

# The end of the US space shuttle program

By Patrick Martin  
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The successful completion of the 33<sup>rd</sup> flight of the space shuttle Atlantis, which landed at Cape Canaveral July 20, marked the end of the US space shuttle program and the beginning of a lengthy hiatus in manned space efforts. The American manned space program is shutting down indefinitely, an event that has considerable historical significance.

The Atlantis mission was overshadowed by this impending shutdown. The crew was limited to four astronauts—the fewest aboard a shuttle flight since 1983—because there was no backup shuttle available in the event the Atlantis suffered sufficient damage during liftoff to make reentry into the Earth’s atmosphere too dangerous. Any rescue would have been conducted with a Russian Soyuz, able to ferry only one astronaut at a time, in addition to its own two-person crew.

The three remaining shuttles will become, literally, museum pieces, with Discovery at the Smithsonian’s Udvar-Hazy Center near Dulles Airport outside Washington, Endeavour at the California Science Center in Los Angeles and Atlantis at the Kennedy Space Center in Florida.

For at least five or six years, and likely much longer, the only proven capability for putting astronauts in Earth orbit will be the Soyuz, based on technology even older than the space shuttle, which was designed and developed in the 1970s. The Russian vehicle will be the only means of bringing up new astronauts and cosmonauts to the international space station, built in the course of dozens of shuttle flights over 30 years. The Russian space agency will charge NASA \$63 million per astronaut—a relative bargain compared to the \$1.5 billion cost of each shuttle mission.

The suspension of US manned space flights is unprecedented since the first Mercury astronauts were sent into space in the early 1960s. There was a sizeable gap between the last Apollo mission to the Moon and the launching of the first space shuttle flight, but the transition had been prepared and the skilled engineers, scientists and pilots were redeployed from one program to the other without a significant loss of momentum.

Now, however, nine thousand experienced engineers, scientists, and skilled production workers, are being laid off indefinitely. Some 1,500 workers at the Kennedy Space Center worked their final day on Friday, July 22, only two days after the final landing of Atlantis. Many of them, veterans of as much as 30 years of work on the space shuttle program, will never work again in their profession. And they cannot be easily replaced. This is, after all, rocket science.

United Space Alliance, a joint venture run by Lockheed Martin that is the prime contractor for the space shuttle, announced that

the bulk of its employees would lose their jobs by early August.

The shutdown of the space program is yet another atrocious policy decision of the Bush administration that has been first rubber-stamped, then made even worse, by the Obama administration. NASA decided to phase out the space shuttle in 2004, after the 2003 Columbia disaster in which seven astronauts were killed when the shuttle broke up during reentry, scattering debris across much of Oklahoma, Texas and Louisiana.

The initial decision on space policy by the Bush White House was to set the goal of a return to the Moon by 2020, to be followed by a Mars mission that would use the Moon as a jumping-off point. To accomplish these missions, NASA was to develop and build a new rocket, to be called the Constellation, and a new capsule to be fired into space with it.

The arrangement was to be similar to the Apollo spacecraft/Saturn rocket combination that first landed men on the Moon, rather than a reusable spaceship/airplane combination like the shuttle.

Obama cancelled the Constellation project soon after taking office, in one of his first actions to cut the federal budget deficit. The program had expended \$13 billion without producing even a first test of the new system.

Instead of the Moon and then Mars, the Obama administration proposed a manned mission to the asteroid belt by 2025, followed by a Mars flight, but pushed out so far into the future that it amounted to the tacit abandonment of any serious effort at manned space flight.

More significant than the change in target and schedule, however, was the decision to complete the dismantling of NASA as an agency actually operating manned missions. The federal agency will continue to launch and run its enormously valuable robotic space probes, aimed at exploring the entire solar system. However, manned space flight is to be completely privatized, along with the unmanned launches into low earth orbit which are required to sustain operations at the international space station.

Some of the “old school” veterans of the Apollo program have bemoaned the Obama administration’s turn away from manned space flight. They complain that the US is abandoning its once formidable lead in space to Russia, China and even India, which all have devoted significant resources to manned space operations in recent years. China became the third country to put a man into space, and India is preparing to become the fourth in the coming decade.

Former astronauts Neil Armstrong, Jim Lovell and Gene Cernan co-authored a statement declaring, “After a half-century of remarkable progress, a coherent plan for maintaining America’s

leadership in space exploration is no longer apparent.” Apollo XI flight controller Gene Crenzt echoed them, saying, “Now, with inept national and space leadership, we stand with both feet firmly planted on the ground. Our nation has surrendered the high ground that the NASA space team captured July 20, 1969” (the date of the Moon landing).

