side. The equipment for exerting and monitoring the draw stress on the wire was described in Interim Report VII[5] and details of the starting wire are given in Interim Report VIII[6].

Two trials were conducted at a nominal temperature of 500 F with 0.0196-inch-diameter beryllium wire of ingot origin. The wire was lubricated with L38 (PTFE) and was reduced to 0.0124-inch diameter in one pass (60 percent reduction). The die used was made from tungsten carbide, its entry angle was 45 degrees included, and its bearing length was approximately 0.003 inch. In both trials, about 15 inches of good-quality wire was produced.

The fluid (polyphenyl ether) and tooling were heated to 500 F, but, because of a time lapse during loading of the wire, some heat was apparently conducted away from the area of the die to the support tooling. Consequently, during extrusion, the pressure plus draw stress (P + D) requirements to produce the wire gradually increased until they became excessive. However, the P + D requirements at the beginning of extrusion were in the order of 100,000 psi. In future trials at elevated temperature, procedures will be modified to maintain temperature during loading and extrusion. Such steps are not necessary in the 500 F extrusion of the large-diameter billets because much more rapid handling and extrusion of the billets is possible.

The starting wire had an irregular surface finish and this was carried through onto the extruded wire, although the surface irregularities were smoothened somewhat.

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