

FILE



Interoffice Communication

To G. G. Draper

From Tom P. Roche

Date October 23, 1974

Subject Proposed Clearing Procedure for the VCM Caustic Dryers, S-207 A & B

The present method of clearing and recharging the VCM caustic dryers, S-207 A & B, results in the release of a significant quantity of VCM vapor. In addition, this operation presents a major VCM worker exposure problem. This letter is written to recommend a new procedure for clearing the dryer. This new procedure should significantly reduce the VCM exposure problem associated with dryer recharging. Please review and comment on this proposal. Suggestions and comments should be returned to Douglas Michels by October 28, 1974.

The present procedure of dryer recharging involves a) blowing the liquid in the dryer to the second dryer or to the T-251 pit, b) nitrogen purging to S-108, c) opening the dryer, d) manually washing the contents to the T-251 pit. High VCM emissions result when the manway is opened, from vinyl release during the caustic wash and from vinyl emissions from the T-251 pit. The new procedure will permit more complete vessel purging and will wash the caustic to the slops caustic tank thereby almost eliminating the emissions from the T-251 pit.

A possible new vinyl emission point is created at the slops caustic tank. If monitoring indicates this is a problem the caustic tank will be equipped with a relief valve system and the vent will be routed to the 148 foot tank farm vent stack which will soon be built.

Two process designs will be issued with regard to the clearing procedure for S-207 A & B. The phase I design consists of those modifications and procedures which should be implemented as soon as possible. A general process sketch and procedure are described on the attached table 1. Basically, this procedure will consist of a) blowing the VCM liquid into the second dryer, b) pressure purging the dryer with nitrogen to S-108, c) circulating slops caustic through dryer to dissolve the flake caustic and d) final pressure purging to S-108 using nitrogen to reduce the residual VCM vapor concentration in the dryer. The new equipment necessary to implement the phase I design consists of piping and valves to facilitate the purging, isolation and caustic circulating operations. These items should be installed as rapidly as they can be procured so the VCM exposure problem can be dealt with on an interim basis. This procedure will not eliminate exposure to the employee who opens the dryer and flushes the vessel. He will still have to wear breathing air equipment. The procedure should, however, remove sufficient VCM so the area below and surrounding the vessel does not have high VCM concentrations.

The phase II design will consist of procedures and equipment to clear the vessel sufficiently so that VCM exposure will be negligible. This design will include specifications for new S-207 A & B vessels. These vessels are critical replacement

items in the 1974 budget. In addition this design will include specification of a new vacuum compressor which will evacuate the dryers into the wet vent header. As equipment deliveries for the items involved are of long duration this system will take much longer to install than Phase I.

Figure 2 presents a process sketch of the Phase II system and table 2 describes the procedure. This procedure will consist of the following steps; a) blowing the liquid VCM into the second dryer with nitrogen b) pressure purging the dryer with nitrogen to S-108, c) evacuating the dryer using the vacuum compressor, d) circulating slops caustic through the dryer to dissolve the flake caustic, e) final pressure purging to S-108 using nitrogen and f) final evacuation using the vacuum compressor.

The implementation of the Phase II system should eliminate the exposure problem associated with the dryer changeouts. This system will require the relocation and addition of several connections on the dryer vessel and this will be part of the forthcoming process design.

Thomas P. Roche

Tom Roche

Approved

Don L. Mill

bw

CC:

RDG-JAD-JHM-GGD(5)-JRH(4)

