FINAL REPORT

CONTRACT NAS 8-11791

COVERING PERIOD

6/29/64 to 2/24/65

66-TTR-027

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SUMMARY

In accordance with the terms of the subject contract, Titeflex conducted a program involving the design, development and manufacture of flexible hose and fittings in accordance with MSFC-NASA Design Procurement Drawing No. 20M42005.

Items were:

1. 500 ft. of -8 size hose with 800 fittings.
2. 25 ft. of -12 size hose with 50 fittings.
3. 60 ft. of -16 size hose with 100 fittings.

In addition, Titeflex conducted performance testing of hose assemblies of each of the three sizes referenced above in accordance with the requirements set forth in 20M42005, and did procure for shipment to the George C. Marshall Space Flight Center, assembly tooling and equipment suitable for assembly hose end fittings consistent with factory-made assemblies in performance and reliability.

The specific hose assembly proposed by Titeflex for this contract was a modification of an existing product being marketed by Titeflex for aerospace applications. This current product consists of a convoluted teflon-fiberglass innercore reinforced with stainless steel wire braid.

The new assembly used aluminum wire braid, yeilding a hose construction with unique weight, performance and bend characteristics.

End fittings proposed for this program utilized an aluminum adaptation of the stainless steel fittings currently in use on other product lines manufactured by Titeflex.

The specific product proposed by Titeflex to meet the performance requirements of specification 20M42005 can be described as follows:

Hose: Innercore is of Titeflex design consisting of a convoluted teflon-fiberglass lamination which makes it possible to combine the chemical inertness and thermal stability of teflon with a flexibility in large diameters that is not attainable with any other known construction. This is a proven design currently incorporated into hose assemblies being used in a number of active aircraft and missile programs. It is marketed by Titeflex with a stainless steel braid reinforcement and stainless steel fittings under the designation "Titeflex - 400".

To meet the weight and other requirements set forth in 20M42005, Titeflex proposed convoluted teflon - fiberglass hose with suitable aluminum wire braid reinforcement instead of stainless steel. It may be worthy of note that Titeflex has supplied NASA aluminum braided hose of this type for evaluation purposes.

End Fittings: It was proposed that a line of end fittings compatible with the performance and design requirements of 20M42005 be designed and developed incorporating an all - aluminum construction, i e aluminum insert, aluminum collar and aluminum coupling nut conforming to MC 223 and MC 124. This would be similar to the crimped stainless steel end fittings presently marketed for aerospace applications by Titeflex.

PERFORMANCE

The hose and fittings were manufactured, and assembled with no difficulty. The crimped assemblies provided a good workable fitting attachment which functioned normally without cracking, leakage or blow-off.

Burst Characteristics:

The burst pressure values, established during preliminary evaluation work are as follows:

Hose Size	Room Temp. Burst
R265-8	1,650 psi
R265-12	1,600 psi
R265-16	1,000 psi

(Burst requirement was 200 psi.)

Weight and Flexure:

The weight and bend radius characteristics for the hose is as follows. Required values per 20M42005 are shown in parenthesis purposes.

Titeflex Hose Part No.	Hose Weight lb./ft.	Min. Bend Radius	Fitting wt. lb. per 2 fittings
R265-8	.15 (.17)	2.50 (2.75)	.13 (.18)
R265-12	.236 (.25)	3.00 (3.50)	.25 (.50)
R265-16	.283 (.28)	3.50 (5.00)	.32 (.72)

Leakage:

When filled with water under pressure, no measurable leakage could be determined.

Water at twice proof pressure was held for several hours and continually inspected for external leakage and none could be detected.

When tested gaseously, however, with nitrogen at 100 psi, the average molecular diffusion was .008 SCCS (Standard Cubic Centimeters per Second) Per Foot of Length.

This contract was cancelled before production hardware was furnished.