE HOUR PRIOR TO JETTING TO A-9. ADD EITHER 1×10^9 COUNTS/MIN. OR 2×10^9 COUNTS/MIN. TAKE SAMPLE AFTER IN A-9 AND STOP THERE.

OK PUMP 3 CARBOYS OF 60% HNO_3 INTO 70G-C DISSOLVER IN DECONTAMINATION ROOM, MAKE UP AND REST WITH WATER AND SPARGE UNTIL 8 AM.

IN DISSOLVING METATHESIS CAKE (D-3B) PROCEED AS FOLLOWS:

1- ADD 2 L. HNO_3 TO A-9
2- AGITATE 15 MINUTES.
3- SETTLE 15 MINUTES.
4- TRANSFER OUT TO BUCKET ON CELL FLOOR MEASURE VOLUME AND SAMPLE. LABEL 1P-1.
5- ADD 800 cc HNO_3 TO A-9
6- AGITATE 15 MINUTES.

7- SETTLE 15 MINUTES
8- TRANSFER OUT TO BUCKET ON CELL FLOOR
MEASURE VOLUME AND SAMPLE
LABEL 1P-2.
9- ADD LAST 800 cc HNO_3 TO A-9.
10- AGITATE 15 MINUTES.
11- TRANSFER OUT TO BUCKET ON CELL FLOOR
MEASURE VOLUME, AND SAMPLE.
LABEL 1P-3.
12- MIX ALL THREE JETTINGS TOGETHER
AND RECORD TOTAL VOLUME.
SAMPLE AND LABEL 1P.

W.A.R. PER ADD

4-26-45
4-12
ADD

CELL B WORK.

1- FINISHED UP CHECKING FOR STAINLESS.
NO MONEL
2- ALL TANKS RINSED INSIDE WITH WATER
3- ALL LINES PURGED TO JETS.
4- WHOLE CELL HOSED DOWN

W.A.R. DISCREPANCIES.
1- GAUGE ON B-15 → B-1 JET
DOESN'T WORK.
2- B-6 TO B-3 LINE DOESN'T WORK WELL
SOLUTION RUNS INTO B-1.

PUMPED 3 CARBOYS OF 60% HNO_3 INTO DISSOLVER AND 1 CARBOY OF WATER TO FILL DISSOLVER. AIR SPARGING NOW.

CONNECTED RUBBER HOSE AND SARAN LINE TO A-9 TO B-100 LINE WHICH WE BURIED INSIDE CELL. CONNECTED TO BUCKET ON CELL FLOOR AS PER W.A.R. INSTRUCTIONS. WE FIRST TRIED B-100 LINE (166) AND IT WOULDN'T WORK SO WE TRIED LINE 120 B-100. THIS WOULDN'T WORK EITHER.

TOLD LAB. ABOUT 18 SAMPLES. AOW

4-27-45
12-8
EJW

1 Connected 3/8" stainless steel pipe to discharge line of B-100 & thus withdrew liquid from A-9. Saran & hose created an excess amount of back pressure - reason why it didn't work. BH.

We cannot locate the tools which were kept in shift office file. 4 months back!

WAR. Is 1MA, 1MB, 1MC standard sample code for metal solution sample taken in A9 instead of in A1 ?

Dissolution of metathesis cake

1P-1 The first 2000 ml HNO_3 added and taken but after settling gave 6.1 liters of total solution but I failed to see where liquid came from since the previous decantation was

good and only 500 ml heel should have been left in A9. The transfer out of A9 was very good also and no trouble encountered. 1P-1 contained a lot of precipitate even though settled for 15 minutes. 1P (all combined) also full of precipitate)

The following listed jets were tested and the results obtained in each case are itemized below —

A - Jets working satisfactorily with no backup

1. B1 - B6D
2. B3 - B6B
3. B6 - B5D
4. B1 - B5D
5. B15 - B6

B - Jets not functioning —

to be used as is

1. B6 - B3
2. B6 - B3D

C - Jets backing up at completion of jetting when surging occurs prior to complete steam thruput

using B3 - B6A — B3 - B6B back up
revamping — " B1 - B3D — B6 - B3 " " ✓
nothing at present B3 - A5A — B3 - A5B " "
revamping — " " — B1 - A5 " " ✓ (slightly)
" B1 - A5 — B3 - A5A " "
" " — B3 - A5B " "

D - Jets backing up during jetting

using B5 - B1 B3 - B1 back up
" B5 - B6 B3 - B6A
" B3 - B6B
B1 - B6 } all back up

nothing at present using B3-A5B — B3-A5A back up

The remainder of the jets were not tested for various reasons.

1. B3-B1 A union must be inserted
OK → to replace sleeve which we had to cut in order to determine runback

2. B1-A9
O.K. B15-B1
B3-A9 } Tank A-9 being used

3. ✓ B1-B12A
✓ B1-B12B
OK. B3-B12 } Instructions interpreted as follow - nothing to be placed into B12

4. B5-A5A
B5-A5B } Sumps must be cleaned in order not to transfer dirt to A5. Started cleaning sump just prior to shift change. Ought to be done by 3 am

Leaks observed on PB-4A & PB-5 need below

given to Satchell not done yet.

B1-B12A at elbow & union above steam valve
B1-B12B " "
B1-B5D " " " " " " "
B1-A9 " " " " " " "
B1-B3D union
B6-B5D "
B5-B6 "
B5-B1 steam valve leaks

In two cases we observed whether solutions added thru roof funnels hit splash plate.

1. B-1 funnel 1/4" off-center - splashing OK
2. B-3 Line 545 hits splash plate
O.K. " Line 544 does not hit splash plate.

Respectfully submitted after 8 busy hrs.
GH & FW.

Run Status

D3C - in A9, trace in sample taken. Acid in T4 for extraction, not tested for strength, made up according to McL's previous instructions. — no HNO_3 added
D3D - not started.
Transfer line A9 - B12 disconnected in Cell A and a line to floor attached for transfers to bucket.

8:1
LAM.

B1-B12A backs up into
B1-B12B and B3-B12

B1-B12B backs up into
B1-B12A and B3-B12

B12 has leak thru top at point where hg. level probe enters tank.

All splash plates O.K.

D3C held up during installation of vent on Line 174 (S. funnel to A9) and vent on W-11 line.

B1, B6, B12 jackets O.K.

Cell B jets not yet tested:-
B3-A9
B1-A9
B8-A5A
B8-A5B

Status
Slugs in A1

D3C on the digestion till 4:00 Step 11

Spargers on B1, B3, B6, B17 OK.
For details on orifices, etc, see Chas. Maxwell.

Centrifuge was run 1 hr. at 250 RPM.

Program for tonight

(1) Continue D3C extraction running 1 hour hot settling -- then five hours cold settling.

(2) Decant with 980 cc kel-jet A9-A8DB ✓

(3) FS wash

(4) FS metathesis except do at 80°C ± 5°C.

(5) Catch metathesis liquors in B1 as specified and sample there.

(6) Rinse B1 well and transfer product solution to B1 and sample there.

(7) Start dissolving of D3D at convenience. Hold in dissolver without tracer until further notice.

(8) SAMPLING Pls take four separate samples ~ 25 cc each for everything. Run samples

15 minutes for first sample and five minutes each for the other three. Have agitation on the tank being sampled all the time sampler runs.

(9) WATER Use distilled water hereafter only for solution make-up from the carbonate (for metathesis) solution on. Do not use distilled water for diluting dissolver, 60% H_2SO_4, tank washes, etc. Distilled water is to be used on extraction cake washes.

(10) WATER All tap water in this building is filtered. Since we went into operation the use of filtered water has been 125% of capacity. Therefore Pls start turning off water on jackets etc when it is not needed.

Rodger

(11) Moveable pippettes, centrifuge skimmer, and capillary samplers are all snafu. So 12-8 pls tackle the fixed pippettes to see if

you have any better luck than we did.

(12) Am missing the D3A run records. Lifeful reward (5¢) for their return dead or alive.

→ (13) Effective at once each midnight shift is to do the following as soon after midnight as possible (before 2AM)

a) Put new charts on all circular chart instruments which have operated during the previous 24 hours.

b) Label the charts removed carefully giving Date and Instrument #.

c) Cut off the roll charts at midnight the day previous to yesterday (that is 26 hours before 2AM) to give the complete record for the day before yesterday. Date and label these.

d) Turn all in to my office for inspection and filing.

(c) Start at once (tonight)

This includes recorders on radiation

measurement instruments

(14) Pls fill out the shift inventory sheets more completely. Each tank should have an entry even if it is merely "MT."

(15) Run results are available on Fred Rehm's desk. As you can see they are not too good to date. Would be pleased to hear any and all suggestions. I have one — namely that very complete records are essential if we are to be able to figure out what goes. It appears we will be something of a semi works for a couple of weeks.

W. A. Rodger

Made up 65% H_2SO_4 + 2% HNO_3 in T-4 and dropped to T-9. Ready for D-3 extraction step. 351 # of this solution + 79 # water into A-9 will give 430 # of desired 50% H_2SO_4 + 2% HNO_3 as per McL's note.

Bottled 36.1% K_2CO_3 to 40% K_2CO_3 by adding 500 g K_2CO_3. Lab. result is now 37% K_2CO_3. Something is haywire. Solution in T-1

Pump M-3 leaking.

Line from M-6 to T-4 leaks in make up room by wall ark. Bigger about it.

J.T. Weills would like us to take 15 minute reading on gauge pressure and temperature of each cooling coil on A-2 while dissolving.

Setup B-5 to B-1 solution pass to B-3.

PRINT IN FUTURE PLEASE

Amy

4/2
12
E
FS = Flow sheet
QS = Quantity

4/28/45 12-8 EJW

① At the present time, there is no way we can add top water to T4 for mixing 65% H_2SO_4. We are therefore forced to use distilled water.

UAR

② None of us can figure out what you mean by FS wash and FS metathesis. We tried to find out what it is by calling you — nobody answered. I hope we did the right thing.

FS = Flow sheet
QS = Quantity Sufficient

③ Are the chemists lined up properly to analyze out quadruple samples? The chemists say they don't even use 2 of them ??? Yes!!!

④ We were to take readings on A2 cooling water according to J T Neills instructions to A.C.V. The rate of water flow through A2 was varied although not called for in the instructions. During the [illegible] part of the run I realized that there must be a great deal less heat transfer as the run proceeds and he may not have wanted variable flow. Please let me know if and how we are [illegible] this experiment on the next dissolution.

Just by dipping our hands in the exit water I know that there was considerably less heat on this batch than on the first couple in this run. This is probably due to [illegible] of reaction.

FUTURE PLEASE 3-3.

(5) Siphon pipettes do not work as far as our shift is concerned, this may be due to our lack of knowledge in operating them. We could not get more than 12" H_2O vacuum on either pipette and the water to be transferred must be lifted more than 2 ft above B6.

Run Status.

D3-C settling 1st metathesis until 7:53 in A9

D3-D metal solution diluted, no tracer added, in A1. Will be ready for LL and density reading at 8:02 AM.

WAR It takes about 1 hour to get a batch of waste from A5 to A6.

4-28-45 8-4 Jetting A9-B10D the thermocouple gave a poor slope as the transfer progress. When point was put on jet couple for A9-B1A, the curve continued on as the nothing had happen.

4-12 Pls. check the couple behavior when A9 is decanted to B11 on 2nd metath. supernate

Status.

D3C step 31 settle til 4°!, 2nd metath.

D3D in A1

Movable pipette B-7 was tested for delivery rate to B1 + B3. The rate into B1 at full pressure overflows the cup. At full press. into B3, the cup fills up about 1/2 and upon end of transfer the air causes a little splashing.

Flange + union check (for tightness) is practically complete. There remain a few places to check around B12. Using green paint to indicate check.

4-28-45
4-12
ACJ

LRM: A-9 TO B1 DD THERMOCOUPLE IS NOT PERFORMING PROPERLY BECAUSE MICROMAX IS NOT SET-UP.

WE DECANTED 2ND METATHESIS SUPERNATE TO B-1. AFTER TURNING OFF THE JET THE LIQUID LEVEL IN A-9 WAS ZERO. ABOUT AN HOUR LATER, IT WAS 1". CAN'T QUITE UNDERSTAND WHAT CAUSED THIS. FOUND ONE LEAK A9 TO B-1A JET DOESN'T SHUT-OFF COMPLETELY.

12-8 Program

(1) Fill up Run D3C

(2) Rinse A9 and A8

(3) Test transfer jets call B to A9 for operability

(4) Test all transfer jets A9 to call B (A9 — B1A, A9 — B1B, A9 — B12) for dilution by adding

2000 cc -- transfer -- record vol
800 cc -- wait 15 min -- transfer -- record vol
800 cc -- " " -- " -- " "

Do this at least five times for each jet (Note: leave A9 — B1A disconnected — the steam valve leaks.

(5) Set — 3×10^9 counts to go in dissolver solution and start D3D. It will be run about like D3C. Will make up changes in book in morning. You won't get to the first one.

(6) Operate movable pipette. Have every man on shift operate it at least 10 minutes making all transfers — with one exception

PLS Have one man on all matching operation

DO NOT USE THE TOOL ON B12 AS YET. Check 4-12 for operation.

W.E.R.

THE FOLLOWING VALVES SHOULD BE RESEATED OR REPLACED.

1- STEAM TO A-9 JACKET
2- " " JET A-9 TO B1A
3- " " " B-5 TO B1
4- " " " B-6 TO B59
5- " " " B-3 TO A5A

ALL ARE LEAKING STEAM.

RVM

STATUS:

9-39 - DILUTED IN A-1 NO TRACER ADDED.

