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**STANDARD OPERATING PROCEDURE FOR THE OPERATION OF THE
CHEMICAL PITS - (USED AS A REFERENCE IN OU1 RI)**

08/01/59

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REPORT

6308

STANDARD OPERATING PROCEDURE
FOR
THE OPERATION OF THE CHEMICAL PITS

(Section 10.1)

By

W. A. Smith, Jr. - Procurement Division

Revised By

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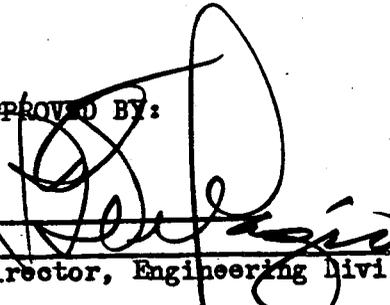
Of

National Lead Company of Ohio

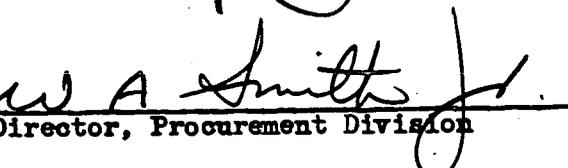
August 1, 1959

Review Date: April 1, 1960

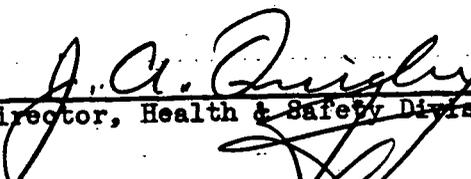
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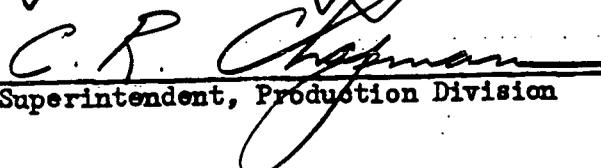
Director, Engineering Division



Director, Procurement Division



Director, Health & Safety Division



Gen. Superintendent, Production Division

National Lead Company of Ohio
Cincinnati 39, Ohio
Contract Number AT(30-1)-1156

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TITLE: STANDARD OPERATING PROCEDURE FOR THE OPERATION OF THE CHEMICAL PITS

DIVISION: Engineering, Health & Safety, Procurement, Production

DATE ISSUED: September 23, 1957 ISSUE NO: 3 SUPERSEDES: NICO-694, Rev. 1

ORIGINAL AUTHOR: W. A. Smith, Jr.

REVISED BY: J. E. Carvitti, 8/1/59

OPERATION:

The disposal and/or removal of material from or to the pits.

PURPOSE:

To dispose of certain uranium containing residues or wastes which are by-products of the FMPC operation and are not economical to recover via the Scrap Recovery Operation. To remove liquid (and/or solids) from the pits as the need arises. This procedure will apply for depleted, enriched or normal residues. This procedure will not apply for any dumping into the waste or burning pit except the removal of liquid from the waste pit.

SPECIFICATION:

Specification(s) of the type material(s) to be placed in the pits will vary and may be changed from time to time by action of the Residue Committee.

Specifications of the liquid material to the pit from the Ore Refinery and Recovery Plant will maintain an average of eight pH. The uranium content in the liquid will average less than 0.01 g/l for the Ore Refinery and average less than 0.05 g/l for the Recovery Plant (for economical purposes). No oil or organic will be in this liquid.

Specification(s) of the liquid material (only) to be removed from the pits will vary and may be changed from time to time by action of the Engineering Division but must meet river specification.

SPECIAL PRECAUTIONS:

1. Toxicity of uranium compounds.
 - a. Avoid inhalation of uranium compounds or residues.
 - b. Wear the protective equipment specified.
 - c. Clean by hosing the equipment used at chemical pits prior to leaving area (i.e., heavy equipment).

