

## Interoffice Communication

To D. D. Eoff  
 From D. H. Jones  
 Date July 28, 1975  
 Subject Plant Breathing Air System  
 Design No. 32-FOL-375-DHJ  
 FINAL

Attached is the final design for a Plant Breathing Air System. The Breathing Air System will service the chlorine building and unloading rack, the VCM and EDC Tank Farm Areas, the Light Ends Dryer Area and the Block I and Block II Process Areas. A tie-in to the existing railcar breathing air system will also allow service to that area.

### PURPOSE

The plant currently consumes approximately 7700 SCF or 35 cylinders of breathing air at a cost of \$260 per month, excluding breathing air used during ship loading. Most of this breathing air is now consumed at the railcar loading area, with lesser quantities being used during sampling and other miscellaneous tasks within the process and tank farm areas. Presently all breathing air except the railcar loading areas is supplied by localized bottle stations of one or two bottles each or by air bottles on portable carts which can be transported to desired locations.

The proposed breathing air system would eliminate many problems associated with local bottle stations and provide a more reliable breathing air supply source.

### DESIGN DESCRIPTION

Included are the bottle rack location and details, piping manifold layouts and the number and location of breathing air mask connectors. The number and location of mask connectors were determined in conjunction with the recommendations of Operations and Maintenance concerning the number of people that may require breathing air protection in a given area.

OSHA Regulations require that respiratory protection be used when vinyl chloride concentrations exceed 1 ppm for an eight hour time weighted average or 5 ppm for a 15 minute time weighted average. Increased use of respiratory protection within the plant is to be anticipated when these new regulations become mandatory effective April 1, 1976.

The proposed system will use one centralized bottled air station with piping manifolds located throughout the plant to supply breathing air to all areas. This central station will be tied into a spare Control Room Alarm which will indicate both low and high air pressure and alert an operator to take appropriate action.

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Planned location of the bottle rack is by the south-west outside wall of the Control Room. This location will allow easy monitoring of the system and switching of bottles. Also this location will allow use of a trailer supplying bulk air during turnarounds if needed.

The piping system will consist of 1½ and ¾ inch carbon steel headers leading from the bottle rack to areas within the plant. Pressure in the headers will be controlled at 70 PSIG. The branch connection pipes will be ¾ inch carbon steel pipe. Also a ¾ inch tie-in to the existing railcar loading breathing air header will allow that area to be supplied by the new central bottle station. The existing railcar loading breathing air bottle station will be maintained as a back-up station.

The new breathing air bottle station will be stocked with air cylinders presently in the plant. Normally these cylinders can be refilled daily on a cylinder for cylinder basis and additional cylinders (40) can be borrowed for a turnaround. Additional cylinders are not available for purchase at this time. A few portable carts with air bottles will be maintained for miscellaneous tasks in areas not supplied by the central bottle station. Also, existing Victor Type SR400D pressure reducing regulators from the local bottle stations will be used at the new bottle station. The number of regulators needed was determined from the maximum usage of 100 men (200 SCFM) and the flow capacity of the regulators at 200 PSIG bottle pressure.

Estimated maximum usage in the Tank Farm Areas was 15 men or 30 SCFM and in Block I and II Process Areas was 100 men or 200 SCFM.

*David H. Jones*

David H. Jones

APPROVED BY

*Jim Robinson*

bc

CC: JAD-GGD-DDE(5)-JRH(4)-JIM-CEG-PE

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LOCATION AND NUMBER OF BREATHING AIR MASK CONNECTORS

A. Block I Process Area (Total of 36 Mask Connectors)

- I. Heavy Ends Column - Four mask connectors will be attached to each pipe rack stanchion south and south-east of H-108A and H-108B respectively at ground level. Total of eight mask connectors.
- II. Heavy Ends and Light Ends Reflux Pumps - Two mask connectors will be located between the H. E. Reflux Pumps, P-106A & B, on the pipe rack stanchion north of the pumps at ground level. Also two mask connectors will be located near the sampling point south of the L. E. Reflux Pumps, P-104A & B at ground level. Total of four mask connectors.
- III. Light Ends Column - Four mask connectors will be attached to the pipe rack stanchion directly south of the Column, C-102, at ground level. Total of four mask connectors.
- IV. Water Wash Recycle Pumps, P-110 A, B, & C - Two mask connectors will be attached to both pipe rack stanchions north of P-102B and T-101 at ground level. Total of four mask connectors.
- V. EDC Reactor, R-101 - Four mask connectors will be attached to the pipe rack stanchion south of R-101 at ground level. Total of four mask connectors.
- VI. Neutralization Pit, T-252 - Two mask connectors will be attached to the pipe rack stanchions north and south-east of T-252 pit at ground level. Total of four mask connectors.
- VII. Caustic Dryers, S-207 A & B - Four mask connectors will be attached to the south hand rail of the upper platform of the dryers. Total of four mask connectors.
- VIII. Vinyl Column - Four mask connectors will be attached to the pipe rack stanchion south of the column at ground level. Total of four mask connectors.

