

CAPE CANAVERAL AIR FORCE STATION,  
LAUNCH COMPLEX 39, PAD A  
(John F. Kennedy Space Center)  
HAER FL-8-11-F  
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**APPENDIX C: Launch Complex 39: Pad B**

## **Introduction:**

The “Missile Launch Complex 39 Site,” which included Launch Complex 39B, was originally listed in the NRHP on May 24, 1973 for its association with the Man in Space Program. This historic property was reevaluated in 1996 in the context of the Apollo Program, ca. 1961 through 1975, and on January 21, 2000 the newly defined Launch Complex 39: Pad B Historic District was listed in the NRHP. Per this nomination, the historic district contained twenty-three contributing and thirty-four noncontributing resources within its boundary. The Launch Complex 39: Pad B Historic District has since gained importance in the context of the Space Shuttle Program, circa 1969 to 2010. As currently defined, the historic district contains twenty-one contributing resources and twenty-four noncontributing resources within its boundary.

As noted on Page 2 of this report, there are only two sites at KSC that have been used during the Space Shuttle Program: Launch Complex 39: Pad A and Launch Complex 39: Pad B. Per the “Programmatic Agreement among the National Aeronautics and Space Administration John F. Kennedy Space Center, Advisory Council on Historic Preservation, and the Florida State Historic Preservation Officer regarding Management of Historic Properties at the Kennedy Space Center, Florida,” if there are multiple assets of a specific property type that are 95 percent identical, only one of the assets will be recorded, in this case, Launch Complex 39: Pad A. Since these launch complexes were essential to the Space Shuttle Program, this appendix has been included as part of this documentation package to provide a brief summary of the history of Launch Complex 39: Pad B (LC39B) and note any major physical differences.

## **Historical Information:**

The drawings for the original LC39B were completed by Giffels and Rosetti, Inc. of Detroit, Michigan, in October 1964; construction of the complex, by the George A. Fuller Company headquartered in New York, New York, was completed in 1968. An exact replica of LC39A, the complex consisted of the launch pad, fuel and oxidizer facilities, camera stations, electrical equipment buildings, a water chiller facility, an emergency egress facility, and operations offices. The first launch from LC39B, and its only one during the Apollo Program, was Apollo 10, which lifted off on May 18, 1969. The complex was later used to launch the three manned missions of the Skylab program (May 25, 1973 [Photo C-1], July 28, 1973, and November 16, 1973), as well as the Apollo-Soyuz Test Project mission (July 15, 1975).

In June 1977, Reynolds, Smith and Hills of Jacksonville, Florida, was awarded a contract to provide specifications and drawings for modifications to Pad B, which were completed by December 1978. On August 11, 1978, the Frank Briscoe Company, Inc. of East Orange, New Jersey, was awarded a \$17.2 million contract to complete the initial work at LC39B, which included the erection of the FSS using the Apollo-era Launch Umbilical Tower; the rail track to

allow the RSS to move back and forth; and the sound suppression system.<sup>1</sup> On October 8, 1980, a \$6.7 million contract was awarded to W&J Construction Corporation of Cocoa for installation of the ground support equipment within the Pad B complex, including the installation of pipes and cable to carry fuels, fluids, and air to the FSS and RSS.<sup>2</sup> Additional work at LC39B was completed by Saver Mechanical, Inc. of Jacksonville, Florida, and the Holloway Corporation of Titusville, Florida.<sup>3</sup> Space Shuttle program modifications within the LC 39: Pad B complex were completed in late 1985.

On January 28, 1986, the *Challenger* was the first Space Shuttle to lift off from LC39B (Photo C-2). Seventy-three seconds after launch, this mission abruptly ended with a failure in the right SRB O-ring, which caused the loss of the spacecraft, as well as the entire crew. In the aftermath of the *Challenger* accident, LC39B was put into inactive status to allow time for modifications that included new weather protection structures, a SRB joint heater to keep the field joints at 75 degrees, freeze protection for the water systems, debris traps, and temperature and humidity control improvements for the PCR. With the resumption of Space Shuttle flights, LC39B became the principle launch pad, with the first Return to Flight mission that lifted off on September 29, 1988 (Photo C-3).

