



FILE

Interoffice Communication

To J. R. Holcomb
From Al Peck
Date October 11, 1974
Subject Relocation of Laboratory VCM Vents

Attached is a revised process design to route two laboratory VCM vents to the existing VCM vent header system in the tank farm area. This design is being issued as final unless further comments are received.

The laboratory currently vents excess VCM liquid collected in sample bombs through a short vent pipe located on the roof of the lab. VCM vapor from the GC sampling system is also periodically vented through the north wall. The vented VCM vapors pose two potential hazards:

- 1) The fumes can enter the control room due to the proximity of the lab vent to the control room air intake.
- 2) The vapors could be dangerous to personnel in the area during venting before the vapors have dispersed.

To control these hazards the vents will be routed to the existing sample vent header in the tank farm area. This header presently runs to the temporary vent on top of the T-411C sphere. As this vent is 85 feet high the VCM will be dispersed more effectively and the exposure hazards will be reduced. When the refrigerated rail car vent recovery system is completed, the VCM sample vent header will be tied in with this system.

This design includes some minor revisions to the existing laboratory venting apparatus. These revisions are necessary to prevent non-VCM contaminants from entering the vent system and to insure that no excessive pressure buildup occurs in the vent line.

An important addition to this design would be to return excess VCM liquid to the process via the recirculating sample loops while taking the next sample. This would require purchase of additional sample bombs so that each sample bomb would be assigned to a specific sample type. This procedure would reduce VCM emissions by limiting the use of the lab VCM bomb purging system.

Al Peck

Al Peck

Approved

Douglas Michels

CC:

RDG-JAD-JHM-GGD-JRH(4)-CEG-PLF-JSR-JCL

VVC 000002216

DISCUSSION

LABORATORY VCM VENT

A. Laboratory Hood Apparatus Modifications (Figure 1)

The steam and vacuum lines are to be disconnected from the VCM venting manifold and sealed. A separate steam system to clean one bomb at a time should be built complete with tubing connections and a holder. After the vacuum line to the venting manifold is disconnected the present vacuum system will still permit evacuation of one bomb at a time. A pressure gauge and valve will be added. The gauge will be used to determine the manifold back-pressure and the valve used to throttle the flow to the vent. The operating procedure for use of this apparatus are described on Figure 4 and 5.

B. Laboratory GC Sampling System Changes (Figure 2)

The GC sampling system vent will require new stainless steel tubing and a check valve as shown. The tie-in to the vent line is also shown.

C. Vent Line (Figure 3)

The laboratory VCM vent is to be routed to the pipe rack on the north side of the building. The GC sampling system vent should be tied in at this point. The line is then routed as shown to an existing valved connection on the VCM sampling system vent header. The first 50 feet of the pipe from the lab should be steam traced to vaporize any VCM liquid. Low points in the line should also be steam traced to vaporize any liquid that may become trapped at these low points in the line.

