

Crucial Gemini team works nights and weekends to support the ISS and its crew

WANTED: *Flight Controllers. Must be willing to do the work of three highly trained people and work primarily nights and weekends. Benefits include: Challenge of shaping a new era of flight control, appreciation and respect from other flight controllers and a great job title – ATLAS or TITAN.*

Not many people would respond to such an opportunity. But there are a few who did – an elite group of International Space Station (ISS) flight controllers called the Gemini team. The members of this team train for months, work at night and play a crucial role in the maintenance of the ISS and the safety of its crew.

"We are really changing the operations control paradigm with the Gemini program," said John McCullough, a flight director.

This nocturnal team is a relatively new addition to JSC. Gemini was created to solve a problem in the Mission Control Center: ISS flight controller burnout. Operators were frustrated with the night and weekend shifts they were sometimes obligated to work in order to maintain the 24-hour station, which led to lower overall morale. Some controllers even left their MCC jobs because of it.

"You wear and tear operators pretty quickly in the ISS flight control room," said Judd Frieling, a Gemini flight controller. "Unlike the shuttle, you never land, and it can get pretty stressful."

The reduction in manning concept is not new. During early construction of the ISS, before anyone was living and working there, the modules were monitored overnight by a Station Duty Officer (SDO). The SDO would call in the appropriate personnel if any serious technical problems arose during the night.

But after the Expedition One crew arrived at the ISS in November 2000, a fully manned control team became necessary 24 hours a day. Soon, the flight controllers' time and energy were stretched thin. The erratic hours started to take their toll, and a solution had to be found.

In the spring of 2001, the Mission Operations Directorate began looking for an answer to the burnout problem. They came up with Gemini: A reduced flight control team for the night and weekend shifts. Gemini would reduce a normal six-person team down to two people – hence the zodiac "twin" reference with the name Gemini.

Each Gemini operator would be responsible for three disciplines, whereas a regular operator focuses on one.

"The goal was to reduce the number of people working in the MCC during 'bad hours' without reducing the capability of the flight control team," said Steve Koerner, Gemini group lead. Koerner, a former shuttle flight controller, was part of the team that came up with the Gemini concept.

Then came the hard part: Recruitment. A Gemini operator would essentially be responsible for more than a regular controller, and do it during the shifts that most people didn't want. On the upside, the off-console office hours would be flexible, and a Gemini controller would "certainly be much more marketable for future MOD leadership positions," said Jon Harpold, director of MOD.

A full Gemini team would consist of six ATLAS (Atmosphere Thermal Lighting Articulation Specialists) controllers, and six TITAN (Telemetry, Information Transfer and Attitude Navigation) operators.

Koerner stepped up to the task of finding 12 people willing to do the job. Recruitment was targeted to existing flight controllers, so that they would only have to learn two additional disciplines. They believe a rookie operator would take longer to train.

Koerner offered operators the chance to build a new class of flight control from the ground up. Eleven people took him up on the opportunity, and became the first Gemini team. Today's ATLAS controllers are Stein Cantrell-Avloes, Max Haddock, Carla Haroz, Joe Peacock, Natalie Turner and Christine Tyrell. The TITANs are Trey Brouwer, Karen Bush, Judd Frieling, Dan Jackson and Mark Severance. Gemini still needs one more TITAN controller to make a full 12-person team.

The Gemini operators trained for several months to learn their new

disciplines inside and out. Each controller must be able to handle any problem in his or her three systems for up to two hours – the time it might take for an on-call specialist from the individual systems flight control groups to arrive at MCC. In October of last year, Gemini controllers tested the waters, supporting ISS operations every other weekend. In January 2002, the team jumped in and took over most night and weekend shifts.

Recruitment may have been difficult, but the 11 current Gemini controllers say there's no place they would rather be.

"People have responded not to the lousy hours, but to the challenge and the responsibility of learning more and doing more," said Bob Castle, Deputy Chief of the ISS Flight Director Office.

For instance, Karen Bush, TITAN, said she enjoys learning more about the station, which makes her a better flight controller. She also said working the late-night shift, which starts at 11 p.m., "guaranteed me the opportunity to be with my family in the evening" and lets her run errands during the day.

Judd Frieling, also a TITAN, said he joined because he was "looking for a challenge, and liked the idea of molding a new group."

Frieling added that the ISS seems to experience the most technical problems at inconvenient times. "The challenges never seem to happen during banker's hours," he said.

The Gemini team has certainly had its share of challenges and tests. One notable example is the Feb. 4 Loss of Attitude Control (LOAC) event. "A LOAC event affects power, which affects everything else," said Castle. "It was a significant challenge."

Frieling, who was the TITAN on console for the February LOAC, said there are advantages to the Gemini system during a technical challenge. "It's often easier to coordinate a problem between two people instead of six," he said. "Where three people might see three separate problems on their consoles, a Gemini controller can spot the overall pattern."

Gemini has been, and will continue to be, a team effort. "In the spirit of doing more with less," said McCullough, "we all roll up our sleeves and do what is necessary to be safe and successful as a very close-knit team."

Overall, ISS Program Manager Tommy Holloway is pleased with the Gemini team, saying it has "significantly improved ISS continuous operations."

He added, "The people in the group are some of the best and brightest in MOD and their efforts are essential to our future success." ♦



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On nights and weekends the Gemini team members work in the B-Flight Control Room at MCC. Pictured here are two of those team members: Natalie Anne Turner (top) at the ATLAS console and Karen Bush (bottom) at the TITAN console.



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