



Shell Oil Company • Shell Chemical Company
Interoffice Memorandum

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PLAINTIFF'S EXHIBIT

SH-1207

MAY 28, 1985

FROM: SR. INDUSTRIAL HYGIENIST

TO: HOLDERS OF HEALTH AND SAFETY WORK PRACTICE GUIDELINE BOOKS

SUBJECT: ADDITION TO THE HEALTH AND SAFETY WORK PRACTICE
GUIDELINE BOOK

The attached Engineering Guide was prepared last year for the installation of new breathing air systems. It addresses many questions that frequently surface regarding the installation of new equipment.

Please add this document to your copy of the Health & Safety Guideline book.

A handwritten signature in cursive script, reading "P.J. Snyder".

P.J. Snyder

PJS/md

Attachment

cc: ECB Satellite
PJS Chron

LAM 000485

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INSTALLATION OF NEW BREATHING AIR SYSTEMS

LAM 000486

ADDENDUM TO
ENGINEERING GUIDE AND SPECIFICATIONS



SHELL OIL COMPANY
DEER PARK MANUFACTURING COMPLEX

RECOMMENDED PRACTICE 3 RP-1B
BREATHING AIR SYSTEM

NOVEMBER 1, 1984
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SCOPE - A breathing air system is for life support, so its dependability and quality of product is of utmost importance. Air at the delivery point must be respirable by humans without adverse results; that is, no toxicity and without odor, taste or particulate matter. This specification covers the design, material, equipment and system cleanliness for a permanently installed continuously pressured breathing air distribution system.

The need for this system in a particular unit or area is not a part of this specification; it shall be established by the joint concerns of health, safety, environmental and operating departments.

GENERAL - A system consists of a supply, pipe headers, service-drops, and associated pressure regulation equipment. The supply may be either a purchased bottled air bank or an on-site compressor system; the latter is a complex system and design parameters and specifications are not included herein. The service-drops shall terminate with unique quick coupling attachment devices that can only be utilized by Safety Department approved respirators and associated equipment (e.g., extension hoses). It is forbidden to permanently or temporarily tie into and/or use the system for any other reason than life support purposes.

SYSTEM PRESSURES - For this specification the air supply is purchased bottled air banks and the industry standard maximum pressure is nominally 2300 psig.

At DPMC, the distribution system pressures are standardized at either of two pressure levels, depending on the respirator equipment to be used. The 100 psig system is most prevalent, however, some areas at DPMC-North utilize breathing equipment that requires a 500 psig system. Industrial Hygiene Department representatives shall be consulted for selection guidance.

To maintain the system pressure, a pipe mounted self-venting (uncaptured) pressure regulator with monolithic ports for inlet and outlet pressure gages shall be installed in very close proximity of the 2300 psig air supply. Depending on the air bottle bank, more than one regulator may be required.

The system downstream of the pressure regulator(s) shall be protected by a relief valve with a "set" pressure of 125% of system pressure and with a flow rate equal to the maximum flow through a wide open pressure regulator at maximum differential pressure (i.e., full bottle pressure).

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FLows AND LINE SIZE - The supply header shall be minimum 1-1/2" nominal pipe size because of deflection limitations encountered on the usual pipe rack spans.

The service-drops shall be minimum 3/4" nominal pipe size and shall terminate with a fire safe ball valve and a unique quick coupler.

A maximum design-flow rate of 100 SCFM is reasonable; this allows, for example, two 40 SCFM and eight 2.5 SCFM simultaneous users. At this flow rate line pressure drop in a 1-1/2" header is satisfactory.

Typical user flow requirements are as follows:

Individual Respirator	2.5 SCFM
Continuous Flow Welders Respirator	8 SCFM
Sand Blast Hoods & Chemical Suits With Air Conditioning	40 SCFM

QUALITY OF AIR - All vendor bottled air is purchased as "specification" breathing air. In addition, the oxygen content shall be analyzed and approved by the Safety Department inspector prior to placing the product in service. Approval is verified by the inspector affixing an "approved" tag to the bottle system.

CLEANLINESS OF NEW PIPING SYSTEM - A piping system is considered clean when free of organic, inorganic and particulate matter. This shall be attained by effecting a well defined cleanliness effort during construction and a purging operation of the as-built system.

During the construction phase, a high degree of visual inspection for cleanliness shall be instituted. The removal of contaminants such as grease, oil, threading lubricant, dirt, gravel, water, metal filings, scale, weld spatter, paints or other foreign matter from inside the system is essential. A detailed written procedure shall be inaugurated and followed throughout the construction phase.