CEG-JSR-JCL-ARP

VVC 000002185

TABLE I

PHASE I CAUSTIC DRYER WASHOUT PROCEDURE

Procedure

- 1) Pressure liquid VCM out of dryer to be recharged into the second dryer.
 - a) Open nitrogen valve into top of dryer.
 - b) Open drain valve into the second dryer feed line.
- 2) Pressure purge the dryer with nitrogen to S-108.
 - a) Feed nitrogen into the top of the dryer, pressurizing the vessel.
 - b) Open the line to S-108 depressuring the dryer into the wet vent header. The drain valve on S-108 to the T-251 pit should be closed.
 - c) Repeat the pressure-depressure procedure.
- 3) Circulate slops caustic through dryer to dissolve the flake caustic.
 - a) Prepare slops caustic tank using the same dilution procedure now used during clearing of S-401.
 - b) Blind dryer outlet line so that circulating caustic will not leak into product line. Note - The spool piece should be purged with nitrogen to S-216 before opening flange and to installing blind.
 - c) Remove blinds from caustic supply and return lines. Pressure purge spool pieces with Nitrogen to S-216 before opening flanges removing blinds.
 - d) Circulate caustic through the dryer until the temperature of the return caustic starts falling. This should take about 4.5 hours.
 - e) Blow return line back to T-423 with N₂. Blow caustic in bed and inlet line back to T-423.
 - f) Blind caustic feed and return lines. Pressure purge spool pieces with nitrogen to S-216 before opening flange and installing blinds.
- 4) Pressure purge with Nitrogen to S-108 to reduce residual VCM vapor concentration in the dryer.
 - a) Feed nitrogen in top of dryer, pressuring vessel.
 - b) Open drain from dryer into the blowdown drum, S-108, depressuring the dryer.
 - c) Repeat the pressuring and depressuring procedure two times.
- 5) Open manhole and recharge dryer. Use blower to control caustic dust and vapors.
- 6) Remove blind from dryer outlet line. Pressure purge spool piece with nitrogen to S-216 before opening flange to remove this blind.

New Piping Requirements

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- 1) 4" caustic supply line - T-423 to S-207 A & B
- 2) 4" caustic return line - S-207 A & B to T-423
- 3) Nitrogen purging lines to blind spools on caustic lines and VCM product line.
- 4) Vent lines to S-216 from blinding spools on caustic lines and VCM product line.
- 5) Necessary valving on caustic lines and at dryer for isolation of caustic and VCM containing streams.
- 6) Necessary valving to direct the caustic flow to the appropriate dryer.

TABLE 2

PHASE II CAUSTIC DRYER WASHOUT PROCEDURE

Procedure

- 1) Pressure liquid VCM out of dryer to be recharged into the second dryer.
 - a) Open nitrogen valve into top of dryer
 - b) Open drain valve into the second dryer feed line.
- 2) Pressure purge the dryer with nitrogen to S-108.
 - a) Feed nitrogen into the top of the dryer, pressurizing the vessel.
 - b) Open the line to S-108 depressuring the dryer into the wet vent header. The drain valve on S-108 to the T-251 pit should be closed.
 - c) Repeat the pressure-depressure procedure.
- 3) Evacuate dryer using the vacuum compressor.
 - a) Line up dryer to be evacuated into the compressor knockout pot.
 - b) Line up outlet compressor piping into the wet vent header.
 - c) Evacuate dryer using the compressor.
- 4) Circulate slops caustic through dryer to dissolve the flake caustic.
 - a) Prepare slops caustic tank using the same dilution procedure now used during clearing of S-401.
 - b) Blind dryer outlet line so that circulating caustic will not leak into product line. Note - The spool piece should be purged with nitrogen to S-216 before opening flange and to installing blind.
 - c) Remove blinds from caustic supply and return lines. Pressure purge spool pieces with Nitrogen to S-216 before opening flanges removing blinds.
 - d) Circulate caustic through the dryer until the temperature of the return caustic starts falling. This should take about 4.5 hours.
 - e) Blow return line back to T-423 with N₂. Blow caustic in bed and inlet line back to T-423.
 - f) Blind caustic feed and return lines. Pressure purge spool pieces with nitrogen to S-216 before opening flange and to installing blinds.
- 5) Pressure purge with Nitrogen to S-108 to reduce residual VCM vapor concentration in the dryer.
 - a) Feed nitrogen in top of dryer, pressuring vessel.
 - b) Open drain from dryer into the blowdown drum, S-108, depressuring the dryer.
 - c) Repeat the pressuring and depressuring procedure two times.
- 6) Final dryer evacuation using vacuum compressor
 - a) Line up dryer to be evacuated into the compressor knockout pot.
 - b) Line up outlet compressor piping into the wet vent header.
 - c) Evacuate dryer using the compressor.
 - d) Open bleed on manway and then open manway leaving compressor on.
 - e) Wash out vessel to T-251 pit leaving compressor on.
 - f) Shut compressor off and recharge dryer.

