

National Aeronautics and Space Administration



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# Space Flight Safety Review

## (Alcohol Use In The Preflight Period)

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**28 August 2007**

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## **Acknowledgement**

The following people were instrumental in helping me with this review and report:

Faith Chandler, NASA Headquarters, Office of Safety and Mission Assurance

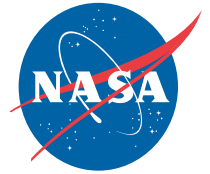
Lynne Loewy, NASA Headquarters, Office of Safety and Mission Assurance

Dan Thomas, NASA Headquarters, Office of General Counsel

Nigel Packham, Johnson Space Center, Safety and Mission Assurance

Brian Kelly, Johnson Space Center, Flight Crew Operations Directorate

Daniel Swint, Johnson Space Center, Aircraft Operations



Date: August 28, 2007

To: Deputy Administrator  
From: Chief, Safety and Mission Assurance  
Subject: Completion of the Safety Review  
References: Appointment Letter: Safety Review (Appendix A)

Your letter dated July 26, 2007, established the Safety Review to evaluate all Astronaut Health Care System Review Committee (Committee) observations and findings related to the inappropriate use or abuse of alcohol by astronauts in the immediate preflight period, and to evaluate all existing policies and procedures related to alcohol use and space flight crew medical fitness during the immediate preflight preparation period to ensure that any risks to flight safety are dealt with by appropriate medical authorities and flight crew management review and accountability.

In accordance with standard safety review protocols, I have investigated the allegations reported by the Committee as well as related policies and procedures. With this letter, I submit my report, Space Flight Safety Review (Alcohol Use In The Preflight Period), as documentation of my investigation, findings and recommendations.

Bryan O'Connor

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## Executive Summary

In its final report, dated 27 July, 2007<sup>1</sup>, the Astronaut Health Care System Review Committee found the following: “Interviews with flight surgeons and astronauts identified episodes of heavy use of alcohol by astronauts in the immediate preflight period which led to flight safety concerns. Two specific instances were described where astronauts had been so intoxicated prior to flight that flight surgeons and/or fellow astronauts raised concerns to local on-scene leadership regarding flight safety. However, the individuals were still permitted to fly.” The purpose of this review was to evaluate the Committee’s finding related to the inappropriate use or abuse of alcohol by astronauts in the immediate preflight (spaceflight) period, and to evaluate relevant existing policies covering alcohol use and abuse. My approach to the review was to learn as much as I could about the reported allegations through interviews, data searches and history review. The goal was to establish the nature and scope of any flight crew alcohol abuse, thus enabling a more informed course of action in our policies, procedures, risk mitigation strategies, authority structure and communications systems.

The scope of the review was limited to spaceflight with focus on the activities on launch day from crew wakeup until launch. The review method included review of anonymous reporting systems, review of mishap and close call records going back as far as 20 years, a survey of existing alcohol-related policies, and conduct of approximately 90 voluntary interviews with participants and witnesses to the last few days before launch. To supplement this review, I reminded members of the flight community that they should use the hot lines and NASA Safety Reporting System for any flight safety information they felt reluctant to provide in the open forum of my review. Also, NASA is preparing a focused anonymous survey as a follow up; this survey will help to try to flush out any residual concerns in this and other areas covered by the Committee report.

Within the scope and limitations of this review, I was unable to verify any case in which an astronaut spaceflight crewmember was impaired on launch day, or any case where a manager of a flight surgeon or co-crewmember disregarded their recommendation that a crewmember not fly Shuttle or Soyuz. Should such a situation present itself in the future, I am confident that there are reasonable safeguards in place to prevent an impaired crewmember from boarding a spacecraft. As for disregard for flight surgeon or crew safety concerns, I found that although there may be occasional disagreements among operations and medical team members, all parties understand their roles and authorities and the multiple safety reporting and appeal paths. This report recommends an improvement in flight surgeon oversight during launch day activities. I also found several areas in various NASA and other relevant policies that should be improved for scope and clarity, and this report has specific recommendations in that area. This review is complete, but I have reminded the workforce that any alcohol abuse or other flight safety threats should be reported in an open forum, or if necessary, through any one of the several anonymous reporting systems in place at NASA.

# **SECTION 1: ALCOHOL IN THE IMMEDIATE PREFLIGHT PERIOD**

## **Background**

In its final report, dated 27 July, 2007, the Astronaut Health Care System Review Committee (hereafter referred to as the Committee) found the following: “Interviews with flight surgeons and astronauts identified episodes of heavy use of alcohol by astronauts in the immediate preflight period which led to flight safety concerns. Two specific instances were described where astronauts had been so intoxicated prior to flight that flight surgeons and or fellow astronauts raised concerns to local on-scene leadership regarding flight safety. However, the individuals were still permitted to fly.” The report findings, if true, describe two serious close calls. NASA takes this matter very seriously as it represents a threat to our mission and personnel, and it is a clear affront to NASA’s core values of safety, integrity and teamwork. To address this potentially serious safety risk, NASA decided that a review of the events and circumstances was required. The Deputy Administrator chartered me to conduct a review that would evaluate the Committee finding related to the inappropriate use or abuse of alcohol by astronauts in the immediate preflight (spaceflight) period. My charter further calls for a review of existing policies and procedures related to alcohol use and space flight crew medical fitness during the immediate preflight preparation.

The Committee report offered three recommendations related to its alcohol abuse finding that cover policies dealing with alcohol use and abuse as well as communication to management of safety concerns by crewmembers and flight surgeons. NASA is already moving forward to address these recommendations and will use this report to inform the plan. My approach to the review was to learn as much as I could about the reported allegations in order to establish the nature and scope of any flight-crew alcohol abuse, thus enabling a more informed course of action in our policies, procedures, risk mitigation strategies and communications systems.

## **Scope**

By charter, the scope of this review focuses on the space flight safety implications of alcohol use or abuse. I focused on those things that could cause impairment during launch day flight preparation. Consistent with some operational interpretations of impairment (including NASA’s T-38 flying policy), I included the after-effects of alcohol (i.e., hangover) as within scope. The relevant question therefore was, “Did we have a situation where a crewmember presented on launch morning in an impaired state, was observed as such by a flight surgeon or another crewmember, and was then cleared to fly by operational management over the objections of the flight surgeon (or other crewmember)?” Because the Committee Chairman mentioned that the shuttle case could have involved a scrub and subsequent T-38 flight, I reviewed T-38 flight operations to the extent that they informed the shuttle incident investigation. Aircraft flying operations in general were out of scope. The second task in my charter was to review existing policies, and for that I did review other aircraft operational procedures and policies for

reference and benchmarking. This review constitutes only one of a number of steps in NASA's response to the Committee report as a whole. It will inform the Agency's ongoing review of drug and alcohol policy and procedures set in place last year following a facility maintenance contractor fatality at one of our centers<sup>2</sup>. That review, amplified and endorsed by subsequent Aerospace Safety Advisory Panel recommendations on government and contractor alcohol and drug testing is due to be complete later in the calendar year. Finally, a review like this has a beginning and an end; however, NASA's health and safety management programs will and must continually monitor all air and space flying operations for hazards, both technical and human.

## **Method**

Because of their promises of witness anonymity, the Committee was reluctant to provide NASA the details, timelines, references or sources of their finding. Therefore, I resorted to investigation techniques consistent with our other anonymous reporting systems. I reviewed relevant policies, procedures and near-launch timelines and staffing. I inspected the crew quarters facilities at both the Johnson Space Center (JSC) and Kennedy Space Center (KSC), and interviewed managers familiar with the cosmonaut crew quarters in Kazakhstan. I reviewed results from the JSC and space shuttle Program hotlines, the NASA Safety Reporting System (NSRS), and NASA's close call and mishap reporting systems for evidence related to astronaut alcohol abuse and space or aircraft flight. My data search went back 20 years, a time-span during which U.S. astronauts flew 94 shuttle missions and 10 Soyuz missions. I also reached out to people who spent time as crewmembers or in support roles in the crew quarters at the KSC and the Baikonur Cosmodrome in Kazakhstan. I ensured that I had at least one interview covering every flight back to the post-Challenger timeframe. This included current and former astronauts, flight surgeons, research and operations support nurses, shuttle-suit technicians, close-out-crew technicians, and the managers and staff of the crew (quarantine) quarters. I asked them all, on a voluntary basis, for any information they could give me about this matter, and reminded them verbally, through their chain of command, and by general announcement that they could report anonymously through the hot lines and NSRS system if they wanted to. To date, I have heard from more than 90 individuals representing all of the groups mentioned (no one has filed an anonymous report to date). I focused on the flight safety issue and stayed clear of leading questions in my interviews. Under no circumstance should my safety review be considered as a legal or punitive review. I had authority neither to swear in witnesses, nor to receive private medical information outside the realm of flight safety. NASA's Inspector General has announced his intention to review the results of this review and to conduct whatever follow-up might be indicated.

## **Results and Discussion**

### ***The Shuttle Instance***

In his press conference, the Committee Chairman elaborated on the reported shuttle incident.

- “In this particular case, it was a fellow astronaut rather than a flight surgeon who identified the concern.”



- “...this person presented for flight for the shuttle, and then subsequently to the T-38, in a condition that to that person did not seem to be fit for duty.”
- “At the point when the person was going to fly in the T-38 is when the issue was raised.”

The implication here is that the flight surgeon never saw the unfit shuttle crewmember. So we are looking at a situation in which a launch scrub happened between crew sleep on Launch minus one day (L-1) and the launch day medical checkup. For rendezvous mission (i.e., Space Station, Hubble Space Telescope, etc.) that means the scrub would have been declared sometime between L-19 hours and L-9 hours. For non-rendezvous (i.e., Spacelab, satellite deployment) missions, the time of the scrub would have been between L-13 hours and L-4 hours. The Committee Chairman’s remarks suggest that the scrub was followed by T-38 flight to Houston. That means that the scrub would have had to include an early decision to slip the mission five or more days, followed by a crew decision to fly back the same day. This combination of scrub timing and long slips has happened six times in the last 20 years, and on three of them, the crew did not fly back to Houston on the scheduled launch day.

The missions that fit the description took place between the years 1990 and 1995. I reached out to at least two of the crewmembers on each of these missions, and I talked to the astronaut office chiefs serving at the time. None could verify the scenario above. And to date, I have not received any anonymous information that would verify the incident.