Such criticism is both chauvinistic and quite short-sighted, since none of these countries can mount a space program on the scale of NASA, or even aspire to. It also comes nearly 40 years too late. The fact is that while technically challenging, the space shuttle program itself represented a retreat from the aggressive pioneering of the 1960s-era race to the Moon, carried out at the height of the Cold War between the United States and the Soviet Union.

Nine flights were the most in any year, a far cry from the 50-a-year pledged when the shuttle was first presented as the “space truck,” a reusable workhorse. As one commentator noted sourly, the five shuttle vehicles made 135 flights, more than 20,000 orbits around the Earth, traveling 537 million miles, but “never went anywhere.” This restricted focus was in large part the byproduct of military and intelligence considerations, which drove NASA operations, particularly beginning with the Reagan administration (1981-89).

The space shuttle delivered nearly 200 satellites into Earth orbit, many of them operated by the National Security Agency and the National Geospatial Intelligence Agency. These satellites are what enable the Pentagon to pinpoint virtually any spot on the globe for incineration by American missiles and bombs, and give the US military the “high ground” it feels is necessary to prevail over any opponent. According to one estimate, Pentagon spending on space-based activities accounts for \$40-\$50 billion a year, three times the actual budget of NASA.

The accelerating space efforts by Russia, China and India are driven by similar considerations—after the examples of Iraq, Afghanistan, Libya and other countries laid waste by US “smart” bombs and cruise missiles, all satellite-guided, every potential target of the American military feels the need to compete in that largest of all theaters of warfare, outer space.

The confinement of manned space operations to low Earth orbit had deadly consequences for the astronauts, since they were limited to performing over and over the two most dangerous and difficult elements of space travel, liftoff from the Earth and reentry back through the atmosphere, with reusable vehicles that inevitably weakened under the constant and repetitive strains. Challenger exploded during launch in 1986, and Columbia broke up during reentry in 2003. Seven astronauts died in each disaster.

Powerful rockets are required to overcome the gravitational pull of the Earth, and the spacecraft had to be able to endure the enormous heat generated during reentry. Compared to the challenges of achieving Earth orbit and returning from it safely, the engineering problems in traveling from Earth orbit to the Moon or to the orbit of the nearest planets are relatively modest.

That being said, the space shuttle program contributed significantly to the development of astronomy and marked a series of space travel “firsts”—the first vehicle with an airlock, the first to use a robotic arm for operation in the vacuum of space, and the first to enable human beings to carry out that most characteristic of

mankind’s activities, labor. Space shuttle astronauts served as construction workers (building the international space station), as transport workers (supplying the space station and delivering scientific instruments), and even as repairmen (fixing the Hubble Space Telescope).

The NASA budget is now under ferocious attack from both the Obama administration and the congressional Republicans. Perhaps the most odious action in this sphere comes from the House Appropriations Committee, which two days before the final launch of Atlantis voted to slash NASA spending by 10 percent below the Obama administration’s already low request.

In keeping with the know-nothing posture of the Christian fundamentalist wing of the Republican Party, the worst cuts came in basic science: those areas of NASA’s work that have no conceivable military usefulness, but help fuel the excitement of scientific discovery and undermine religious backwardness.

The House committee proposed to scale back two of NASA’s most important unmanned exploratory missions, to Mars and a moon of Jupiter. It actually eliminated funding for the James Webb Space Telescope, the future successor to the Hubble Space Telescope, arguably the most important scientific instrument ever built.

The new space telescope is to be positioned beyond the orbital path of the Moon around the Earth, too far for any space-based repairs to be undertaken. This positioning will enable the telescope to make observations of the most distant galaxies, shielded from the effects of Earth’s atmosphere and gravity and relatively far from its magnetic field.

Hubble enabled astronomers to identify the black holes that are the nuclei of galaxies, identify what is known as “dark energy,” and make enormous progress in estimating the age of the current stage of the universe. The James Webb telescope will be able to observe much further, and hence, much further back.

Given the problems which confronted Hubble, which had a flaw in its optics that shuttle astronauts famously corrected, any disruption of work on the James Webb telescope, now under construction, could destroy the project. This can only be described as an act of anti-scientific political vandalism.

The end of the manned space program, along with the ongoing war by the US ruling class on scientific knowledge, testifies to the long-term decline of American capitalism, and exhaustion of the profit system as a whole, on a world scale.

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