9-3C - CAKE SOLUTION STEP 12 LAST PORTION ACID ACIDATING IN A-9 READY TO TRANSFER

1P-1 & 1P-2 AT 1205 AM.

COMPOSITE IS IN GRADUATE IN CELL A.

ADD

4/28/45 12-5 EJW

① Transferring IP out of A9 through A9-B1B gave a lot of trouble because it would not completely MT the tank. This may be due to our leaving the bubbles on during the transfer. On the second try after turning off the bubbles and cooling the jet, it transferred very easily.

WAR ② We started to check dilution of jets as per instruction. Off hand it may not look possible but it takes at least 4 hours to check each jet and this ties up the rest of our dummy run. May I suggest repeating dilution tests only 2 or 3 times instead of five, just to save some time, if 2 or 3 check closely?

③ The movable pipette works OK but I too hard of hearing to hear the "gurgle" ~~through~~ the microphone distinctly, especially when blowing out the liquid. The manometers are however ~~the~~ good indicator.

④ Run Status

D3-D — Still in A1, no traces added but it is ready in lab.

A9 is M.T.

⑤ Dilution test results attached to clipboard on WAR's desk.

4/29/45 (1) Be sure that all operators keep the Micro Max's up to date showing the time at least every 2 hrs. (line showing 0° - 100°C) also when the selector switch is turned record the new point on the chart.

(2.) Initial the left hand column on each page when you've read that far. This will insure proper circulation to all.

LRM.

Repairs made to B7 and B19 apparatus.

Jet testing continued. One jet remains to be tested as per page 94, item 4. ---- A9 - B12. Since there is no manometer on B12, it might be O.K. to use B7 to MT B12, blow into a graduate, measure volume.

No! B12 isn't clean enough. WAR.

200 slugs on 3rd floor. Very weak.

D-3D remains in A-1 pending completion of jet testing in A9.

Program

OK (1) Skip the test to B12 for time being.

Ej W OK → (2) Add ~ 3×10⁹ counts to B3D

OK AEM A) agitate ½ hour and jet to A9

(3) Begin D3D as per run sheets.
Main differences are:
a) Settle 3 hours hot
b) Settle 3 hour while cooling
c) use A9-A8DB only
d) Sample before and after washes.
e) allow 1 hours settling on washes.
f) Decant very carefully as per note 13 below

OK AEM (4) Load dissolver and take coats off the 200 slugs for Run D4. J.T. Wells is out to take some special measurements. Pls. cooperate with him in anything short of mayhem.

OK AEM (5) Start dissolving for D4A. ACU pls make up D4A book. Include changes on early pages as per runs D3C and D3D.

(6) Take apart the other moveable pippette (the one whose installation is not complete. Clean out well.

OK AEM If the two lines which carry vacuum and pressure are not welded into the head leave apart.

EJW (7) Take apart the two stationary

pippettes. Clean out well. Leave apart. (Do this if you can't find a leak elsewhere)

(8) Check B6 for cleanliness. Also B3.

(9) Clean out B12. Use rag to get out gross material. Then use acid and/or water. Draw out into suction flask. Determine that Pt lining on bottom is not punctured.

(10) Clean up Rm. 9

(11) If you can't get all this done leave it for the 12-8.

(12) Safety rules to become effective on 4/30/45 at 8⁰⁰ but we will require use of rubbers only in Cell A and Rm 9 for the present.

→ (13) Be very careful in starting decant jets. Have vent open. Open steam valve slowly. Take 15-30 seconds at least. Then close vent valve equally slowly. This was found necessary in SW so as not to disturb cake.

W. A. Rodgers

4-29-45 ADDED 3×10^9 COUNTS TO 9-39 IN A-1
4-12 AND JETTED OVER TO A-9. STARTED
4-30-45 EXTRACTION & DECANTATION
12-8
ACN

LOAD DISSOLVER WITH 200 SLUGS FOR RUN 9-4. REMOVED COATS AND STARTED METAL SOLUTION STEP.

DURING PROCESS OF TAKING AL. COATING REMOVAL SOLUTION SAMPLE AT THE LINE PLUGGED. HOWEVER, THE LINE WAS UN-PLUGGED BY BLOWING AIR BACK THROUGH SAMPLER LINE.

CELL 3 → WE TOOK APART THE MOVEABLE (3-8) PIPETTE (INSTALLATION NOT COMPLETED). CLEANED IT OUT WELL. ACCORDING TO THE BLUEPRINT THE VACUUM AND PRESSURE LINES EXTEND ABOUT 1/2 INCH BELOW TOP OF FLANGE. SINCE WE COULD NOT SEE THEM, WE LEFT PIPETTE APART.

3-12 CERTAINLY WAS FULL OF DIRT. CLEANED IT OUT WITH CHEESE-CLOTH AND WASHED WITH 20% HNO_3 AND RINSED WITH WATER TWICE. QUITE CLEAN NOW.

JETTED 4400# NEUTRALIZED 9-3C WASTE FROM A-6 TO W-9.

WAR → SUGGEST WE HAVE A CAN OF CORKING COMPOUND
Egee

ON HAND TO SEAL SLUG CHUTE AFTER ADDING SLUGS.

ALSO A WOODEN BOARD WITH PEGS OVER

W.A.R. → THE THIRD FLOOR SINK FOR BEAKERS WOULD IMPROVE HOUSEKEEPING THERE.

WE GAVE THE THIRD FLOOR LAB. AREA AND T-TANK AREA A GENERAL CLEANING. WASHED DOWN HEAD TANKS, WASHED LAB. DESK TOP, LINED UP S.S. BUCKETS, WASHED LEAD FLOOR ETC. LETS TRY TO KEEP IT LOOKING LIKE THIS.

CELL B → EXAMINED B-3 AND B-6 FOR CLEANLINESS. JETTED WATER OUT AND DROPPED SMALL LIGHT INSIDE TANK. THEY BOTH APPEARED CLEAN. THEN WE PUT SOME WATER IN AND SIPHONED IT OUT AND CHECKED CLEARNESS OF WATER.

WE CLEANED OUT CELL B SUMP AND CELL FLOOR. JETTED OUT TO SEWER.

W.A.R. → ON THESE COLD NIGHTS THE SHOWER WATER DOESN'T GET VERY HOT. COULD SOMETHING BE DONE ABOUT THIS? SET-UP THERMOSTAT?

TEMPERATURE OF A-1 ON INSTRUMENTS

W.A.R. → AND # 12 NEED CORRELATING THEY REGISTER THREE TO FOUR DEGREES APART.

EJW

W.A.R. → INSTRUMENT DEPT. COULD ZERO ALL SP. GRAVITY MANOMETER ON THIRD FLOOR. ON DAY SHIFT.

W.A.R. → BOTH B-9 AND B-11 STATIONARY PIPETTES LEAK AROUND THE HANDLE OF THE PLUG-COCK.

RUN STATUS:

D-39 PAGE 14-2 STEP L. IN PROGRESS

D-4A PAGE 10 STEP 19 COMPLETED NO TRACER ADDED.

ACD

CLEANED AND WASHED OUT DECONTAMINATION ROOM.

4/30/45. 5-4. EJW ① Blank flange on top of A9 is open for MOP's inspection at 4:10 PM

② There is something screwy with the vacuum on A9 and A8 it fluctuates so much that we're afraid it may stir up the precipitates while settling. In order to eliminate this possibility, we've been shutting off the vacuum in A9 while settling. As Peterson suggested, the variation in vacuum may be caused by water in some low point in vacuum line, so far we haven't been able to locate it.

EJW

LRM

EJW

(3) Maintenance is getting ready (at 4:00 PM) to insert traps into transfer lines from A9 to cell B tanks. Please check cell A and these lines before getting from A9 to B1

(4) All service piping painted & checked some valves still out. Don't say we didn't warn you!!

These lines are tagged out but you can tear them off when work is complete.

(5) T8 and T4 contain same acid (65% H_2SO_4 + 2% HNO_3) strength was not adjusted so please adjust before using.

Have all men pick out a pair of rubbers that fit, tie them together, attach name and number and leave in shift office for painting

HAR per EJW

Run B12 on 4-12 and 12-8.
Run B6 on midnight
Try playing with product removal equipment.

LRM

EJW

104

4-20-45.
4-12.
MM.

Here's the program for B-12 and B-6 starting now, as per Dr. W.K. Eister :—

[5.5485]

B-12

Run B12-X1 is in progress, to be run at 20 amps for length of run. One fuse blew out on 4-12. Corrected starting time — 7^{50} P.M. Sample at end of each hour and keep current on until lab results show concentration of Pb = 2 mg/Liter or less. If the conc. levels off at something over 2 mg/Liter, run an hour or so + stop. It is expected that this run should be over at 1^{50} A.M. At end of run, sample again for Pb. Pipette out, catch in bottle, sample, 25 cc, for

Pb as received
Pb clarified
Fe
HNO_3.

B-12 Pb Solution.

1. Add 3.5 L. 20% HNO_3 thru funnel.
2. " 500 cc of 25% $NaNO_2$ over 5 min. period.
3. Heat to 75 °C. --- hold for 30 min.
4. Cool to 30 °C .... pipette out
5. Sample 3WPA for Pb, Fe.
6. Repeat steps 1-5. Sample 3WPB for Pb, Fe.
7. Wash with 2 portions - 4 Liters - H_2O,

EW

Sample each for Pb only. (3WPC & 3WPD)

Run B12-X2 to be varied from B12-X1 in this way:

Run at 15 amps for first 2 hours.
" " 20 amps for remainder of run.

B-6

Run sheets for B6-X1 and B6-X2 are being left in Room 12.

Tanks B3 & B6 will be left rinsed out.

WAR— H.J.C. says you should get some man sized rubbers if you would accomodate his feet.

Two suggestions on F. Evap. equipment:—

1. The conduit on ceiling above ladder arrange-ment should be moved, as it prevents making a complete seal at lip of cone with the stationary piece.

2. Two holes on each side, instead of one are needed on top of final cone carrier to hold sleeves in correct position to insure a fit on the arms. It is possible with present arrangement to have the sleeves out of line enough to prevent their sliding over the arms.

EJW

Carrier was taken to shipping portal + back. There is a point on the 22' monorail just north of the switch point beyond which the load will not pass, due to a metal obstruction on track.

Status:

11^{50} P.M. Sample on B-12 taken. Proceed as per page 104.

2nd Metathesis in A-9, cooling. Step 29.

RUN STATUS:

CELL A

D-4A - IN A-9 STEP 11 IN PROGRESS

CELL B

B-6 X-1 - READY FOR STEP 6.

B-12 X-1 - READY FOR STEP 14.

FINISHED D-39. CAKE SOLN IN S.S. BUCKET IN CELL A.

MECHANISM FOR RAISING CONE WORKS TOO TIGHTLY. TOOK CARRIER TO SHIPPING POINT AND BACK WITHOUT ANY INCIDENTS.

WPB 29

ABM

5/1/45 ~~After cutting or changing charts from the recorders, file them in Rm #12. Charts for the Dial type Micro Mac are in the desk at PB1.~~ ~~[illegible]~~

→ And please write in the instrument number so they can be filed. EJW

Run B12-X-1

We started step 16 but removed acid after several minutes so that nitric fumes would not interfere with maintenance men working in cell. The acid can be dumped back in and run continued. Acid is on sink in lab marked "Do not throw away" [illegible]

Run B6-X-1

Run thrown out as instructed see run sheets.

Run D4-A

Settling until 5:10 PM as instructed by NAR. (Extraction - A9)

Run D4-B

UNA in A1, diluted, no tracer added.

EJW

Program

① Carry on D4A thru metathesis. Leave the cake solution for day shift. On all decantations do the following:

a) leave bubbler on slowly.

b) have one man in cell A on top tank A9 during the decantation.

c) Take off blank flange on A9 and listen to transfer. As sound as air is heard to suck into jet signal man upstairs to shut off jet.

d) Have man watching LL manometer and TC on jet to see if we can determine this point on the instruments

② Run B12 at 25A with tracer. Check C frequently to see that the generator is set at 25 V. It drifts.

③ Run Ba(CO3) volume reduction in B6 according to run sheets B6-X2. If it is sure that the Ba(NO3)2 precipitation can be completed by 8:00 AM

EJW

run it too. Otherwise not.

(4) Pls have cell B clear, clean and MT of other than water by 8⁰⁰ AM

(5) Test of B19 heater.

a) Run air at reading 30 on PB 6.

b) Turn on switch 1 record time to come to temp and the temp.

c) add 2 and do like wise.

d) continue adding heaters until all are on or

e) until the temperature of any of the TC's connected to potentiometer on first floor reads 800° F.

(6) Test any jet which recently had the condensate traps added for dilution if you can.

W. A. Rodgers

WPB
EJW

5-1-45
4-12
HM.

The metal Waste Sample on D4A (A8) was taken after first (H_2SO_4) wash, missed sample.

WAR.

Re-item 1 (a thru d) page 108. This was done on washes to D4A extraction cake. Within about 5 seconds after the liquid level reaches the decant slot, a whole load of crap swirles into the previously undisturbed heel and makes it very turbid. At this same time, the thermocouple on jet transfer gives no indication whatever that the transfer is over. The temp. line started rising when steam was turned on, continued in a straight, almost horizontal line until transfer was over. Thus, at least on these small volume transfers, the thermocouple will be quite unreliable for indicating end of transfer. The manometer was on zero at start of transfer, so no indication can be had from it.

5-2
12
A

The B-19 heater is being tested as per item 5, page 109. Data sheet in log book. Flash! Fuse Blown at 11^{45}. Main switch thrown off. The exit temp. from heater is disappointing.