B. Block II Process Area (Total of 60 Mask Connectors)

- I. Cracking Furnaces - Four mask connectors will be attached to each pipe rack stanchion north of the furnaces at ground level. Four mask connectors will be attached to the hand rail of the feed valve platform of each furnace. Total of sixteen mask connectors.
- II. Vaporizers - Four mask connectors will be attached to the pipe rack stanchion north-west of the vaporizers, H-201 A & B, at ground level. Total of four mask connectors.
- III. Quench Column - Four mask connectors will be attached near the sampling point on the stanchion west of the Quench Column, C-201, at ground level. Two mask connectors will be attached to the hand rail of each of the three upper platforms of the Quench Column. Two mask connectors will be attached to the hand rail of the platform

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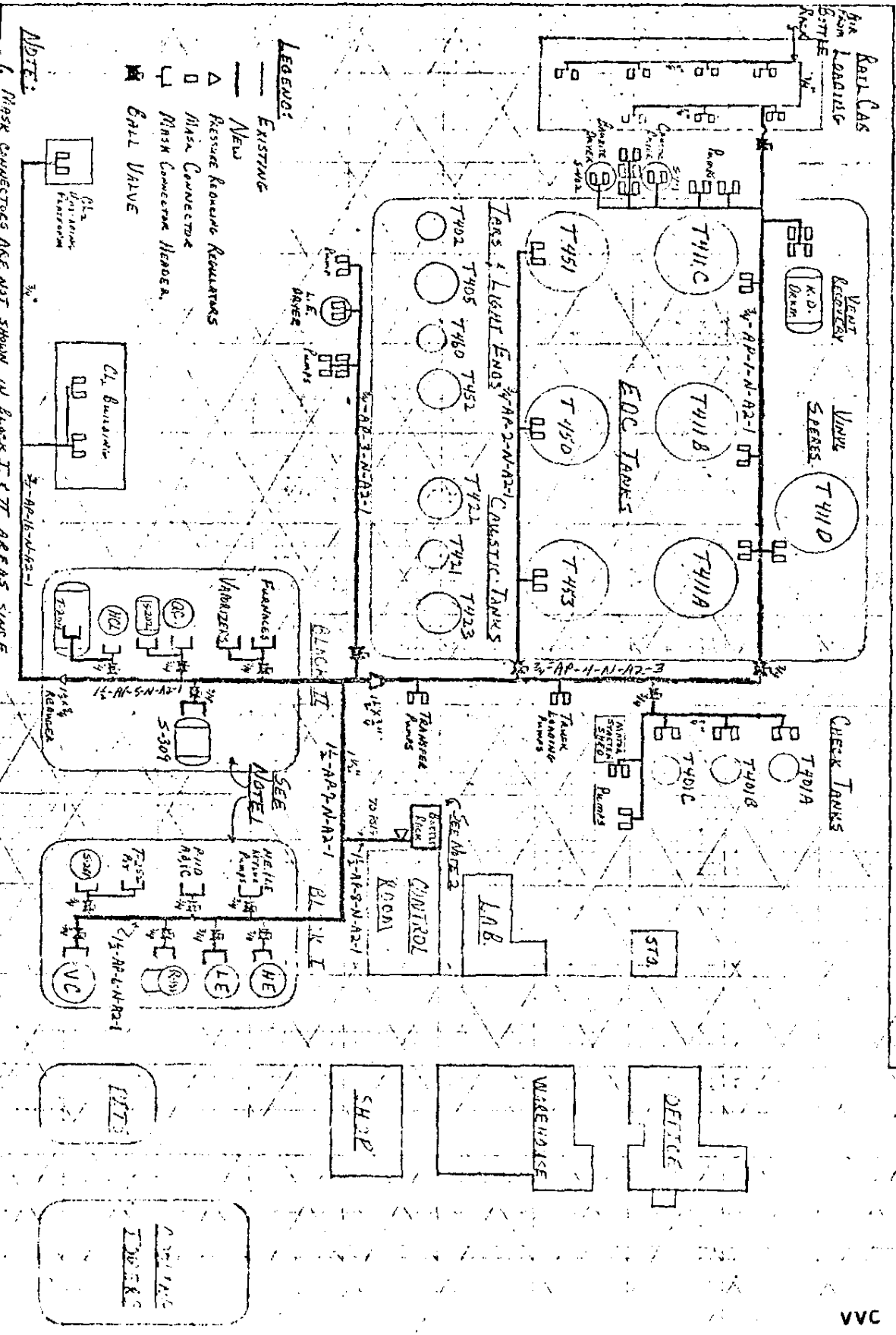
on top of the Quench Column Accumulator, S-202. Total of twelve mask connectors.