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New Equipment Requirements

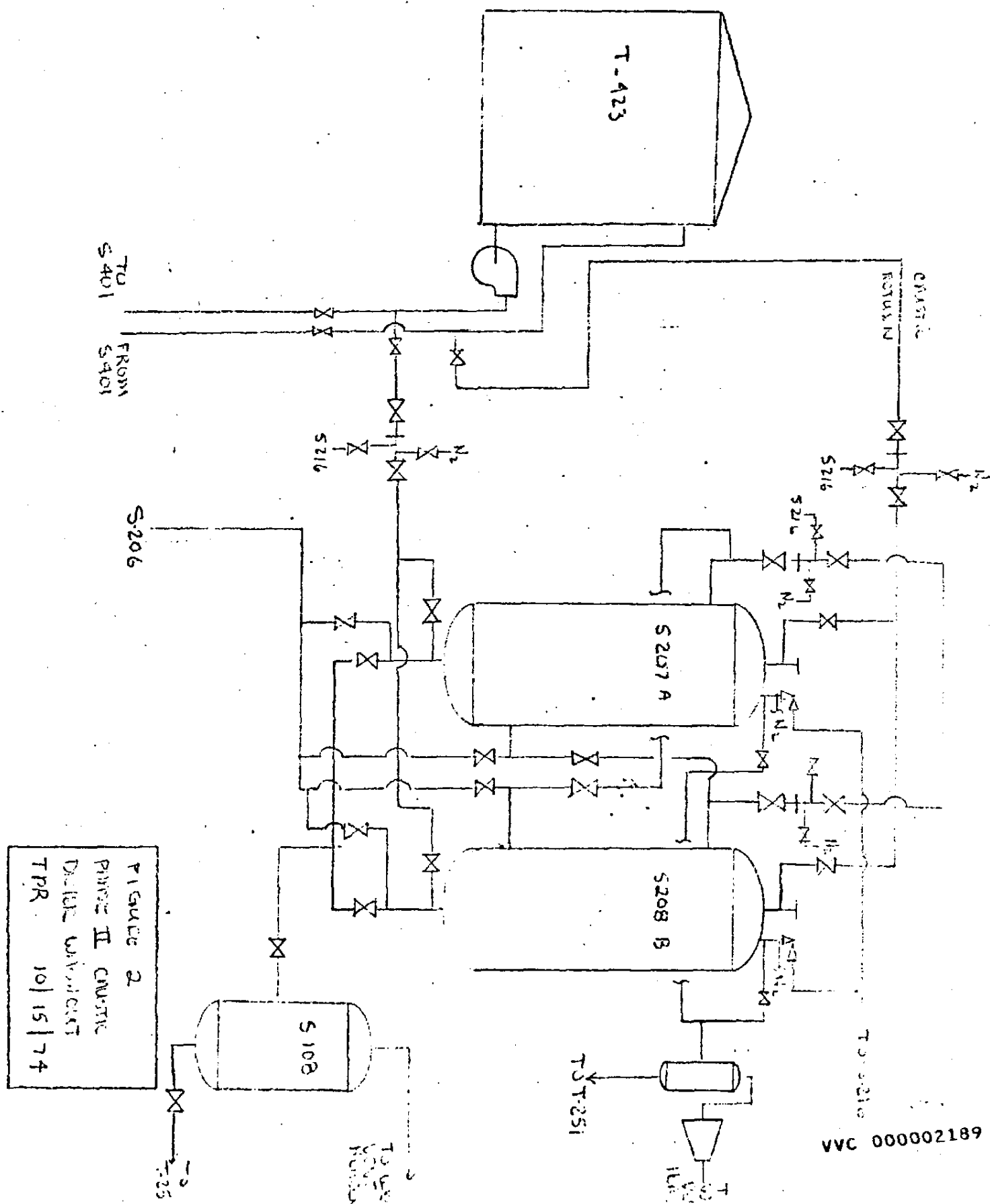
- 1) Vacuum compressor (a vacuum jet eductor will also be evaluated)
- 2) Knockout pot

New Piping Requirements

- 1) From dryer to knockout pot
- 2) From knockout pot to compressor
- 3) From compressor to vent header
- 4) Knockout pot drain to T-251

Note: To control emissions from the slops caustic tank the installation of a relief system and a vent header to the tank farm vent stack will be considered.