As described by the Committee, this event is disturbing; however, without facts to support the allegation, it does not meet NASA’s definition of a space shuttle flight safety close call. First of all, the scrubs were all declared before the crew woke up. So, when the crewmember “presented for flight for the shuttle” (i.e., at crew breakfast), the crew would have already been informed of the scrub. Was a crewmember impaired from heavy drinking the night before, or did he decide to drink alcohol before breakfast knowing there would be no shuttle flight that day? Then, when the crewmember was observed on the T-38 flight line later in the day, a witness reportedly raised the issue, but to whom? I asked the astronaut office chiefs, who normally would have been in the flight operations area, more than likely flying with the crew to Houston themselves, if they remembered any such complaint, directly or indirectly, and they all replied, “no.” Did the crewmember with the concern raise it only with the impaired crewmember? The Committee’s admitted purpose in highlighting this instance was to underscore how “astronauts raised concerns to local on-scene leadership regarding flight safety. However the individuals were still permitted to fly.” To date, I have not been able to verify the circumstances for this case.

### ***The Soyuz Instance***

As I neared completion of my review, I shared my interim findings with the Chairman. He offered more detail on the Soyuz incident. Reportedly, the crewmember was so drunk that the flight surgeon felt compelled to sit in the crewmember’s room overnight out of

concern that he might suffer an airway obstruction. The Chairman did not say which night with respect to launch this happened.

I talked with and/or heard from all active operational flight surgeons, covering all of our Soyuz missions to the International Space Station (ISS). The flight surgeon that covered the one Soyuz mission to Mir in 1995 has left the Agency, but I talked to flight surgeon managers and astronaut office chiefs covering all Soyuz flights by United States (US) crewmembers, including the one to Mir. I also talked to crewmembers still with NASA. I was somewhat limited by medical privacy protocols during this part of the review. If the flight surgeon had a medical issue with an astronaut, and it was not a mission impact matter, he was not authorized to give me details attributable to an individual. So, if a crewmember had an airway problem at some time during the Soyuz operation, I had to assume that the flight surgeon involved does not and did not consider it a mission impact (including flight safety) issue. I did not hear any evidence to suggest that a flight surgeon ever raised an alcohol flight-safety issue that was disregarded by local on-scene managers.

Following my interviews, the flight surgeons, without any prompting by me or their management, offered this joint statement:

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**From:** Davis, Jeffrey R. (JSC-SA) [mailto:jeffrey.r.davis@nasa.gov]  
**Sent:** Thursday, August 23, 2007 9:31 PM  
**To:** boconnor@hq.nasa.gov; Williams, Richard S. (HQ-QA000)  
**Cc:** Davis, Jeffrey R. (JSC-SA)  
**Subject:** Fw: FYI

Bryan

This came in this afternoon unprompted.

Jeff

Jeff Davis, MD  
Director, Space Life Sciences  
Phone: (281) 483-0393

----- Original Message -----

**From:** Johnston, Smith L. (JSC-SD2)  
**To:** Duncan, James M. (JSC-SD); Davis, Jeffrey R. (JSC-SA); Williams, Richard S. (HQ-QA000)  
**Cc:** Alexander, David J. (JSC-SD2); Bauer, Peter (JSC-SD2); Beven, Gary (JSC-SD); Carpenter, Frank E. (JSC-SD); Dervay, Joseph P. (JSC-SD2); Effenhauser, Rainer K. (JSC-SD2); Gilmore, Stevan (JSC-SD); Hart, Stephen F. (JSC-SD2); Johnston, Smith L. (JSC-SD2); Jones, Jeffrey A. (JSC-SD); Locke, James P. (JSC-SD2); Polk, James D. (JSC-SD2); Powers, Edward (JSC-SD2); Roden, Sean K. (JSC-SD2); Schmid, Josef F. (JSC-SD2); Senter, Cedric H. (JSC-SD2); Stepaniak, Philip (JSC-SD); Stoner, Paul S. (JSC-SD); Taddeo, Terrance A. (JSC-SD2); Tarver, William J. (JSC-SD)  
**Sent:** Thu Aug 23 15:32:45 2007  
**Subject:** FYI

Dear Dr. Duncan, Dr. Davis, and Dr. Williams,

We, the complete current active Mission Operations JSC NASA Civil Servant Flight Surgeon Corps, wish to make the following statements:

1. In the course of Astronaut mission operations and training, our safety and medical concerns have not been ignored by NASA Medical Operations, the Astronaut Office, Mission Operations Directorate, Aircraft Operations Directorate, and ISS and Shuttle program management.
2. We have not observed any Astronaut impaired by alcohol during T-38, Shuttle, ISS, and Soyuz flight operations.

We hope this helps to clarify recent statements and actions attributed to us and the Astronaut Corps.

Sincerely,

The Current Corps of NASA JSC Civil Servant Mission Operations Flight Surgeons

David J. Alexander, M.D.  
Peter A. Bauer, M.D.  
Gary Beven, M.D.  
Frank E. Carpenter, M.D.  
Joseph P. Dervay, M.D.  
Rainer K. Effenhauser, M.D.  
Stevan M. Gilmore, M.D.  
Stephen F. Hart, M.D.  
Smith L. Johnston, M.D.  
Jeffrey A. Jones, M.D.  
James P. Locke, M.D.  
James D. Polk, D.O.  
William E. Powers, M.D.  
Sean K. Roden, M.D.  
Josef F. Schmid, M.D.  
Cedric H. Senter, M.D.  
Philip C. Stepaniak, M.D.  
Paul S. Stoner, M.D.  
Terrance A. Taddeo, M.D.  
William J. Tarver, M.D.

In summary, within the scope and limitations of my review, I was not able to verify heavy use of alcohol by astronauts in the immediate preflight period for Soyuz launch, leading to flight safety concerns by the flight surgeon, nor was I able to verify that a flight surgeon has ever raised a Soyuz flight safety concern to management, let alone have such a concern disregarded. I cannot say such events have never happened; I just was unable to verify that they did happen.

The next step for the safety review was a look at relevant history.

## ***Related History***

### **NASA Mishap Database**

Of the over 40,134 combined government and contractor mishap and close call records spanning from 1984 through 2007 located in the NASA Incident Reporting and Information System (IRIS), none of the incidents involved alcohol or drug use or abuse by an astronaut.\*

Of the 6,965 JSC government and contractor major and minor mishaps recorded since the inception of the electronic mishap database in 1986, none involved alcohol or drug use or abuse by an astronaut (this captures everything from first aid cases to major mishaps).

### **JSC Close Call Reports**

Of the 8,164 NASA and contractor close calls recorded since the inception of the close call database in 1995, none involved alcohol or drug use or abuse by an astronaut.

### **NASA Safety Reporting System (NSRS)**

Of the 680 anonymous safety concerns reported to and investigated by the NASA Safety Reporting System since its inception in 1987, none involved astronaut alcohol or drug use or abuse.

### **JSC Safety Hotlines**

Of the 863 Safety Hotline reports recorded since its inception in 1991 to the present, none involved alcohol or drug use or abuse by an astronaut.

In summary, our historical data and interviews do not identify any cases of astronaut alcohol abuse.

To the extent that alcohol abuse is possible in the immediate launch timeframe, what kind of risk mitigation is in place to prevent such behavior from becoming a flight safety

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\* Although NASA doesn't currently test civil service employees for alcohol after mishaps, investigating authorities can still cite it as a contributing or causal factor in mishap or close investigation based on witness interviews, autopsy reports, or self admission.

concern? What goes on in the crew quarters in the last few days before the crew launches, and if there are deficiencies, what are reasonable improvements we can make?

### ***Crew Quarters: The Environment***

The primary purpose of crew quarters is to provide quarantine for the crew to protect them from contagions. The shuttle crews enter quarantine at launch minus seven days (L-7) by checking into the JSC crew quarters. This gives them an environment somewhere between a modern military barracks and a very clean no-frills hotel. There is a conference room, study and computer terminal areas and personal bedrooms. The crew meals are prepared in the co-located kitchen by experienced food professionals under the guidance of qualified nutritionists. Alcohol is available for off-duty hours. Access to the quarantined crew quarters is limited to older children and adults who have passed a physical checkup to minimize the chance of infection to the crew. On L-3, the crew flies in T-38 aircraft to KSC, where they enter the Florida crew quarters. Again, this arrangement provides quarantine, limited visitor access, food preparation on the premises, and places to study, work out, relax and sleep. The Kennedy crew quarters are larger than those at JSC, allowing for crew surgeons, support crew (other astronauts assigned to ground and launch preparation duties for the mission), and flight crew operations managers. The facility is co-located with a small clinic to accommodate medical care, the L-2 physical exam and any medical experiment baseline data collection in which the crew might be involved. KSC crew quarters are also next door to the suit-up room, the crew's last stop before the "astrovan" ride to the launch pad.

Flight crew operations in Kazakhstan are similar to those at the KSC with some small differences. The crewmembers typically go to the Cosmonaut Hotel two and a half weeks before launch. The isolation and quarantine timelines are slightly different from those at the JSC and KSC, with "total isolation" beginning two days prior to launch. The U.S. flight surgeon stays in the hotel for the entire time, as does the Russian flight surgeon. Either flight surgeon has the authority to decertify a crewmember for any kind of impairment, medical or alcohol. By Russian policy, the Soyuz operation includes a fully qualified backup crewmember for each position (in contrast, NASA trains no backups for the space shuttle crews). The backup can take the place of the prime crewmember any time up to launch day if necessary. Again, alcohol is available for off-duty hours. There is a special ceremony held before the crew goes to the launch pad that involves a traditional champagne toast. Those who have participated in this tradition told me the amount of alcohol is very small, and NASA flight surgeons did not express any concern to me about this tradition. I asked one of the flight surgeons if he thought there was pressure on the crewmembers to drink the champagne so as not to show disrespect. He told me about one case in which the U.S. astronaut, a non-drinker, quietly expressed concern to him about the toast as the time approached. Before the flight surgeon could advise, the Russian flight surgeon, who overheard the question, politely intervened saying, "don't drink it...it's alright."

Although the medical coverage in the Cosmonaut Hotel appears comparable with what NASA provides at KSC, I did hear that the Cosmonaut Hotel occasionally did not have

sleeping accommodations for U.S. flight crew management. When that happened, the flight crew managers had access to the hotel during waking hours, but their rooms were across the street, collocated with the crew families. This non-optimal condition is being resolved and will not be a factor in the future.

