

"UNUSUAL INCIDENT"

Date: February 18, 1976

Area: "Ponsol" Spray Dryer #2 - 743 Bldg.

Nature of Incident: Leak of propane to atmosphere.

DESCRIPTION

At approximately 9:30 p.m., the operator was starting the dryer to dry Charge 184 of "Latyl" Yellow 3G Disp. Cr. He opened the automatic valve in the propane line by pushing the panel board switch. The propane is stored in six propane storage tanks across the street and southeast of 743 Building; the automatic valve is at this location.

The pilot light lit without incident, but the main burner would not light because of low gas pressure (as indicated by panel board lights). The operator noted a strong smell of gas when he checked the burner on the fourth floor outside platform. He also noted that a relief valve was missing from the system. He called his co-worker on the intercom and the automatic valve was shut off immediately. He then went across the street to the propane storage tank where he again noted a strong smell of propane and also noted that two relief valves were missing at this location. The operator called the night office and his supervision at this point.

An investigation immediately following the incident revealed that the three relief valves had been removed on the day shift for routine inspection and that the 3-way valve beneath each relief valve had been set wrong (see attached sketch). The 3-way valves were reset properly and the unit was started up without incident. The inspected relief valves were installed the next day. The investigation also revealed that approximately 500 gallons of liquid propane was discharged to the atmosphere over a 15-20 minute period.

INVESTIGATION

1. The mechanical foreman lined up his mechanic on the 8x4 shift to remove the three relief valves and take them to PVI for inspection. The foreman reviewed the job directly with the mechanic, and the mechanic assured him that he knew how to do the job. He had done this same job six months previously and had sketched the 3-way valve in his notebook. However, for some unknown reason, he made a mistake in his sketch, and instead of closing the valve, he opened it. The spray dryer was shut down for clean-up when the valves were removed, so the automatic gas valve was closed and there was no pressure in the gas line. Therefore, the mechanic did not realize he had set the valve wrong.
2. The regular operator, a Leader C/P who is in charge of running the spray dryer, was off this particular day and only his helper, an Operator 2/C, was present when the valves were being removed. The helper had no knowledge of the workings of the propane system, but tagged out the 3-way valves with the mechanic. No other member of operating supervision knew the job was being done.
3. Normal shift turnover is a written report in the shift log and conversations between the incoming and outgoing shift leaders. In the absence of the 8x4 shift leader, the Operator 2/C did not write down or tell the incoming shift leader that the relief valves had been removed, since he believed the 3-way valves were properly set and the system was safe.

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INVESTIGATION (Cont'd.)

4. The maintenance foreman was unable to contact the Spray Dryer supervisor. His attempts to contact higher supervision were unsuccessful because he was unaware of the complete structure of the spray dryer organization; Engineering Area 3B maintains the "Ponsol" Spray Dryer #2, but has no other contacts with the "Ponsol" Area.

CONCLUSIONS

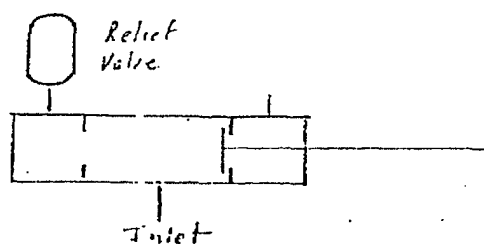
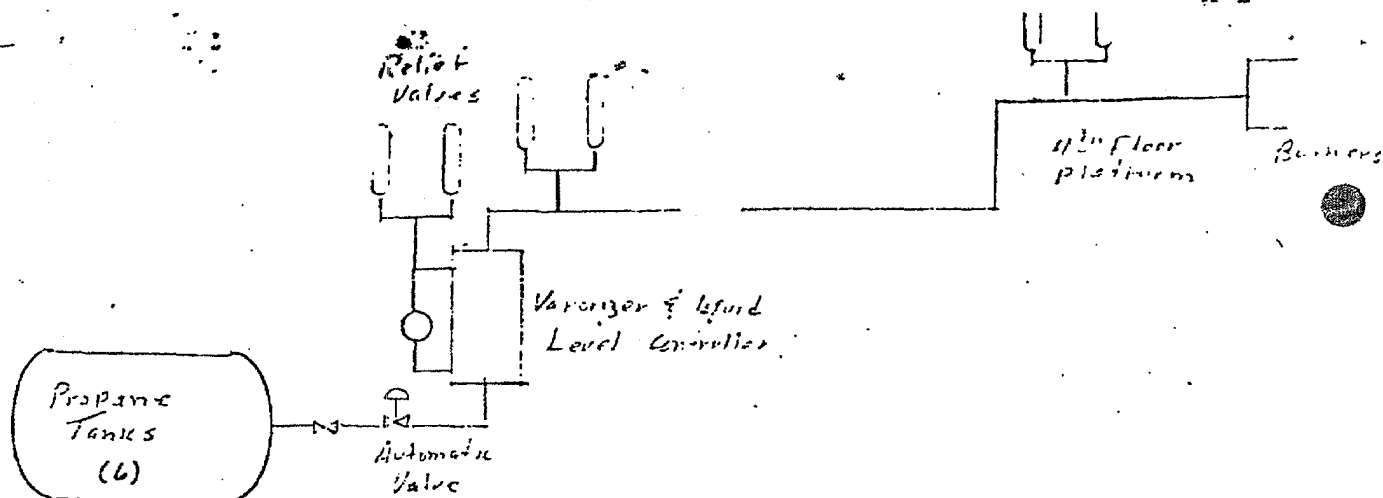
1. The basic cause of the incident was failure to follow established valving and tagging procedures.
2. It is a recognized procedure for the mechanics to operate the 3-way valve since a wrench is required to turn the valve stem. However, the correct position of the valve was not checked by a qualified operator or by members of either Engineering or Operating Department supervision.
3. The mechanic did not realize that he was working from a faulty sketch.
4. An Operator 2/C tagged out the valves as a representative of the Operating Department. He was unfamiliar with the system and was not authorized to do any locking or tagging.
5. Because of poor communications, there was incomplete shift turnover by both the Engineering Department and the Operating Department.