2. ~~No residues will be dumped into the chemical pits without first obtaining approval from the Residue Committee. The following residues have already been approved:~~
 - a. Routine disposal of trailer cake from Plant 8.
 - b. Routine disposal of neutralized filtrate from UAP cake from Plant 8 (includes sump liquor).
 - c. Routine disposal of general sump slurry from Ore Refinery (includes neutralized raffinates).
 - d. Routine disposal of broken graphite mold component from Plant 5.
 - e. Routine disposal of chemical feed sump residues from Water and Boiler Plants.
 - f. Routine disposal of hand cleaned and moistened residues by the Residue crew.
 - g. Routine disposal of rainwater from pipe trench in the K-65 area.
 - h. Routine disposal of cooling water from heat treating operation from Plant 6.
3. Segregation of the residues in the chemical pits must be maintained by the Transportation Department.
4. Transfers of SS residues, not previously approved to the pit must be accompanied by an SS Material Interplant Transfer Form (or approved variation thereof). Transportation Department will sign any SS Transfers and forward all copies to the Residue Chairman.
5. Continual check for possible liquid leaks from any of the pits, (under the direction of the Engineering Division).
6. In chemical pit #1 a channel at least five feet wide must be maintained with the outer berm to enable the proper flow of rainwater, (under the direction of the Transportation Department).
7. Keep all liquid slurries at an average pH of eight, (under the direction of the Ore Refinery and Recovery Plants).
8. Do not dump contaminated materials into the waste scrap pit.

PROTECTIVE EQUIPMENT:

1. All standard Health and Safety practices will apply.
2. Wear class "A" safety clothing.

3. Wear a dust respirator when the need arises, if no other means of dust control are available.

PROCEDURE:

1. The routine disposal of trailer cake from the Recovery Plant will follow FMPC Manufacturing Standards Manual 8C-208.1.
2. The routine disposal of neutralized filtrate from UAP cake system from the Recovery Plant will follow Manufacturing Standards Manual 8C-208.2.
3. The routine disposal of alkaline general sump slurry from the Ore Refinery will follow Manufacturing Standards Manual 3C-501.
4. The routine disposal of broken graphite mold components from Plant 5 will follow Manufacturing Standards Manual 5C-402.1.
5. The routine disposal of chemical feed sump residues from the Water and Boiler Plants will be disposed of via tank truck as is the existing practice.
6. The routine disposal of hand cleaned and monitored residues from the Residue Crew will be disposed of via truck as is the existing practice.
7. Disposal of certain residues to the chemical pits may be performed when special authorization from AEC has been received.
8. The routine disposal of rainwater from the pipe trench in the K-65 area will follow existing practices.
9. The routine disposal of cooling water from the heat treating operation will be done via tank truck as is the existing practices.
10. Approval for the disposal of non-routine residues to the chemical pit may be obtained by the following procedure.
 - a. Custodian of residue must originate Form No. PUR-1201 (see attached), titled "Request for Permission to Dispose of Residues in Chemical Pit" and forward, in quadruplicate, to the Chairman of Residue Committee for appropriate action.
 - b. The Residue Committee whose membership includes representatives from Accountability, Engineering, Health and Safety, Procurement, Production and Technical, will discuss and verbally approve or disapprove the request prior to any disposal.
 1. Accountability will obtain the necessary approval from the Atomic Energy Commission, if so required.
 2. Health and Safety will inform Transportation Superintendent of any special safety precautions.

- c. The Residue Committee Chairman will sign all four copies of the request, if approval to dispose of the residue is granted.
1. Copy #1 is for the Residue file.
 2. Copy #2, #3 and #4 are forwarded to Transportation Superintendent. Copy #3 is to be returned to Chairman when disposal has been completed.
 3. Copy #4 is returned to Originator when disposal has been completed.
- d. The Transportation Superintendent will arrange to pick up residues from Originator within one week (or some mutually agreed date with the Originator) after receipt of approved forms and deliver the residues to the chemical pit storage pad.
- e. When appropriate (or convenient) disposal time and manpower are available, the Transportation Superintendent will dispose (or dump) the residues.
1. Transportation Superintendent will inform Water Treatment Plant Supervisor of plans to dump non-routine residues.
 2. It shall be mutually agreed that no dumping of residues will be performed by Transportation Department while the Engineering Division is arranging to pump liquid from the same chemical pit.
 3. Transportation Department will maintain a five foot channel between the residues and the berm of the chemical pit (pit #1).
 4. No dumping of residues will be performed by Transportation if subcontractors are in the area of the Scrap Pits except under authorized conditions as specified by Health & Safety.
 5. The Transportation Superintendent will return copy #3 of Form No. PUR-1201 to the Residue Committee Chairman when disposed activity is complete.
11. Under normal operations the slurries are pumped to the new settling pit (pit #3) from the Ore Refinery and the Recovery Plant where the solids are allowed to settle out. The clear liquid then cascades over a weir into the "clear well". The liquid is then pumped from the "clear well" to the river discharge line at the general sump. Note, an additional source of water to the chemical pits is the accumulation of rainwater in the "waste" pit and pipe trench. The routine procedure for removal of liquid from the chemical pits are as follows:
- a. Water Treatment Supervisor will check the following prior to pumping liquid from the "clear well".