### ***Alcohol Availability and Use in Crew Quarters***

In their finding, the Committee report states, “Alcohol is freely used in crew quarters.” To assess this finding, I toured both Johnson and Kennedy crew quarters while the Space Transportation System (STS) - 118 crew was occupying them. I talked to staff and crew support personnel about the availability and use of alcohol during quarantine. I verified that alcohol is available in the crew quarters, mostly in the form of beer and wine. I saw one half-empty bottle of tequila in one of the cupboards. The crew, being in quarantine, cannot go to town to buy these items, so in a tradition that goes back many years, support crew astronauts take preferences, stock the refrigerators, and are repaid by a pay-as-you-go honor system. As for use, I noted that the amount of beer and wine in the crew quarters was substantially less than from what was reported in the 1980s and early 1990s. When I asked about this, I learned that the fraction of the crewmembers who drink alcohol has been declining over the years. It is not unusual to see crews with only two or three occasional drinkers (out of seven), whereas 20 years ago, it would be uncommon to see three non-drinkers on a seven person crew. I also heard that drinking is confined to off-duty hours. It usually consists of moderate amounts of wine or beer at dinner, and sometimes with television before sleep. Sleep periods are treated seriously by crew commanders, flight surgeons and flight crew management because the crew has to adjust to the Space Station schedule, and they don’t want jet lag on top of the other stresses of spaceflight.

On L-2, the crew has a flight physical administered by the crew flight surgeons, the primary purpose of which is to spot any signs of oncoming colds or infection or other threats to flight fitness. After the physical, the crew has a partial day off, and spends time with spouses and guests at “the beach house.” Beer and wine are usually available in the beach house if the crew members request it for themselves or their guests. L-1 is a relatively slow work day, including procedures review, training flights and correspondence. Again, alcohol is available after hours, but it is rare even for beer and wine drinkers to consume after L-1 dinner, as most crewmembers tend to use the last few hours before sleep to email or phone family and friends in the privacy of their rooms. About half the crewmembers get extra time with experienced medical doctors and nurses as they provide urine, blood and saliva samples and participate in other medical protocols in baseline data collection activities as close to flight as they can be scheduled. The shuttle pilots fly the Shuttle Training Aircraft on L-2 and/or L-1 depending on weather, and some astronauts will fly a T-38 aerobatic flight on one of those days to stress their vestibular systems. Standard alcohol “bottle-to-throttle” and impairment policies apply (as always) to those activities. For shuttle missions bound for the Space Station, the shuttle crew goes to bed at about L-18 hours as compared to non-Space Station missions when bed time is L-13 hours. All remaining flights on the shuttle manifest are rendezvous missions and will follow this preflight routine.

Similar to KSC crew quarters, the Cosmonaut Hotel makes alcohol available to crews for off-duty-hours relaxation and the evening meal. When I asked recent NASA participants in Soyuz operations about cultural differences with respect to alcohol, I was told that just as the prominence of alcohol as a social feature has declined in the U.S. space community; it similarly has decreased in the Russian space community. Over the years, more and more non-drinkers have participated as crewmembers or support crews in the Soyuz operation, and traditional peer or cultural pressure to drink socially appears to be very low.

Although my review revealed that alcohol is available to crewmembers in their crew quarters, I heard no accounts of it being used during work hours or beyond the start of the mandatory sleep period. The people involved in launch day activities in crew quarters found it hard to believe that a crewmember would put his or her mission and crewmembers at risk by showing up impaired for a spaceflight. Crewmembers know they must be physically fit and mentally prepared to make an unaided emergency launch pad escape should there be a fire or other emergency before liftoff. Even a few seconds delay in un-strapping and evacuating the shuttle could cost lives. And, for the Soyuz operation, former crewmembers found it hard to believe that anyone would risk his/her seat in the mission after many years of preparation by getting impaired (or even injured due to impairment), thus providing a reason for the U.S. or Russian operational managers to replace him/her on the crew, even as late as launch morning.

The lack of privacy on launch day makes it nearly impossible to hide alcohol use or alcohol-induced impairment. Could a crewmember drink to the point of inebriation in his/her room the night before launch? Certainly, but, from the time the crew wakes on launch morning until they lift off, they are surrounded by other astronauts, managers, support crew, television (TV) cameramen, still photographers, crew quarters staff and others. Breakfast, the first scheduled event, usually starts 30 minutes after wakeup and is held in the same dining room shared by support crew and operational managers.

Part of the Committee finding discusses limitations of NASA's medical certification in that it is not structured to detect episodes of heavy drinking. I talked to the flight surgeons about the implications of that finding on launch day. Shortly after launch day breakfast, each crewmember receives a short visit from the flight surgeon. Although this final medical checkup is limited, it does, according to an experienced senior flight surgeon, provide "a reasonable likelihood of identifying or having suspicion of impairment on launch day." For non-rendezvous flights, the medical check occurred just before suit up. For Space Station and other rendezvous flights, the time between the two events is about five hours.

During lunch and subsequent suit up, live TV cameras are there for close-ups as technicians, one per crewmember, work closely with astronauts to help them don their spacesuits and perform system integrity checks. The suit-up room is crowded, so the flight surgeons, managers and other staff usually "hover" in the proximate area, while the suit technicians and crew do their work. When asked whether this situation is adequate to

pick up any late crew fitness issues, a senior flight surgeon suggested that it might be reasonable to admit the crew surgeon to observe within the suit room and visit all stations during the suiting process. This would allow more direct observation of the crewmembers on launch day and reduce the reliance on a suit technician (non-clinician) detecting any late medical issue.

After suit-up, live TV captures the crew's walk to the "astrovan." When they reach the launch pad, the closeout crew helps crewmembers don their parachute harnesses and strap into their seats, and again, more live TV. I heard from two of the Orbiter Vehicle Closeout Crew (OVCC) managers, one of whom followed up with this statement in an email:

"We have talked to OVCCs and Closeout Crew leaders past and present, and all have stated that at no time have they witnessed any behavior or actions that caused them to question the flight crew's abilities to perform their tasks. The only observation made is the fact that all flight crew members have varying levels of nervousness on launch day, which the OVCCs obviously expect to see, and which is something that all closeout crew members are sensitive to."

On the subject of the culture in today's corps of astronauts, I talked to some people who have been around for a long time. They commented that today's crews are more focused, quieter, and busier than crews of the distant past, especially in the last days before a mission. Part of the reason could be the complexity of today's missions compared to those of earlier years. Space Station assembly flights are arguably the most challenging and intense missions we have flown to date in the Shuttle Program. Part of the difference in atmosphere may also be due to the decreased reliance in today's culture at large on alcohol in social settings, and the attendant lack of peer pressure to drink to be accepted.

Finally, I talked to some of the current group of crew commanders. They know they are responsible for the performance of their crews during training and flight. They know that if one of their crewmembers showed up for work on launch morning impaired by alcohol, or any other high-risk activities, they would expect to be held accountable.

In a roundtable discussion with about ten flight surgeons, I heard that if a crewmember showed up for the launch day checkup in an impaired state (whether by alcohol, illness or injury), the flight surgeon would take medical measures appropriate to the situation, including, if necessary, decertification of the crewmember. They point to a real life example, STS-36 in 1990, when the young NASA flight surgeon, now a not-so-young but still active NASA flight surgeon, decertified one of the crewmembers for short term illness the day before launch. He knew the stakes, but he remembers how at the time, the medical management, flight crew management, and program management all deferred to his call. NASA stopped the countdown, and slipped the mission two days while the crewmember recovered.

If a crewmember were to injure him/herself at the beach house on L-2 by some activity such as playing football, or stepping on a stingray in the surf, or falling down stairs while impaired, the shuttle mission would be threatened. Unlike the Soyuz operation, or for



most critical shuttle ground positions, the shuttle flight crew members have no ready backups. NASA long ago stopped training backup crews for shuttle missions, the crew size made the expense prohibitive. NASA accepts the risk of a late scrub and slip due to loss of a crewmember. As part of the risk mitigation, there is a longstanding policy (CB-91-111, High/Medium Risk Activity Policy) in the Flight Crew Operations Directorate (FCOD) that restricts high risk activities by crewmembers in the twelve months before a mission. This was originally written to cover recreational activities such as airplane and motorcycle racing, parachuting, snow boarding, and even professional activities such as fire fighting and military reserve or national guard training activities. Alcohol abuse, as with any high-risk activities, by a crewmember at any time in the last few months prior to flight could result in a major injury and subsequent delay to a launch to train a replacement crewmember. The FCOD policy does not include alcohol abuse in its examples of these high-risk activities. Adding alcohol abuse to this policy would emphasize its importance as a potential mission risk.

The result of my tours and interviews was this: alcohol is available in the crew quarters, but is only used during off-duty hours. None of the people I talked to or heard from admitted to witnessing anything more than moderate use on L-2, light use on L-1, and none at all on launch day before cabin ingress or scrub.

**F1) Finding:** Alcohol is available for crew use, and although it is possible to abuse it during limited private times, the culture of professionalism in today's astronaut corps, along with the highly visible, structured and supervised schedule during the last several days prior to launch provide reasonable controls to avoid flying an alcohol-impaired crewmember.

**F2) Finding:** In light of all the other controls in place on launch day, the L-0 flight surgeon check provides a reasonable likelihood of identifying signs of illness or impairment of the level that would threaten flight safety, but it could be supplemented by closer first hand observation prior to crew departure for the pad.

**Recommendation for Finding #2 (RF2):** A flight surgeon should be located in the suit room during suit up to allow more direct contact with the crewmembers on launch day and reduce the reliance on a suit tech (non-clinician) picking up any last minute medical issue.

**F3) Finding:** CB-91-111 (June, 1991), High/Medium Risk Activity Policy, does not include alcohol abuse in its examples of high-risk activities.

**RF3) Recommendation:** Expand existing NASA policy titled: CB-91-111 (June, 1991), High/Medium Risk Activity Policy, to include as one of the examples of high risk activities "drinking to excess."

## **SECTION 2: NASA POLICIES RELEVANT TO ALCOHOL USE AND ABUSE**

### **Review of Authorities: Use and Abuse**

For the purpose of this report, the term “authority” is used to describe all documentation that gives NASA the power to take an action. Authorities include federal laws, federal regulations, executive orders, memorandums of agreement and NASA policies.

“Implementing the authority” means that NASA has taken the necessary actions to exercise the authority provided. These actions may include, but are not limited to, activities such as creating NASA Policy Directives (NPDs), NASA Procedural Requirements (NPRs), guides and procedures. “Exercising the authority” means that NASA has used the authority to take the action permitted.

