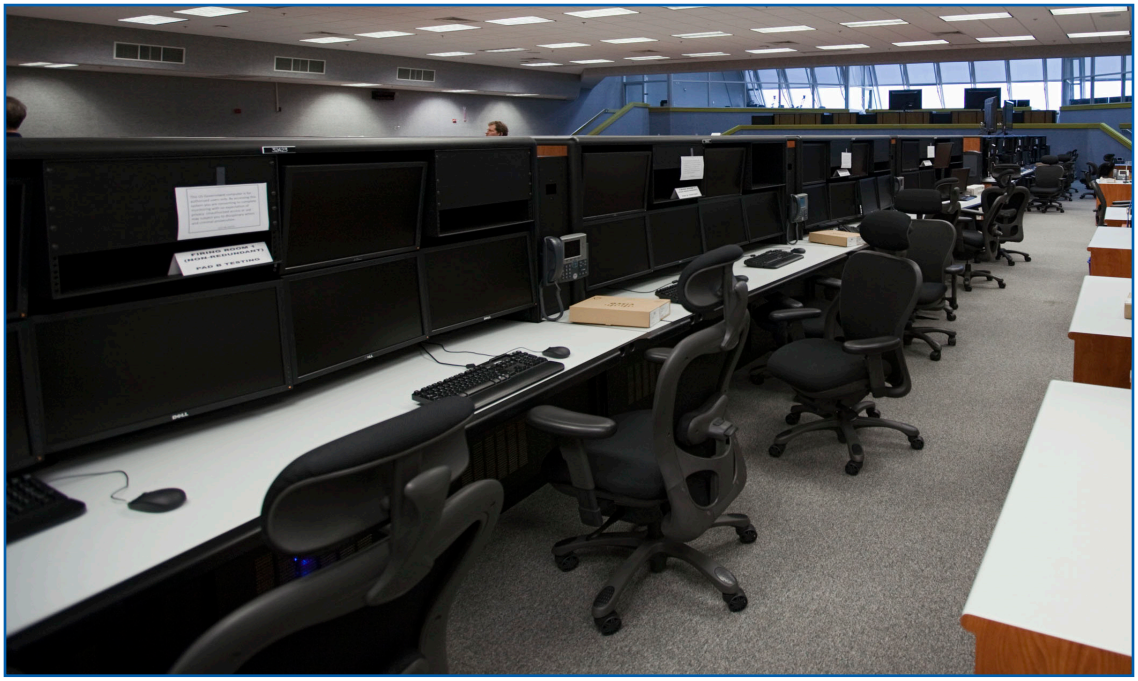
NASAfacts

# Firing Rooms
## at Kennedy Space Center



Firing Room 1, looking toward the raised platforms area, shows some of the horseshoe-shaped cabinets that served as workstation for engineering specialists during a countdown.

After 30 years serving as the "brain" behind space shuttle processing and launches, the firing rooms in the Launch Control Center, or LCC, at NASA's Kennedy Space Center in Florida are being modified to oversee launches and preparations of a new generation of rockets and spacecraft.

The agency's Ground Systems Development and Operations Program is coordinating the changes in the firing rooms as part of a center-wide refurbishment of launch systems and facilities, many of which have been in place since the Apollo Program in the 1960s.

The firing rooms are the heart of the Spaceport Command and Control System at Kennedy. All the activities involved with preparing rockets, spacecraft and payloads for space can be controlled by engineers sitting at computer terminals in the firing rooms. Likewise, all activities at the launch pads can be run from a firing room.