WPB

Status:

B 12-X1 Completed.

B 12-X2 running on 15 amps until 12 05 AM, to be increased to 20 amps then. Sample every hour.

B6-X2 → contains 1 250cc of 6P-VR. To be removed, sampled, and stored. in B-6

→ 3WVR in B-3 to be sampled, then dumped.

D 4A in A9. 2nd water wash settling til 12 05 AM

Run sheet for # B6-X3 is on desk. Do Not start unless it can be finished by 8AM.

5-2-45 CELL 3.

12-8 CALLED MAINTENANCE TO REPLACE BLOWN FUSES ON B-19 HEATER. ELECTRICIAN REPLACED 60 AMP. FUSE ON MAIN SWITCH BOX AND 6 FUSES AT PANEL-BOARD. SWITCHES WERE PUT ON AND FUSES AT PANEL BOARD BLEW AGAIN. THIS HAPPENED TWO OR THREE TIMES. DECIDED THERE MUST BE WRONG WITH THE HEATER, SHORT OR SOMETHING. ELECTRICIAN WOULD NOT WORK ON IT, SINCE HE DIDN'T KNOW ENOUGH ABOUT IT. SAID DAY SHIFT WOULD GET IT.

WRB

CELL 3

RUN 3-6 - X-2 IS IN BOTTLE IN SOUTH HOT LAB. ACCORDING TO RUN SHEET THERE WERE 250 cc IN 3-6 ACTUALLY 880 cc WERE REMOVED.

MADE UP 4% NaOH IN M-10 TO 83" MARK.

W.A.R → ACCORDING TO THE RUN SHEETS IT CALLS FOR 3125 # CARBOPHOSPHATE - SOLN TO NEUTRALIZE 8 WMD + W. HOWEVER THE OTHER SHIFTS JUST MAKE-UP 2250 # . WE ALWAYS MAKE-UP MORE SOLUTION TO REACH 3125 # MARK WHICH VALUE IS CORRECT?

W.A.R → RE. ITEM 1 (a THROUGH d) PAGE 108.

WE FOUND CONDITIONS SIMILAR TO LARRY'S OBSERVATION.

REMOVING FLANGE AND DROPPING LIGHT INTO A-9 WE COULD CLEARLY SEE CLEAR SUPERNATE AND SETTLED PRECIPITATE.

EVERYTHING RAN SMOOTHLY UNTIL WE STARTED TO SHUT-OFF JET. WHEN LINE WAS SUCKING AIR AND STARTED TO TURN OFF JET, SOME DARK WASH COMES OUT OF DECANT PIPE AND STIRS UP PRECIPITATE. THEN IT APPEARS AS THOUGH SOME SLURRY SUCKS OUT JET LINE.

THE MANOMETER LIQUID LEVEL DROPS AWAY

SO FAST, THAT NO CORRELATION BETWEEN MANOMETER AND THERMOCOUPLE CAN BE DETERMINED.

RUN STATUS AT 8:00 AM

CELL A

9-4A IN A-9 - METATHESIS - STEP 28 IN PROGRESS.

9-4B IN A-1 SOLUTION DILUTED NO TRACER ADDED.

CELL B

8-6 X-2 COMPLETE. SOLN. IN SOUTH HOT LAB.

8-12 X-2 READY FOR STEP 8 Pb OXIDE PLATE IN 8-12.

NOTE: 8-3 CAPILLARY SAMPLER STILL PLUGGED.

Ray

WPB

EJW

114

5-2-45 SPECIAL NOTES

(1) Draftsmen from Project office will be in cell B on 12-8 for several days. Assist them in any way you can, and warn them fully of any hazards in the cell. Make radiation survey if hot material is in cell & tell them what working time they have in each part of it. They should wear coveralls, safety glasses, rubbers & head covering. Have them count hands & feet just as regular workers do.

(2) 12-8 shift: Cell B was not clean at 8 Am today. We lost 1 hr. while a survey was made & hot spots cleaned up. Maintenance was held up. Starting Thursday Am Farmakes will arrive at 7 Am in order to survey Cell B in time to get it clean enuff for maintenance to work starting at 8 Am.

M. C. [illegible]
5-2-45 11:20 Am

WPB

Walt wants somebody to watch decantation, please check him before proceeding

5/2/45 8-4 ① Run Status

① D4A — Settling 2nd metathesis cake ready for decantation to B1 as soon as maintenance dept moves out of cell B

D4B — Same as at 8:00AM, diluted UNH, no trace added.

B12-X-2 — Same as at 8:00AM. Lead oxide plated out removed. Run shut on 3rd floor.

② Jobs incomplete — laboratory equipment brought in from store room but not put away in drawers which have been labelled.

Sump L.L. calibration — Cell A sump complete and information posted on PB-3. Cell B sump is not started but hose is connected to sump to fill it with water

1. The Phosphate-Carbonate situation will be clearly stated in the following flow sheets. As soon as frames arrive, soln. make up will be posted thus uniform.
2. Recorders are not being marked every two hours also points are not being recorded.
3. All store & stationery supplies will be obtain upon receipt of a note — WPB

WPB
Egw

B9 & B11 are okay to use.
at 65" suction transfer rate is 100-150cc per min from B6 into either one. To empty, open pipette footvalve and vent on PB4B. No tests made on microphones on B9 & B11, but they are not needed & probably not effective.
McLinnett
5:10 pm 5-2-45

5-2-45
4-12

We are now beginning to get some significant results. All analytical results are being kept by Fred Rehm and are tabulated by him on large sheets which he leaves on the table just inside the door of his office. I request that all shift supervisors regard this as required reading and suggest it as excellent material for all personnel. The weekly reports are filed in Drawer 5, File 1. Supervisors pls read each week and sign. Again recommended reading for the rest of the personnel.

To date we have determined the following about cell A

① Much more cooling is necessary

on A9 than the flow sheet calls for.

(2) If A9 is not cool the jets work only poorly and the settling is bad (probably due to thermal currents). Losses up to 100% + have been found.

(3) Longer settling time and higher decant heels both help the losses.

(4) Operation of the decant jets needs to be gentle.

(5) If someone watches the decantation and the jet is turned off just before the break point is reached a very definite improvement is affected.

The problem before us at the moment is how to determine this point remotely, as there is a considerable lag in both the jet TCs and the LL manometers, absolutely reproducible results probably cannot be guaranteed. However in run D4B we want to make an attempt to do so.

On D4B the following conditions are specified.

a) regular solutions and extractions

b) settling hot 3 hours followed

WPB
EJW

by 5 hours cooling and settling. Bubblers on at rate of 1 bubble/second during all settlings on this run.

c) Decantation to A8 using A9 – A8DB and turning off jet when LL (on oil manometer) reaches 1.5". This 1.5" figure is somewhat arbitrary and we may want to change it. Observe all transfers to see how they look but allow men operating the boards to make the stop decisions.

d) The volume of washes has been increased to give a significant starting volume. Again 1.5" is specified as the stop point. Washes are decanted to B1 for separate sampling.

e) Metatheses is unchanged except for attempting to stop the "A" decantation at 1.5". On the "B" decantation we will have to take the loss as we have enough trouble as it is trying to keep the final solution volume low. Here, though, attempt to stop jetting as soon as the TC shows a high reading.

W. G. Rodgers 10 pm

5-3
12
AC

WPB

Jets A9-B1A, A9-B1B, A9-B12 were tested for dilution. Data on sheet.

D4B in A1. No tracer added.

A9 is M.T. & rinsed.

5-3-45
12-8
ACM

RUN STATUS:

D-4 B IN A-9 START STEP 15
5 HOUR COOL SETTLING.
B-12 X-3 COMPLETED
B-6 X-4 COMPLETED

A-1 SAMPLER WAS UN-PLUGGED BY BREAKING UNION ABOVE SAMPLER HEAD AND POURING HNO3 INTO LINE.

BLEW FUSES ON B-12 SEVERAL TIMES.

MADE-UP SOME 65% H_2SO_4 - 2% HNO_3 FOR NEXT RUN.

CAN'T UNDERSTAND WHY L.L. OF A-9 DID NOT READ HIGHER. SHOULD HAVE READ 82" INSTEAD OF 77".

WB
EGW

ACM

120

4/3/45 ① Settling the precipitate in A9 while
8-4 running 1 bubble per second air into L.L.
tubes does not give correct L.L. reading
on A9 manometer. The instrument men
agree that there are leaks somewhere
in the lines but claim they cannot
be fixed because there are too many
valves and 2 manometers in the
system that are contributing to the
loss of air.

We adjusted the bubblers during
settling of D4B to use the minimum
amount of air and yet maintain
the proper level on the manometer.
The correct liquid level is gotten just
before settling starts.

The amount of air used appeared
all right in A9 but looked like an
② air sparger during decantation when
the L.L. dropped low.

The decantation was followed as
instructed except that the jet was
prematurely shut off at 2" man reading
instead of 1.5". Air was being sucked
into jet at the 2" level reading and
the manometer has a lag in it.
The final manometer reading dropped to
.7" after decantation was completed.
We would like to suggest stopping
decantation at 3" manometer reading on the

Supply inventory sheet which

next batch. If the lag in manometer reading is reproducible, we should then finish off with 1.5" heel.

Run Status

D4B — Settling 25% H_2SO_4 extraction wash until 4:00 PM

D4C — UNH diluted, no tracer added.

To our new visiting operators: "S-W Boys"

We would appreciate your cooperation in house cleaning any of your junk in this building, esp. the 3rd floor around the solution make-up bench.

Thank you velly much

EJW

4:00 P.M. 5/3/45

Supply inventory sheets which omit unnecessary vessels, i.e. A2, A4, M3, A10, A12, A16.

(1) A D-4 IP sample stated one vol., the run sheets show another, and the actual vessel containing the soln is marked a 3rd vol. Be sure that all volumes recorded collaborate.

(2) Please show A.M. or P.M. on all sheets asking for time. In some cases the date would even be helpful.

(3) Graphs are being drawn up for B1, B3, + B6 and A5, A6, + A8 are being extended. We should have them in the near future.

(4) Have all men paint their shoes blue (toe + heel) at the end of the shifts.

(5) Don't omit items on the shift inventory. If you don't know say so dont just cross it out.

WPB EJW (6) Also initial pages read. WPB

5-3-45
4-12

The Centrifuge is being worked on again. If repaired and OK at midnite, proceed with run D-CR-2. Sheets in manila folder in Rm. 12. The starting soln, including tracer, is in T-1. In case run is not started, dump the tracer from T-1 before 8^00 A.M.

Run B12-X4 has been scrapped due to run down of batteries. Instrument man is supposed to check charger on 12-8. 8-4 P/s have batteries hooked in parallel. B-12 to be MTied and PbO_2 dissolved thusly:

1. 4 Liters 20% HNO_3 to B12
2. 75cc 30% H_2O_2 " "
3. In 10 min, 75cc 30% H_2O_2 to B12
4. Let sit 1 hour & remove
5. 2 - 4 Liter water washes.

Tank B4 jacket has water leak (bottom).

The capillary sampler to B1 is not aligned with nozzle entrance. Has to be guided into tank. N.G. Also hits obstruction about 10" from bottom???

Why not seal the B tanks & get some needed vacuum? Activity will be spewed all over walls unless the capillary port is closed up.

EJW

5-4-45
12-8
ACM

RUN STATUS:

9-48 - RUN COMPLETED
8-6 X-5 COMPLETED

CHARGING BATTERIES ON 3-12.

ON P.B. 4A INSTRUMENT 5 THERMOCOUPLE ON 3-1 TO A-5 SET DOESNT WORK.

MADE UP 20 L. OF 6 % $Pb(NO_3)_2$ - NOT SAMPLED.

• TEST DILUTION ON FOLLOWING SETS.

A9 - 31A THREE TIMES
A9 - 31B TWICE.

ACM

① Please be more careful about filling out the inventory sheets!

② To review the procedure for addition of sulfuric in situation. Use 65% H_2SO_4 (331# made up in T4) add also 100# water directly to A9 to make the full 430#.

③ Do not use T8, and T9 for storage. That is purpose of T4, T5, and T6.

MPB
Egw

WAR

5/4/45 ① New calibration charts are in shift office desk — no frames yet available.

② We are to find the optimum getting pressure to use in transferring A8 to A5 so that vacuum, and not pressure is maintained in A5.

Records, ETC

Records of tests, equipment, piping, etc are available in the top drawer of the filing cabinet, Room 12. Also in this drawer are blank test sheets (with ample space for date & signatures); it is suggested that these be used for recording tests and that the resulting record be filed in the manila folder labelled, "Test Sheets — Nos. not assigned" (top drawer).

The third drawer has notes and drawings not of particular value to all. A set of vessel detail drawings and some piping drawings have disappeared from their folders in this third drawer; Any assistance in finding these drawings will be appreciated.

J. T. Wells

③ A suggested new inventory sheet, with some additions and elimination of information has been made and attached to clipboard. N.P.B. asks that the other two shifts also add their suggestions and she will try to have one made that will keep everybody happy.

Eg

④ Run Status

D3C — in A1, UNH diluted, no tracer added

D3B — neutralized metal waste in A5 not moved to A6 because of maintenance work going on in Cell A.

⑤ Tank A8, and A9 contain water used for calibration

⑥ B3 sampler still plugged, blowing out with air does not loosen it.