1. Check flow from Ore Refinery to the chemical pit.
 2. Check flow from Recovery Plant to the chemical pit.
 3. Check flow from storm sewers to the river.
 4. Check flow from sewage plant to the river.
 5. Check with Fire & Safety for any fire plug flushing.
 6. Check the flow rate in the river.
 7. Check the pH of liquid in "clear well".
 8. Determine the proper total flow rates allowable to river from the "clear well".
 9. Check the by-pass valving at the general sump.
- b. Water Treatment Personnel will pump the liquid from the "clear well" at the maximum capacity (or volume) which can be sent to the river. Note, during the wet early summer season the liquid, if within spec, from the settling pit (pit #3) may be pumped or syphoned over the weir to allow the maximum amount of liquid to be pumped to the river; this will enable the settling pit (pit #3) to fill up during the extreme dry spells when the river flow is low. Pumping will continue until the desired level is reached in the "clear well".
- c. Water Treatment Personnel will obtain daily samples of liquid being pumped to the river for determination by others of Cl, P, S, Organic, TSS, alpha and beta radiation, etc. On special requests samples for the determination of Th, Ra, Fe, CrO₂, PO₄, pH, etc., will be obtained.
- d. Water Treatment Personnel will check storm sewer lift station, during pumping operation, so it does not overflow to Paddy's Run.
- e. EXCEPTION - Liquid will be decanted or syphoned to Paddy's Run, whenever an extreme, emergency arises. (To be done during daylight hours only.)
- f. Contaminated rainwater will be pumped from the waste pit into the new settling pit (pit #3) via a portable pump by Water Treatment Personnel when the need arises.
- g. Rainwater from the pipe trench in the K-65 area will be pumped into the chemical pit (pit #1) via existing pump by Ore Refinery Personnel when the need arises.
12. Location of Material in Pits.
- a. The Transportation Department is responsible for dumping the materials in the chemical pits and is also responsible for the maintenance of segregation of materials in accordance with plot plan shown in Drawing #8-4269. The chemical pits are divided into areas and these areas

are reserved for residues as follows:

Area A - Depleted Materials.

Area B - Filter (Trailer) Cake from Plant 8.

Area C - Entire chemical pit #2 (until full) - Semi-liquid, filter cakes, sump liquor and/or aqueous liquids (normal).

Area D - Graphite (Plant 5), bricks, stones and miscellaneous solids.

Area E - Chemical trap material and/or miscellaneous drummed material.

Area F - To be used when Area C becomes filled. Material to be dumped west of discharge line from general sump.

Area G - Reserved.

Area H - Reserved.

- b. The slurries from the Ore Refinery and the Recovery Plant are being pumped into Area F.
- c. The rainwater from the waste pit is to be pumped into Area F.
- d. The rainwater from the pipe trench is to be pumped into Area A.
- e. If the need arises to dump any enriched residues, these residues will be dumped on "like" normal materials, (i.e., enriched filter cake on normal filter cake, enriched graphite molds on normal graphite molds, etc.).
- f. Material to be dumped into the chemical pits will be allocated to pit areas by administrative action of the Residue Committee.
- g. Unused portions of the existing pit will be reserved as indicated on Drawing #8-4269 and dumping large quantities of residues in these areas will require prior approval of the Residue Committee and the Plant Manager.

13. Responsibility of Divisions.

a. Engineering Division - Water Treatment Department.

