Hubble Space Telescope Servicing Mission 4
A New Thermal Blanket Layer

During the Hubble Space Telescope Second Servicing Mission in 1997 and subsequent missions, astronauts observed damage to some of the Telescope's thermal insulation. Years of exposure to the harsh environment of space had taken a toll on Hubble's protective multi-layer insulation, and some areas were torn or broken. This multi-layer insulation protects the observatory from the severe and rapid temperature changes it experiences as it moves through its 97-minute orbit from very hot sun to very cold night.

Protecting and Maintaining Normal Operating Temperatures

The New Outer Blanket Layer, or NOBL, covers protect Hubble's external blankets. They prevent further degradation of the insulation and maintain normal operating temperatures of Hubble's electronic equipment. Each NOBL has been tested to ensure that it can withstand exposure to: charged particles, X-rays, ultraviolet radiation, and thermal cycling for at least ten years.

The covers are made of specially coated stainless steel foil which is trimmed to fit each particular equipment bay door that is covered. Each cover is supported by a steel picture-frame structure. Expanding plugs, like common kitchen bottle stoppers, fit into door vent holes to allow quick installation by the space-walking astronauts.

During Servicing Mission 3A in 1999, astronauts installed three NOBLS on damaged areas. During Servicing Mission 3B in March 2002, a fourth NOBL was installed. Three additional NOBL panels will be installed during Servicing Mission 4.
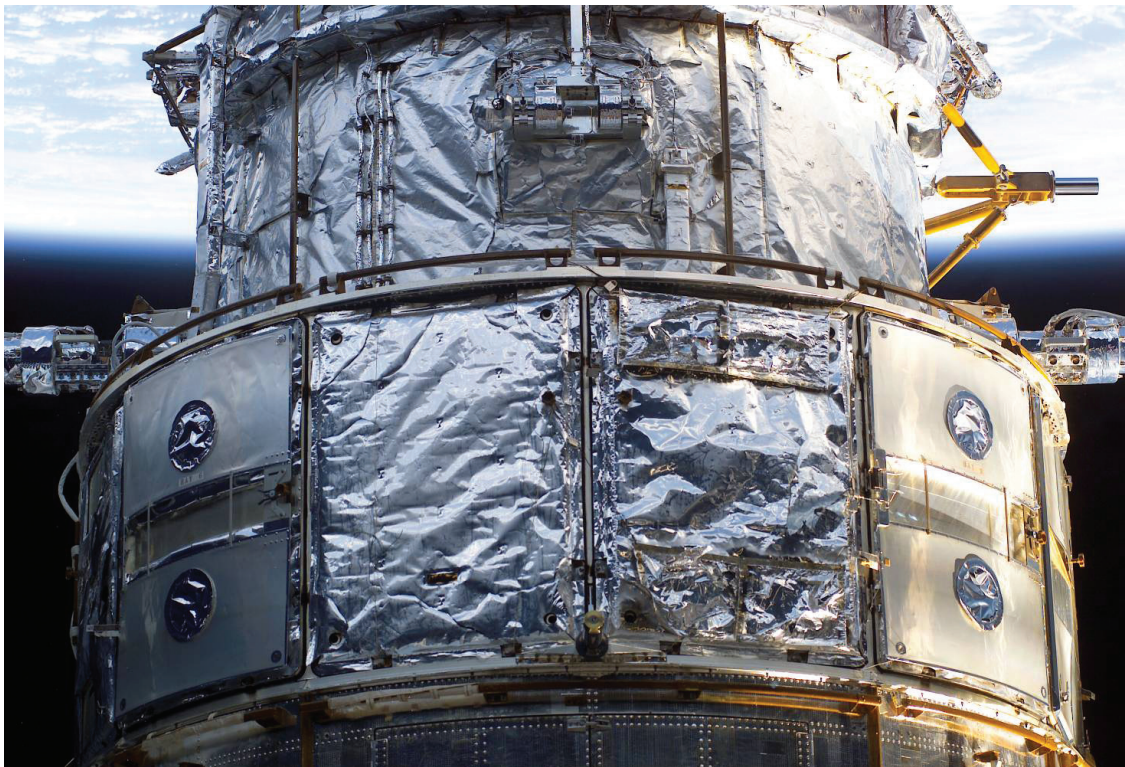
NASAfacts

This photo shows from left to right, Bays 6, 7, 8, and 9 with New NOBLs on Bays 6 and 9. The damaged insulation on Bay 8 is scheduled to be replaced during SM4.

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NASA Facts

FS-2007-09-089-GSFC (SM4 #06) (rev. 11/07)