LC39B launched the following six missions, which occurred between December 1988, and November 1989, while LC39A was on inactive status for modifications. Between 1990 and 2003, the two launch complexes were used jointly, with thirty-eight missions lifting-off from LC39B and forty from LC39A.<sup>4</sup> Highlights from those missions that launched from LC39B include the deployment of the Hubble Space Telescope (STS-31, April 18, 1990) and its first servicing mission (STS-61, December 1, 1993); the Gamma Ray Observatory deployment and first spacewalk in five years (STS-37, April 5, 1991); the first flight of the Orbiter *Endeavour* (STS-49, May 7, 1992); and John Glenn's return to space (STS-95, October 29, 1998).

On July 26, 2005, the second Return to Flight mission, which followed the loss of *Columbia* in February 2003, lifted-off from LC39B. The next three flights were also launched from this complex; on December 9, 2006, STS-116 became the final Space Shuttle mission to lift-off from LC39B.<sup>5</sup> In 2007, work began on the complex to renovate it for the test flight of Ares I-X (Photos C-4 and C-5), which occurred on October 28, 2009.

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<sup>1</sup> Frank E. Jarrett. "Chronology of KSC and KSC Related Events for 1978." KHR-4, January 1, 1980, 58.

<sup>2</sup> Ken Nail, Jr. and Elaine Liston. "Chronology of KSC and KSC Related Events for 1980." KHR-5, March 1, 1981, 223.

<sup>3</sup> Ken Nail, Jr. "Chronology of KSC and KSC Related Events for 1983." KHR-8, October 1, 1984, 60; Ken Nail, Jr. "Chronology of KSC and KSC Related Events for 1984." KHR-9, June 1985, 93.

<sup>4</sup> In June 1991, LC 39B was again placed on inactive status to allow for a six-month period of repairs and refurbishment. It was reactivated in 1992 for the launch of STS-49 in May.

<sup>5</sup> Jenkins 294-295, 302-303, 310-311; NASA. "Space Shuttle Mission Archives." February 2010; NASA. "NASA's Shuttle and Rocket Launch Schedule." March 26, 2010. In April 2009, LC39B hosted Space Shuttle *Endeavour* (STS-400) as a contingency in the event of a problem with STS-125's visit to the Hubble Space Telescope.

### **Physical Differences of LC39B**

There are very few physical differences between LC39A and LC39B. The major difference between the two complexes is that LC39B sits 7' higher above mean sea level than LC39A. Another difference is the inclusion of an additional access road to the northwest reclamation pond. At the time of this documentation, two modifications had been made to LC39B, including the installation of a vehicle stabilization arm at the 235' Level of the FSS and the replacement of the lighting mast at the top of the FSS with three towers located throughout the complex.



Photo C-1. View of Skylab 2 at Launch Complex 39B, January 11, 1973.  
Source: John F. Kennedy Space Center, KSC-73PC-0017; accessed via NASA Image Exchange (NIX) at <http://nix.nasa.gov/>.



Photo C-2. Launch of STS-33, *Challenger*, the first Space Shuttle mission to lift off from LC39B, January 28, 1986.

Source: John F. Kennedy Space Center, KSC-86PC-0081; accessed via NIX at <http://nix.nasa.gov/>.



Photo C-3. Launch of STS-26, *Discovery* from LC39B, for the “Return to Flight” after the *Challenger* accident, September 29, 1988.  
Source: Langley Research Center, EL-1997-00011; accessed via NIX at <http://nix.nasa.gov/>.



Photo C-4. LC39B during the installation of the new lightning protection system, February 12, 2009.

Source: John F. Kennedy Space Center, KSC-2009-1572; accessed via <http://mediaarchive.ksc.nasa.gov/>.



Photo C-5. Launch of the Ares I-X test flight from LC39B, October 28, 2009.  
Source: John F. Kennedy Space Center, KSC-2009-5974; accessed via  
<http://mediaarchive.ksc.nasa.gov>.