- 1. Coordinate operations with other Divisions.
- 2. Pump or remove any liquid from "clear well" to meet the proper river specifications.
- 3. Pump or remove any liquids from other pits when the need arises.
- 4. Sample liquid prior to and during pumping from "clear well".

5. Maintain pumps and related accessories at chemical pits, except equipment used to pump out pipe trench and equipment used by Transportation Department.
 6. Sample routinely the liquid in Paddy's Run and drainage area.
 7. Maintain the discharge line and related accessories from the "clear well" to the general sump area.
 8. Inspect entire pit area and berm at least once per day for possible leaks.
 9. Flush out line from general sump to chemical pit upon request by Ore Refinery Personnel.
 10. Notify Production (both Ore Refinery and Recovery Plant) of the quality of the water, if water does not meet river specifications, (namely pH, if it drops below 7.5 or rises above 8.5 pH in the pit).
 11. Maintain locked valves in the general sump area.
- b. Procurement Division - Transportation Department
1. Coordinate operations with other Divisions.
 2. Pick up and dispose (or dump) residues.
 3. "Police" entire pit area and maintain the general appearance.
 4. Inspect to see that roadways, ditches, berm and equipment are maintained and free of contaminated material. The roadways include entire access road to the chemical pits.
 5. Check with Engineering Division if any sub-contractors are working in area.
 6. Maintain a five foot channel in chemical pit #1.
- c. Production Division - Ore Refinery and Recovery Plant
1. Coordinate operations with other plant and Divisions.
 2. Maintain pipe lines to settling pit (pit #3).
 3. Maintain and drain pipe lines to chemical pit #1 (Ore Refinery only).
 4. Maintain average pH of eight in slurries being pumped to settling pit and adjust the pH upon notification from the Engineering Division.

5. Add the proper flocculating agents to assure rapid settling, if it is required.
6. Maintain quality of liquid (i.e., low U, F, NO₂, etc.) in order to allow effluent pumping rates to equal or exceed influent rates.
7. Obtain rates and samples of slurries being pumped to the settling pit (pit #3). Report this information on daily routine forms.

d. Health and Safety Division

1. Normal routine monitoring of materials to or from the chemical pits.
2. Normal routine inspection of areas.
3. Inform responsible persons of any changes in MAC of contaminants in plant liquid effluents.

e. General

1. Coordination of matters pertaining to the chemical pits will be done by the Chairman of the Residue Committee.

APPROVED BY:

P. D. McCreery
Accountability Department

W. J. Shattman
Chemical Plants Superintendent

Chas Bussert
Metals Plants Superintendent

NATIONAL LEAD COMPANY
OF OHIO
P. O. BOX 188, MT. HEALTHY STATION
CINCINNATI 31, OHIO

SUBJECT: REQUEST FOR PERMISSION TO DISPOSE OF RESIDUE IN CHEMICAL PIT
TO: Chairman, Residue Committee
FROM:
REFERENCE: SOP No. _____

Permission to dispose of the residue(s) listed below in the Chemical Pit is requested.

<u>Description of Material(s)</u>	<u>Quantity</u>	<u>Type of Container</u>
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Special precautions or instructions for handling the foregoing:

PART A

ORIGINATOR'S SIGNATURE

TO: Transportation Superintendent
FROM: Chairman, Residue Committee

Approval for disposal of the material described above is granted.
Special instructions (if any):