RECOMMENDATIONS

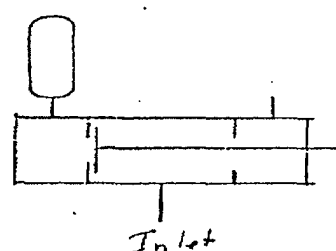
1. Relief valves in the propane system are not to be removed until the procedure is reviewed on the spot by members of the Engineering Department supervision and the Operating Department supervision (L. P. Winfield and C. H. Turner).
2. Valving and tagging is to be done only by operating personnel specifically authorized by area management (C. H. Turner).
3. Area supervision will strengthen shift turnover procedures to assure that all information is included and reviewed (H. R. Steinbruck).
4. Two-part red tags will be adopted by Operations at "Ponsol" S.D. #2 so that an on-the-spot reminder of uncompleted work will be present in the Operating Control Room (C. H. Turner).
5. Consideration will be given to replacing the dual relief valve system with a single relief valve or replacing the present 3-way valve with one of another design (W. J. King and J. J. Pietrantonio).

Investigated by: M. L. Reinhart L. P. Winfield
 H. R. Steinbruck J. J. Pietrantonio
 C. H. Turner J. E. Olcott
 W. J. King

Reviewed by: J. J. Meyer

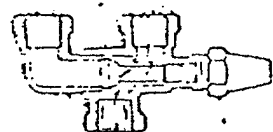


Correct



Incorrect

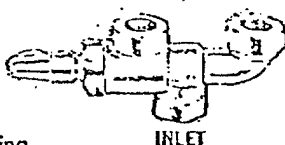
SEVERY three-way dual shut-off valves



Type 92
Parallel Mounting
FORGED BRASS VALVE
Right Outlet Port Open
Left Outlet Port Closed

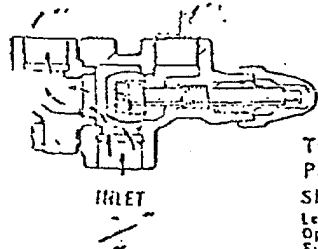
INLET

Recommended for use with Relief Valve Types 52, 523, 524.



INLET

Type 302-A
Parallel Mounting
DUCTILE IRON VALVE



INLET

Type 8023
Parallel Mounting
SEMI-STEEL VALVE
Left Outlet Port
Open
Right Outlet Port
Closed

For Dual Relief Valves and Drier By-Pass Installations or Applications requiring simultaneous opening of one line and closing of another.

Three-Way Dual Shut-off Valve Inlets are shown at the bottom of the illustrations. Tight shut-off can be obtained at either extreme of stem position, closing off either the left or right outlet port. When the valve stem is in an intermediate position, the flow is through both outlet ports.

A dual relief valve installation consists of one three-way shut-off valve and two relief valves so arranged that both relief valves cannot be shut off from the protected pressure vessel at the same time. This permits safe removal of either relief valve for repair or replacement, while the vessel is protected and under pressure. EACH relief valve must have sufficient capacity to provide the necessary discharge flow when used alone.

The design of this Three-Way Valve provides full discharge area through the valve regardless of stem position, assuring maximum protection. Furthermore, this design provides for convenient parallel mounting of the two relief valves and fulfills the requirement set forth in the ASA B9.1 1964 Code Section 12.1.1.

"No stop valve shall be located between any automatic pressure relief device or fusible plug and the part or parts of the system protected thereby, except when the parallel relief devices mentioned in 12.2 are so arranged that only one can be rendered inoperative at a time for test or repair purposes."

Two three-way valves, installed with drier bypass line, permit installation or removal of service drier without air, dirt, or moisture entering line.

PARALLEL MOUNTING—CAPPED TYPE, BOTTOM INLET

450 P.S.I. Working Pressure. Maximum Temperature Rating 300°F.

CATALOG NUMBERS	SIZE CON- NECTIONS	BODY MATERIAL	DIMENSIONS—INCHES				WEIGHT— POUNDS
			INLET CENTER TO		INLET FACE TO OUTLET FACES	OUTLET PORT CENTERS	
			FLANG CENTER	CAP END			
525	1/2" F.P.T.	Forged Brass	2 3/4	3 1/4	2 1/2	2 3/4	1
8021A	1/2" F.P.T.	Ductile Iron	1 3/4	4 1/4	2 1/2	3	3
8022A	3/4" F.P.T.	Ductile Iron	2 3/4	5 1/4	3 1/2	3 3/4	4 1/2
8022A-B	1" F.P.T.	Ductile Iron	2 3/4	6 1/4	3 1/2	4 3/4	6
8023	1 1/2" F.P.T.	Semi-Steel	2 7/8	7	4 1/2	4 3/4	18 1/2