NASA astronauts fall into three categories: Civil Service Astronauts (CSA), Military-Detailee Astronauts (MDA) and International Partner Astronauts (IPA). The authorities were reviewed to determine if NASA had sufficient power to regulate, test and implement disciplinary action for the use and effects of alcohol prior to, and during, a space flight for all three groups of astronauts. The authority to regulate the use and effects of alcohol also depends on the location of the conduct. For example, there are different applicable authorities for the JSC, KSC on the space shuttle, on the International Space Station and on the Soyuz.

This review is intended only to be a summary of applicable authorities and a brief description of how NASA has implemented and exercised those authorities. Additional details about each of the authorities described can be found in Appendix E.

Legal authority governing alcohol use at NASA facilities varies from building to building. The General Services Administration (GSA) prohibits the use of alcohol on all GSA property [Code of Federal Regulations (CFR): 41 CFR §102-74<sup>3</sup>]. However, because NASA has its own property acquisition authority, GSA’s regulation banning the use of alcohol is applicable to some, but not all of NASA’s property. For example, KSC is on federal property acquired through the National Space Act Agreement of 1959 as amended, and the GSA regulation is not applicable to this property. NASA can, and in some cases has, regulated alcohol use at its non-GSA facilities, but as discussed below, this coverage is incomplete. Thus, for at least some NASA facilities, there is no written rule or policy at the federal, Agency or Center level governing the use of alcohol.

The GSA regulation states “all persons entering in or on federal property are prohibited from being under the influence or using alcoholic beverages.” There is no specific prohibition on alcohol use at non-GSA properties. Center directors have taken affirmative steps to clarify the process for requesting exemptions to the ban – a process that is permitted in the regulation. Under the regulation, only the head of the Agency or his/her designee may permit alcohol onto a federal facility. There is no specific

delegation of authority with respect to either GSA or Space Act properties; however, NPD 1000.3<sup>4</sup> contains a general delegation of authority that may arguably cover alcohol use. (Except as may be specified in laws, regulations, or directives, center directors have full authority to carry out the responsibilities of their offices, and they may redelegate this authority as deemed appropriate.) Perhaps because of this, center directors are permitting alcohol onto the Center with the understanding they have proper authority to do so. However, this delegation from the administrator has not been made explicitly.

JSC has implemented a policy statement from the Center Director dated April 6, 2006<sup>5</sup> which informs the senior staff that alcohol on JSC federal property requires written approval. No specific written approval exists for the astronaut crew quarters at JSC. JSC is currently drafting a JSC Policy Directive (JPD) titled “Alcohol Use in the Astronaut Crew Quarters.”<sup>6</sup> Similarly, KSC has implemented the authority via Kennedy NASA Policy Directive (KNPD) 1600.3, Use of Alcoholic Beverages on KSC Property<sup>7</sup>. However, as written this authority specifically excludes the KSC Visitor Complex, Apollo/Saturn V Center, Beach House, and Astronaut Crew Quarters. (The astronaut crew quarters and beach house are locations that astronauts occupy prior to space shuttle flights during their off-duty hours, and where they engage in recreational activities and have access to alcohol). No other documents have been identified that implement and exercise an authority for alcohol use at these locations. JSC is developing a JPD (as noted above) for JSC crew quarters, and it is intended to extend to KSC crew quarters. However, there is no delegation for the JSC Center Director to approve alcohol use at KSC, and the aforementioned general delegation of authority found in NPD 1000.3 does not arguably grant the JSC Director authority to regulate facilities at KSC. For those areas covered by KNPD 1600.3<sup>7</sup>, KSC has exercised the authority and is retaining the approved requests at the Center’s security office.

**F4) Finding:** GSA regulations cover NASA-occupied GSA buildings, such as NASA Headquarters. No written Agency policy covers non-GSA facilities. Center policies are incomplete, and the authority for their issuance is, in some cases, unclear. Thus, for at least some NASA facilities, there is no governing authority, rule or policy at the federal, Agency or Center level.

**RF4A) Recommendation:** JSC should complete the draft of the JSC Policy Document titled “Alcohol Use in the Astronaut Crew Quarters.” Once completed and approved by the JSC Center Director, this document should be filed with the highest ranking law enforcement organization at JSC.

**RF4B) Recommendation:** KSC should complete a policy document similar to the JPD titled “Alcohol Use in the Astronaut Crew Quarters” that covers both the crew quarters and the astronauts’ recreational activities at the beach house. Once completed and approved by the KSC Center Director, this document should be filed with the highest ranking law enforcement organization at KSC.

For civil service astronauts on any system, NASA has the authority per the United States Codes (U.S.C.): 5 U.S.C. § 75<sup>8</sup>, and 5 U.S.C. § 7352<sup>9</sup> to take action including reprimand,

removal from duty, suspension, or removal (firing) for use and the effects of alcohol depending upon the severity of the conduct. These authorities are implemented via the NASA Headquarters Desk Guide for Table of Disciplinary Offenses and Penalties. NASA has taken, as needed, personnel action for alcohol impairment while on work duty. Although this action has not been used for civil service astronauts, the civil service astronaut's supervisor has the authority to initiate discipline.

**F5) Finding:** Civil service employees, including astronauts, can be disciplined for unauthorized possession of alcohol or being under the influence of alcohol while on duty.

All astronauts (civil service, military detailee and international partner) must comply with 14 CFR §1214.403<sup>10</sup>, which states that: No International Space Station crewmember shall by his or her conduct act in a manner which results in or creates the appearance of adversely affecting the confidence of the public... Although the Crew Code of Conduct (CCoC) does not discuss use of alcohol, it could be interpreted to mean that the code is violated if an astronaut were impaired or drunk while performing duties because this would reduce public confidence.

Per 14 CFR § 1214.403<sup>10</sup>, ISS crew members are subject to the disciplinary policy developed by the Multilateral Crew Operations Panel (MCOP). The disciplinary policy is intended to maintain order among the ISS crewmembers during preflight, on-orbit and post-flight activities. This policy is implemented by a document titled "Disciplinary Policy for International Space Station (ISS) Crew" approved by the Multilateral Coordination Board (MCB) on September 15, 2000<sup>11</sup>. This policy provides general descriptions of disciplinary measures for violations of the ISS Code of Conduct including verbal warning from the MCOP, written reprimand from the MCOP and removal from the crew. It also includes a provision that allows the ISS commander to address immediately any violations that occur in flight. This policy also states that the MCOP will develop documentation establishing the details of this disciplinary policy. However, these details have not been defined by the MCOP.

14 CFR 1214.404<sup>10</sup> applies to Crew Code of Conduct violations also. This section states that violations of the code can be punished as violations of 18 USC § 799. Under the terms of this regulation, it would apply to "whoever" violates it, so on its face the regulation applies to all astronauts.

**F6) Finding:** Under the Crew Code of Conduct for ISS, all astronauts must act in a way to maintain public confidence.

**F7) Finding:** The Multilateral Crew Operations Panel (MCOP) has yet to develop the details of the disciplinary policy for the ISS Code of Conduct that was initially drafted in 2000.

**RF7) Recommendation:** NASA should work with the MCOP to assess and document the need for additional details in the disciplinary policy.

All military detailee astronauts must comply with, the Uniform Code of Military Justice (UCMJ)<sup>12</sup>. Members of the uniformed services who serve as NASA astronauts are detailed to NASA from their military service branch. The terms of the detail are found in Memoranda of Understanding (MOUs) between the Department of Defense (DoD), the Army, the Navy, the Air Force and NASA. The MOUs state that military astronauts detailed to NASA remain subject to the UCMJ<sup>13, 14</sup>. There are several offenses under the UCMJ that could apply to an intoxicated astronaut, such as “drunk on duty” or “drunkenness and disorderly conduct.” According to the MOU between DoD and NASA, a military commander would have the authority to take an action under the UCMJ. NASA could hold a military detailee astronaut accountable by taking them off flight status, by providing a negative performance review input or by terminating the detail.

**F8) Finding:** Military detailees, including astronauts, may be punished under the Uniform Code of Military Justice for abuse of alcohol.

Per 14 CFR § 1214.7<sup>10</sup>, the space shuttle commander has the authority to take whatever action is in his/her discretion necessary to: enhance order and discipline, provide for the safety and well being of all personnel on board, and provide for the protection of the space shuttle elements and payload carried or serviced by the space shuttle. Under this authority the commander can implement disciplinary action as necessary for all astronauts (civil service, military detailee, and international partner) if a crewmember is under the influence of alcohol, impaired or drunk. If an astronaut failed to comply with an order from the space shuttle commander, the astronaut could be prosecuted under 18 USC § 799.

**F9) Finding:** All astronauts are subject to the authority of the space shuttle commander while on the shuttle.

## **Review of Authorities: Alcohol Testing**

### ***General Testing***

NASA has the authority per 42 U.S.C. § 2473c<sup>15</sup> to test civil service employees in safety-sensitive, security or national security functions for alcohol. Civil service astronauts have safety-sensitive functions and fall under this authority. This authority does not extend to military detailee astronauts or international partner astronauts. This authority has not yet been implemented or exercised. NASA has the authority to take action if an employee has been identified as being impaired, under the influence of alcohol or drunk while on federal property and/or performing duties on the space shuttle, ISS, or Soyuz. For astronauts, the applicable action is dependent upon the type of astronaut (i.e., civil service, military detailee, or international partner), the type of activity, and the severity of the conduct.

**F10) Finding:** NASA has the authority per 42 U.S.C. § 2473c, *Civil Space Employee Testing Act of 1991* to test civil service employees in safety-sensitive, security, or

national security functions for alcohol. In order to implement this authority, the NASA administrator must establish an alcohol testing program for NASA. This authority has not been implemented or exercised.

**RF10) Recommendation:** NASA should evaluate the implications of implementing the authority to test employees, including astronauts, for alcohol as provided in 42 U.S.C. § 2473c and generate a documented policy decision. Post-mishap testing and testing based on reasonable suspicion would be prudent for all flight safety critical employees, including, but not limited to, astronauts.