EXISTING
NEW

LAB
SEWER

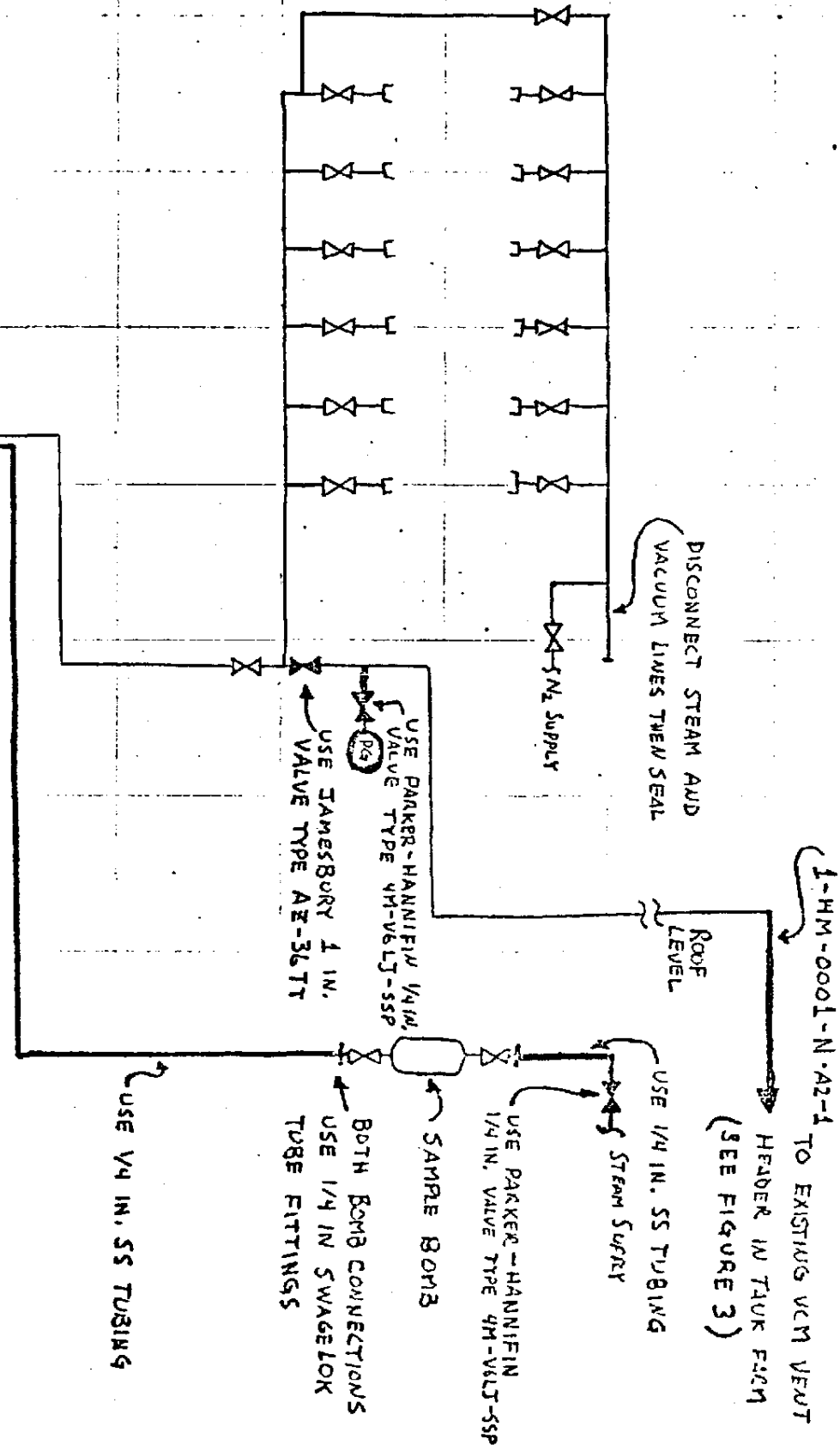


FIGURE 1

RELOCATION OF LABORATORY SAMPLE VENT
