

MOCR

Flight Director

Called FD for short, the flight director is in charge of the mission. The FD always has the final decision with on any problems. The FD plays a major role in problem solving. If anyone has a question, they turn to the flight director to help - so it is important for the flight director to know what is going on and who is the expert on what parts of the mission.

PAO

PAO stands for Public Affairs Officer. As the public affairs officer, the PAO has to keep the public informed and tell them what the astronauts on the orbiter are doing. As part of this job, the PAO has to talk to all the other people in MOCR and find out what's happening. The PAO will also be in charge of video taping and photographing the mission. This year, we hope to add additional duties such as posting updates to the web during the mission and editing a final video for viewing at the last club meeting of the year.

Capcom

Capcom stands for capsule communicator. This name goes back to the days when the astronauts went to space in small capsules. Now, they travel in the shuttles, but the name for this job just stuck. Capcom is the only person who can communicate with the people on the orbiter. The crew has to constantly be in touch with mission control to get information or report experiment results or to find solutions to problems that may arise. Capcom is usually an astronaut. On this mission, the capcom will also be in charge of any EVAs taking place from the orbiter. EVA stands for extravehicular activity - better known as a space walk. The capcom will be in charge of communicating with astronauts on the EVA and reporting their progress to the rest of mission control.

SOCC

SOCC stands for Station Operations Control Center. This position is the combination of everyone who works at the mission control located at the Marshall Space Flight Center and the ISS mission control. These mission controls are in charge of the activities of the space station as well as the payloads and many science experiments on board the shuttle. Normally, each mission control will have its own flight director, capcom and many other positions. So, the SOCC on our mission has to fill all these roles. Just as capcom is the only person who can talk to the astronauts on board the orbiter, SOCC is the only person who can talk to the astronauts on board the station. If there are any problems on the station, SOCC has to help solve them. SOCC also helps with experiments on board the station. In this mission, SOCC is in charge of station EVAs as well. This year, the SOCC will also be making periodic experiment updates to the PAOs, using the results posted to the web by the station crew.

Booster/Prop

Booster/Prop stands for Booster and Propulsions system engineer. The Booster/Prop is in charge of anything that makes the orbiter and shuttle go. In addition, our Booster/Prop will be in charge of the station Booster/Prop as well. The orbiter systems include the SRBs, the SSMEs, the OMS and the RCS. In addition, Booster/Prop will monitor the ECLSS. That is a lot of acronyms! Sometimes, NASA looks like they are speaking a foreign language. Booster/Prop works pretty closely with the GNC. Read the Rover Research team description for more information.

SRB - Solid Rocket Boosters

SSMEs - Space Shuttle Main Engines

OMS - Orbital Maneuvering System

RCS - Reaction Control System

ECLSS - Environmental Control and Life Support System

GNC

GNC stands for Guidance Navigation Control. As the name implies, the GNC monitors the guidance and navigation systems, making sure the orbiter and station are on the right track. This is especially important during docking! Our GNC will double as a flight surgeon, checking on the orbiter and station crews' health periodically.

Rover Research Team

Last year, the Booster/Prop and GNC worked together to explore a “lunar” terrain with a prebuilt Lego Dacta Rover - which was nicknamed Seagull last year, but the name can always be changed. The goal was to draw an accurate map of the area based on the images seen through the rover’s eye. This year, this portion of the mission has been expanded (because I really like legos!) The research team will consist of more people working together to construct and program rovers, then explore and map out a lunar terrain. The Booster/Prop and GNC will have to work together for several weeks before the mission, designing and building a rover that is capable of navigating difficult alien terrain. The rover will then be programmed - by the R&D half of the team - to do a few basic commands (forward, backward, right and left). During the mission, the Booster/Prop and GNC will need to assemble the rover - based, of course, on the detailed directions they made! - and then use their - hopefully - rugged rover to map out the area.

