2009 **Crew of STS Mission 125**

The crew of STS 125:
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The success of the STS-125 mission was extraordinarily significant in that it repaired and preserved the valuable Hubble Space Telescope so that it may continue to provide insight into the wonders of our universe. In this, the only shuttle mission with a destination other than the International space station in the final eight years of the shuttle program, five spacewalks were conducted to replace, amongst other items, the Cosmic Origins Spectrograph, the most sensitive ultraviolet spectrograph installed on the telescope, and the Wide Field Camera 3, a panchromatic wide-field camera that can record a wide range of wavelengths. Additionally, the Fine Guidance Sensors that control the telescope's directional system, six new gyroscopes, batteries and the outer insulations blankets were replaced. The telescope was left it its most technologically advanced state since its launch 19 years before.

Justification: The STS-125 mission began with a successful launch on May 11th, 2009. Following rendezvous and capture of the Hubble Space Telescope with the Shuttle's robotic arm, Hubble was placed in its temporary work platform in the Shuttle's payload bay. During the first of five spacewalks the Wide Field Camera 2 was replaced with the Wide Field Camera 3. The spacewalking astronauts overcame the first of several troublesome bolts with brute force to free the old camera from its home within the telescope. On EVA 2 the spacewalkers again overcame adversity to replace all three of the telescope's gyroscopic rate sensing units after one of the units failed to properly engage its platform on Hubble.

The Advanced Camera for Survey's was repaired and the Cosmic Origins Spectograph was replaced on the most difficult of the EVAs during the third spacewalk. While most of the items serviced on Hubble were designed with spacewalking astronauts in mind, the fourth EVA's challenging replacement of a power supply unit on the

SpaceTelescope Imaging Spectrograph was never intended to be performed. Again overcoming balky bolts and unanticipated hand rail locations the crew completed all tasks in the sixth longest EVA in the space shuttle program's history.

The spacewalk's were concluded with the successful replacement of Hubble's external insulation blankets and Fine Guidance Sensors on EVA 5. This was the last of 23 spacewalks over a course of five shuttle missions in support of the space telescope.

This exceptionally successful and challenging STS-125 mission is highly deserving of the Korolev Diploma.