LABORATORY VENT APPARATUS MODIFICATIONS

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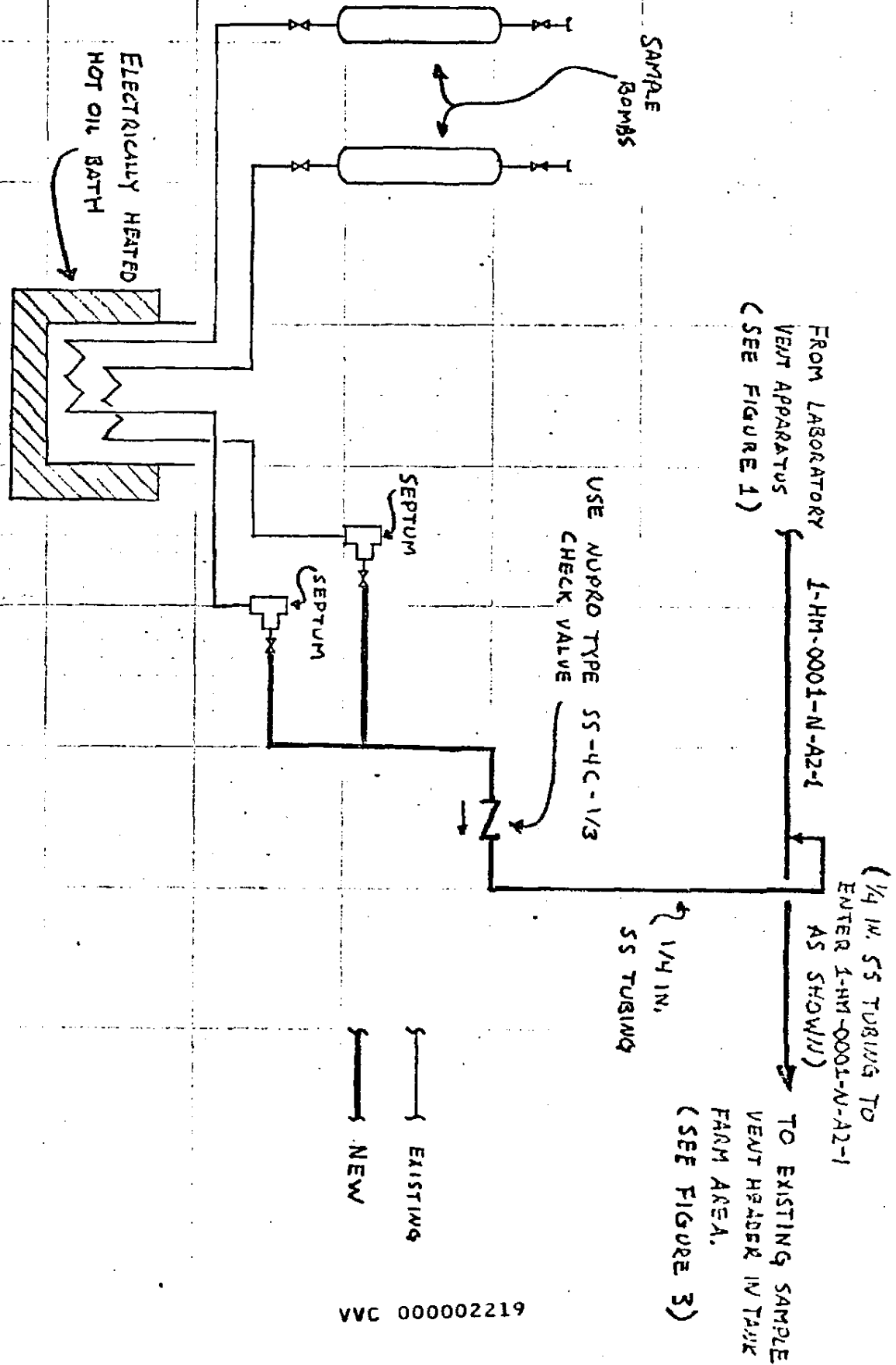