### ***Medical Testing***

It is NASA's policy to provide a healthy and safe environment for crewmembers to enable successful human space exploration. This policy includes providing health and medical care systems for crewmembers for all mission phases-prior to, during, and after space flights (NPD 8900.5a<sup>16</sup>). This policy provides the authority for the NASA physicians to perform all necessary diagnostic and therapeutic interventions that provide medical care for the astronaut corps. The NASA Astronaut Medical Evaluation Requirements Document (AMERD) Volume 1B – Annual and STS Medical Examinations<sup>17</sup> furnishes details about each of the routine medical examinations provided including examinations at launch minus 120 days (L-120), launch minus 90 day (L-90), launch minus 10 days (L-10) and launch minus 2 days (L-2). Additionally, a brief (focused if necessary) medical exam is given the day of launch after the crew meal, and prior to donning launch and entry suits. The medical examination is performed to ensure that the crew member meets medical standards to perform the space shuttle flight duties. At the time of the medical examination, the physician does not specifically evaluate astronauts to determine if they are under the influence of alcohol. Rather, they perform the appropriate medical tests and evaluations as prescribed by any clinical indication identified. If there were certain clinical indications, such as slurred speech, altered gait, or altered cognitive ability, the physician might perform alcohol testing, along with other indicated medical tests, to make a diagnosis. If the astronaut was diagnosed to be under the influence of alcohol, or did not meet medical standards for any other cause, the physician would remove the crew member's medical certification for flight. The decision to do so would be immediately communicated through all levels of line and medical authority. The crew member's medical certification would not be reinstated until the crew member was treated, re-evaluated and found to meet applicable medical standards, or until a medical waiver was generated and approved.

The results of any medical testing, including tests for the presence of alcohol, would be part of the medical record and thus protected under the privacy act. As such, medical test results, even if they indicated the presence of alcohol, may not be usable as evidence for prosecution or disciplinary action.

## ***Summary of Authorities***

NASA has sufficient **authority** to restrict **civil service** astronauts from alcohol use prior to and during flight on the space shuttle, ISS, or Soyuz, to test for alcohol, and to take appropriate action if these policies have been violated. However, NASA has not created sufficient policy and procedure documents to implement all of these authorities. For example, NASA must implement a program to test government employees, including astronauts, for alcohol where it is deemed appropriate (i.e., where alcohol abuse or impairment is suspected). (Current pre-flight medical evaluations do not mandate alcohol testing.)

NASA has sufficient **authority** to restrict NASA **military detailee** astronauts from alcohol use prior to and during flight on the space shuttle, and ISS and can restrict them from duty for violations. NASA can restrict a military detailee from duty and/or cancel the detail to NASA for a conduct problem, such as being under the influence of alcohol while performing duties. Aside from in-flight actions via the commander of the shuttle or ISS, or cancellation of the detail, NASA cannot exercise disciplinary actions; they can only be executed by the appropriate military authority.

NASA has a limited **authority** that pertains to **international partner** astronauts as compared with civil service or military detailee astronauts. NASA does have the federal authority to prohibit them from entering or being on GSA-purchased NASA property while under the influence or using alcohol. The NASA space shuttle or ISS commander has the authority to implement in-flight actions as needed. NASA does not have the authority to test international partner astronauts for alcohol. NASA can restrict an international partner astronaut from duty and/or cancel the detail to NASA for a conduct problem, such as being under the influence of alcohol while performing duties. With the exception of criminal violations punishable by the U.S. legal system, there is no NASA policy or procedure or international agreement that provides the authority to implement any other disciplinary action.

## ***NASA Aircraft Policies***

In addition to the laws, regulations, MOUs, and NASA policies and procedures that are described above, NASA has additional regulations and requirements that govern aircraft operations. Each NASA flight center has a set of requirements for flight operations. Glenn Research Center (GRC) and Marshall Space Flight Center (MSFC) mirror the Federal Aviation Regulation (FAR) (source: 14 CFR. § 91.17 (2007)<sup>18</sup> and state that no person may operate or attempt to operate an aircraft within eight hours of consuming alcohol. Other Centers have more stringent requirements including Goddard Space Flight Center (GSFC) which has a 10 hour limit, and Ames Research Center (ARC), Dryden Flight Research Center (DFRC), JSC, KSC and Langley Research Center (LaRC) have a 12 hour minimum time period between the consumption of an alcoholic beverage and participation as a flight crewmember. Both civil service and military detailee astronauts must abide by the T-38 laws, regulations, and NASA procedures and manuals.

T-38 aircraft are assigned to the NASA JSC to support space flight readiness training of NASA astronauts, to supply chase aircraft for flight-test projects, and to support research and experimental flight tests generated by NASA requirements and priority logistics programs. NASA has a procedure form the JSC Aircraft Operations Division (AOD): AOD 09295: Volume I: Aircraft Operations and Training Procedures T-38 Operating Procedures Volume I<sup>19</sup> for all T-38 operations for the JSC Flight Crew Operations Directorate (FOD) that prescribes general flight and operational instructions and procedures for the T-38 aircraft. It also incorporates the T-38 training-related material. This document has specific requirements regulating the use of alcohol prior to a flight as shown “**5.4.3 Alcohol** *A crew member is not qualified for flight (takeoff) within 12 hours of consuming alcoholic beverages. NASA aircrews are expected to conduct themselves in a common sense manner. Excessive drinking even prior to 12 hours, enough to cause a hangover, is outside of the spirit of the regulations. The policy is that aircrews will neither be under influence nor the effects of alcohol at the time of takeoff.*”

### ***A Final Word on Policy***

It was apparent in this review that NASA has several overlapping policies and some gaps in coverage for alcohol. The Aerospace Safety Advisory Panel (ASAP) has fairly questioned why NASA tests contractors for alcohol and illegal drugs, but testing for Civil service employees is limited to illegal drugs. I believe a reasonable policy would be to require that everyone who works for or at NASA be required to show up for work without impairment due to drugs or alcohol, and that NASA should develop processes consistent with the authority granted them by Congress to test fairly after mishaps or upon reasonable suspicion.



## Findings and Recommendations

### *Alcohol in the Immediate Preflight (Spaceflight) Period*

**F1) Finding:** Alcohol is available for crew use, and although it is possible to abuse it during limited private times, the culture of professionalism in today's astronaut corps, along with the highly visible, structured and supervised schedule during the last several days prior to launch provide reasonable controls to avoid flying an alcohol impaired crewmember.

**F2) Finding:** In light of all the other controls in place on launch day, the L-0 flight surgeon check provides a reasonable likelihood of identifying signs of illness or impairment of the level that would threaten flight safety, but it could be supplemented by closer first-hand observation prior to crew departure for the pad.

**RF2:** A flight surgeon should be located in the suit room during suit-up to allow more direct contact with the crewmembers on launch day and reduce the reliance on a suit tech (non-clinician) picking up any last minute medical issue.

**F3) Finding:** CB-91-111 (June, 1991), High/Medium Risk Activity Policy, does not include alcohol abuse in its examples of high-risk activities.

**RF3) Recommendation:** Expand existing NASA policy titled: CB-91-111 (June, 1991), High/Medium Risk Activity Policy, to include as one of the examples of high risk activities "drinking to excess."

### *Authorities, Organizational Policies and Procedures*

**F4) Finding:** GSA regulations cover NASA-occupied GSA buildings, such as NASA Headquarters. No written Agency policy covers non-GSA facilities. Center policies are incomplete, and the authority for their issuance is, in some cases, unclear. Thus, for at least some NASA facilities, there is no governing authority, rule or policy at the federal, Agency or Center level.

**RF4-A) Recommendation:** JSC should complete the draft of the JSC Policy Document titled "Alcohol Use in the Astronaut Crew Quarters." Once completed and approved by the JSC Center Director, this document should be filed with the highest ranking law enforcement organization at JSC.

**RF4-B) Recommendation:** KSC should complete a policy document similar to the JPD titled "Alcohol Use in the Astronaut Crew Quarters" that covers both the crew quarters and the astronauts' recreational activities at the beach house. Once completed and approved by the KSC Center Director, this document should be filed with the highest ranking law enforcement organization at KSC.

**F5) Finding:** Civil service employees, including astronauts, can be disciplined for unauthorized possession of alcohol or being under the influence of alcohol while on duty.

**F6) Finding:** Under the Crew Code of Conduct for ISS, all astronauts must act in a way to maintain public confidence.

**F7) Finding:** The Multilateral Crew Operations Panel (MCOP) has yet to develop the details of the disciplinary policy for the ISS Code of Conduct that was initially drafted in 2000.

**RF7) Recommendation:** NASA should work with the MCOP to assess and document the need for additional details in the disciplinary policy.

**F8) Finding:** Military detailees, including astronauts, may be punished under the Uniform Code of Military Justice for abuse of alcohol.

**F9) Finding:** All astronauts are subject to the authority of the space shuttle commander while on the shuttle.

**F10) Finding:** NASA has the authority per 42 U.S.C. § 2473c, *Civil Space Employee Testing Act of 1991* to test civil service employees in safety-sensitive, security or national security functions for alcohol. In order to implement this authority, the NASA administrator must establish an alcohol testing program for NASA. This authority has not been implemented or exercised.

**RF10) Recommendation:** NASA should evaluate the implications of implementing the authority to test employees, including astronauts, for alcohol as provided in 42 U.S.C. § 2473c and generate a documented policy decision. Post-mishap testing and testing based on reasonable suspicion would be prudent for all flight safety critical employees, including, but not limited to, astronauts.

## Appendix A. Appointment Letter

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National Aeronautics and  
Space Administration  
Office of the Administrator  
Washington, DC 20546-0001



July 26, 2007

TO: Chief, Safety and Mission Assurance  
FROM: Deputy Administrator  
SUBJECT: **Initiation of Safety Review**

This memorandum initiates a review to consider reported allegations of heavy use of alcohol by astronauts in the immediate pre (space) flight period.

The Astronaut Health Care System Review Committee (Committee) was formed after the NASA Administrator directed the agency's Chief Health and Medical Officer in a February 7, 2007 memo to conduct a review of the medical and mental health services available to NASA astronauts. In its draft report, the Committee stated, "Interviews with flight surgeons and astronauts identified episodes of heavy use of alcohol by astronauts in the immediate preflight period which led to flight safety concerns... Two specific instances were described where astronauts had been so intoxicated prior to flight that flight surgeons and/or fellow astronauts raised concerns to local on-scene leadership regarding flight safety. However, the individuals were still permitted to fly."

If true, these reported allegations describe a serious issue for mission safety. To address this potentially serious safety risk, a review of the events and circumstances is required. If they occurred, you should determine the causes and recommend corrective actions. Therefore, you are hereby directed to gather information, conduct necessary analyses, and determine the facts of the reported incidents.