Chemical Pit Area Assigned _____

CHAIRMAN, RESIDUE COMMITTEE

PART B

TO: Originator
FROM: Transportation Superintendent

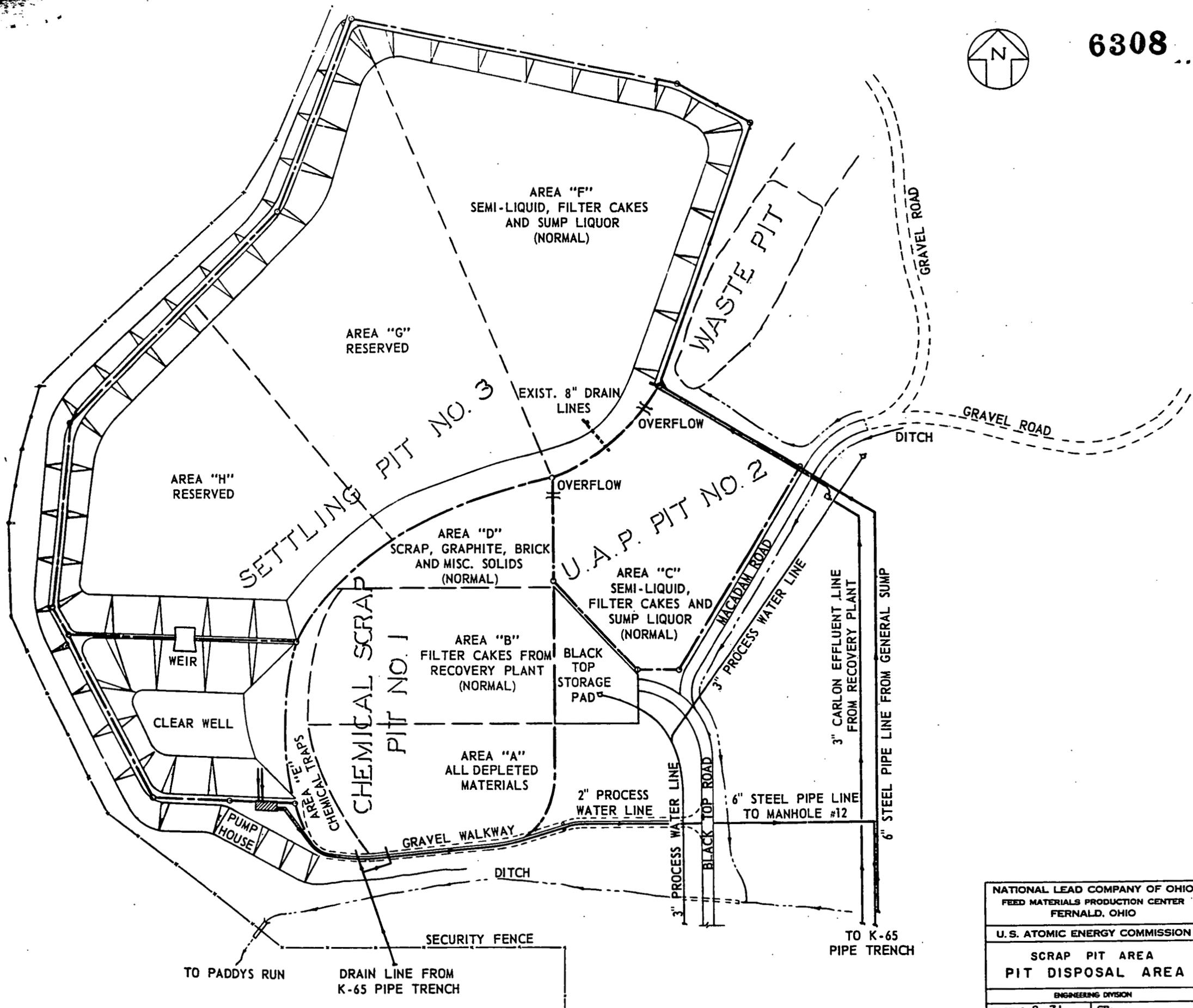
Material described herein was stored in Chemical Pit Area _____.
Work completed _____ (DATE)

TRANSPORTATION SUPERINTENDENT

NO.	DISTRIBUTION OF COPIES
1	Chairman, Residue Committee (RECORD COPY)
2-3	Transportation Superintendent
4	Originator



6308



PLAN
50' 0 50' 100'

000612

NATIONAL LEAD COMPANY OF OHIO FEED MATERIALS PRODUCTION CENTER FERNALD, OHIO			
U. S. ATOMIC ENERGY COMMISSION			
SCRAP PIT AREA PIT DISPOSAL AREA			
ENGINEERING DIVISION			
PROJECT NO. 8-71	CP-		
DRAWN N.R. Roman	CHECKED S. LAZARON 7-30-59	TRACED	REV.
DATE 24 JULY 59	APPROVED [Signature]		
SCALE 1" = 50'	DWG. NO.		
	8-4269		0