FIGURE 2
RELOCATION OF LABORATORY SAMPLE VENT
G/C LINE CONNECTION

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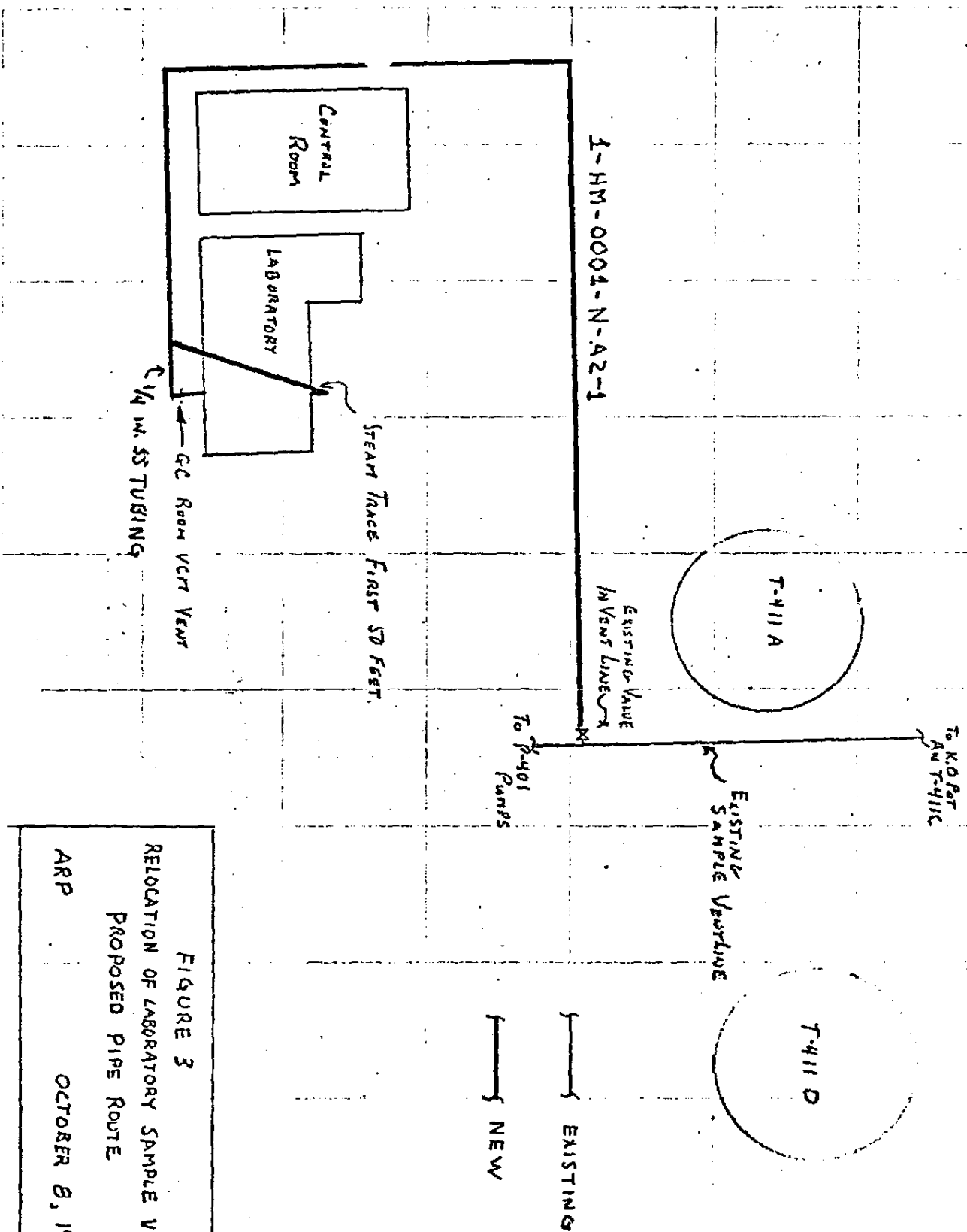
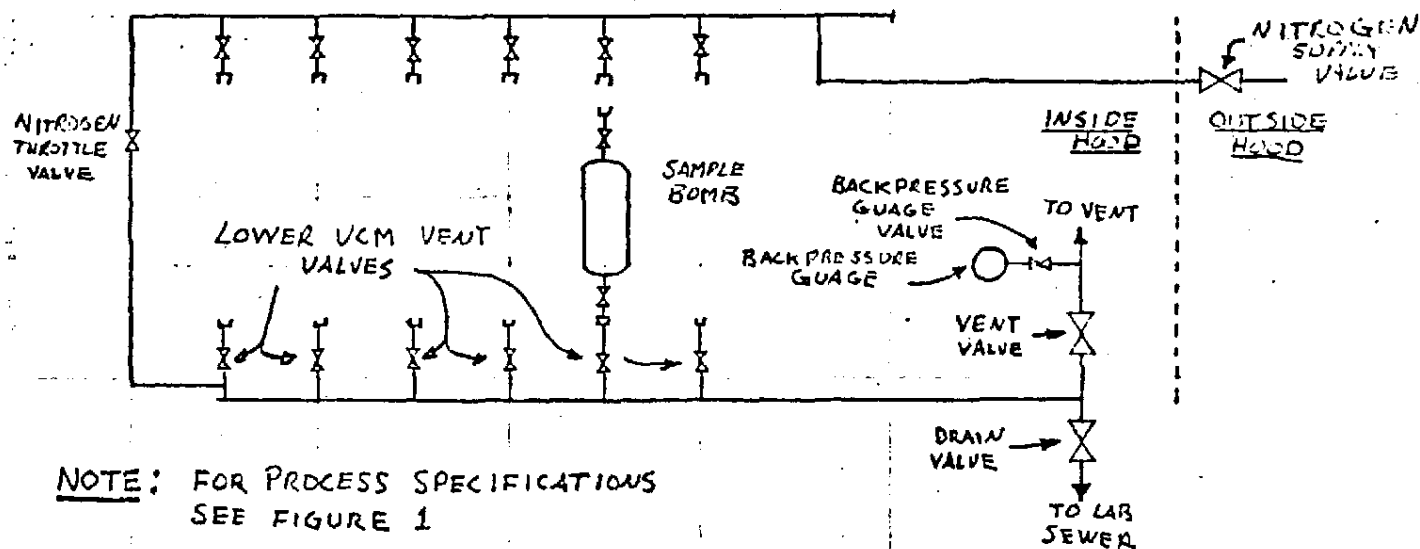


