bcc JJR/UP
FWS
1650 P. L. Slayton
1650 J. S. Pullman
[illegible] H. S. Bergen/P. L. Goscagn

February 17, 1972

Mr. Pete Romano
Grumman Aerospace Corp.
Plant 30, Dept. 296
Bethpage, L.I., N.Y. 11714

Dear Pete:

As related during ourconversation of February 14, Dr. Paton received your February 7 letter on February 11 and he will respond separately.

Further to our conversation, I have attached copies of the Therminol Conversion Bulletin. Please refer to pages 10 and 11 for our suggestions on flushing or solvent cleaning of Therminol FR systems.

A Safety of Handling statement appears on page 12 of the Conversion Bulletin and I've also included individual toxicity statements on Therminol 55 and 66. Should more detailed information on toxicity be required, I suggest you have your medical group contact our Dr. E. Kelly at (314) 694-2191.

Therminol 55 or 66 can be added as top-up to Therminol FR-1 with certain precautions. We suggest this be done only as an emergency procedure to sustain operation and that complete conversion from FR-1 be carried out within weeks. While the products are completely miscible, some degree of chemical incompatibility with FR-1 is possible which will reduce the life of Therminol 55 or 66 in the mixture. Decomposition products and bi-products as low boilers and solids can impair operation of pumps, mechanical seals, vents, controls, and even heat transfer surfaces.

Should you mix Therminol 55 or 66 with FR-1 in your systems, air contact with the mixture should be avoided. Further information on this point is provided on pages 9 and 10 of the Conversion Bulletin. Some low boilers and carbonaceous solids can develop

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on air contact with the hot mixture.

Solids, primarily iron salts and oxides, are also present in your Therminol FR systems. Therminol 55 and 66 tend to loosen these solids and carry them throughout the system where they can deposit on heating surfaces causing reduced heat transfer and at mechanical seal faces causing excessive wear and leakage.

The addition of 5% or more of Therminol 55 or 66 will reduce the fire resistance characteristics of FR-1. As fire resistance of the FR-1 is reduced, by addition of 55 or 66, the need for fire protection equipment in the heating and using systems becomes important. Pages 7, 8 and 9 in the Conversion Bulletin provide more information on this point.

Studies on Therminol FR/55/66 mixtures show the greatest incompatibility above 40% FR fluid in the mixture. Other variables, such as high acidity and air content adversely affect compatibility of 55 and 66 with FR fluid.

I feel the need for a change from Therminol FR fluid has been established. The decision to add an alternate fluid as top-up to the FR system is, of course, yours to make.

We will continue to work with you on conversion from the FRM containing Therminol FR fluid.

Please call if you have any questions.

Sincerely,

D. E. Roush
Product Specialist
Heat Transfer Fluids

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Enclosures
4 Conversion Bulletins
Toxicity on T-55 and T-66

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