

National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
2101 NASA Parkway
Houston, Texas 77058-3696



June 22, 2007

Reply to Attn of:

SA-07-037

TO: NASA Headquarters
ATTN: Deputy Administrator

FROM: AA/Director

SUBJECT: JSC Internal Assessment of Medical Practices after Nowak Incident

In the days immediately after the arrest of astronaut Lisa Nowak, JSC announced its plans to perform an internal assessment of our practice of behavioral medicine, plus review relevant records and information in order to determine whether anything could have been missed that would have averted this incident. Key elements and findings of this review have already been shared with you and the Administrator. The enclosure is the formal summary of our internal review.

We look forward to receiving the findings of the external review panel and will consider their recommendations as we finalize changes to our practice of behavioral medicine.

A handwritten signature in black ink that reads "Michael L. Coats".

Michael L. Coats

Enclosure

cc:
HQ/Administrator/M D. Griffin
HQ/Associate Administrator/R. D. Geveden
HQ/Chief of Staff/P. Morrell
HQ/Chief, Health and Medical Officer/R. S. Williams

Johnson Space Center (JSC) Internal Review Findings

In response to the actions of astronaut Lisa Nowak which led to her arrest on February 5, 2007, NASA JSC conducted an internal review of records and of the workplace. There were two purposes for the internal review. First, NASA JSC looked to determine whether there were any indicators which could have prompted NASA to take actions that could have averted the sequence of events. In addition, astronaut selection and retention procedures were reviewed to see if there were any lessons learned that could be incorporated into the improved practice of behavioral medicine. This report documents the findings of this internal review, as well as related actions taken in response to the events of February 5, 2007.

The results of the internal review are organized into three major areas, as described below.

Review of existing psychological screening for admittance into the astronaut corps, and a review of the nature and extent to which we do ongoing psychological assessments during an astronaut's career at NASA. Who conducts the screening? What are the professional criteria necessary to conduct the screening? How often and in what manner are astronauts psychologically evaluated throughout their career? If concerns are raised during an evaluation, how are they addressed?

Extensive psychiatric and psychological evaluations are performed as part of the astronaut selection process. These evaluations are led by the NASA behavioral medicine staff and supported by selected aerospace or organizational clinical psychiatrists or psychologists that have training and/or an experience base with either aviation or space or both. The NASA behavioral medicine clinicians are credentialed in aerospace clinical psychiatry or aerospace clinical psychology. NASA flight surgeons are credentialed in aerospace clinical medicine and board certified in at least one area of medical specialty.

Annual flight medical examinations are performed on all crewmembers by NASA flight surgeons. Crewmembers assigned to International Space Station increments receive further assessment due to the unique challenges associated with long-duration missions.

The following is performed as part of the astronaut selection process:

- Psychiatric assessment is performed at the time of medical clearance, which includes standardized psychological testing that is comprehensive and thorough (takes 4-6 hours to complete).
- Extensive interviews for psychological suitability (4 hours long) are also conducted by certified and trained psychiatric and psychological personnel.
- Two, two-hour interviews are conducted to examine psychological suitability;
 - First, combined with psychologist and psychiatrist (structured interview).
 - Second, only with psychiatrist (structured and unstructured interview).

- All test and interview results are reviewed by a panel of experienced aerospace medicine experts to arrive at a recommendation for suitability as an astronaut. Included is a psychiatric evaluation (yes or no) by the psychiatrist. An assessment of suitability for short or long duration flight is also provided.
- This information is provided to the selection board.

Annual flight medical examinations, as well as pre-flight, in-flight, and post-flight medical assessments are conducted on all crewmembers by aeromedical physicians (flight surgeons). Shuttle crewmembers do not receive additional psychiatric assessments. It is noted that:

- Aeromedical physicians are trained to recognize behavioral health issues for flying readiness and can refer any issues to a psychologist or psychiatrist at the time of examination, or any other time.
- It is the intent that the flight surgeon be the clinician in touch with the flyer (astronaut), and family, not just during their examinations but throughout their training.
- Crews also have flight surgeons (possibly other than the particular astronauts' assigned clinicians) assigned that participate in simulations and training and can also observe performance readiness.