FIGURE 3
RELOCATION OF LABORATORY SAMPLE VENT
PROPOSED PIPE ROUTE

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PROCEDURE FOR VENTING VCM LIQUID

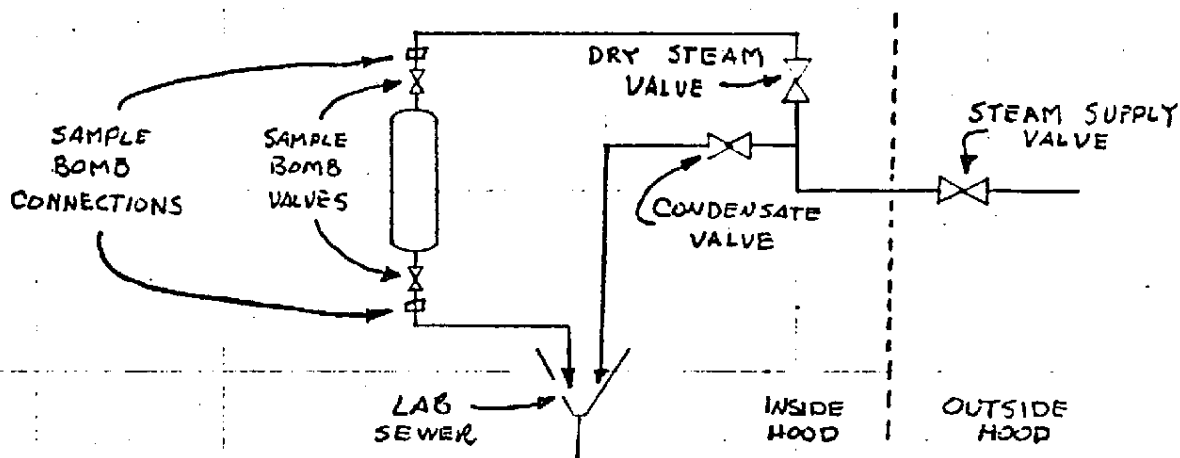
- 1) Prior to operation check the backpressure. Gauge should read zero.
- 2) Connect the sample bombs to the lower fittings of the VCM vent apparatus.
- 3) Check that the vent valve is open and the drain valve is closed.
- 4) Close the hood except for a gap to be able to manipulate the nitrogen throttle valve, lower VCM vent valves, and the vent valve.
- 5) Open one of the lower VCM vent valves and the corresponding lower sample bomb valve.
- 6) Open the nitrogen supply and throttle valves.
- 7) If necessary throttle the vent valve so that the backpressure never exceeds 75 psig.
- 8) After the backpressure gauge drops back to zero vent another sample bomb.
- 9) Repeat steps 5 through 8 until all the connected sample bombs are vented.
- 10) When all the bombs are vented, turn off the nitrogen throttle valve.
- 11) When the backpressure gauge reads zero and all the frost has disappeared from the lines, close all the lower VCM vent valves and the lower sample bomb valves.
- 12) Open the hood and disconnect the bombs.