In the course of your review, you should evaluate all Committee observations and findings related to the inappropriate use or abuse of alcohol by astronauts in the immediate preflight period. In addition, you should evaluate all existing policies and procedures related to alcohol use and space flight crew medical fitness during the immediate preflight preparation period to ensure that any risks to flight safety are dealt with by appropriate medical authorities and flight crew management and, if necessary, elevated through a transparent system of senior management review and accountability.

You are authorized to obtain and analyze all relevant facts, and to interview members of the Committee for clarification of their report observations and findings as appropriate. You also are authorized to interview any NASA employees (including detailees), as well as any contractors and/or International Partner personnel within the constraints of

relevant contracts and intergovernmental agreements. All elements of NASA are expected to cooperate fully with your review and to provide pertinent records, witnesses, data, and any other technical and administrative support you may request.

Your first priority should be the safety of the upcoming Space Shuttle flight, so you should discuss the Committee report with the upcoming crew and flight surgeon, as well as flight crew and medical management as soon as possible. Once you are assured that there is no alcohol or medical organizational, authority, policy, or communications issue for the STS-118, report your findings to the Shuttle Program Manager and the Flight Readiness Review chairman.

Please provide a report and briefing covering relevant findings and recommendations to the Administrator by 31 August 2007.



Shana Dale

cc:  
Officials in Charge  
Center Directors  
JSC Flight Crew Operations  
JSC Space and Life Sciences  
Astronaut Office

## **Appendix B. Acronyms and Abbreviations**

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**AMERD** – Astronaut Medical Evaluation Requirements Document

**AOD** – Aircraft Operations Division

**ARC** – Ames Research Center

**ASAP** – Aerospace Safety Advisory Panel

**CCOC** – Crew Code of Conduct

**CFR** – Code of Federal Regulations

**CSA** – Civil Service Astronaut

**DoD** – Department of Defense

**DFRC** – Dryden Flight Research Center

**FAR** – Federal Aviation Regulation

**FCOD** – Flight Crew Operations Directorate

**GRC** – Glenn Research Center

**GSA** – General Services Administration

**GSFC** – Goddard Space Flight Center

**HQ** – Headquarters

**IPA** – International Partner Astronaut

**IRIS** – Incident Reporting Information System

**ISS** – International Space Station

**JPD** – Johnson Space Center Policy Directive

**JSC** – Johnson Space Center

**KNPD** – Kennedy NASA Policy Directive

**KSC** – Kennedy Space Center

**L-** – Launch minus (Used to mean time prior to launch)

**LaRC** – Langley Research Center

**MCB** – Multilateral Coordination Board

**MCOP** – Multilateral Crew Operation Panel

**MDA** – Military Detainee Astronaut

**MOU** – Memorandum of Understanding

**MSFC** – Marshall Space Flight Center

**MSPB** – Merit Systems Protection Board (MSPB)

**NASA** – National Aeronautics and Space Administration

**NPD** – NASA Policy Directive

**NPR** – NASA Procedural Requirements

**NSRS** – NASA Safety Reporting System

**OVCC** – Orbiter Vehicle Closeout Crew

**RF** – Recommendation For

**STS** – Space Transportation System

**TV** –Television

**UCMJ** – Uniform Code of Military Justice

**U.S.** – United States

**U.S.C.** – United States Code

## **Appendix C. Terms and Definitions**

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Cause. An event or condition that results in an effect. Anything that shapes or influences the outcome.

Close Call. An event in which there is no injury or only minor injury requiring first aid and/or no equipment/property damage or minor equipment/property damage (less than \$1000), but which possesses a potential to cause a mishap.

Code of Conduct. A set of conventional principles and expectations that are considered binding on any person who is a member of a particular group

Finding. A conclusion, positive or negative, based on facts established during investigation by investigating authority (i.e., cause, contributing factor, and observation).

Incident. An occurrence of a mishap or close call.

Mission Failure. A mishap of whatever intrinsic severity that, in the judgment of the mission directorate associate administrator, program/project manager, or the Chief/OSMA, prevents the achievement of primary NASA mission objectives as described in the mission operations report or equivalent document.

NASA Mishap. An unplanned event that results in at least one of the following:

- a. Injury to non-NASA personnel, caused by NASA operations.
- b. Damage to public or private property (including foreign property), caused by NASA operations or NASA-funded development or research projects.
- c. Occupational injury or occupational illness to NASA personnel.
- d. NASA mission failure before the scheduled completion of the planned primary mission.
- e. Destruction of, or damage to, NASA property except for a malfunction or failure of component parts that are normally subject to fair wear and tear and have a fixed useful life that is less than the fixed useful life of the complete system or unit of equipment, provided that the following are true: 1) there was adequate preventative maintenance; and 2) the malfunction or failure was the only damage and the sole action is to replace or repair that component.

Recommendation. An action developed by investigating authority to correct the cause or a deficiency identified during investigation.

## Appendix D. References

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- 1) NASA Astronaut Health Care System Review Committee (July, 2007). *NASA Astronaut Health Care System Review Committee Report to the Administrator.*
- 2) NASA Mishap Investigation I (May, 2006). *Investigation of the Building M6-794 Roofing Fatality: Type A Mishap, Mishap Report.*
- 3) 41 CFR §102-74 (2007). *Title 41, Public Contracts and Property Management Subtitle C—Federal Property Management Regulations System Chapter 102 – Federal Management Regulation System Subchapter C – Real Property Part 102-74 Facility Management.*
- 4) NASA (2007). *NASA Policy Directive 1000.3C, The NASA Organization w/Change 7.*
- 5) Coats, Michael. (April 6, 2006). *Policy on Serving Alcohol on Site.* AD-06-07.
- 6) NASA JSC, (2007). *Draft Johnson Policy Document JPD No. XXXXX. Alcohol Use in the Astronaut Crew Quarters.*
- 7) NASA KSC (2007). *Kennedy NASA Policy Directive (KNPD) 1600.3, Use of Alcoholic Beverages on KSC Property.*
- 8) 5 U.S.C. § 75 (2007). *Title 5. Government Organization and Employees Part III. Subpart F. Labor-Management and Employee Relations. Chapter 75.*
- 9) 5 U.S.C. § 7352 (2007). *Title 5. Government Organization and Employees Part III. Subpart F. Labor-Management and Employee Relations. Chapter 73. Suitability, Security, and Conduct Subchapter V Misconduct.*
- 10) 14 CFR §1214.7 (2007). *ISS Crew Code of Conduct (CCoC).*
- 11) Multilateral Coordination Board (September 15, 2000). *Disciplinary Policy for International Space Station Crew.*
- 12) 10 U.S.C § 801-934 (2007). *Armed Forces Subtitle A. General Military Law Part II, Personnel Chapter 47, Uniform Code of Military Justice. Articles 111, 112, 133, and 134.*
- 13) Agreement Between the Departments of Defense, Army, Navy and Air Force and The National Aeronautics and Space Administration Concerning the Detailing of Military Personnel for Service with NASA (1959).



- 14) Memorandum of Understanding(MOU) Between the Department of Defense, the Army, the Navy, the Air Force, and the National Aeronautics and Space Administration Concerning Detailing of Military Personnel for Service as Shuttle Crew Members (1976).
- 15) 42 U.S.C. § 2473c (2007). *Civil Space Employee Testing Act of 1991*.
- 16) NASA, (2006). *NASA Policy Directive 8900.5A: NASA Health and Medical Policy for Human Space Exploration*.
- 17) NASA. (2002). *Astronaut Medical Evaluation Requirements Document, Volume 1B, Annual and STS Medical Examinations, Revision C*.
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- 19) JSC Aircraft Operations Division (2005). *Aircraft Operations and Training Procedures: T-38 Operating Procedures*. Volume 1.
- 20) NASA Headquarters. (2006). NASA Desk Guide for Table of Disciplinary Offenses and Penalties. DG -03.
- 21) NASA (July, 2006). *NASA Procedural Requirements 3792.1B, Plan for a Drug Free Workplace*. Washington, DC.
- 22) NASA (May, 2006). *NASA Procedural Requirements 8621.1B, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating and Recordkeeping*, Washington, DC.
- 23) Ochoa, Ellen (July 27, 2007). *Space Flight Alcohol Policy*. CA-07-28.
- 24) JSC Flight Crew Operations Directorate, (June, 1991) *High/Medium Risk Activity Policy*. CB-91-111.

## **Appendix E. Summary of NASA Authorities Related to Alcohol**

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# Alcohol: Summary of Authorities That Apply to Astronauts

Key: CSA = Civil Service Astronaut, MDA= Military Detainee Astronaut, IPA= International Partner Astronaut

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	
Authority	42 U.S.C § 2473c	10 U.S.C § 801-934	5 U.S.C. § 75	14 CFR § 1214.403	14 CFR § 1214.700	41 CFR § 102-74.405	EO12564	MOU NASA DoD 1959	MOU NASA DoD 1976	NASA HQs DG - 03	FCOD Policy Memo	
Specific Text	Civil Space Employee Testing Act of 1991	Uniform Code Of Military Justice	Government Organization and Employees	ISS Crew Code of Conduct	Authority of Shuttle Commander	Public Contracts and Property Management	Drug Free Federal Workplace			Disciplinary Offenses and Penalties	Space Flight Alcohol Policy	
<b>R</b> <b>U</b> <b>L</b> <b>E</b>	The General Services Administration (GSA) prohibits the use of alcohol on all GSA property					CSA (GSA property) MDA (GSA property) IPA (GSA property)						
	Shall not act in a manner which results in or creates the appearance of... adversely affecting the confidence of the public.			CSA (ISS) MDA (ISS) IPA (ISS)								
	A crew member is not qualified for flight (launch) within 12 hours of consuming alcoholic beverages. Excessive drinking even prior to 12 hours, enough to cause a hangover, is outside the spirit of the regulations. The policy is that crew members will neither be under the influence nor the effects of alcohol at the time of launch.										CSA (Shuttle, ISS, Soyuz) MDA (Shuttle, ISS, Soyuz) IPA (Shuttle)	
	Military detailees remain subject to the UCMJ's	MDA (Shuttle, ISS)						MDA (Shuttle, ISS)	MDA (Shuttle)			
<b>T</b> <b>E</b> <b>S</b> <b>T</b>	Testing for alcohol use (with goal of eliminating abuse of alcohol)	CSA (Shuttle, ISS)										
<b>A</b> <b>C</b> <b>T</b> <b>I</b> <b>O</b> <b>N</b>	Disciplinary Action (Ranging from written reprimand to removal at supervisor's discretion).		CSA (Shuttle, ISS, Soyuz)							CSA (Shuttle, ISS)		
	space shuttle commander has authority to enforce order and discipline during Shuttle flight to take whatever action in his/her judgment is necessary for the protection, safety, and well-being of all personnel.					CSA (Shuttle) MDA (Shuttle) IPA (shuttle)						
	Prohibition on Service: No person that has used, or is in violation of applicable law or federal regulation concerning alcohol, shall serve as a NASA employee w/responsibility for safety-sensitive, security, or national security functions (restricted duty).	CSA (shuttle, ISS)										
	An individual who habitually uses intoxicating beverages to excess may not be employed in the competitive service.			CSA (shuttle, ISS)								
	Fined or imprisonment of not more than 30 days, or both						CSA (GSA property) MDA (GSA property) IPA (GSA property)					
	Fined or imprisonment of not more than 1 year, or both				CSA (ISS) MDA (ISS) 14 IPA (ISS)							
	Fined not more than \$5000 or imprisonment not more than 1 year, or both					CSA (shuttle) MDA (shuttle) IPA (shuttle)						
	UCMJ offense under military authority, shall be punished as a court-martial may direct.		MDA (shuttle, ISS)									
	Employee assistance program for alcohol use REHABILITATION	CSA (shuttle, ISS)						CSA (shuttle, ISS)				

