

**MP.04.01 Materials and Processes for Reentry Vehicle Technology.** The objective is to develop advanced nosetip, heatshield, and antenna window materials and processes to maintain the current intercontinental ballistic missile (ICBM) and submarine-launched ballistic missile (SLBM) reentry vehicle systems at least until the year 2020. The program will address two issues: performance degradation due to aging materials, and inability to replace damaged hardware due to unavailability of precursor products. New precursor materials and processes will be developed to minimize the effects of aging. The minimum requirement from the ICBM System Program Office (SPO) or the Navy Strategic Systems Program office is to maintain current system performance of the Minuteman III and Trident II systems using replacement form, fit, and function materials. System-level impacts would be determined by the ICBM SPO.

By FY98, replacement materials and processes for antenna windows will be available that are moisture resistant and available for flight test by the Air Force SPO. The AF SPO also will integrate both the fuse and the GPS antenna. By FY00, replacement heatshield materials and processes will be available for flight test. (Both of these are form, fit, and function replacements.) Definition of materials aging effects should be available by FY02. This will include an understanding of aging issues and preliminary predictive capability. Replacement materials whose aging phenomenology is well understood and characterized will be available by FY06.

Current ICBM and SLBM reentry vehicle heatshields cannot be fabricated because the rayon fiber precursor is no longer in production. Alternative fibers have different ablation characteristics and thermal/mechanical properties that must be investigated in order to properly design the replacement heatshield. The aging mechanism of current materials is not well understood and needs investigation to ascertain system-level degradation impacts.

<b>Service/Agency POC</b>	<b>USD(A&amp;T) POC</b>	<b>Customer POC</b>
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**Programmed DTO Funding (\$ millions)**

PE	Project	FY97	FY98	FY99	FY00	FY01	FY02	FY03
0602102F	2417	5.9	3.7	4.1	3.9	4.1	4.3	0
0602234N		0.9	1.0	1.0	1.0	1.0	1.0	0
<b>Total</b>		6.8	4.7	5.1	4.9	5.1	5.3	0