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FIGURE 4
RELOCATION OF LABORATORY SAMPLE VENT
SAMPLE BOMB LIQUID VCM VENTING PROCEDURE

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OCTOBER 2, 1974



NOTE: FOR PROCESS SPECIFICATIONS
SEE FIGURE 1

PROCEDURE FOR STEAMING A SAMPLE BOMB

- 1) Close the dry steam valve and open the steam supply valve and condensate valve.
- 2) When the line is cleared of condensate turn off the condensate and supply valves.
- 3) Connect the sample bomb as shown or if it does not fit into the holder connect with tubing leads.
- 4) Open both valves on the sample bomb and the dry steam valve.
- 5) Close the hood.
- 6) Open the supply and steam out the sample bomb.
- 7) Close the supply valve.
- 8) Open the hood and disconnect.

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FIGURE 5
RELOCATION OF LABORATORY SAMPLE VENT
SAMPLE BOMB STEAMING PROCEDURE

ARP

OCTOBER 8, 1974

MATERIAL REQUIREMENTS
LABORATORY VCM VENT

Pressure Gauge

Service:	VCM liquid or vapor
Instrument Range:	0-100 psig
Operating Temperature:	-7 to 100 °F
Location:	Lab vent hood on the bomb vent manifold

Pipe (See attached piping material specifications for detailed mechanical specifications)

Service:	VCM vapor or liquid
Size:	1 inch - schedule 80
Material:	Carbon steel
Insulation:	Steam trace first 50 feet from lab building outlet. Steam trace low points in line.

Other

Valves, fittings and tubing as shown on Figures 1 and 2.

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Conoco Central Oil Company
Central Engineering Department

Piping Material Specifications

Specification No. _____ A 2-1

Pipe

Size	
2" & SMLR	Sch. 80 ASTM A 106 Gr. B SMLS (Grade A for cold bending)
3" - 6"	Sch. 40 ASTM A 53 Gr. B SMLS
8" - 12"	Sch. 30 ASTM A 53 Gr. B SMLS
14" - 24"	Sch. 20 ASTM A 53 Gr. B SMLS

Valves

Size	Gate
1-1/2" & SMLR	800-lb. screwed, F.S., O.S.&Y., bolted bonnet, 11-13 Cr. trim, Stellite seat, gate valve. (ASTM A-105-71). Vogt Cat. No. 12111 (Co-8000-2)
2" - 3"	150-lb. R.F., F.S., O.S.&Y., 11-13 Cr. trim reduced port wedge gate valve. (ASTM A-105-71). Smith 815 (Co-1509-2)
4" - UP	150-lb., R.F., C.S., O.S.&Y., 11-13 Cr. trim, wedge gate valve, nickel alloy seat. (ASTM A-216 Gr. WCB). Pacific No. 150 (Co-1502-2)
1-1/2" & SMLR	Globe 800-lb. screwed, F.S., O.S.&Y., bolted bonnet, 11-13 Cr. trim, Stellite seat, globe valve. (ASTM A-105-71). Vogt Cat. No. 12141 (Co-8020-2)
2" - Up	150-lb. R.F., C.S., rising stem, 11-13 Cr. trim, nickel alloy seat ring globe valve. (ASTM A-216 Gr. WCB). Crane Cat. No. 143 XR (Co-1522-2)
1-1/2" & SMLR	Check 600-lb. screwed, C.S., 11-13 Cr. trim, ball check valve. (ASTM A-216 Gr. WCB). Vogt Cat. No. 5-4853 (Co-6040-2)
2" - Up	150-lb. R.F., C.S., 11-13 Cr. trim, swing check valve (ASTM A-216 Gr. WCB) Crane Cat. No. 147X (Co-1541-2)
2" - Up	150-lb. R.F., C.S., Trim as designated below, Check valve (ASTM A-216 Gr. WCB) Mission "Duo-Check" (Co-1542-2) Fig. No. Temp. Limit Fig. No. Temp. Limit 15 SMF 250°F 15 SSF 500°F 15 SVF 400°F 15 SPF 1,100°F
1" - 1-1/2"	Ball Valves (Check press. - temp. limits) 300-lb. screwed, C.S., fire safe ball valve (ASTM A-216 Gr. WCB) Hills-McCanna type S-302-CS-F (Co-3060-2)
2" - 8"	150-lb. R.F., C.S., fire safe, ball valve (ASTM A-216 Gr. WCB) Hills-McCanna type S-151-CS-F (Co-1560-2)