⑦ Sp. Gr. factors for B1 and B6 posted on manometers on PB-4a. Sp. Gr. factors for A9 and A8 are as follows

A9 — Sp Gr = $\frac{\text{Reading}}{3.9}$

A8 — Sp Gr. = $\frac{\text{Reading}}{4.0}$

B3 — not started

please post on respective manometers on PB-2

⑧ Thermocouple in line B1-A5 not checked by instrument men but C. Maxwell requests that this job be left for him tomorrow

⑨ B6 probe is ready for calibration

B1 " is not ready now but will be tonight

B12 probe is ok for calibration if maintenance men take pipette out of it

EJW
WPB

(10) Do not operate cell A until maintenance men put new line from A16 to drain. This will be completed at 6:00 PM we hope.

5/4/45

(1) Please return any apparatus or equipment borrowed from any one (ie. 706-D Chem Lab, 706-A-S.W.)
(2) do not leave samples around building. Either give them to the analysts, store them in S. Lab, throw them out, or mark them as to what hangs.
(3) Do not use the Stainless Steel Buckets (1½ or 5 gal) as receptacle for hot Solution.
(4) We are doing what we can regarding the protective clothing situation, should any one asks.

5-4-45
4-12
WRM

All B6 runs which have been completed are filed in Rehms office.

The B-3 sampler was not plugged. Upon removing line and checking print, it was found that print called for a 12" clearance of sample line off bottom. A new 1/4" O.D. tubing was installed with 1/4" clearance off bottom.

The black iron pipe delivering to T-8 = T9 from T-6. is adding Fe to our acid additions??

EJW

DAC

Sample 1MA before tracer was mixed.

The B-19 air heater was run most of shift at 135-148° exit temp. and air ~~rate~~ reading 25. This rate is a variable at present, needs pressure regulator.

B-1 sampler capillary lined up with nozzle.

A 1" line discharge from A16 was installed in place of 1/2" line.

B6 was given 2-45 min. heat treatment (80°) with 20% HNO_3.

Pipette B9 line into B6 seems to be plugged. B6-B3 is plugged or ultra slow.

Sample for W.K.E. B-12 contains 4L. 20% HNO_3 + 150 cc H_2O_2 TO be dumped when men are out of cell. Repeat same treatment + sample for W.K.E. later

Calibration of B6 cap. sampler first by lack of information available on last H_2O wash to B6. (We tried to remove this, found B9 plugged.) and secondly by the need for changing the pointer on dial so that a more accurate reading can be had. ~~Promises to the contrary, maint. has not yet done this. (Item for 12-8 stand-by maint. men).~~

MPB

Ed done

Both Solns for next runs in B-12 ±5, B6 -x6 are on 3rd floor + labelled.

5-5-46 HEEL LEFT IN B-12 USING B-7
12-8 PIPETTE IS 245 cc.
ACW

WE BUTTED UP 38.4% K_2CO_3 SOLUTION.
ANALYSIS NOW 40.3%.

MADE UP SOME SOLUTIONS. GOT SOME EQUIPMENT FROM STORE-ROOM.

Check the interphone system. Some are OK but must have a weak or no signal. Those with weak signals will not pass the voice.

LIQUID LEVEL PROBES ON B-3, B-6 + B-12 CALIBRATED.

B-6 TO B-3 THERMOCOUPLE DOESN'T WORK.

No electrolysis or carbonate runs made.
HEEL LEFT IN B-12 USING B-8 IS 28 cc

EJW

-X6

RUN STATUS:

D-4C COOL SETTLING UNTIL 9:35 AM
STEP 15.

D-4D METAL SOLUTION STEP 11
IN PROGRESS.

AEM

5/5/45 8-4 ① MCL suggested that during some period in each day, when vacuum from 205 stack is not needed, the vacuum be shut off and the line drained thru pin hole in line over Cell A sump.

WPB

② Jobs assigned but incomplete:—

B1 L.L. probe not calibrated. Check maintenance.

B1, B12, B6, B3 probes should have cables shortened to point where complete unwinding of cable will not permit probe point to bend on bottom of vessel. The dial should then be set accordingly. B17 has been done but the rest have not.

③ Lead sample carriers on S platform should be cleaned of grease and dirt.

Shift office cleanup started by moving out several of the excess number of desks. Rest of cleanup not complete.

Walt has requested that the vacuum on all Cell B vessels and A5 and A9 be checked individually with all other vessels closed off. Before doing this water

EJW

must be added to cell B sump to shut out air leak through overflow. Most of cell B junk has been cleaned off floor and out of sump so that water can now be put in.

Run Status

D4C – Settling extraction H_2SO_4 cake wash until maintenance clears out of cell B so we can use B1 vessel.

D4D – Dissolving, should be complete at approximately 4:00 PM.

Sp Gr factors on B1 and B6 are posted in reverse. B3 Sp. Gr factor is written in with pencil on manometer.

5-5-45
4-12
HM.

(BN-J4)

The viewer sleeve hole for F. Evap. needs to be enlarged to permit observation of the heater as it is brought into place under the cone.

The calibration of B1 was delayed by plugged jet A9-B1DD, used in decanting washes from A9 extr. cake. Jet was cleaned & works OK now. The capillary probe was found to be touching line 511, the air & steam sparger. The stand-by men are trying to pry this line out of the way. We cut a line B1-B5 which will have to be re-welded. A flange is

EJW

also removed.

B12 contains 4 L. of 14.% HNO_3. Instrument just tested it & found 50 amps across cell. More work to be done.

A9 - D4C ready for 3rd wash on extraction cake.

B19 has been run, using 250 cc of dead soln. Starting to cool at 12:00 Cool ½ hr. & inspect cake. Pls.

ACV. - report its condition. 2nd Soln for evaporation is on desk at PB6. The head heater does not work. 8-4 Pls. check.

WAR. The micromax on PB-6 is not too satisfactory. It flutters for one thing, but more important it requires constant switching of points for a complete record. A point micromax would give a better & permanent record.

ACV. PS. — give data on clip board to Shelly & Whitney.

WPB

13-

5-6-46
12-8
ACV

CALIBRATED LIQUID LEVEL PROBES ON B-1, B-3, B-6 AND B-17. ZEROED CABLES AND READJUSTED LENGTHS.

WE BROKE THE CABLE ON B-8 PIPETTE, WHILE RAISING IT IN THE REST POSITION. B-7 PIPETTE WAS NOT IN THE REST POSITION AND THE ARM OF B-8 CAUGHT ON IT.

Good idea!

"Energy saving suggestion";
Install small table or rack near all samplers for storage of sample bottles, sample forms, labels, pencils, etc. Such will alleviate the necessity of trips to Lab. (1st Floor), trips for labels (2nd Floor) trips for sample forms (3rd floor). Otherwise how about an escalator or sliding pole ——!! I'm tired —

O.K

Dam for it!

LRM.

AT 12:30 AM WE CHECKED B-19. FOUND 2" LIQUID STILL IN CONE. HEATED FOR ABOUT 3 HOURS MORE, THEN CHECKED. $BaNO_3$ LOOKED GOOD. IT HAS ALL COLLECTED ON THE BOTTOM. Fe WAS DEPOSITED ALL ALONG THE SIDES.

Eng

WE DIDN'T SEEM TO HAVE ANY TROUBLE WITH

HEAD HEATER.

STARTED A SECOND B-19 RUN. GOING STRONG.

MICROMAX ON P.B. NO. 6 ISN'T WORKING VERY GOOD. EXIT AIR HOTTER THAN INCOMING AIR.

MAINTENANCE STAND-BY DROPPED B-1 DOWN AND MOVED SPARGER LINE 5" BACK SO THAT IT IS CLEAR OF SAMPLER. HOWEVER THERE STILL IS A POSSIBILITY THAT PROBES MIGHT STRIKE SOME OTHER PIPE, BECAUSE THERE IS TOO MUCH PLAY IN SAMPLER AND PUT B-1 TOGETHER AGAIN. ALL LINES HOOKED-UP WITH EXCEPTION OF B1 TO B-5 LINE IS CUT. WILL HAVE TO BE WELDED BACK. DIDN'T THINK IT SO IMPORTANT TO CALL WELDER FROM OAK RIDGE DURING SHIFT.

E.J.W.

RUN STATUS:

D-4C METATHESIS STEP 10

B-12 RUN MESSED-UP BECAUSE K_2CO_3 ADDED TO IT INSTEAD OF B-6. TRACER WAS IN $PD(CO_3)$ PRECIPITATE MIGHT PLUG PIPETTE, SO WE ARE TRYING TO SIPHON OFF.

EJW

MPB

'6229

5/6/44 Run Status

8-4 → D4C — Digesting 2nd metathesis until 4:10 PM.

→ B6-X-7 — As instructed by WAR. Volume evaporated down to 250cc. Ready for fuming nitric precipitation. Fuming nitric ppt. to be decanted to 20cc.

Items to be checked

① Maintenance man is trying to fix B12 voltage + current now.

② B8 has been tested and a couple holes for the pin repositioned. Please check these positions again. They should be ok now.

③ B7 suction line bent back to correct position.

④ B12 has 4 liters 20% nitric in it. Most of the carbonate has been flushed out but it still needs $NaNO_2$ (made up and ready for use) to remove Pb completely. This was held up while maintenance men were in cell to avoid fuming.

⑤ B1 has carbonate supernatant from 1st metathesis. This material should be jetted out to A5.

EJW After getting rid of this material please check alignment of B1 probe.

as suggested in 12-8 shift log.

5-6-45 4-12 The runback was re-tested on header line to B12. The back-up into B3-B12 when either B1-B12A or B1-B12B is used - is zero. However, back-up into B1-B12A and B1-B12B when using jet B3-B12 is very great indeed. Also, when jetting B3-B12 the overflow line on B12 Does NOT take care of the input and B12 overflows.

The B-1 sample capillary probe again gave us 2 lights when raised above liquid level. The probe was examined by manit. electrician and instrument man & found to be shorted out inside the lucite piece. Apparently the design of these probes will have to be changed or they will be very unreliable. At least, it would seem advisable to order several spares made up.

11^15 Instruments & Manit. report that the capillary will have to be rebuilt. We are leaving it in 717B for day shift.

The B6 capillary shows another weakness in design. When the evaporation of 90cc heel to 20cc heel was carried out, the probe gave the same liq. level reading after 1 1/4 hours evaporation as at beginning.

EJW
WPB

At this point, the wax seal in the lucite piece melted and dribbled down one of the wires.

B12 Capillary

possibly This is FUBAR also. First, the calibration is no longer good because the cable has been changed. According to whitney, the cable was cut to correct length to stop the probe at the bottom. Now, however, a new line has been installed. Secondly, the lucite piece shorts out and lights the 2 bulbs as it passes thru the open nozzle. Possibly a thin film of liquid on the lucite conducts the current.

whitney stated this out too

B9 + B11

Both are plugged. The bottom of B11 was removed and air pressure applied to tubing B6 → B11. Still plugged. We MTied M6 by suction pump. Would suggest that B9 + B11 could be refitted with a more practical-sized pipe for B6-B9 + B6-B11.

EJW

Run B6-X7 was removed from B6 by pump, vol. 90 cc, diluted to 250 cc, sampled 17P, and remaining 190 cc being evaporated.

Run B6-X8 not started due to B6 capillary mess and general mess.

We expected to leave metathesis cake soln of D4C in B12 ready to start electrolysis (6 hours before B6 was to be MTied after B6-X8, as per WAR.) but the volume of the first acid treatment was 5300 cc by the time it got to B-12. A9 had previously been decanted down all the way, as per instructions (man. zero) The two HNO_3 shots + unexpected increase in volume have been sampled + stored. 8700 cc in S. Lab.

4:30 AM.

The steam sparger line to A9 was found to be hot all the way to A9. Manometer has gained almost 4" in a 3-4 hours. We are going to try to replace this valve.

Done

EJ
WPD

Status:

B6 contains 1L. .1N HNO_3 tank wash after run B6-X7. To be sampled & dumped.

Centrifuge running. See Whitney's memo in Room.

Final Evaporation in progress.

D+D in A-1, tracer added, ready for A.9.

During the two shifts all unions, flanges, couplings, tank covers, etc., in cell A were checked for tightness. This should be the final over-all check. Any subsequent work should be checked for tightness. The following items require attention in cell A:

1. The sump jet was left hooked to hose to outside.
2. The valve on off gas line A5 → A3 has some black iron nuts on bonnet.
3. The valve on A4 line to W-11 line has some black iron nuts on it.

EJW

5-7-46
8-4
AGY

RUN STATUS:

9-49 IN A-9 AFTER ADDING MORE TRACER TO IT. TOOK SAMPLE AND LEFT SIT. DON'T START EXTRACTION STEP UNTIL AROUND 11:00 PM., AS W.A.R., W.P.B. ETC WANT TO SEE 1ST DECANTATION TOMORROW MORNING SOMETIME BETWEEN 8:00 AM & 9:00 AM

B-19 RUN COOLED DOWN. ABOUT 5 cc STILL LEFT IN IT. NO SPLATTERING ON SIDES. DRAFT WORKED GOOD THIS MORNING, SUCKED ALL OIL OUT OF MANOMETER. J.T. WEILL SHUT-OFF VALVE AND EVER SINCE DRAFT WOULD NOT WORK PROPERLY. Let's be sure of our information!! I did not shut the valve at this time. J.T. Weill

B-19 MICROMAX IS WAY OFF SCALE. SOME TEMPERATURES WERE AS FAR AS 25°C OFF. INSTRUMENT DEPT. HAS BEEN WORKING ALL DAY ON IT. STILL NOT FIXED.

MAINTENANCE IS WORKING IN CELL B, TRYING TO UNPLUG B-9, B-11 SUCTION LINES. THEY ARE DROPPING BOTTOMS OF B-9, B-11. ALSO WORKING AROUND B-3 & B-6.
B-6 & B-3 WERE WATER RINSED.

VALUES WERE PUT IN LINES FROM ADDITION FUNNELS TO CELL B.