NASA ISS crewmembers do have an aeromedical psychiatric assessment (behavioral health assessment) at 6 months and 1 month prior to flight, and as needed or further requested by the crewmember or flight surgeon. This is due to the challenges of long-duration spaceflight such as isolation, time away from families, etc. In addition, it is noted that:

- ISS crewmembers also have private psychological conferences (15 minutes) every 2 weeks while on-orbit. This is time for inquiries by NASA behavioral medicine staff into mood, behavioral health and performance assessment.
- Post-flight, ISS crewmembers have psychological assessments at 3 days, 14 days and 30 days after return to assure transition to ground, family and work environment.

The NASA behavioral medicine clinicians are under the responsibility of the JSC Space Life Sciences Directorate, Space Medicine Division. They are listed below together with their credentials.

- a. Frank Carpenter, MD, NASA JSC Chief of Behavioral Health and Performance
Colonel (ret.) USAF
USAF Senior Flight Surgeon
Board Certified in Psychiatry
- b. Gary Beven, MD, NASA JSC Chief of Behavioral Medicine
Lt. Colonel, Air National Guard
USAF Flight Surgeon

Board Certified in Psychiatry and Forensic Psychiatry

c. Walter Sipes, PhD, NASA JSC Chief of Operational Psychology
Major (ret.) USAF
USAF Aviation Psychologist
Former US Army Helicopter pilot

Concerns raised during any evaluation are addressed by the behavioral medicine staff, and within the Behavioral Medicine section. It may be determined that a psychiatric standard is not met, and that would then warrant Aerospace Medical Board disposition.

Were there any indications of concern, any leading indicators we might have picked up on, based on Lisa Nowak's dealings with other astronauts or NASA employees between the time she was detailed to us from the Navy, and the present?

STS-121 crew flight surgeons were queried and did not note any indications of concern from pre-flight to in-flight to post-flight. Similar queries were made of the STS-116 (Commander Oefelein's flight) crew flight surgeons, and again no indications of concern were noted. Her medical and behavioral health records were reviewed and there were again no indications of medical or psychological problems.

During the week of March 19, 2007 through March 23, 2007, employees who worked closely with Lisa Nowak in the months prior to the incident were interviewed. They were asked several general questions relating to their observations of her demeanor and emotional well-being. They were also asked what they would likely do if they became concerned about a co-worker's behavior.

There were no indications that something could have predicted the events that occurred, or that anything should have been done to change them. All of the employees interviewed reported having a professional work relationship with Nowak either as her supervisor, co-worker, or support personnel—none reported having much of a personal relationship with her. Most described her as being very private, quiet, shy, direct, normal, and distant. Most people noted that she was very organized and detail oriented. According to her co-workers, during STS-121 she was focused on the mission, did a great job training and flying, and performed well on-orbit. Some employees mentioned that Nowak could sometimes be demanding and difficult to work with; however, she was viewed as being extremely capable, competent, and hardworking.

Prior to the incident, most of the employees interviewed said they had not noticed a change in Nowak's behavior and were shocked when they heard what happened. A few people mentioned that the post-flight period can be stressful and difficult for some people, and she seemed a little stressed and missed her family. Some employees mentioned an incident in October 2006—it was reported that during a post-flight appearance in New York, Nowak was difficult and rude to workers at the event.

A couple of people mentioned that she was disappointed (in late December) when another astronaut was assigned to STS-120 instead of her. They described her as being a little disappointed. However, she didn't seem depressed—it was not viewed as a triggering event. A couple of people noted that being reassigned back to do CAPCOM work was not Nowak's preferred assignment choice.

However, most of the employees interviewed said they've spent countless hours trying to determine if they had noticed any behavior prior to the incident that could have alerted them to Nowak's subsequent actions; none could think of any. When asked what they would do if concerned about a co-workers behavior, many indicated that they would address a serious concern about a co-worker either directly with the co-worker or with an appropriate management or Flight Medicine official.

For those who participate in this review –are there recommended changes to existing procedures or practices? Are there lessons to be learned that need to be incorporated into future practices?

The following are our recommendations. In addition, we will review the recommendations of the external review team and provide further input on those recommendations.

- Conduct a 30-minute Behavioral Medicine assessment in conjunction with annual medical flight physicals.
- Perform Behavioral Medicine flight assessments for Shuttle crewmembers.
- Enhance aeronautical adaptability ratings (an assessment of fitness for flying duties) in astronaut medical selections.