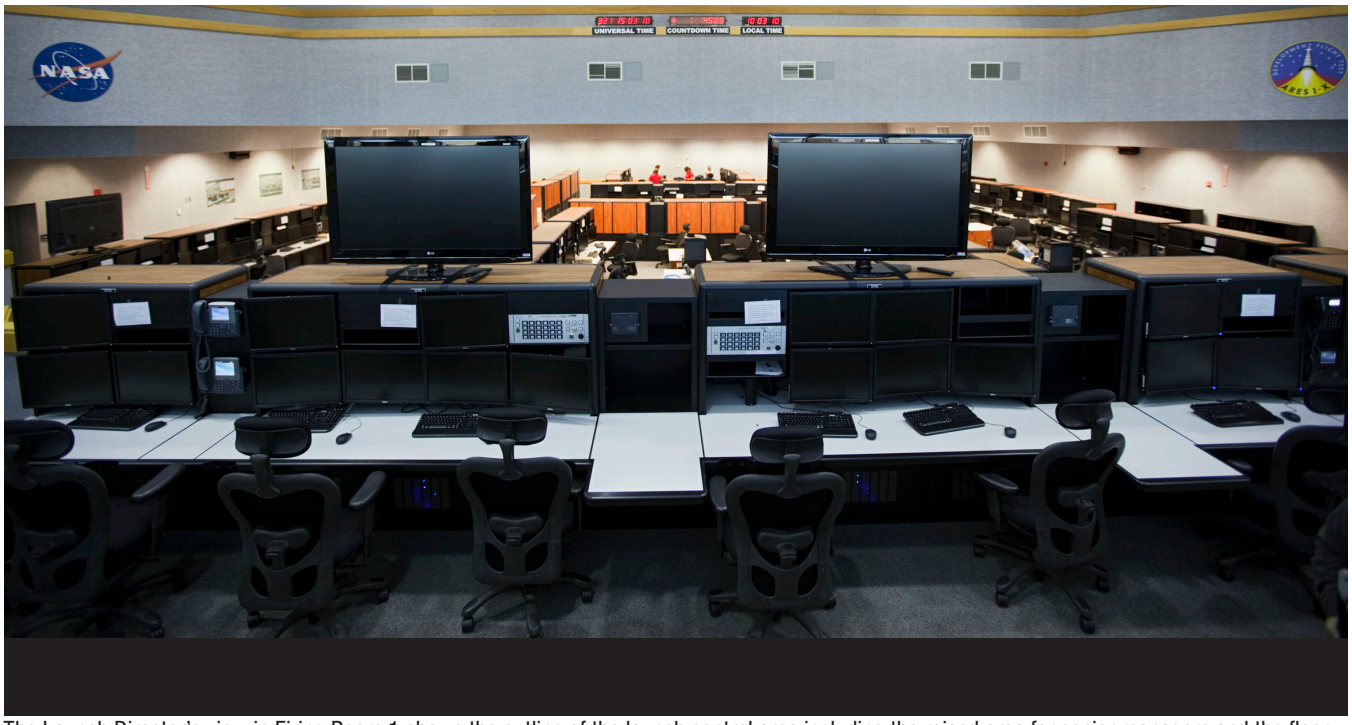
New launch systems including NASA's Orion spacecraft and Space Launch System rocket are not expected to require as many controllers as the shuttle. Instead, advances in computer and software systems will allow greater situational awareness by the launch controllers.

The approach is a new one for the LCC, which last went through major adjustments ahead of the launch of the first space shuttle mission on April 12, 1981. Technicians are installing new materials throughout the building during the refurbishment, but some of the most dramatic modernization has taken place in the Young-Crippen Firing Room, previously known as Firing Room 1. The control room oversaw launches ranging from the first Apollo missions to the first space shuttle mission. Firing Room 1 was last used for the liftoff of the Ares I-X flight test in October 2009.

Firing Room 4, which was used as a large conference room when the LCC was built, was extensively remodeled in 2006 and was used for processing and to launch the final shuttle missions. Firing Rooms 2 and 3 are going through modifications, too, including removing computer terminals that were installed in the 1970s.

Both control rooms were used as the primary control rooms throughout the Apollo and shuttle programs and were used by controllers to track the myriad systems during countdowns.

The remodeling focuses on replacing obsolete or degraded cables, wiring and pipes and on making the control center




The Launch Director's view in Firing Room 1 shows the outline of the launch control area including the raised area for senior managers and the floor-level stations for specialists.

flexible to the needs of a new generation of launchers, payloads and spacecraft.

The new concept for the firing rooms extends to the way individual work stations are configured and used. Previously, a console was connected to an exclusive set of hardware and software, tailoring it for a single use. For example, an engineer overseeing the space shuttle main engines could perform that role only at a set console. The refurbishment will make it possible for controllers to use consoles for many roles. Engineers will be able to sit at any console and access their desired networks.

With modern cables, including fiber-optics, making that change does not require more room for equipment. In fact, it requires much less. A fist-sized set of copper cables that were used to transmit a single camera's data from the launch pad to the firing room has been replaced with a pinky-sized cable that carries the signals from all the video cameras at the launch pad at once.

The changes taking place in the firing rooms will enable them to play a significant and changing role in the operations of future rockets and spacecraft for NASA and private companies as new strides are made into space.

The Young-Crippen Firing Room, formerly Firing Room 1, was extensively remodeled to serve as a flexible nerve center for several kinds of rockets and spacecraft. The workstations and computer networks are modern designs and can be tailored to the needs of specialized engineers no matter where they sit.

## More information online

For more information on the Ground Systems Development and Operations Program, go to **http://go.nasa.gov/groundsystems**

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