By W
WPB

AGY

5/7/45 4-12

① A1 contains 26 slugs. Copy of transfer on WAR's desk.

② Run Status

B12-X-6 electrolyzing at 20 amps until 12:2AM. Increase to 30 amps at that time.

FE-D1 evaporating, started at 10:10PM, continue to completion.

D4D extraction, starting H_2SO_4 addition.

③ B19 off gas line was found plugged with coked outside looked like rust. Line was blown out with air and flushed with water.

④ No runs made in B6. This vessel was found full of all kinds of dirt. It was flushed several times with water and acid. At the present time we have hot 30% HNO_3 in it (boiling)

⑤ No runs made in B1, this vessel also found full of dirt and has been cleaned.

⑥ B12 was also found very dirty inside after plugging up B8 pipette. The vessel was cleaned out and the pipette cleared. It would probably be well to check and flush out B8 again.

Eyw

(7) All Micromaxes on PB1 and PB2 except PB2-7 shut off. Please turn on again when starting to operate them — also mark time of startup.

WPB At end of shift an instrument man told me that there are specific instructions to follow in shutting off these instruments. He was not sure of what they were. Please check Maxwell on 8-4 shift before we bust things up. Maybe it would be better never to shut them off at all.

(8) Solution D4C 12P, which Coster intends to use in next run in B1 is on lead top table on 3rd floor. Sheets for run on top floor.

(9) B19 micromax selector switch has wrong numbers posted. We attached our own version of what we think the selector switch points are but we should have day shift instrument men make sure of these. This may account for some of our screwy results in the past.

(10) Jet B6-B3A also plugged and vacuum pump had to be overhauled. Wonderful equipment, if it would only work.

EJW
WPB

(11) 12-8 shift, is supposed to get 1 carrier of slugs to add to A1.

5-8-45
12-8

Final Evap.

Please supply us with a calibration in C.F.M. for air passage in cone.

J.T.W. → W.K.E.

From all the semi-works runs there should be some recommendations forthcoming specifying best conditions for running the evaporation equipment — C.F.M, Air Temp., vacuum, head plate temp., etc. So far no standards have been set & it would be a waste of time to repeat your work. The cake after evaporation looked good, white, with many circles, however. So far we haven't found a sharp break in off gas temp. or above sol'n temp. which will tell definetely when cake is dry.

Sampler on B6 appears to be plugged.

Funnel to B6-east - has leak in weld.

D4D in A9 ready for 8-4 inspection of decantation.

D3C is evaporated to ~2500.cc in B-1.

B12-X6 Sol'n in 20 L bottle, third floor. 2nd Shot Pb removal in progess - B12. Step 18 complete.

Eg ✓ B6-X8 in progress. Step 8 complete.

24 slugs added to A-1.

B8 is plugged in one line.

5-8-46
8-4
ACV

ADDED 50 SLUGS TO A-1

MAINTENANCE TOOK OUT B-1 AND B-3. PLENTY OF DIRT IN THEM. BLACK, STICKY, GREASY MATERIAL ALL OVER PIPE LINES AND ON TANK SURFACE. WE CLEAN TANKS OUT WITH SOAP AND WATER, THEN HNO_3 AND RINSED WITH WATER.

RUN
D-4D IN A-9 STEP U IN PROGRAM PAGE 14-3

ACV

Program

① Clean Tanks B1, B3, B6, correct 20cc decant line B6 → B3 to give 100 cc heel. Blow out all lines. Put vessels back together.

② Clean B12, B17.

③ Put rubber stoppers in all holes into any vessel in cell A if there are any. Cover the 1/64 holes on samplers with paper and cover paper with scotch tape.

EJW
WPB

(4) Put rubber stoppers in openings to all vessels in Cell B.

(5) Cover B12, the golden horseshoe, B17, B19 area with canvas or oil cloth.

(6) 12-8 Paint Cell A first. Cover walls and sides of equipment. Leave top as we do not want to get the paint running inside equipment.

(7) Paint Cell B only if Maintenance is completely thru in cell and you have time after finishing Cell A.

[illegible]/45 4-12 (1) A list for metal tags that should be put on jets and pipe lines in cell A has been made and turned in to WPB.

(2) B1 probe test results

Probe lines up OK, now two lines had to be spot welded together to clear probe.

B3 probe test results

Last sampler line that was installed was 2" too long and was cut off to fit. The probe still rides the vessel opening but very slightly and should not interfere with operation. The probe does not reach bottom and cable should be

Eg W

H J

EJ

WP

lengthened and zeroed again

B6 probe tests

Probe rides the pipes badly; it is possible to short it out. Some new arrangements for this piping must be made. Probe does not reach bottom, cable too short

(3) Tanks B1, B3, B6, B17 taken down and cleaned out thoroughly, all stored in Room 9.

B12 is empty and should be taken down for cleaning. Maintenance men want riggers on this job.

(4) Run Status.

D4-D — 1st metathesis settling until B1 put back together again

(5) Cell A cleaned and brushed down thoroughly, sump cleaned out and mud sucked out of sump with vacuum pump. H J C. Please check to see if there's anything we may have missed.

(6) Openings to all cell B vessels cleaned out and covered with canvas. Most of junk in cell B swept out

H J C (7) Maintenance requests us to have no painting done in cell B tonight

EJW
WPB

(over)

W.PB 5/8/45 10 30 P. (written before p 145)

1. The off gas line to 205 is turned off. 706-C is using the system. Contact and arrange with them if you need to use A1 or A5.

2. The following lines are being altered:
Steam to jets: A9-B1A, A9-B12, A9-B1DD, B1-B12A, B1-B6D, B6-B5D, B6-B3DA, B6-B3DB, B3-B6A, B15-B6.
Spargers to: B1, B6, B17, B3
These lines will then have the strainer just beyond the bleed tube and stainless from that point on into the cell. The blow-off side off the strainer will be piped with a valve to the panel board drip pans.

3. Vessels B1, B3, B6, + B17 have been cleaned are in Rm #9. They are to be replace only when Cell B is thoroughly clean.

4. B7, B9, + B11 have yet to come off and be cleaned. B8 has been done so do not use until Cell B is clean.

5. Checking schedule material is being collected so add any item + the frequency the item should be checked in this log.

EJW

5. When we start up operations again, all strip Micro Maxs will be cut weekly and at the start of every shift the date, time, & selector point is to be recorded. Of course circular charts are to be re-placed daily on the 12 to 8 shift. On any Micro-Max when ever the selector pointer is moved, record, without fail, the new point, time, and also any pertinent information recorded (such as the end of a decantation, B19 heater control changed, etc.)

6. While we have the time, get the Bldg. in good shape. Keep house keeping in good order, advise & enforce safety precautions, and offer general suggestions.

7. The operating Manual is being revised so let's have all changes advisable for better and accurate operation.

8. See that every man on every shift has what he needs to do his work - clothing, shoes, tools, graphs, etc. even transportation gripes that we can, perhaps, get remedied

9. Also, do not pass on any important information orally and please verify that you've read the log by initialling every two pages

WPD EJW

10. Keep the ratchets and plug removing handles in the 3rd Floor Tool-desk.

5-9-45
12-8
JJC

Equipment "covers" checked and found to be OK. Painters applied about 30 gals. of "paint" taking 3 coats for about 1.5 gal/100 sq ft. No difficulty experienced in application although nature of applying this kind of paint is evident by beads formed on surfaces. Work was not completed till about 5:30 PM with no stops for eating, etc, so it would be improbable that both cells could be painted in an 8 hour shift.

Ambiguous instructions page 144 - ⑥ and note to me from MCL. No equipment painted as per MCL's note as it states walls and ceiling of cell only. What about structural steel work?

JJC

5-9-45
8-4
ACP

RUN STATUS

2-49 IN A-9 FIRST METATHESIS SETTLING UNTIL 8-1 PUT TOGETHER AGAIN

MAINTENANCE

THE FOLLOWING PIECES OF EQUIPMENT

5/9/
5-

WERE REMOVED BY MAINTENANCE FROM B CELL.

B-1; B-3; B-5; B-6; B-7; B-8

B-9; B-11; B-12; B-17.

IN THE DECONTAMINATION ROOM, THEY WERE CLEANED AND COVERED, WAITING CLEANING OF PIPING.

MAINTENANCE IS INSTALLING STAINLESS FOR LINES FROM VALVE TO JET. ALSO NEW STRAINERS.

WHEN THIS WORK IS DONE WE WILL BLOW OUT ALL SERVICE LINES UNTIL CLEAN.

WE CLEANED CAPILLARY SAMPLER CABLES, PLATINUM PROBES AND PLASTIC PORTION OF SAMPLER LINE OVER B CELL.

PAINTED PICTURE FRAMES FOR CALIBRATION CHARTS AND PUT UP A FEW.

ACY

5/9/45
5 10 PM

Maintenance is just about thru installing the stainless lines to jets. 4-12 is to blow down steam headers for 20 minutes, then blow down all lines at the strainers for 20 minutes, and finally blow line down to the jet for another 20 minutes.

ACY

WB
EGW
JM

Take an air line into the cell

and blow back up the suction line of each jet thru the jet and out the discharge. Do this for about 2 minutes each jet closing off the steam side. Then connect up the jets.

Have given to EJW a list of all the jets which have had stainless added to them. Use this to check off each item as it is completed and return form to me in the morning.

EJW also has a check list of all jets which have not been changed. These are to be considered SECONDARY or EMERGENCY jets and are to be used as such. EJW pls tag with DO NOT OPERATE tags all of these jets and add the notice TO BE USED IN CASE OF EMERGENCY ONLY. Except when specifically directed to do so these jets will not be used. Those authorized to so direct are: EJW, LRM, ACV, WPB, WAR, MCL. As a final cleanup these jets are to be cleaned at the strainer, broken

at the jet and blown down ten minutes; the suction and discharge lines blown out with air two minutes. Then the jet assembled. Check off on the provided list and return to me.

We will use all of these "non-stainless" jets once as noted below. Thereafter these use will require in addition to the approval of one of those listed above, a written (Form 160) explanation to me as to why the jet was used. These will be filed in the permanent equipment record.

As soon as the blowing down is complete notify maintenance so they can go back to installing the tanks. The following program is to follow the final installation and is to await OK from Maintenance that they are thru. (12-8 if possible)

completed

omit → ① Test all bolts and nuts for tightness (paint)

omit → ② Check that all jets are connected and unions are tight. (Paint)

EJW ③ Fill each vessel (B1, B3, B6, B12, B17) to overflow with 10% HNO_3. Sparge each for ½ hour using steam in B1, 3, 6 and air in B12 and B17.

MPB

(3a) Flush out each rest well with copious quantities of water. Leave full of 10% HNO_3.

(4) With spayers going transfer all the acid to A5. Do this by MTying B3 and B1 directly to A5; Jet B6 to B3 using both B6 → B3 DA part of the time B6 → B3 DB part and finish the last 4-5 liters with ~~B6 → B3~~. Transfer the liquid in B12 and B17 to B3 using B7 for one transfer and B8 for the other, then MT B3 to A5

No such jet!!

(5) Then half fill B1, B3, B6, B12, B17 with 10% HNO_3. Use each of the straight line jets to transfer at least 4 liters of solution. Check each EMERGENCY jet to make sure it operates then turn it off.

No jets from B12, B17

(6) Using B7 transfer 400 cc from B17 to each of the following (B1), (B3), (B6), (B19), (B5). Check to make sure each one runs properly (Note that the capillary out of B5 is not plugged!)

(7) Repeat (6) using B8

(8) Using B7 transfer 4000 cc from B12 to each of the following (B1), (B3), (B6), B19, B5.

(9) Repeat (8) using B8

(10) Use both B9 and B11 drawing

about 600 cc from B6 each time (Should take ≈ 5 minutes) and allow to drain to B17.

(11) Check operation of each sampler and each capillary probe.

(12) Transfer all HNO_3 to A5. Rinse each vessel with distilled water and follow to A5.

HJC See note and Store Order for you in mail box.

LRM Pls return the corrected Store Orders requested of you a week ago.

All Personnel Note B.B. for new bus schedule.

EJW, ACV, LRM, GH, ML, FAW, RSP, AJC, JEC Eister has started to rough out special operating procedures. These are in EJW's hands. Notes from each one of you on these are requested by 10:00 AM tomorrow 5/10/45. If you have no comment on any tank or operation say so but don't leave just [illegible] Pls put comments on separate sheet.

from Warren's original. Note: they are admittedly in error and incomplete.

EJW, LRM, ACV Check sheets are provided for all this work. Please return to me when complete.

W. A. Podger

5/9/45 ① All steam lines to jets have been
4-12 blown out as instructed. The jets' suction line and discharge line, however, were not blown out with air but were flushed thoroughly by jetting water out of a bucket. A great deal of dirt was washed out of these lines.

All strainers in steam lines to both cell A and cell B have been cleaned out and replaced.

② All tanks in cell B except B3, B6, B12 have been reinstalled. According to C. Hart, these will not be installed until 8:00 AM tomorrow. It will take quite a bit of pipe bending to get the probes in these vessels to operate without ruding the pipes.

EJW ③ The program outlined by WAR has been completed up to item ① on bottom of page 151. (check list is attached to

clipboard). Because it will be impossible to cleanout transfer lines with acid tonight due to B6, B3 and B12 being down, U.A.R. requested, by telephone, that the 12-8 shift work on the pipettes.

(4) 12:00M inventory same as at 4:00PM. New inventory blank in shift office file.

(5) Erators write-up enclosed in log. We were just a trifle too busy to do more than glance at it so far.

(6) Telephone 6102 out of order so we left Room #11 open to use the one there, we were unable to contact any repair men.