After construction is complete the following purging operation shall be effected to put the system into operation. (Exclude the pressure regulator and quick coupler fittings, as these components may be damaged by the high steam temperature.)

Pressure entire system with exhaust steam (50 psig max.) and thoroughly purge system at each service-drop. This is to de-oil and remove any remnant particulates from the system.

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BREATHING AIR SYSTEM



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CLEANLINESS OF NEW PIPING SYSTEM (Cont'd)

Without depressuring the system, switch from steam to nitrogen. Thoroughly purge system at each service-drop until all steam is dissipated, as evidenced by dry nitrogen purge.

Disconnect steam and nitrogen purge piping. Connect the breathing air supply and again purge each service-drop until the air quality meets the approval of the zone safety inspector.

Install the Hansen quick connect hose fittings at all service-drops.

SYSTEM IDENTIFICATION - At all service-drops and at 50-foot intervals on piping headers, apply to the piping in a prominent fashion, a permanent weather resistant identification sign/tag reading "breathing air".

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ADDENDUM TO
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RECOMMENDED PRACTICE 3 RP-1B
PIPING - BREATHING AIR SYSTEM

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ATTACHMENT 1

PIPE & FITTINGS SPEC'S.

ITEM	SIZE	RATING	TYPE	SPECIFICATION
100 PSIG SERVICE				
PIPE	$\frac{3}{4}$ " TO $1\frac{1}{2}$ "	SCH.80	ERW	A-53, GR A OR B, T & C, GALV.
FITTINGS	$\frac{3}{4}$ " TO $1\frac{1}{2}$ "	150#	SCRD.	A-197, MAL. IRON, GALV.
VALVES	$\frac{3}{4}$ " TO $1\frac{1}{2}$ "	150#	SCRD.	B-62, BRONZE, R.S.
PIPE THRD. COMPOUND	_____	_____	_____	M & M SCOTCH BRAND #547 TEFLON TAPE (1)
500 PSIG SERVICE				
PIPE	$\frac{3}{4}$ " TO $1\frac{1}{2}$ "	SCH.80	ERW	A-53, GR A OR B, T & C, GALV.
FITTINGS	$\frac{3}{4}$ " TO $1\frac{1}{2}$ "	300#	SCRD.	A-197, MAL. IRON, GALV.
VALVES	$\frac{3}{4}$ " TO $1\frac{1}{2}$ "	300#	SCRD.	B-61, BRONZE, R.S.
PIPE THRD. COMPOUND	_____	_____	_____	M & M SCOTCH BRAND #547 TEFLON TAPE (1)
2300 PSIG SERVICE				
PIPE	$1\frac{1}{2}$ " & UNDR	(2)	SMLS.	A-312, TP304 OR 316 S.S.
TUBING	$1\frac{1}{2}$ " & UNDR	(2)	SMLS.	A-269, TP304 OR 316 S.S. (3)
PIPE FIT'S.	$1\frac{1}{2}$ " & UNDR	(2)	S.W.	A-182, TP304 OR 316 S.S.
TUBE FIT'S.	$1\frac{1}{2}$ " & UNDR	(2)	SOCKET	TYPE 304 OR 316 S.S. (3)
VALVES	$1\frac{1}{2}$ " & UNDR	(2)		

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- (1) TEFLON TAPE ONLY IS TO BE USED, HOLD-BACK TAPE
FROM FIRST TWO PIPE THREADS.
(NO OTHER THREAD LUBRICANT / SEALANT SHALL BE USED.)
(2) TO BE ENGINEERED FOR PRESSURE & PIPE SIZE.
(3) ALL JOINTS TO BE SILVER SOLDER.

