

## **PRO-TEC Pump Consultants** -- P.O. Box 474 -- Pinch, WV 25156

May 22, 1995

Alan Roth  
Advanced Product Distributors, Inc.  
601A Lofstrand Lane  
Rockville, Maryland 20850

Dear Dr. Roth:

This letter is to describe the very positive results that I have had with MILITEC-1 in pumps. Specifically, these are end-case, centrifugal ANSI pumps made by Duriron Pump Co. handling 30 gal./min. at 60 ft. TDH (total discharge head) pumping 20% caustic at ambient temperature. I learned about the product from a distributor of yours who was selling MILITEC-1 to my company (one of the top ten chemical companies in the U.S.). Before I retired from there 2 years ago, I was a Maintenance Supervisor and an important part of my responsibility was pump reliability. The plant at which I worked produces agricultural chemicals. My company thought enough of my capability in pump reliability to send me to other plants to train their operators, mechanics and engineers.

We had a long history of pump failures, averaging almost one per day among our 120 centrifugal pumps. We would pull a pump when we found a seal failure which was due in a lot of the cases to a bearing failure. If the bearings are well lubricated, they can last many, many years. Unfortunately, water and dirt make their way into the oil which causes failure. Good pump life will normally be 4-5 years, normal pump life might be 1-2 years and poor pump life only 1-2 months. About 1 1/2 years before my retirement, I developed an innovative seal flush design and made some other changes to our pump maintenance that helped to reduce the number of failures. At that time, the pumps were about 20 years old and we overhauled them; adding MILITEC-1 before putting them back in service. We found an old oven and baked the bearings and shafts at 130°F with a film of MILITEC-1 on them. Then we installed the parts, added oil and 3% MILITEC-1.

While it is difficult to estimate how much improvement was due to MILITEC-1 versus the other changes, I would guess that MILITEC-1 was responsible for about half our success. We went from about 20 failures per month to about one a month for 1 1/2 years, and when I visited the plant recently after a 2-year absence, I learned that the failure rate has not changed. The other pump improvements were not foolproof so MILITEC-1 adds that extra protection when conditions change. There are so many variables that can affect the pump. MILITEC-1 provides a margin for error and off-spec conditions.

One very clear result of MILITEC-1 in these pumps is the reduction of temperature. On my recent visit to the plant, we were looking at the seal design and just happened to measure the bearing housing temperature with a Ranger PM Digital Thermometer Model RAYRPM 2EMLS with a laser pointer. We found the temperature to be 94°F with the ambient temperature at 79°F. This was very impressive as the load was 30 gal./min. and I would expect the temperature to normally be at around 140°F to 150°F. On subsequent days, I learned the housing temperature one day was 92°F with the ambient temperature at 81°F and another day was 79°F with the ambient temperature at 68°F. This differential of 11 degrees rather than 45 to 55 degrees means much less bearing wear. A general engineering rule of thumb is that every 18 degree temperature rise doubles the wear. Just on temperature alone, MILITEC-1 more than doubles the life of the bearings.

I experienced MILITEC-1 even more dramatically when I used it in my current business training people to get more out of their pumps. During training sessions I would drain the oil out of a pump and run it for hours to show that with MILITEC-1 an oil loss does not adversely affect the pump (nor even allow the bearings to heat up). Many of the trainees were skeptical and thought I had grease on the bearings or had a hidden oil system still operating. I decided to remove a 90° slice

from the housing to expose both the shaft and the two bearings. Instead of just draining the oil, I let the bearings dry so that there was not even a film of oil remaining. I tested the pump at home and ran it like this for 8 hours under full load (40 gal./min) with no problem. I then took it to an expo where I demonstrated the pump operating absolutely dry for 2 days, 8 hours each day, again under full load. By the way, the bearing temperature was only 101°F at the end of each 8-hour period. This demonstration helps me sell my services as people can see that my training will make a big difference for them.

I should make it clear that I am not in the business of selling MILITEC-1. When my trainees ask where they can get the product, I give them a telephone number to call. I don't make any money from this. I am satisfied that MILITEC-1 helps me so much in my service business. I have learned to really appreciate your product with the experiences I have described above.

Sincerely yours,

/s/

Mike Davis