5-10-45. 12-8 All lights out + clocks stopped when we came on.

2" of unknown in B1 jetted to A5.

Started cell fan for ventilation.

B-8 Pipette

1. Rest position is about 1½" too high to permit B-7 to swing to B17.

2. The electrical conduit line at base - south of B-8 will interfere with delivery to B17.

3. Auxiliary vacuum-pressure line on B8 needs to be plugged to make pipette work.

4. Have the capillaries been welded at flange entrance to pipette to insure no leakage?

5. B8 as it is now, leaves 1⅞" of liquid in B17.

OK

EJW

WRB

LM

Items 1 & 5 on P.155 prevented complete testing of pipettes. By increasing the volume added to B17, we were able to pick up some sol'n & transfer to B1 + B19.

Notes, comments on clipboard about operating procedure. Ours also are incomplete. If a complete write-up is to be done & catching every detail, a manual could be written, a big-dog that will wear well. This could be a confusing mixture of Equipment description with operating procedure.

WPB 5/10/45 8 00 A

Smoking is now prohibited in the cells, Rm #9, and the 3rd floor.

5-10-45
B-4
ACW

MAINTENANCE WORKED ALL DAY IN CELL B. PUT ALL PIECES OF EQUIPMENT TOGETHER AGAIN. TIGHTENED ALL BOLTS AND UNIONS. THEY ARE NOW PAINTING CELL.

On 4-12 pick up the work on special procedures. Install all optical instruments and tag the lines at sleeves (ones for which tags are done)
EJW 12-8 start program outlined last night. Try to finish this item
(4) but do not do (3a) yet. VR

5/10/45 4-12

① Operating procedure suggestions written up.

② Lines and jets in cell A tagged off and all openings to vessels which have been covered up for painting have been uncovered.

③ We could not locate enough holes to fit all telescopes, 2 are leftover.

Telescopes through BW-B4 and BEB4 could not be assembled using all three sections without sticking out too far out of wall. One section was left out of each and left in boxes at each cleave.

④ Inventory at 12:00 M same as at 4:00 PM

5-11-45 12-8.

The centrifuge shaft has some crud sticking to it, probably from testing. Was it intended that hot stuff would crawl so far up the shaft? Pls. inspect.

The B-4 (capped) suction line into B-1 still needs to be capped.

What is to be the position of the viewers when not in use? We pulled them back from opening while sparging acid.

~~The B-6 steam sparger, at 6# P.S.I., starts to flood B17 with steam thru the overflow line B17—B6.~~

Pls. have labels on PB4A corrected for sparges B6 & B17.

WPB
EJW

The installation of painted jet designation tags on all, or the more important jets, might be of value in case we needed to shove a maint. man into the cell for a quick change job.

Parts 1 + 2 of Page 151 program omitted, as per WAR.
Part 3 completed.
Part 4 completed.
Part 5 completed for the following jets:—

B1-B6D	B1-B3D	B3-B6A
B1-B12A	B1-B12B	B1-B3D
B3-B6B	B3-B1	B1-A5
B6-B3DA	B3-B6B	B3-A5A
B6-B3DB	B3-B12	B3-A5B
B1-A9		

The last jet was tested when it should have been left alone. D & O metathesis cake is wholly or partly removed due to action of 10% HNO_3.
PARTS 6, 7, 8, 9 completed as far as B1, B3, B6 are concerned. Nothing put into B5, B19.
B1, B3, B6 rinsed out with water.

5/11/45 8 30 A WPB

1. The bldg was in very good order this A.M. Let's maintain the "Good Housekeeping".
2. If H.P. instruments from Rm #11 are used, please turn them off, otherwise leave them untouched. Again this A.M. the "paint pail" was found on. This has happened often before. Be sure it isn't your crew.

3. Keep the doors to the 5 capillary samplers closed. It is a direct line for dirt to get into those vessels.

5-11-45 8-4 Maintenance men are replacing all damaged strainers on lines to the cell (reason steam headers are tagged out)

Screws have been installed on the drums of the capillary samplers to fasten the ends of the cables. – probes are to be zeroed at the heel left by one of the jets – jet used to be considered the "standard" for all further checks on that vessel.

Run status – zero zero.

No work done on "special procedures" as there has been work going on on the pipettes and probes. Probes now ready to be zeroed and calibrated.

① Complete any of the program outlined on pp 150 – 153 which is not complete.

② Recalibrate all probes.

③ When B1 and B12 are done start up Run D4C in B1. Run sheets are provided. Please follow instructions carefully and leave copious notes on the operation.

④ When the pipette area cleanout is complete and calibration on B17 and B6 are done start the special B19 test as per sheets provided. Here again accurate observation is essential

EJW

WPB

(5) 4-12 shift need not report Sunday at 4 (Neither for the second half of the scheduled double shift.)
W.A.R.

5-11-45 Following steps to be done on pg 150-153
4-12 Step 6
Done — Transferred 400cc (HNO_3 10%) from B17 using B7 to B19
✓ Not done Transferred " " " " " " to B5
OK — Capillary not plugged out of B-5
Step 7
Done — Transferred 400cc (HNO_3 10%) from B17 using B8 to B19
✓ Not done Transferred " " " " " " to B5

Step 8
Done — Transferred 4000cc (10% HNO_3) using B7 from B12-B19
Done — " " " " " " " -B5
Step 9
Done — Transferred 4000cc (10% HNO_3) using B8 from B12-B19
Done — " " " " " " " -B5

This completes with LRM's work steps 6, 7, 8, 9,

→ Unless B8 is dropped in rest well, lower than the bottom stop allows it to go, it interferes with operation of B7. It's a good thing G.H. noticed it while watching pipettes operate before we we actually hooked them together.
Since lower level swing position on B7

2 + by

has a lot of play in it, it would be best to operate in this swing position as high as possible.

PROBE CALIBRATION & ZEROING —
B1, B12, B17, PROBES CALIBRATED & ZEROED
B3 NOT STARTED OR DONE
B6 IN PROCESS. SHEETS ON CLIP BOARD ON DESK BY PB 4A — all other calibrations on clipboard also

Run Status (a) Special Test B19 not started
(b) D4C — step 2 complete, step 4 ready to start.

Status of instructions pages 149–153 in
All but the following have been completed
done (a) transfer 400cc 10% HNO_3 from B17 to B5 using B7
done (b) Transfer 400cc 10% HNO_3 from B17 to B5 using B8
(c) steps 10, 11, 12
done

We got started late on run D4C because of the other work on B12 that was necessary before it could be freed for the run.

E J W
MPB

5-12-45
12-8

Emergency jet B3-B1 used as standard for calibration of B-3 probe.

Tanks B-1 & B-3 are clean. B-19 Spunal test solution made up and on chemical table 3rd level

Item 10 done for B9. B11 will not pull enough vac to raise liquid out of B6. Have checked for tightness + leaks (soap solu)

600 cc 10% HNO_3 in B6 for item 10.

D4C electrolysis has run 6 hrs at 8 AM.

B3, B6 calibrated (probe).

5-12-45
8-4

Instrument men fixed probe of B12 + B3 - broken wire causing intermittent contact

B-11 top flange tightened - now works O.K.

When using B-7 it must be raised to the top of the lower swing position, it then clears B8 by about 3/8".

at Present B7 is tagged out, it is to be considered unfiling.

The probe sampler on B6 appears to be riding the pipes - cable stackers before light goes on - nothing done about it as it was discovered just as we were ready to put D4C into B-6.

Run status

D4C

in B6 - ready for decontation at 4:10

B12

Plate removal solution - remove at 4:20

EJW

B19

Run in progress - see run sheets at desk.

Program for Week End

Done (1) 4-12 Pls get everything off 1st floor in operating area and dry up any water in preparation for painting.

Done (2) Complete special run now in process in B19

(3) Carry D4C completely on thru final evaporation

(4) Start D4A in B1 as per run instructions and carry thru electrolysis. Hold in pipette B8 until special tests outlined under (5) below are completed.

(5) On Sunday 8-4 (Or as soon as Run D4C clears out of B6 run the special iron tests briefly outlined below (Run Sheets provided) Rinse B6. Sample a bottle of f Nitric Acid And submit for Fe analysis. Add 100 cc to B6. Evaporate to dryness (Look inside tank to determine dryness) Add 200 cc 0.5 N. HNO_3 to B6. Put in B17 and sample for Fe. Do this (6) six times.

(6) Then put D4A in B6 but don't start Vol Reduction unless it can be completed by 4:00 Sunday.

(7) Start Special run in A9.

EJW
WPB

(8) B17 and B12 may be agitated by use of either moveable pipette. B8 pref.

5/12/45 4-12 (1) Take a tip from us who learned it the hard way. Do not try to evaporate anything out of B1 or B6 when their respective condensers are on. This is the reason we lost a lot of time evaporating D4C in B6

(2) On decanting B6-B3DA, do not turn off jet for a couple of seconds after level reaches zero on manometer. If turned off immediately when zero is reached, the volume will come back up to about 325 ml and evaporation will be necessary

(3) Probe calibrations on B1, B3, B6 have all been changed to give actual volume by adding heel that was left in decantation to the volume that was recorded.

Run Status

D4A — Evaporating, step #2 in progress.

D4C — Fuming nitric precipitation agitation on until 12:00 M.

Special B19 run — completed, cone is still to be cleaned out.

(4) "Special runs in B6" sheets are attached to clipboard.

(5) Some instructions on capillary sampling are attached to clipboard.

EJW

5-13-45
12-8

04c special 10 x samples for Fe could not be taken. We couldn't poosh da plunger down to hang capillary. Its stuck. A120, the B-6 probe riding on something about .7" off bottom prevented our checking that we had evaporated to dryness. As far as looking into B-6 to see if evap. is complete — well, there's nobody that small on this shift. B6 was heated 1½ hours & evaporation was assumed to be complete.

The most recent calibration of B12 (5-11-45) differs considerably from the earlier calibration. On D4A transfer from B1 → B12 a dilution of only 30cc in 2000cc was obtained. If probe reading were taken from old calibration, dilution would be about 1000cc, which is closer to previous experience on this jet. Comments welcome

B-19 cone cleaned.

D-4-C 2nd H_2O wash (25cc) step 23 in B.6. Having some more fun with B.9. The 135cc + 25cc washes want to stay in B.6. Maybe these pipettes will perform, but you must show us.

D-4-A Electrolysis. Step 18. Change amps at 8½

EJW
WPB

5/13/45
8-4

① Run D 4C steps 25 and 26

① We were unsuccessful in transferring solution from B6 to B17 by using either B9 or B11 pipette. Air pressure was put on both pipettes to determine whether or not they were plugged and could be blown out, this also failed.

The solution in B6 was then taken out into a vacuum bottle, the total volume being 387 cc, which checked probe reading perfectly. The solution contained a lot of black foreign material which appeared to be just dirt although no precipitate was present. The solution was sampled 17P-2

Steps 29 and 30

Solution again taken out of B6 into vacuum bottle — volume 35 cc. This solution was combined with 17P-2, total volume 422 cc. The combined solution was then filtered with a resulting volume of 415 cc and transferred to B17 directly (~~not thru funnel~~). Probe volume in B17 — 425 cc

Run Status

D4C — In B17, ready to be transferred to B19 for final evaporation.

D4A — Electrolyzed until 4 PM and turned off, last sample taken at 3:20 PM had analysis of 24 mg/liter. There was practically no lead removal between the 4th and 9th hour of electrolysis, at

EJW

about 48 mg

which time the current was stepped up to 30 amps. Lead removal at 30 amps for 1 hour showed removal of 48 mg/lit to 24 mg/lit

Special Evaporation Runs in B6

Completed steps #1 and #2. B6 heated to dryness. Running nitric which was sampled is on sink.

Very little operating could be done after 2:30 PM. because:—

1. Pipettes B9 and B11 have to be cleaned and unplugged before proceeding with B6 runs. Before cleaning out B9 and B11, B17 must be emptied to B19.

Before putting anything in B19 painters must get out so we can walk over floor to put B19 into position. — Happy days.

W.P.B 9 30/A 5/14

Battery motor & generator on. B-12 off at board so turned off generator.

8-4

B9 & B11 were dropped & blown back again. Upon testing B9 would draw about 1/2 the amt. we put in B6. Maint. is installing an air blow back system on 2nd floor — B.W.

EJV

WPB

D4A untouched this shift. At the appropriate time before B6 is M'ized, it is to be electrolyzed some more to reduce Pb conc. Sample as usual.

B6 special testing with fuming nitric re-started.

P/S. Let re-graphing of B tank probes go til tomorrow, we have started + will finish.

D4C is in graduate on 3rd floor. Hold for now.

Conc contains 250 cc dummy soln to be evap. if, as, + when instrument men complete mess on B-19 off gas meter. It was capped up with black mass etc. Evap. at air rate 25, temp 140-145, .25" deflection (.5 C.F.M.) on meter, and use no heat heater. Place soln on desk.

T-6 manometer unplugged.

10:30

Program

1. Put D4C soln noted above in bottle in South Lab.
2. Finish the approved Fe tests as soon as possible.
3. Carry on D4A as per usual

sheets.

(4) Start Run S-1 in A9. This is a dummy precipitation of $PbSO_4$ followed by metathesis. Big point is to check transfer to B12. I want to see that point whenever it comes up. Call me please.

Done EJW (5) Try to determine the operating levels for cell B sump and mark on PB3 as has been done for cell A.

(6) Try to determine flooding velocity on A16. Also on A4 when we get our hill vacuum back — probably Wednesday.

