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SEAL SEGMENT VIBRATION TEST

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PURPOSE

To determine the amount of wear resulting from relative motion between seal segments and mating components.

PROCEDURE

The following components (1) seal segment 977D848 (modified), (2) plunger, lateral support 963B727, and (3) main segment 936J568-B, were submitted by the Mechanical Design Section for evaluation. A sketch of the test set-up is shown in Figure 1. A spring preload of 40 lbs. was applied between the lateral support pin and the seal segment. The load alternated between 40 lbs. at minimum displacement and 61.5 lbs. at a maximum displacement of 0.100 inch.

RESULTS

After 105,000 cycles of operation under the above conditions the test apparatus was disassembled and components were again observed and measured. The wearing action produced on the components could not be measured with micrometers, however, areas of contact during relative motion were polished. The polished surfaces appeared at areas marked "W" on the sketch. In addition, white blotting paper was used to wipe off the lateral support pins and interior surface of hole in the main segment to pickup any graphite particles which may have been a result of the wear process. The procedure did not show any evidence of graphite wear particles.

CONCLUSIONS

1. The wearing action produced on the components could not be measured with micrometers, thus indicating that wear was negligible after 105,000 cycles of operation.
2. Interfacial wear surfaces developed a polished appearance.

FUTURE ACTION

Futher tests of a similar nature are planned using different load conditions applied in various directions.

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SEAL SEGMENT WEAR TEST ARRANGEMENT

W = WEAR SURFACES

MINIMUM SPRING DISPLACEMENT = 0.250" - 40 lb.

MAXIMUM SPRING DISPLACEMENT = 0.350" - 61.5 lbs.

FIGURE 1