SHEET NO. OF
JOB NO.



BY _____ DATE _____
 CHKO. BY _____ DATE _____

SUBJECT _____

SHEET NO. _____ OF _____
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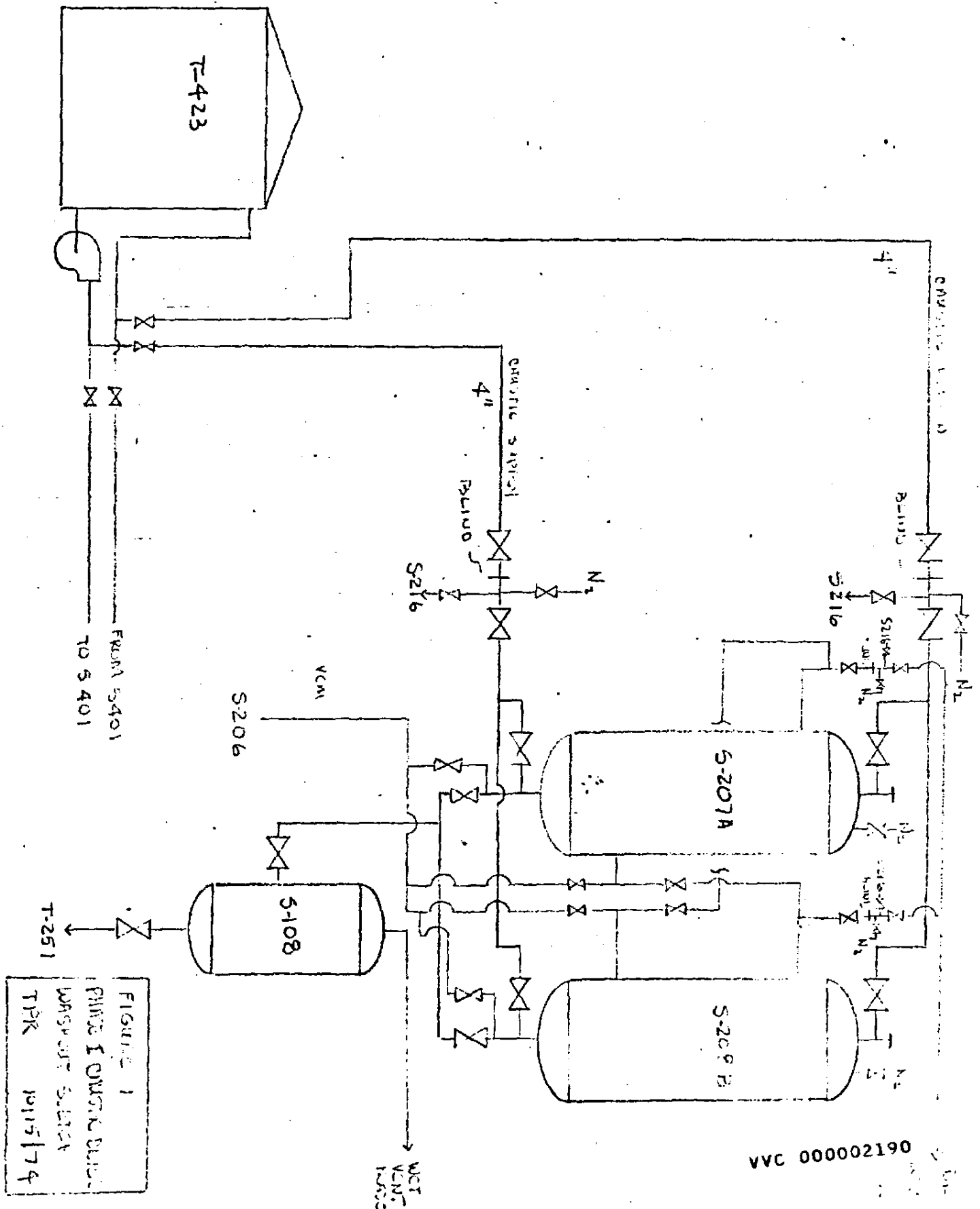


FIGURE 1
 PROCESS FLOW
 WASTE WATER
 TPR 10/15/74

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