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RECOMMENDED PRACTICE 3 RP-1B
PIPING - BREATHING AIR SYSTEM



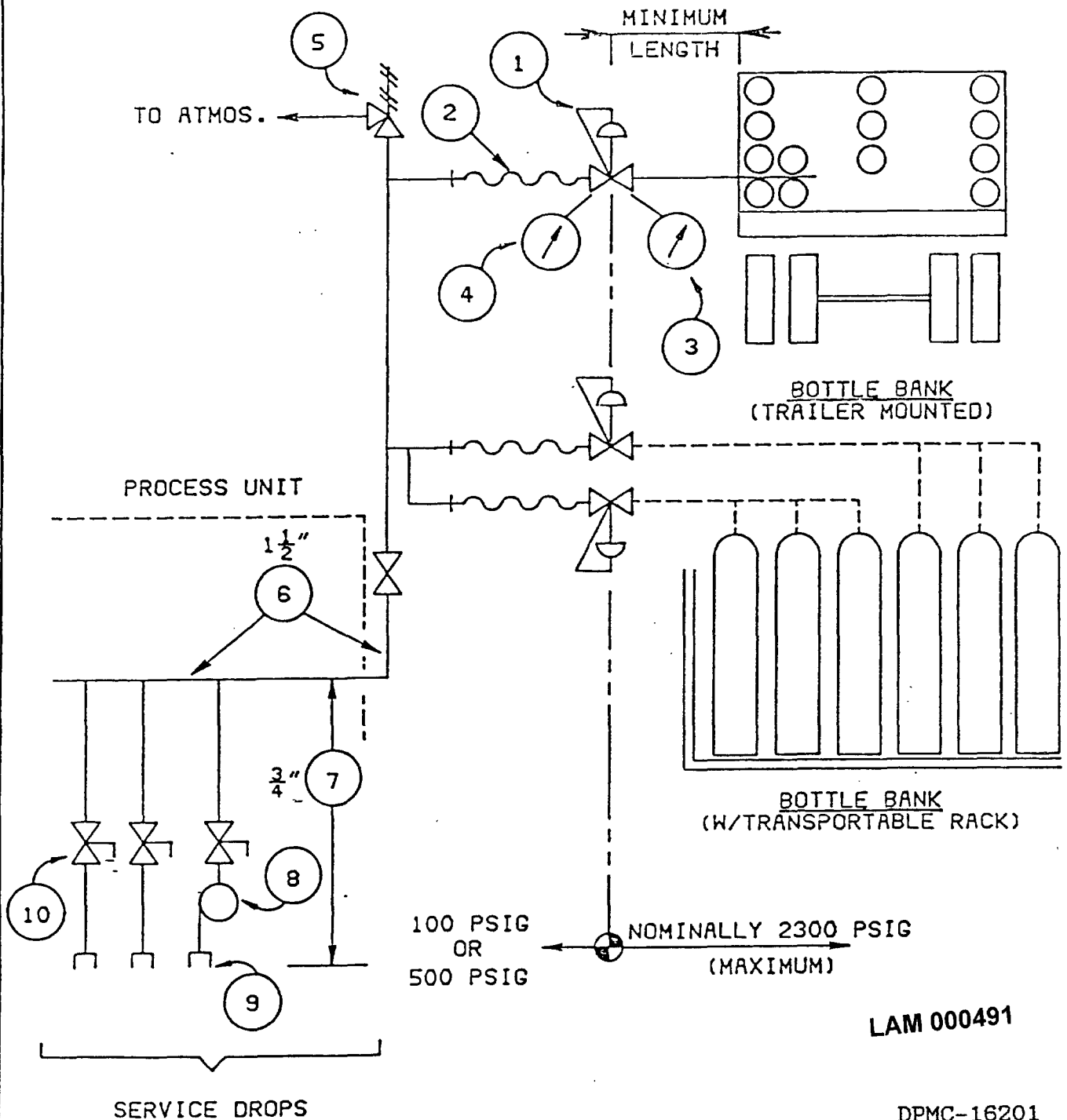
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ATTACHMENT 2

EQUIPMENT SCHEMATIC



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ATTACHMENT 2 - EQUIPMENT DESCRIPTION

1. Tescom 44-1300 series (or equal), self-contained, brass body, self-venting, pressuring reducing regulator with FNPT connections for inlet/outlet pressure gages. Specify "clean for oxygen service".
2. Teflon, smooth bore, flexible hose with Type 300 stainless steel wire reinforcement braid and brass end connections.
- 3-4. Pressure gage, 2" or 2-1/2" (max.) nominal diameter, phenolic case, alloy steel bourdon tube, stainless steel movement, bottom MNPT connections, safety glass and appropriate pressure range ($1.5 \pm$ times expected pressure).
5. Bronze or brass body relief valve. "Set" pressure shall be 125% of system pressure. Capacity shall be that of the pressure regulator in wide-open position and at maximum pressure differential.
- 6-7. Header and service-drop piping - See Attachment 2.
8. Air hose reel - optional (as needed).
9. Hansen (do not substitute) 3000 series, brass, one-way, socket end, quick connect coupler with sleeve lock device.
10. Brass, soft seat, fire safe, scrd ball valve - See Attachment 2.

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PROCEDURES
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