(7) 8-4 Tuesday pls have some one help JTW check the following jet lines

A9 - A8DA	A9A8DB
A9 - A8C	A5 - A6 ✓
✓ A5 - A5	A8 - A5B ✓
✓ A8 - A5DA	A6 - A6 ✓
✓ A6 - W11	✓ done

(8) Warren has done some more writing?. Pls check and add comments.

EJW (9) a system for blowing back B9 and B11 has been installed. It is located at BW - B7. If B9 or B11 plug do the following

Vallado

(a) close the foot valve
(b) close valve between panel board and the new air line.
(c) open air valve slowly so as to put no more than 25 # pressure on the pipette. This should do the trick.

5-14-46
4-12
Key

* SPECIAL NOTE ON FUMING HNO_3 TESTS IN B-6.

1- ADD 100 CC OF FUMING NITRIC TO B-6.
2- TURN ON AIR SPARGER TO 1/2"
3- BE SURE B-6 CONDENSER IS OFF.
4- TURN ON STEAM AND HEAT FOR TWO HOURS. ASSUME DRY AND ADD 1/2 N HNO_3 AND PROCEED AS BEFORE.
5- BE SURE TO COOL DOWN BEFORE DROPPING PROBE

* AS RECEIVED BY W.A.R.

WILL MELT

RUN STATUS:

B-19 RUN COOLING DOWN. SECOND DUMMY RUN IN VOLUMETRIC FLASK ON DESK (SECOND FLOOR)

Eg W

B-6 SECOND FUMING NITRIC TEST IN PROCESS. HEATING 100 CC FUMING HNO_3 TO DRYNESS

5-1 IN A-9 STEP 4 READY TO ADD SECOND WASH TO TANK.

EISTER'S COMMENTS ON CELL B OPERATION ARE ATTACHED. READ AND COMMENT.

ACM

START 3-12 @ 6:00 AM PER W.A.R.

5-15-45 Report on 8 hours in Cell B glue factory

12-8 ① We noticed that openings to most of the vessels in Cell B were covered with gauze but that B17 and B6 were not — not when we looked in anyway. If B6 and B17 had been covered at one time, then we can look for gauze inside the vessels because they were pushed in with the probes before we discovered that the openings had been covered.

② B9 and B11 would not suck out of B6. Tried blowing them out according to instructions several times but failed to get results. Tried cleaning out tanks etc etc., nothing worked.

③ Special run in B19 appears to have gone bad with paint in the cove. Paint must have come from B17.

④ Cell B floor cleaned and glue scrubbed and

EJW

WPB

sump calibrated.

(5) Second special Fe test was siphoned out of B6 into bottle and sampled. Some back foreign material present but not in large quantities as in yesterday's run.

(6) Started D4A in B12 at 6:00 AM as per ACV's note.

Special A9 run: 8 WM could not decant with A9-A8DB to 0.0 level, see run sheet. It is probable that a large loss will be found here because the jet was run longer than normally necessary. Jetting A9-B1DD also acted oddly jet seemed to work in jerks and sump 1WC4 was very cloudy and it looked like it had fine black material — probably more gasketa.

(7) NaOH line from pump M3 to tank T6 appears to be frozen.

(8) Run Status —

S1 — digestion, 2nd metathesis complete at 8:00 AM.

D4A — electrolyzing, left sample at 8:45 AM. I 25 amps, check to see if more current is needed.

Special Fe run in B6 — at standstill after second run, see note (3)

E J W

(9) Who is the culprit who insists on taking of stoppers from samples or is this standard procedure?

5-15-45
8-4

Pipette Testing.

The air blow out lines were not touched. We were merely trying to verify that B9, B11 were plugged.

B11] 2000 cc H_2O added to B-6. After 17 minutes of 65"-70" suction, P.A. system gave indication. Soln dumped to B17, picked up by B8 in 3 min., discharges in 4 min to B-19. Vol. recovered — 2150 cc. Repeated test with 170 cc, Recovered 155 cc.

B9]. 2000 cc H_2O added. Manometer gave indication after 12 min. P.A. gave no indication. Ran 5 min. additional picked up in B-8 in 3 min. Recovered 2005 cc from B-9 with good P.A. indication.

B-6 funnel still leaks.

Leaking valve on jet A9-A8 DA replaced.

EJW

T-1 contains K_2CO_3, 40.3%

WPB

S-1

[redacted] in B-12. Starting electrolysis Step. 15. Sample taken.

D4A starting carb. reduction in B6, Ready for step 8.

B19 loaded with 250 cc dead soln. Ready to go when air press. regulating valve is in + OK.

All probes calibrated. Copies to be posted tomorrow.

Program

By now cell A generally works adequately. Sometimes fluttry jet operation (either its own orneriness or poor operation on our part) will cause a high loss. On hot runs we can probably get around many of these by waiting for analyses. We should be able to avoid those do to "hutches" by careful operation.

In cell B losses on volume reduction runs around 10% and those on each fuming nitric about 8%. Losses on electrolysis are negligible. So we are coming there too. The B9 - B11

situation is not good but we shall try to get around it as follows:

Before starting a run in B6 rinse B6 well with water. Transfer the water to B3 as quickly as possible using air agitation from B6. Do the usual times. Then test B9 and B11 and make sure both are operating before proceeding.

I wish the night foreman would do as little operating as possible and spend full time on supervision. It is very important from here on out that instructions are carefully followed, decantations made carefully, all samples taken, carefully recorded, kept, and the equipment kept in as good running order as possible. This is the prime job of the night foreman.

To facilitate record keeping and shift changes please adopt the following procedure: Use blank sheets in front of each run book. On these sheets record in detail any deviation from normal operation, any unusual

incident, any observations for the good of the cause. See Run 5-1 for two examples written by me. Also have the men working on a run write up on these sheets clearly and in detail the exact status at shift change. Shift supervisor should initial this only. Shift supervisor is to continue clearly and completely listing complete run status in log book. The SS should also refer to items of interest added to run sheets in the log book but this reference need not be very detailed.

Starting at once attempt to take capillary samples of all P samples (12P, (but not 12P 3h etc) 17P, 6P.) For the present the washing of the capillary will be done by analysts. Biggest precaution is to TURN OFF the current to the probe before inserting or removing the capillary. Capillaries are obtained from analysts and returned to them. For the moment insert until second light just lights.

Design will be revamped so that only the lower light should be lit.
WAR.

5-15-45 RUN STATUS
4-12
ACM

B-6 RUN D-4 A Ba(NO3)2 PRECIPITATION & RESOLUTION. READY FOR STEP 9 DECANTATION TO B-3. B-3 IS MT.

B-12 RUN B-1 ELECTROLYSIS STEP 19 TAKE 12P-6h SAMPLE @ 12:25 AM.

B-19 SPECIAL DUMMY RUN. HEATED 6½ HOURS COOLED & CHECKED STILL 2" IN CONE STARTED HEATING SOME MORE NEXT READING @ 12:30 AM.

VARIAC V-2 ON NO. 6 P.B. GOT RED HOT SO WE TURNED IT OFF.

METAL GUARD ON FAN FELL OFF AND TORE UP FAN BEFORE IT COULD BE TURNED OFF. NO ONE HURT. FAN ON THIRD FLOOR BY P.B. 4A

IN ADDITION TO SHIFT INVENTORY REPORT ACM WE HAVE A SHIFT CHECK REPORT TO MAKE OUT DURING THE FIRST THREE HOURS OF THE SHIFT SEE CLIPBOARD.

EJW
WPB

178 ~~B6-B3DA~~

5/16/45 12-8

① Union on discharge side of jet B6-B3DA leaks. **BAD!**

② Valve to jet B6-B3DA leaks badly and should be replaced. See note on run sheets D4A

③ Run in B19 was discarded before completion — See run sheet enclosed. A new run was started after filling cell B sump with water and cleaning out B19 equipment which was crapped up with paint

④ The lab analysis results of electrolysis samples come in too late to do much good to our operation. The 9:25PM sample 12P-3h thru 12P-6h) results did not come through until after the 3:25AM sample (12P-8h) was submitted. 12P-7h and 12P-8h results will not be in until after 8AM. The chemist says his 706-C work has him all tied up.

⑤ Synthetic solution used in B19 was 1g Ba as $Ba(NO_3)_2$ + 1g $Fe(NO_3)_3$ in $1N\ HNO_3$, is this correct?

⑥ Run Status

B19 special test evaporation on since 5:15 AM Run S-1, electrolyzing in B12 and should be complete, check lab when samples 12P-7h and 12P-8h are analyzed. Sample 12P-6h was ok.

EJW

Run D4A

Evaporation after fuming nitric wash in B6 should be complete at 8:00 AM. Heat still on. H.P. steam header to PB-4A is off and bypassed to prevent leaks through jet valves to B6.

WPB 5/16/45 10 30 A.

1. Hereafter, all R.O.'s are to be typed.
2. Manometers, that need filling or adjusting, are to be taken care of by instrument men only. It is their job to do it and do it correctly.
3. Be sure your men wear their safety glasses, also take utmost caution when using the hoists.
4. The Blackboards are to washed every noon. Anything in colored chalk will not be washed off however. After erasing any item in colored chalk mark it "OK" with white chalk; it will then be washed.
5. Do not make out sample sheets in duplicate anymore.
6. For all entries in log book please head it with your initials, date, and time.

Ey

Ey W

WPB

5-16-45 B-19 cone cleaned out after ~~[illegible]~~ dead run.
8-4 D4A - 265 cc in B17. Hot. See WAR } as to whether
WPB }
to evaporate this.
B6 - 340 mc. at bottom.

S-1 in B6 ready for step 3 when
maint. is out.

B cell funnels labeled for scopes. If
you want anything painted in cells,
leave list.

B12 to be given usual 2 treatments
for removal of PbO_2. 3000 cc 25% HNO_3 in.

UR B19 air heater is kaput. Don't
use. Will start work on it 1st
thing in AM.
All shifts please fill out the
shift check sheets provided
We have missed a couple of
samples recently.
Henceforth use B7 pipette to
handle waste Pb solutions out of
B12 and B8 to handle
transfers from B12 to B6 and
B17 to B19. Rinse B8 out well
now and try to never put
hi Pb solution in it. We are
recontaminating our product

solution somewhere and I think it is from using B8 to transfer the bi Pb to B3

5-16-45
4-12
ACD

RUN STATUS:

B-3 RUN S-1 SUPERNATANT FROM B-6 STEP 9 + 10 NOT SAMPLED YET.

B-6 RUN S-1 $Ba(NO_3)_2$ PPT PAGE 29 READY FOR STEP 11.

B-12 RUN S-2 ELECTROLYSIS IN PROCESS. TAKE 12-P-3 hr SAMPLE AT 12:35 AM.

B-19 D-4A HEATED FOR 1½ hrs THEN HEATERS WENT OFF AND STAYED OFF. SOLUTION STILL THERE "HOT STUFF" 370 mr/hr @ SURFACE.

ELECTRICIAN PUT ONE FUSE IN PANEL-BOARD. THAT'S ALL HE COULD FIND AT FAULT. BELIEVES SOMETHING WRONG INSIDE HEATER BOX. W.A.R. DECIDED TO LET DAY MAINTENANCE WORK ON IT.

EJW
MPB

VACUUM IN ANALYTICAL LABS. WENT OFF @ 8:30 PM

ELECTRICIAN LOOKED IT OVER AND REPLACE A BLOWN 150 AMP. FUSE IN MAIN SWITCH BOX. NOW THE EAST VACUUM PUMP IS WORKING. HOWEVER SOMETHING MUST BE WRONG WITH THE WEST MOTOR, AS IT IS VERY HOT. ELECTRICIAN BELIEVES IT MUST HAVE A SHORT SOMEWHERE.

Repaired Eqre

B-6 FUNNEL STILL LEAKS. ESPECIALLY WHEN FUMING NITRIC IS ADDED.

ACN

5/17/45 12-8

① To shift check sheets, it may be a good idea to add draining line — A4-205 stack in Cell A sump. This cannot always be done if A1 is operating but water does accumulate in this line.

Good idea VR

② Another item that should be added is to change vacuum pumps each shift. If one motor is used continuously it will get hot when a lot of vacuum is used. This information was gotten from electricians.

② Suggestion — Turn off and bypass H.P. steam header while evaporating in B6. This will eliminate any possibility of steam leaking through jet valves to B6.

③ Eureka — B9 actually worked on the second try tonight, we still can't figure out why it did like never before.

Mirabile! GW

④ Repair Item

Building leaks like a seive during storm. Window above PB-4B cannot be closed and although we tried to cover amplifier on board, rain water shorted out some electrical connections before we had a chance to do a good job.

Run Status

→ S-1 — In B17 ready to be transferred to B19 for final evaporation

→ S-2 — B6 volume reduction digestion complete at 8:00 AM ~~[illegible]~~ for 2 hour settling — 8:00 AM — 10:00 AM

PbO_2 removal in B12 with 3200 ml solution and no agitation. Check to see if these instructions need changing before removing waste from B12

5-17-45 8-4 [illegible]

26 Slugs put in A-1

Variac on PB6 being repaired.

B-19 cone cleaned.

B17 contains S-1 soln to be evap.

B6 " S-2 Step 14.

B12 " S-3 Step 18. Electrolyzing

EJW

MB

184

Continue putting slugs in dissolver until 100 are loaded. 74 to go. On last trip pick up as part of the load one (1) hot slug to be less than one week old and not more than 20 R at 1 ft.

Start coating removal and solution of D6 as soon as possible.

WAR-

5-17-45
4-12
AOP 1st

To: W.a.R. —

Re: Operating procedures.