* See under Notes for Valve Notes.

Flanges

Size	
2" & SMLR	CARBON STEEL FLANGES PER ASTM A-105-71 150-lb. R.F. weld neck with Sch. 80 bore
3" - 12"	150-lb. R.F. weld neck with Std. bore
14" - 24"	150-lb. R.F. weld neck with Std. bore
2" & SMLR	300-lb. R.F. weld neck with Sch. 80 bore
3" - 6"	300-lb. R.F. weld neck with Std. bore

* All control valves shall have 300-lb. R. F. flanges.

Temp.	Press.
°F	Max. p.s.i.g.
100	275
200	240
300	210
400	180
500	150
600	130

ANSI B-16.5

Rating	Temp. Range
150-lb. R.F. Carbon Steel	+30° to 600°F
Corrosion Allowance	0.063 in.
Original Issue	November 1957
Revision 2	July, 1973

Notes

1. See Gen. Notes
2. ASTM A-105-71

Valve Notes:

1. Valve manufacturer and catalog numbers shown for convenience only. Conoco approved equals may also be used.
2. Include service and temperature data in valve specifications to insure proper gaskets, packing and trim are specified.
3. Valve parts in possible contact with anhydrous or aqueous ammonia shall not contain; zinc, aluminum, copper or alloys thereof.

Branch Connections

		HEADER SIZE															
		24	20	18	16	14	12	10	8	6	4	3	2	1 1/2	1	3/4	1/2
BRANCH SIZE	1/2	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	T
	3/4	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	T
	1	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	T
	1 1/2	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	T
	2	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	T
	3	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	T
	4	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	T
	6	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	T
	8	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	T
	10	W	S	S	S	S	S	S	S	S	S	S	S	S	S	S	T
	12	W	S	S	S	S	S	S	S	S	S	S	S	S	S	S	T
	14	W	S	S	S	S	S	S	S	S	S	S	S	S	S	S	T
		16	W	S	S	S	S	S	S	S	S	S	S	S	S	S	T
		18	W	S	S	S	S	S	S	S	S	S	S	S	S	S	T
		20	W	S	S	S	S	S	S	S	S	S	S	S	S	S	T
		24	T														

Note: Where reinforcement of stub in branch connections exceeds the area of a 1/2" weld, to meet the temp. press. rating, use weldolet.

CONNECTION SYMBOLS	
S	Stub in with code fillet weld (Min. weld of 1/4" throat).
Fractional Dimensions	indicate minimum fillet weld throat size
T	Weld Tee
W	Weldolet, Thredolet, or Equivalent

Note 2.

Fittings

Size	
ALL	Screwed or Socket Weld ASTM A-105-71, 3000 lb. Butt Weld ASTM A-234, Gr. WPB

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See Gen. Notes 5 & 6.

Bolts and Gaskets

Size	
Less than 1"	Stud bolt per ASTM A 193 Gr. B 7 with two hex nuts each per ASTM A 194 Gr. 2H.
1" & LCB	Flange gaskets to be 1/16 in. asbestos composition ring. Flange gaskets to be spiral wound in accordance with API Standard 941