PLAINTIFF'S EXHIBIT

MON-2624

Monsanto

FROM (NAME—LOCATION—PHONE) C. W. Ramsay* - Engineering Technology - Ext. 4010

DATE : October 8, 1986

SUBJECT : AN Shutdown Gasket Concerns

REFERENCE :

cc: R. S. Ingersoll
R. C. Fisher
Z. Silva
W. C. Marvin

TO : G. T. Butler*
P. L. Sharp*
M. Ince*
N. M. Tyler

*Attendees

This is to document the results of the meeting held to determine the scope of the gasket problems identified during the past AN2 Turnaround. These problems are all related to spiral wound gaskets, and are not related to filler material. Some of the identified problems are strictly related to conversion to 5000 psi gasket while others are not. The concerns identified are as follows:

1. The gasket comes unwound. This problem is more often noted in the larger gaskets. The gaskets unwind from both the inside out and the outside in. It is believed that this problem has been accentuated/increased by the conversion to the 5000 psi windings.

2. The gasket cups/curls inside the flange. It is currently not known what causes this problem, the gasket O.D. ring cups and deforms when the bolts are tightened. This may be related to bolt torques, gasket positioning, or some other cause. Again this problem is associated with the 5000 psi gasket.

3. The gasket is warped. This is believed to be a supplier quality control problem. There have also been cases where the ring is warped by the stamping of the 5000 psi designation into the O.D. ring.

4. On the smaller sizes (reported on 3/4", 1", and 1-1/2" sizes) if there is significant piping misalignment the gasket will not provide sufficient resistance to crushing to pull the flanges up, this is particularly true if the flange raised face does not seat on the O.D. ring. The 10,000 psi gasket had a much better performance in this area. While piping misalignment is not desirable, some misalignment has to be expected and compensated for.

5. The windings on some of the gaskets were warped or cupped. This is believed to be a supplier quality problem.

6. After compression the gasket comes apart. There is some concern that the gasket will come unwound on the inside during service. Apparently the crushing of the gasket for sealing purposes breaks the welds on the windings.

7. The gasket usually has to be replaced in a hot bolting situation. This is not totally unexpected. With the available bolting it is easy to pull the gasket all the way down to the compression gauge (the thickness of the metal O.D. ring controls the amount of crush on the gasket material) on the initial tightening. This is an indication that the gasket is compressing properly, however it does not leave room for additional compression.

8. The gasket O.D. Ring does not fit. On some flanges the ring is loose, allowing the gasket to drop down below the desired position, on other flanges the ring is too large and catches on the bolts. Either of these conditions cause the gasket not to seal properly. The cause of this problem is being investigated. This problem relates to both the 5000 psi and the 10,000 psi gaskets.

9. Due to the special nature of the 5000 psi gaskets there are significant difficulties in procuring the gaskets. There are two ways to handle this concern. Either the vendor or Monsanto will have to begin to stock the gaskets in sufficient numbers to handle the normal and emergency requirements. There are some notable cost reductions available in correcting this problem. (Hot shot costs, special opening costs for the gasket manufacturer, and improved quality control).

10. The 5000 psi gaskets require significantly more care in handling, installing, etc. This is resulting in additional costs, increased gasket usage and delays in job completions. The methods need to be reviewed to see if these problems can be reduced/eliminated, this gasket was not intended to increase costs long term.

The problems identified are grouped in four major areas, Vendor gasket design, Vendor Quality Control, Acquisition problems, and Installation/Mechanical problems. These area are being investigated and results and conclusions will be reported regularly.

C. W. Ramsay /SLT
C. W. Ramsay

/slt

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