Shuttle – ISS – Lunar Options

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The Space Shuttle and the International Space Station have been developed at great expense over several decades and represent a tremendous capability. Any further manned missions beyond low earth orbit should build on these capabilities, or on capabilities derived from them. To neglect doing so will be to repeat the mistakes of the Apollo program where a tremendous capability, the Saturn rocket, was discarded in favor of starting from scratch. Several opportunities exist for using the Space Shuttle and the International Space Station to facilitate returning humans to the moon. One category of activities falls in the area of developing enabling technologies. Specifics in these categories include development and testing of radiation shielding technologies, materials for advanced propulsion, in-space fabrication and repair technologies and the effect of space on exposed materials over long periods of time. Another category of activities falls in the area of bioastronautics, including research into crew health and maintenance and the effects of microgravity and radiation on humans. Life support research also needs to extend to plants and animals, especially regarding multi-generational studies. Another obvious use of the Space Shuttle and the ISS for a return to the moon is as a staging point. The first requirement for effective implementation of this capability is, of course, an expansion of the ISS to house more people, to provide a hangar for the on-orbit assembly of the large vehicles in which it will be convenient to return to the moon. The ISS, with its high inclination relative to the equator, makes an ideal launching point for a return to the moon to look for water and He3.