## Supporting Text For Matrix

	Citation	Citation Title	Applicable Text	Definitions of Terms	Type of Employees	Applicable To NASA System
1.	42 U.S.C. § 2473c	Civil Space Employee Testing Act of 1991	<p>(c) Testing program.</p> <p>(1) The Administrator shall establish a program applicable to employees of the National Aeronautics and Space Administration whose duties include responsibility for safety-sensitive, security, or national security functions. Such program shall provide for pre-employment, reasonable suspicion, random, and post-accident testing for use, in violation of applicable law or federal regulation, of alcohol or a controlled substance</p> <p>(2) [Contractors]</p> <p>(3) In prescribing regulations under the programs required by this subsection, the Administrator shall require, as the Administrator considers appropriate, the suspension, disqualification, or dismissal of any employee to which paragraph (1) or (2) applies, in accordance with the provisions of this section, in any instance where a test conducted and confirmed under this section indicates that such employee has used, in violation of applicable law or federal regulation, alcohol or a controlled substance.</p> <p>(d) Prohibition on service.</p> <p>(1) No individual who is determined by the Administrator under this section to have used, in violation of applicable law or federal regulation, alcohol or a controlled substance after the date of enactment of this Act [enacted Dec. 9, 1991] shall serve as a National Aeronautics and Space Administration employee with responsibility for safety-sensitive, security, or national security functions (as determined by the Administrator), or as a National Aeronautics and Space Administration contractor employee with such responsibility, unless such individual has completed a program of rehabilitation described in subsection (e).</p> <p>(e) Program for rehabilitation.</p> <p>(1) The Administrator shall prescribe regulations setting forth requirements for rehabilitation programs which at a minimum provide for the identification and opportunity for treatment of employees referred to in subsection (c) in need of assistance in resolving problems with the use, in violation of applicable law or federal regulation, of alcohol or a controlled substance. Each contractor is encouraged to make such a program available to all of its employees in addition to those employees referred to in subsection (c) (2). The Administrator shall determine the circumstances under which such employees shall be required to participate in such a program. Nothing in this subsection shall</p>	<p>(h) <b>Definition.</b> For the purposes of this section, the term "<b>controlled substance</b>" means any substance under section 102(6) of the Controlled Substances Act (21 U.S.C. 802(6)) specified by the Administrator.</p> <p>This Act does not include the definition of "employee" so we must use a Govt.-wide definition.</p> <p>Government-wide <b>definition</b> found at <b>5 U.S.C § 2105</b>. It reads, in part, as follows:</p> <p><b>Employee</b></p> <p>(a) For the purpose of this title, "employee," except as otherwise provided by this section or when specifically modified, means an officer and an individual who is--</p> <p>(1) appointed in the civil service by one of the following acting in an official capacity--</p> <p>(A) the President;</p> <p>(B) a Member or Members of Congress, or the Congress;</p> <p>(C) a member of a uniformed service;</p> <p>(D) an individual who is an employee under this section;</p> <p>(E) the head of a Government controlled corporation; or</p> <p>(F) an adjutant general designated by the Secretary concerned under section 709(c) of title 32;</p> <p>(2) engaged in the performance of a federal function under authority of law or an Executive act; and</p> <p>(3) subject to the supervision of an individual named by paragraph (1) of this subsection while engaged in the performance of the duties of his position.</p>	<p>This applies to <b>civil service employees</b> whose duties include responsibility for <b>safety-sensitive, security, or national security functions</b>.</p> <p>Does not apply to military directly.</p>	<p>Civil service working on all NASA systems</p> <p>CSA (shuttle, ISS)</p>

	Citation	Citation Title	Applicable Text	Definitions of Terms	Type of Employees	Applicable To NASA System
			<p>preclude any National Aeronautics and Space Administration contractor from establishing a program under this subsection in cooperation with any other such contractor.</p> <p>(2) The Administrator shall establish and maintain a rehabilitation program which at a minimum provides for the identification and opportunity for treatment of those employees of the National Aeronautics and Space Administration whose duties include responsibility for safety-sensitive, security, or national security functions who are in need of assistance in resolving problems with the use of alcohol or controlled substances</p>			
2.	<b>10 U.S.C. § 801-934</b>	Title 10. Armed Forces Subtitle A. General Military Law Part II. Personnel Chapter 47. Uniform Code of Military Justice Subchapter X. Punitive Articles	Identifies the persons subject to the Uniform Code of Military Justice. Detainees to other federal agencies (such as NASA) are not excluded from the UCMJ's coverage	<i>10 USCS § 801</i> (8) The term "military" refers to any or all of the armed forces.	Applicable to <b>military detailees</b> working for NASA.	All NASA Systems MDA (shuttle, ISS)
	<b>UCMJ Article 892</b>	Dereliction of Duty	May be willful or negligent.			
	<b>UCMJ Article 111</b>	Drunken or reckless operation of vehicle, aircraft, or vessel	<p>(1) That the accused was operating or in physical control of a vehicle, aircraft, or vessel; and</p> <p>(2) That while operating or in physical control of a vehicle, aircraft, or vessel, the accused:</p> <p>(a) did so in a wanton or reckless manner, or</p> <p>(b) was drunk or impaired, or</p> <p>(c) the alcohol concentration in the accused's blood or breath equaled to or exceeded the applicable limit under subsection (b).</p> <p>[Note: If injury resulted add the following element]</p> <p>(3) That the accused thereby caused the vehicle, aircraft, or vessel to injure a person.</p>	From UCMJ explanation of offense:		
	<b>UCMJ Article 112</b>	Drunk on duty	1) That the accused was on a certain duty; and	From UCMJ explanation of offense:	Applicable to military detailees working for NASA.	All NASA Systems MDA (shuttle, ISS)

	Citation	Citation Title	Applicable Text	Definitions of Terms	Type of Employees	Applicable To NASA System
			<p>(2) That the accused was found drunk while on this duty.</p>	<p>(2) Duty. "Duty" as used in this article means military duty. Every duty which an officer or enlisted person may legally be required by superior authority to execute is necessarily a military duty. Within the meaning of this article, when in the actual exercise of command, the commander of a post, or of a command, or of a detachment in the field is constantly on duty, as is the commanding officer on board a ship. In the case of other officers or enlisted persons, "on duty" relates to duties or routine or detail, in garrison, at a station, or in the field, and does not relate to those periods when, no duty being required of them by orders or regulations, officers and enlisted persons occupy the status of leisure known as "off-duty" or "on liberty." In a region of active hostilities, the circumstances are often such that all members of a command may properly be considered as being continuously on duty within the meaning of this article. So also, an officer of the day and members of the guard, or of the watch, are on duty during their entire tour within the meaning of this article.</p> <p>(3) Nature of offense. It is necessary that the accused be found drunk while actually on the duty alleged, and the fact the accused became drunk before going on duty, although material in extenuation, does not affect the question of guilt. If, however, the accused does not undertake the responsibility or enter upon the duty at all, the accused's conduct does not fall within the terms of this article, nor does that of a person who absents himself or herself from duty and is found drunk while so absent. Included within the article is drunkenness while on duty of an anticipatory nature such as that of an aircraft crew ordered to stand by for flight duty, or of an enlisted person ordered to stand by for guard duty.</p>		

	Citation	Citation Title	Applicable Text	Definitions of Terms	Type of Employees	Applicable To NASA System
	10 U.S.C Article 133	Conduct Unbecoming an Officer	May include public drunkenness, drunk and disorderly conduct.			
3.	5 U.S.C. § 75	Title 5. Government Organization and Employees Part III. Subpart F. Labor-Management and Employee Relations	Title 5 USC governs conduct and adverse actions with respect to employees. There is no list anywhere of all the offenses or causes for which government agencies may take adverse action against employees. Rather, this is a general standard that is applied to individual cases. Drinking or being intoxicated on the job is a misconduct case that is actionable for adverse action. The application of the standard is based on previous precedence with cases before the Merit Systems Protection Board (MSPB).  An adverse action is defined as suspension of 14+ days to removal.	For the purpose of this subchapter - (1) "employee" means an individual in the competitive service who is not serving a probationary or trial period under an initial appointment or who has completed 1 year of current continuous employment in the same or similar positions under other than a temporary appointment limited to 1 year or less; and (2) "suspension" means the placing of an employee, for disciplinary reasons, in a temporary status without duties and pay.	CSA	All
	5 U.S.C. § 7352	Subchapter V Misconduct	§ 7352. Excessive and habitual use of intoxicants  An individual who habitually uses intoxicating beverages to excess may not be employed in the competitive service.	The word "employed" is substituted for "appointed to, or retained in" because it includes both.	CSA	All Systems  CSA (shuttle, ISS)
4.	14 CFR § 1214.403	<u>ISS Crew Code of Conduct (CCoC)</u> , 14 CFR § 1214.403  Negotiated and approved by the ISS International Partners	Sec. 1214.401 Applicability. This subpart applies to all persons provided by NASA for flight to the International Space Station, including U.S. Government employees, <b>uniformed members of the Armed Services</b> , U.S. citizens who are not employees of the U.S. Government, and foreign nationals.  NASA-provided International Space Station crewmembers who are not citizens of the United States will be required to enter into an agreement with NASA, in which they agree to comply with specified standards of conduct, including those prescribed in the Code of Conduct for the International Space Station Crew (Sec. 1214.403).  Sec. 1214.403 Code of Conduct for the International Space Station Crew. 11. General Standards A. Responsibilities of ISS Crewmembers ISS Crewmembers shall comply with the CCoC. Accordingly, during preflight, on-orbit, and post flight activities, they shall comply with the ISS Commander's orders, all Flight and ISS	(3) "Disciplinary policy" means the policy developed by the MCOP to address violations of the CCoC and impose disciplinary measures.	CSA MDA	ISS CSA (ISS) MDA (ISS) 14 IPA (ISS)