R&D

This is the other half of the rover team that will be working in mission control. R&D stands for Research and Development. That is exactly what the goal of this group will be. The researchers will learn how to “write” programs for the rover using the Lego Dacta software. This will probably require a day or two after school or at lunch as they become familiar with the Lego parts also. This team will then program the rovers built by the Booster/Props and GNCs. The rest of the R&D team’s work will occur during the mission. The R&D team will be presented with a task that CHASA wants a rover to do (such as taking temperature readings and then pick up any object that is below a certain temp) and the team will have the rest of the time to design, build and program the best possible rover for the task. All the while, they will have to make detailed directions of instruction so someone else could build it later. But don’t think this job is easy! If you finish the first task, there are always more to come. CHASA and NASA have a lot of ideas for what a rover should be able to do. Imagine a team of rovers landing on Mars, constructing a ground base for human habitation, and then carrying out extensive research across the planetary surface - looking for water and maybe even life!

Colonial - The Orbiter

Commander

The commander is the person in charge of the orbiter. The commander is a pilot who worked in the military and flew fighter jets. The CDR (that's short for commander, and read "commander") is the person who flies the orbiter during landing, unless the CDR and pilot make other arrangements beforehand. The commander and pilot work together during launch, orbital insertion, docking with the station, deorbit, re-entry and landing. The commander and pilot monitor systems and the orbital track of the orbiter. These two roles talk through capcom to both the flight director and Booster/Prop & GNC to solve any problems that may occur.

Pilot

The pilot - abbreviated PLT - works closely with the commander to pilot the orbiter and help solve any problems. The commander and pilot work together during launch, orbital insertion, docking with the station, deorbit, re-entry and landing. The commander and pilot monitor systems and the orbital track of the orbiter. These two roles talk through capcom to both the flight director and Booster/prop & GNC to solve any problems that may occur. Additionally the pilot is in charge of launching the satellite.

Mission Specialists

The mission specialists are often civilian scientists who are chosen for their expertise in a certain area or on a certain piece of equipment. The MS (that's the abbreviation for mission specialist) conduct research and perform EVAs. An EVA is an extravehicular activity - better known as a space walk. The mission specialists communicate experiment and EVA results to the mission control through capcom. Hopefully, our mission specialist will be able to post web updates of their experiments. This year, our mission specialists will have a much more active role in choosing their experiments. Sometimes a mission specialist is chosen for a mission because they have worked for many years to design an experiment they want to see conducted in micro gravity. So, as a mission specialist you will be able to do a little research and submit your own proposal for an experiment you wish to conduct on the mission. The CHASA administration will then choose the experiments they feel are the most cost effective with the greatest potential for learning - in otherwise, those experiments that were seriously submitted and do not cost more than the budget allows.

Eagle Station

Station Commander

The station commander is in charge of the activities on the station. The stn. cdr has final say in any decisions. When problems arise, the station cdr has to delegate responsibilities and work with the station crew to resolve the problem. The cdr also has to watch the orbit of the station and control the station RCS (reaction control system - helps keep the station in orbit). The commander is the one in charge of the communications between the station and the SOCC. The stn cdr also participates in experiments and EVAs as well.

Station ECLSS Engineer

The station ECLSS engineer is in charge of the ECLSS - that's the Environmental Control and Life Support System. This engineer has to monitor the O₂ and CO₂ levels and deal with any problems that occur to affect the environment of the station, such as fires and structure damage. Part of these duties include acting as the station medical officer. This includes performing pre-EVA and post-EVA physicals as well as helping to solve any medical problems that arise (like a broken arm from a clumsy astronaut). Plus, the ECLSS engineer participates in experiments and possible emergency EVAs - assisting the station commander.

Station Operators

The station operators are the main researchers on board the station. Both the commander and ECLSS engineer also perform and participate in experiments, but the station operators are the experts. They will perform scheduled EVAs (space walks) and report results of all the activities to the SOCC. The stn ops also aid the stn cdr and ECLSS engineer in solving problems.

Experiments:

This year, the results of experiments will be posted by the station crew to the web, to be accessed by the SOCC, PAOs and other interested mission control personnel. Because astronauts often work for years designing experiments they take into space, CHASA will start its own experiment program this year. The station crew will have the opportunity to submit experiment proposals to the CHASA administration for consideration. CHASA will choose the most cost effective experiments that have the greatest learning potential - in other words, we'll choose those experiments submitted that had the greatest consideration and effort, but are within the CHASA budget. More information on experiment proposals will come during training for the mission.