Several instances have arisen in which certain operating instructions deviate from those first encorporated in run books, such deviations from time to time have been merely listed in log book. From day to day it is rather difficult to remember explicitly all detailed changes. Suggest such changes be encorporated in run books or run books refer to certain pages of log book where changes and new instructions are given.

5/17/45 L. E. Collins

2nd To W.A.R. —

Re. Transfer S-2 $Ba(NO_3)_2$ to B-17

After evaporation of $Ba(NO_3)_2$ in B-6, 135 ml. dissolving water was added to B-6 - agitated and stationary pipetted to B-17. Upon probing B-17, reading gave approximately 130 cc. To this step all was well. Following this, 25 ml. H_2O put to B-6 agitated and pipetted to B-17. Upon probing B-17 this time the volume again read ~125 ml. Assuming an error in probing, etc, the second 25 ml. H_2O was added to B-6, and this was presumably (sp.) pipetted to B-17. Upon final probing B-17 still showed a volume of ~125 cc. The only logical conclusion was that B-9 was plugged. Following W.A.R.'s instructions on pp. 169-170, B-9 was blown back with approximately 25# pressure. Then assuming that B-9 was unplugged, I tried finishing transferring B-6 to B-17. Holy smokes! probing of B-17 then gave a reading of about 50 cc. Following W.A.R.'s instructions I perched myself atop cell B while

EJR
WRB
LM

operator blew back B-9 again. Cell B ceiling took a beating and so did Collier. Solution was splattered everywhere. S-2 was finally reduced to a total volume of ~25 cc. Sample 17-P was then taken of final solution (before 2nd blow back).

17-P sucked out of B-17 and stored in laboratory. B-8 movable pipette washed before transferring Electrolytic Soln. to B-6. B-6 also washed and pipetted to B-17 via B-9 (we hope) and then B-8 ed to B-3 along with B-6 wash water.

200 SLUGS NOW IN A-1, INCLUDING ONE HOT SLUG 36.4 r.

RUN STATUS:

B-12 - S-3 ELECTROLYSIS OVER, BUT RUNNING PENDING EMPTYING OF B-6

B-19 - $Ba(NO_3)_2$ SOLN. HAS RUN 7 HOURS @ 12:15 AM.

EJW

706-C WAS USING 205 LINE SO WE COULD NOT START COATING REMOVAL. AFTER MIDNIGHT IT WILL BE OK TO CHANGE OVER JET LINE TO 205 STACK.

S-3 IN ELECTROLYTIC CELL IS OK TO MOVE OUT. 5 hr SAMPLE SHOWED 1.4 mg/l per liter SOLN. COULD NOT MOVE OUT BECAUSE OF TIE-UP OF S-2 IN B-6.

COULD NOT MAKE-UP S-4 RUN SHEETS AS PER W.A.R., SINCE WE COULD NOT FIND KEY TO CABINET.

PER W.A.R. AFTER TAKING SOLN. OUT OF B-12 WITH B-8 AND H_2O_2 TREATED SOLN. OUT WITH B-7. PUT 3 L ½ N HNO_3 INTO B-7 AGITATE A WHILE AND FORCE OUT TO BOTTLE, SAVE BOTTLE AND SAMPLE. THEN REPEAT WITH ANOTHER 3 L.

B-8 SHOULD BE WASHED OUT BEFORE MOVING S-3 OUT OF B-12.

B-6 CLEANING SET-UP ON PAGE 176.

ACY

5/18/45 12-8

(1) In order to get a vacuum reading on B19 it was found necessary to jiggle the cone around to get good contact with the head heater. The lack of vacuum during run S1 accounts for long time taken to evaporate it; see run sheet. What will we do to get vacuum during that run???

(2) WPB — Shame on you; pinning tags "Do not operate", all over B7 and not stating reason why, besides they are not supposed to be on now, are they???

(3) Lab tank T8 has delivery pipe from head tanks hanging on it. Watch for incorrect weights and please have maintenance fix it.

(4) Are 4 samples still necessary on waste?

(5) Run Status

S-1 completed thru evaporation, cone not cleaned out. We did not know whether or not this material should be sampled before discarding. Please check and dispose of this material.

S-3 Ready for step F16, (decantation in volume addition, also ready for step 7 on yellow sheet (inspection of B12)

D5 — Coating removal complete, ready for 1st dissolving. Blue sheets

are not all made up or bound in covers.

WPB 6/18/45 9 00 A

706-C is going to be using the 205 off gas system from now until sometime early this P.M. (about 2 00 P) when they turn it over to us, determine if they are through with it + have E.L. Brady remove all tags. Retag it for our use then.

5-18-45 8-4 M.

Installation of automatic valve on W-11 necessitates low rate of input to W-11 until job is complete. Do not start A-1 until maint. is thru at W-11. Should be done about 4 or 5 P.M.

Sampled 12 W 16-C

B12 was inspected after cleanout & found to be OK except for

1. Small grit-like particles on bottom
2. Darkness on gauge at higher level, apparently from a run which was larger than usual in volume. Run 5-4 is being held up for another cleanout on B12

Before B6 receives another run and after 5-3 is out of B-6, a test is to be made on B9, putting air pressure on B9, noting whether drop valve holds, etc., as per WPB.

WPB EJW M

B6 funnel welded (at).

T-8 contains approx. 65% H_2SO_4, HNO_3 added. Check in lab for analysis. Sample not taken.

See WAR for S-4 sheets.

Status.

S-4 electrolyzing in B12

S-3 ready for step 19, page 30. B6.

We now have OK to start A-1. Off gas valves changed + tagged. W-11 repaired. Ready to start dissolving.

C-12
5/18/45
J.K.
M.L.

1) Inventory sheet at shift change recorded B-17 as being MT - Upon probing (lucky we did) found ~125 cc of _____ (you name it). Pipetted to B-3 →

2) Impossible to determine complete evaporation of $Ba(NO_3)_2$ in B-6. Run S-3 was assumed to be evaporated after 2 hrs., and upon transferring to B-17 found volume to be 170 cc. If this amount only 135 cc. was dissolving water. B-6 probe only useable for heels > 90 cc. How do we ascertain complete evap

3). Tried to use B-11 to transfer $Ba(NO_3)_2$ (dissolved) to B-17 — no such luck — not even a drip. Blew back B-11, but still SNAFU. Ended up by using old reliable B-9. ?

Later: it works like a charm.

Gentlemen,

WAR 5/18/45 11:00 PM

Report on General Situation

During the past week the general cell B situation has greatly improved. Also the operation turned in by all hands has been vastly improved. I suspect there is a corollary there somewhere.

Most of the equipment is almost dependable by now. The worst point being B9 and B11. If we are sure to have both working before starting a run in B6, B9 generally will work. It has been determined (the hard way) that you cannot blow B9 or B11 back when there is liquid in B17. The B17 liquid hits the ceiling.

You can hot about 0.667 on taking capillary samples if you draw the sample up slowly and

NPB

EJW

evaporation?

allow 1 minute contact at the liquid surface. Pls take 3 capillary samples of all 17P, 6P, and 12P samples as well as the present samples.

Losses are running about as follows:

Lead Waste	2-4%
Carbonate Waste	5-20%
Fuming Nitric (A)	8-25%
Fuming Nitric (B)	8-20%
Yields	?10-70%

As you can see we have had some pretty wide variance in both losses and yields. The treatment of decants very definitely is tricky. We do seem to be getting just about everything left in B6 out into B17, however, which is encouraging. Also the occasional low losses indicate that it can be done if we do it right.

Key

The final product solution started out very hi in lead and iron. By now the iron is below or near tolerance and we think we found what was wrong with the Pb and hope to have

Eyle

corrected it by using B7 to transfer Pb wastes from B12 to B3 and B8 for the B12 to B6 and B17 to B19 transfers.

We are getting to the point where going in the cell costs us something in personal exposure. So we will run no more evaporations of hot solutions but will stick to synthetic stuff for the rest of the dwarf run period. Also take Pb samples from B12 only after 7 hours. The latest electrolysis (S4) gave ~ 6 mg total Pb after the seven hours.

Will the shift supervisors please read and sign the weekly reports. Filed in safe. This is also recommended diet for all shift members.

Starting this week I would like a weekly report from each shift supervisor. These will be due at 8 00 AM each Saturday morning. This week only Ed will be able to make the deadline but will allow Larry 8 hours grace and Tony 16

per

MPB

Run sheets made up for S5 and all four batches of D5. Suggest starting S5 as soon after midnight as possible and solution of D5B about 4⁰⁰ or 5⁰⁰ AM

W.A.R.

5/18/45
11³⁰/PM

Run Status

D5A – digesting in A9 – ready to start 8 hr settling at 12²⁰ – you lucky dogs!

D5B – ready for metal solution – run book in room 12

S-4 –

Step 20 next – Electrolytized solution ready to be transferred to B-6 via B-8.

A Must.

Be sure to test B-9 & B11 with H.O before starting S-4 in B-6 so as to be sure both are in operating condition. B-11 seems to be still on a "Fritzy".

Tec
per WAR

EJW

5/19/45 12-8

① B9 and B11 both found to work OK
Except that B11 is very slow and needs a lot of patience.

② Please order up some 30% H_2O_2, we're about out of it and none in stock room.

③ How about having some small platforms made to cover pipes from cell B funnel. These pipes will be in a hell of a shape after more walking over them.

④ Since semi-works is only working one shift while we're on three, could we borrow their lay to stock room? or get one of our own so we don't have to open their safe to get it?

Run Status

D5A — Filtration settling until 8:30 AM

S5 — Electrolyzing at 15 amps until 9:00 AM

S4 — Settling fuming nitric precipitate in B6 until 9:10 AM

D5B — UNH in A1, diluted and cooling

WPB 5/19 8 30/A

1. There will be a S + H inspection today, probably in the P.M.

2. Please read or reread items #3 + #6 page 179. Lets have

Not WPB

5-19-45
8 00 A

All samples (A+B) except capillaries to be taken in cone shaped graduated centrifuge tube, 2 c.c.+

B19 heater wires replaced with asbestos covered wire.

Status

D5B – one hour 80-90° extraction digestion over at 4 P.M.

D5C – Ready to start dissolving.

S-4 – In B-6.

S-5 in B12. Waiting for clearance to B6 after pipette check.

Ans

B-11 plugged. Trying to bring first shot of $Ba(NO_3)_2$ soln over into B 9 from B-6.

Program

① Start S6 as soon as possible.
② Push S5 along as rapidly as practical so that we can start S7 early Sunday afternoon.
③ S5, S6, S7 should be finished by Monday AM at 8 00. This will require close attention to all B as 19 hours is the

best time to date on a S run.

(4) Cell B has priority over cell A as we are going to shut down cell B Monday to take bottom off B4 so as to repair B9 and B11. Cell B must be MT by 8 AM and we are anxious to complete S6 and S7 before then if possible.

(5) Carry along cell A as you can. Decant wastes from A8 to A5 leaving a one gallon heel. We will attempt to recover as much product from the wastes as possible. Therefore allow wastes to settle in A8 as long as possible before decanting.

(6) Monday week is DER TAC

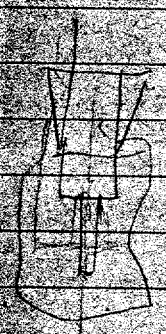
WRB

5-19-44
4-12
RCM

RUN STATUS:

A-1 → 9-5C METAL SOLUTION DISSOLVING. STEP 11 NEXT READING @ 12:15 AM.

A-9 → 9-5B. SETTLING COLD UNTIL 12:25 AM



B-6 → 5-5 STEP 6 (a) PAGE 26 EVAPORATING 500 cc HEEL.

B-12 → 5-6 ELECTROLYSIS @ 15 AMPS UNTIL 1:00 AM.

Ed: WILL YOU FINISH MAKING CORRECTIONS ON 5-7 RUN SHEET SIMILIAR TO THOSE ON 5-6 RUN.

5/20/45 EgW
12-6 RCM

① Rodgers says to take 3 capillary samples on B17 only.

② Call UtaR before getting waste & WMB to A5.

③ Run Status at 8:00 AM.

5-5 — evaporating Ba (NO_3) ppt to dryness step G 16. Heating started at 6:30 AM.

H.P. steam heater off and bypassed →

5-6 — Electrolysis complete, ready to be transferred to B6 when it is MT'd

D5C — Extraction settling, end of 1st 3 hr settling period at 9:48 AM.
Please finish up changes on S7 run sheets (at PB-4A). I was unable to get to them (see ACV's note).
D5D — Dissolving

5-20-45 (long)
8.4 One Sp. Gr. bubbler on A8 controls liq. level also. Slowing down the bubbler labelled "A8 level" does not get the job done.

250 cc found in B17. Dumped.

Did not remove run S-7 from B-17. There is 205 cc hot solution there to be stored in the lab.

S7 ~~S-5~~ started electrolysis at 3:10 pm.

A-5 has supernatant from A-8 which is part of shot "D5B". Heel has been sampled. D5"C" supernatant from A-9 is now in A-8. A-9 ready for 4th batch.

B-6 is starting a VR and will be ready for Step 8 at 4 pm.

Last of 30% H_2O_2 in hood so please be careful with it.

Keep B-19 at 140° to check heater. Record temp 15 min intervals à la Rodger. JJC

200

5-21-45

12-8 RUN STATUS @ 8:00 AM

Acy

4-12 A-5 8WMC-9 NEUTRALIZED AND SAMPLED. D-5C

A-8 8WMC-H HEEL D-5C SAMPLED.

→ A-9 D-5D. READY TO DECANT TO A-8. STEP 16.

→ B-6 S-7 READY TO START VOLUME REDUCTION.

B-12 S-7 PbO_2 PLATE TO BE REMOVED.

Acy