	Citation	Citation Title	Applicable Text	Definitions of Terms	Type of Employees	Applicable To NASA System
			<p>program rules, operational directives, and management policies, as applicable. These include those related to safety, health, well-being, security, and other operational or management matters governing all aspects of ISS elements, equipment, payloads and facilities, and non-ISS facilities, to which they have access. All applicable rules, regulations, directives, and policies shall be made accessible to ISS crewmembers through appropriate means, coordinated by the MCOP.</p> <p>B. General Rules of Conduct.          “No ISS crewmember shall, by his or her conduct, act in a manner which results in or creates the appearance of... adversely affecting the confidence of the public in the integrity of, or reflecting unfavorably in a public forum on, any ISS partner, partner state or Cooperating Agency.”</p> <p>It does not specifically reference alcohol use.</p> <p>IV. Disciplinary Regulations          ISS crewmembers will be subject to the disciplinary policy developed and revised as necessary by the MCOP and approved by the Multilateral Coordination Board (MCB). The MCOP has developed an initial disciplinary policy which has been approved by the MCB. The disciplinary policy is designed to maintain order among the ISS crewmembers during preflight, on-orbit and post flight activities. The disciplinary policy is administrative in nature and is intended to address violations of the CCOC. Such violations may, inter alia, affect flight assignments as an ISS crewmember. The disciplinary policy does not limit a Cooperating Agency's right to apply relevant laws, regulations, policies, and procedures to the ISS crewmembers it provides, consistent with the IGA and the MOU's.</p>			
5.	14 CFR § 1214.7	TITLE 14 Subpart 1214.7--The Authority of the space shuttle Commander	<p>(a) During all flight phases of a space shuttle flight, the Space shuttle commander shall have the absolute authority to take whatever action is in his/her discretion necessary to:</p> <ol style="list-style-type: none"> <li>(1) Enhance order and discipline,</li> <li>(2) Provide for the safety and well being of all personnel on board, and</li> <li>(3) Provide for the protection of the space shuttle elements and any payload carried or serviced by the space shuttle.</li> </ol> <p>The commander shall have authority throughout the flight to use any reasonable and necessary means, including the use of physical force, to achieve this end.</p>			



	Citation	Citation Title	Applicable Text	Definitions of Terms	Type of Employees	Applicable To NASA System
			<p>1214.701 Definitions.</p> <p>(a) space shuttle Elements consists of the Orbiter, an External Tank, two Solid Rocket Boosters, Spacelab, Upper Stage Boosters (Solid Spinning Upper Stage and Interim Upper Stages) and others as specified in NASA Management Instruction 8040.9.</p> <p>(b) The flight crew consists of the commander, pilot, and mission specialist(s).</p> <p>(c) A flight is the period from launch to landing of a Space shuttle--a single round trip. (In the case of a forced landing the space shuttle commander's authority continues until a competent authority takes over the responsibility for the Orbiter and for the persons and property aboard.)</p> <p>(d) The flight-phases consist of launch, in orbit, deorbit, entry, landing, and postlanding.</p> <p>(e) A payload is a specific complement of instruments, space equipment, and support hardware/software carried into space to accomplish a scientific mission or discrete activity.</p> <p>(f) Personnel on board refers to those astronauts or other persons actually in the Orbiter or Spacelab during any flight phase of a space shuttle flight (including any persons who may have transferred from another vehicle) and including any persons performing extravehicular activity associated with the mission.</p> <p>702(b) The authority of the commander extends to any and all personnel on board the Orbiter including federal officers and employees and all other persons whether or not they are U.S. nationals.</p> <p>704(a) All personnel on board a space shuttle flight are subject to the authority of the commander and shall conform to his/her orders and direction as authorized by this subpart.</p>			
6.	<b>41 CFR § 102-74.405</b> <b>What is the policy concerning the use of alcoholic beverages?</b>	TITLE 41 – Public Contracts and Property Management Subtitle C— federal Property Management Regulations Systems Chapter 102 – federal Management Regulation System Subchapter C – Real Property Part 102-73— Facility Management	Except where the head of the responsible Agency or his or her designee has granted an exemption in writing for the appropriate official use of alcoholic beverages, all persons entering in or on federal GSA property are prohibited from being under the influence or using alcoholic beverages. The head of the responsible Agency or his or her designee must provide a copy of all exemptions granted to the buildings manager and the highest ranking representative of the law enforcement organization, or other authorized officials, responsible for the security of the property.	Under the influence not defined	Applicable to <b>all</b> persons entering or on all property under the charge and control of the General Services Administration	All NASA Systems on federal Property CSA (GSA property) MDA (GSA property) IPA (GSA property)

	Citation	Citation Title	Applicable Text	Definitions of Terms	Type of Employees	Applicable To NASA System
			<p>Applicability:            § 102-74.365 To whom does this subpart apply?            The rules in this subpart apply to all property under the authority of GSA and to all persons entering in or on such property. Each occupant Agency shall be responsible for the observance of these rules and regulations. federal agencies must post the notice in the Appendix to this part at each public entrance to each federal facility.</p> <p>Penalties            § 102-74.450 What are the penalties for violating any rule or regulation in this subpart?            A person found guilty of violating any rule or regulation in this subpart while on any property under the charge and control of GSA shall be fined under Title 18 of the United States Code, imprisoned for not more than 30 days, or both.</p>			
7.	<b>EO12564</b>	Drug-Free Federal Workplace (1986)	(f) For purposes of this Order, the term "Employee Assistance Program" means Agency-based counseling programs that offer assessment, short-term counseling, and referral services to employees for a wide range of drug, alcohol, and mental health programs that affect employee job performance. Employee Assistance Programs are responsible for referring drug-using employees for rehabilitation and for monitoring employees' progress while in treatment.	(e) For purposes of this Order, the term "employee" means all persons appointed in the Civil Service as described in 5 U.S.C. § 2105 (but excluding persons appointed in the armed services as defined in 5 U.S.C. § 2102(2)).	All <b>civil service</b> employees	Civil service working on all systems  CSA (shuttle, ISS)
8.	<b>Memorandum of Understanding(MOU) 1959</b>	Agreement Between the Departments of Defense, Army, Navy and Air Force and The National Aeronautics and Space Administration Concerning the Detailing of Military Personnel for Service with NASA	<p>(a) Service in NASA under this Agreement will in no way adversely affect the status, rank, office, or grade which commissioned officers or enlisted men may occupy or hold or any emolument, perquisite, right, privilege or benefit (including promotion in military rank) incident to, or arising out of any such status, rank, office, or grade. Personnel detailed to NASA <b>will remain subject to the Uniform Code of Military Justice</b> and to policies and directives of the Military Department concerned with regard to military discipline, leave, and flying requirements.</p> <p>(b) Except as [**23] noted in (a) above, persons detailed or appointed to NASA will not be subject to direction or control by the Department from which detailed with respect to their duties and responsibilities with NASA. Personnel detailed to NASA <b>will be governed by all appropriate regulations and</b></p>	None included in MOU	All <b>military detailees</b> to NASA	All Systems  MDA (shuttle, ISS)

	Citation	Citation Title	Applicable Text	Definitions of Terms	Type of Employees	Applicable To NASA System
			<b>directives of NASA.</b>			
9.	<b>Memorandum of Understanding(MOU) 1976</b>	Memorandum of Understanding (MOU) Between the Department of Defense, the Army, the Navy, the Air Force, and the National Aeronautics and Space Administration Concerning Detailing of Military Personnel for Service as shuttle Crew Members (1976)	<b>V. STATUS, DIRECTION AND CONTROL</b> d) Military personnel detailed in accordance with this agreement will be subject to all appropriate regulations and directives of NASA. While detailed to NASA pursuant to this MOU, military members will be subject to NASA regulations, concerning standards of conduct of NASA employees as well as those of the Department of Defense. NASA <b>will remain subject to the Uniform Code of Military Justice</b> and to the policies and directives of the Military Department concerned with regard to military discipline, leave, flying requirements, and other policies and directives which do not affect responsibilities exercised in NASA. Personnel will be granted sufficient time to satisfy military requirements, including, but not restricted to, annual physicals, accomplishment of practical factors for advancement, annual verification of service records, and certain pay record verifications.	None included in MOU	<b>Military detailees</b>	space shuttle  MDA (shuttle)
10.	<b>NASA Desk Guide DG - 03<sup>20</sup></b>	NASA Desk Guide for Table of Disciplinary Offenses and Penalties	This is a guide to use when determining whether and/or to what extent formal disciplinary action is necessary in dealing with issues of employee misconduct.  20. Unauthorized possession or being under the influence of alcohol while on duty.  1 <sup>st</sup> offense: Written reprimand 3-day suspension to removal 2 <sup>nd</sup> offense: 7-day suspension to removal	No definition of employee provided	NASA Civil Service Employees	All systems  CSA (shuttle, ISS)
11.	<b>Memo</b>	TO: CBIAll Astronauts FROM: CA/Director, Flight Crew Operations SUBJECT: Space Flight Alcohol Policy  <i>Original signed by:</i> Ellen Ochoa Signed: July 27, 2007	This memo documents the Flight Crew Operations Directorate policy regarding alcohol use in the preflight period. This policy <b>applies to any person launching on a U.S. spacecraft and to NASA astronauts launching on any spacecraft.</b> “A crew member is not qualified for flight (launch) within 12 hours of consuming alcoholic beverages. NASA astronauts are expected to conduct themselves in a common sense manner. Excessive drinking even prior to 12 hours, enough to cause a hangover, is outside the spirit of the regulations. The policy is that crew members will neither be under the influence nor the effects of alcohol at the time of launch.”	No definitions included.	Any person launching on a US Spacecraft  NASA astronauts launching on any spacecraft	All U.S. Spacecraft  CSA (shuttle, ISS, Soyuz) MDA (shuttle, ISS, Soyuz) IPA (shuttle)



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