- IV. Primary Separator, S-309 - Two Mask Connectors will be attached to the stanchion south-west of S-309 at each level of Oxy. (Ground, second and third level.) Total of six mask connectors.
  - V. HCL Column - Two mask connectors will be attached to the pipe rack stanchion north of the column at ground level. Two mask connectors will be attached to the hand rail of the first, second, fifth, seventh, and eighth platforms. Also, four mask connectors will be attached to the handrail on the west side of T-204, HCL Storage Tank, walkway. Total of sixteen mask connectors.
  - VI.  $CL_2$  Building - Two mask connectors will be attached to each of the two center stanchions on the east side of the building at ground level. Also two mask connectors will be attached to the hand rail of the  $CL_2$  unloading platform. Total of six mask connectors.
- C. Tank Farm Areas. (Total of 54 mask connectors)
- I. Light Ends Dryer - Four mask connectors will be attached to the support leg for the tars loading line next to the light ends transfer pumps at ground level. Two mask connectors will be attached to the hand rail on the upper platform of the light ends dryer. Two mask connectors will be attached to the support leg for the discharge of the pump south of the light ends dryer at ground level. Total of eight mask connectors.
  - II. Check Tanks - Two mask connectors will be attached to the pump switch support leg of the east pump of the transfer pumps located north of the caustic slops tank, T-423. Two mask connectors will be attached to the pump switch support leg of the truck loading pump located north of EDC Storage Tank, T-453. Two mask connectors will be attached near the sampling point of each check tank, T-401 A,B,&C. Two mask connectors will be attached to the north-west leg of the motor starter shed at ground level, and to the pipe support leg west of the check tank filters. Total of fourteen mask connectors.
  - III. Vinyl Spheres - Two mask connectors will be attached near the sampling point of each sphere. Total of eight mask connectors.
  - IV. Bauxite Dryer and Vent Recovery - Four mask connectors will be attached to the pump switch support leg of the vinyl vent recovery pump located south of the vent recovery knock out drum. Two mask connectors will be attached to each of the two support legs of the vinyl loading pumps discharge line located west of the Bauxite Dryer. Two mask connectors will be attached to the hand rail of the upper platform of both the Caustic Dryer, S-401, and the Bauxite Dryer, S-402. Six mask connectors will be attached between S-401 and S-402 on the south-east stanchion of S-401 at ground level. Total of eighteen mask connectors.
  - V. EDC Storage Tanks - Two mask connectors will be attached on top of each of the EDC Storage Tanks, T-450, T-451, and T-453. Total of six mask connectors.

BY D.H.I. DATE 2-23-75 SUBJECT PLANT LAYOUT - AIR SHEET NO. OF  
 CHKD BY DATE EXISTING SYSTEM JOB NO.   
 DESIGN NO. 32-POL-325-04-T

ENTRANCE

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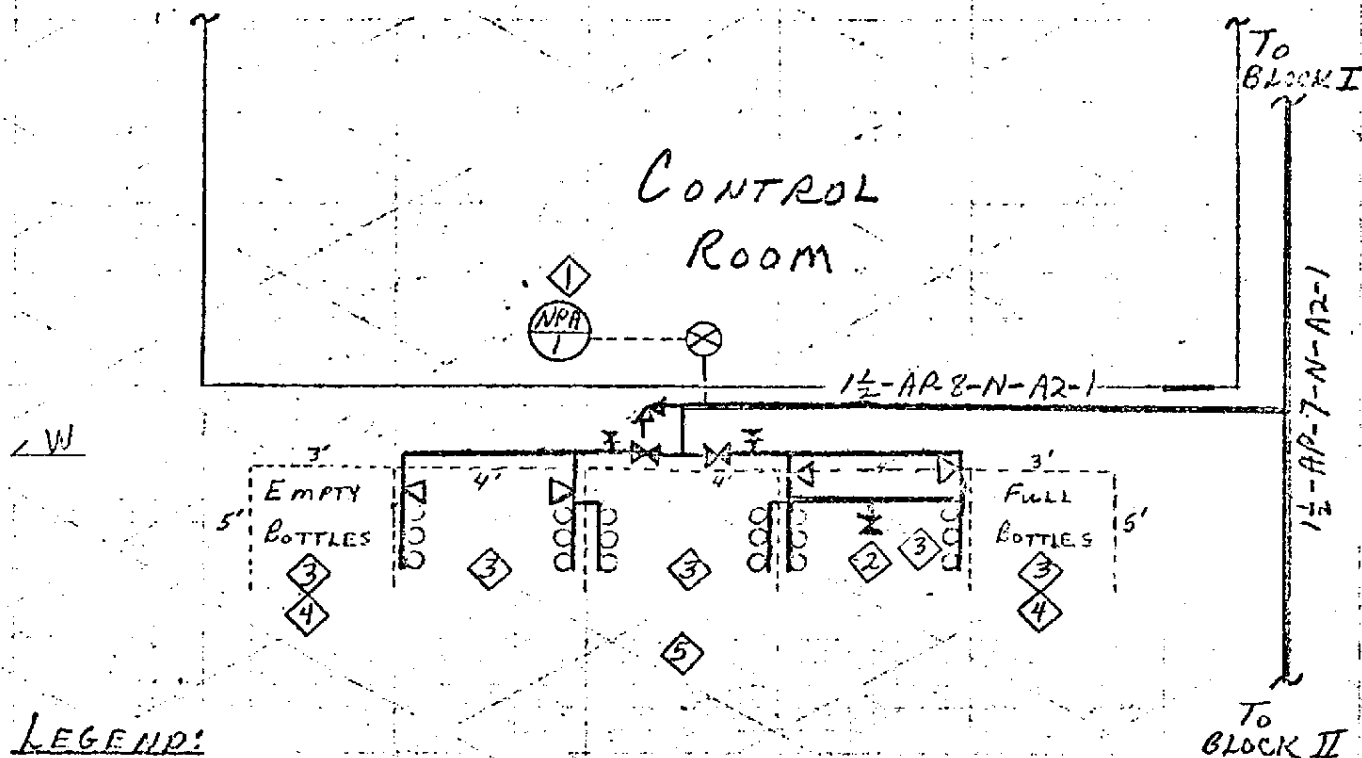


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BY DHJ DATE 2-28-75  
CHKD. BY \_\_\_\_\_ DATE \_\_\_\_\_  
Dwg No. 32-POL-2

SUBJECT BOTTLE RACK F-2  
PLANT BOTTLE AIR  
BREATHING SYSTEM  
DESIGN No. 32-POL-375-DHJ

SHEET NO. \_\_\_\_\_ OF \_\_\_\_\_  
JOB NO. \_\_\_\_\_



LEGEND:

- NEW AIR LINES
- △ PRESSURE REDUCING REGULATOR (SR 400 D)
- AIR BOTTLES
- BOTTLE RACKS
- ◇ NOTE NUMBER

NOTE:

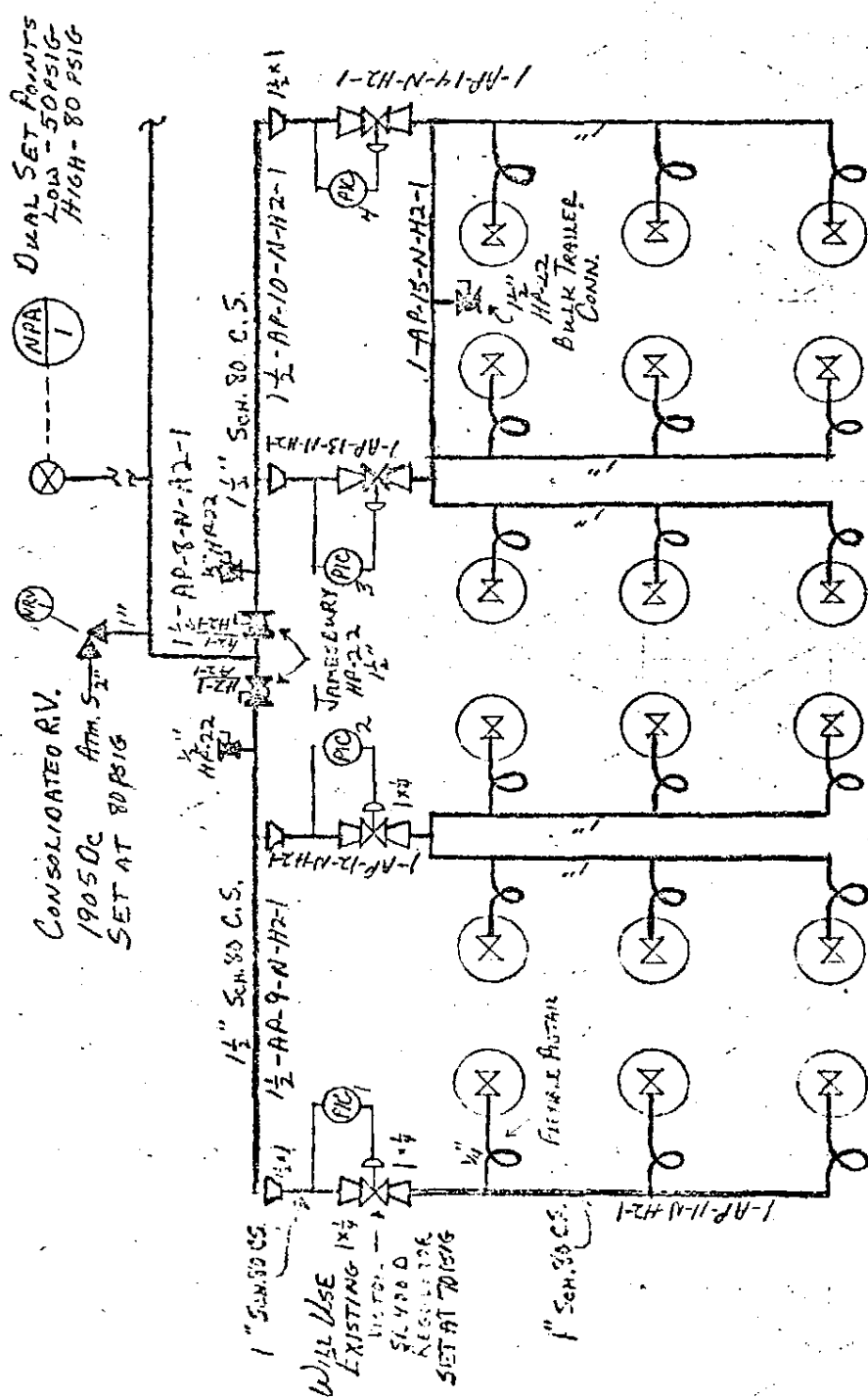
- ① LINE PRESSURE CONTROLLED AT 70 PSIG. A PRESSURE SWITCH WILL BE TIED INTO AN EXISTING SPARE ALARM IN THE CONTROL ROOM.
- ② BULK SUPPLY INLET WILL ALLOW SYSTEM TO USE BULK BREATHING AIR TRAILER.
- ③ EACH BOTTLE WILL BE CHAINED TO BOTTLE RACK.
- ④ SIGNS WILL BE ABOVE EACH AREA TO INDICATE FULL OR EMPTY CYLINDERS.
- ⑤ REFER TO DWG. 32-POL-3 FOR BOTTLE STATION P&I DETAIL.

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BY DHT DATE 7-1-75  
 CHKD. BY DATE  
 Design No. 32-POL-3

SUBJECT DETAIL BOTTLE BACK  
FOR PLANT BOTTLE AIR  
REFRESHING SYSTEM  
 DESIGN No. 32-POL-375-DHT

SHEET NO. OF  
 JOB NO.



LEGEND

- NEW
- PF-1340 S.S. FLEXIBLE PIGTAIL (3000 PSI)
- AIR CYLINDER.
- BALL VALVE

NOTE:

1.) H2-1 PIPE DESIGNATION SPECS. WILL BE 3000 PSIG AT 100°F.