good day and welcome back to the Johnson Space Center as our pre-flight briefings continue for the sts-132 Ulf for mission coming up this is the mission overview briefing and with us to discuss the flight today are Mike Seraphin the sts-132 leads space shuttle flight director Emily Nelson the sts-132 Ulf for Leeds Space Station flight director and astronaut Jerry Ross the chief of the vehicle integration test office here at the Johnson Space Center one of two men to fly a record seven times in space and the only astronaut who has flown
five times on the space shuttle Atlantis

soon to be retired and we'll start off

with Mike well good morning and thank you for your interest in the sts-132

mission in the planned last flight of the space shuttle Atlantis and its journey to the international space station this morning along with my colleague Emily Nelson will introduce you to some key players that are going to play some pivotal roles in the mission of it sts-132 along with the provide an overview of the mission plan and the timeline that we have in place
so with that I'd like you to introduce

you to the crew of the space shuttle

Atlantis if we could pull up the photo

of the crew of Atlantis you see here our

commander Ken Ham he will be the first

time commander on this flight and he

will be supporting the suit up of the

spacewalkers before they go out to hatch

each day as well as performing a lot of

our transfer activities to resupply the

International Space Station pilot on

this mission is tony antonelli you see

him in the back row in the center this

will be his second flight as well and he
will be supporting the task IV role on

44 00:01:50,969 --> 00:01:56,158 this mission so he'll be overseeing the

45 00:01:52,649 --> 00:01:58,468 spacewalks from inside Atlantis and just

46 00:01:56,159 --> 00:02:01,500 ensure that those happen in a timely and

47 00:01:58,468 --> 00:02:03,809 safe fashion he will also be performing

48 00:02:01,500 --> 00:02:07,409 some of the robotic activities on this

49 00:02:03,810 --> 00:02:09,090 flight along with undocking and fly

50 00:02:07,409 --> 00:02:11,550 around the International Space Station

51 00:02:09,090 --> 00:02:14,009 at the end of the mission our three

52 00:02:11,550 --> 00:02:15,870 spacewalkers garrett reisman

53 00:02:14,009 --> 00:02:18,030 Mike good and steve bowen will each be

54 00:02:15,870 --> 00:02:21,150 going out the hatch two times during our

55 00:02:18,030 --> 00:02:23,908 three plan dba's have all flown once

56 00:02:21,150 --> 00:02:25,709 before garrett in particular is a

57 00:02:23,908 --> 00:02:27,688 long-duration flyer on board the
International Space Station stayed on board during the expedition 1617 time frame and then Pierce Sellers has flown twice before in space get peers will be our systems expert on the Russian module flying up on this flight the Rassvet or the miniature research module number one and will also be supporting the robotics from the International Space Station on the station arm all of these are veteran flyers only six astronauts on this flight we've been flying seven in the past and that provides with a little bit of a timeline challenge and workload
challenge on this flight but it also

provides a benefit of having additional

launch mass to resupply the

International Space Station I'll also

provide you with an overview or some

information on the crew patch if we

could show the sts-132 crew patch this

depicts the space shuttle Atlantis

flying off into the sunset will if the

12-day mission plans plays out as

planned the Space Shuttle orbit the

Earth 186 times during its final flight

you can see it here flying off into the

sunset we orbit the Earth 16 times a day
and we see 16 sunrises and sunsets per orbit so is Atlantis flies off into the setting sun, we deliver the rassvet module which means sunrise for a continuation of the International Space Station. The mission itself is very challenging, we have robotics on nine of the 12 days of this mission. On flight day one, we break out the shuttle's robotic arm and check it out and make sure that it's ready to go. On flight day two, we inspect the heat shield on Atlantis. On flight day three, we pull the integrated cargo carrier out of...
the payload bay and install it on

00:04:17,970 --> 00:04:24,870
station flight day 4 we support one of

00:04:22,019 --> 00:04:26,579
the spacewalks played a 5 we install the

00:04:24,870 --> 00:04:27,879
miniature research module number one

00:04:26,579 --> 00:04:30,819
flight day 6 is

00:04:27,879 --> 00:04:32,649
support of our second spacewalk fly day

00:04:30,819 --> 00:04:34,959
eight again support of our third

00:04:32,649 --> 00:04:36,879
spacewalk flight day nine we install the

00:04:34,959 --> 00:04:39,250
cargo carrier back into the shuttles

00:04:36,879 --> 00:04:40,839
payload Bay for return and then flight

00:04:39,250 --> 00:04:42,670
day 10 we inspect the heat shield one

00:04:40,839 --> 00:04:44,979
last time so three-quarters of our

00:04:42,670 --> 00:04:47,199
mission is taken up with robotics

00:04:44,980 --> 00:04:49,840
activities and provides a great

00:04:47,199 --> 00:04:52,120
combination of man and machine is we
utilize not only the robotics on this flight but our human space flowers during this 12-day mission with that I would like to introduce you to the key players on the ground here in Mission Control that will be supporting the space shuttle side of the mission I will be supporting is the orbit one and lead flight director for the mission I'll be a supporting during the first half of the cruise day from the time they wake up through their midday meal I'll be overseeing the rendezvous and docking operation as well as all the inspection
activities fly day two as well as late

inspection later on in the mission
during the dock portion I work with my

colleague Emily Nelson to get the crew

out the hatch for all of the all of the

spacewalks overseeing the asset

operation the launch operations on this

mission will be a Richard Jones our

ascent flight director Richard is a

veteran shuttle flight director many of

you may recognize him as the lead of

sts-131 that we just landed a couple of

weeks ago he will oversee the launch

operations in conjunction with our
colleagues out at the Kennedy Space Center and convert Atlantis from a launch vehicle to an orbiting spacecraft this would be Richards third a sent Chris Edelen is our orbit to flight director Chris will be supporting the second half of the cruise day we call it orbit two from their midday meal until the start of the sleep phase and this is chris chris's second mission is a shuttle flight director ginger Carrick will be supporting her second mission and she will be supporting the overnight shift and replant operations and then
Tony Saatchi is our entry flight director. Tony is a veteran shuttle flight director. Many of you may recognize him from his lead role during the last Hubble servicing mission. This will be his first entry as an entry flight director. So now that we've overviewed some of the key players on the flight, I'd like to show you the payload Bay of Atlantis. If we could roll our first video, it will show you the payload Bay and all of the items that we plan to launch on board Atlantis along the starboard side of the payload Bay.
172 00:07:08,230 --> 00:07:11,890
have the orbiter boom sensor system that

173 00:07:09,970 --> 00:07:15,550
will use to inspect the heat shield on

174 00:07:11,889 --> 00:07:18,279
Atlantis and on the port side opposite

175 00:07:15,550 --> 00:07:19,720
the orbiter boom sensor system we had

176 00:07:18,279 --> 00:07:22,599
the shuttle's robotic arm that will

177 00:07:19,720 --> 00:07:25,180
grapple the boom with to perform the

178 00:07:22,600 --> 00:07:26,860
heat shield inspection in the front of

179 00:07:25,180 --> 00:07:28,569
the payload Bay we have the orbiter

180 00:07:26,860 --> 00:07:30,460
docking system that will serve as our

181 00:07:28,569 --> 00:07:32,500
mating interface to the International

182 00:07:30,459 --> 00:07:34,509
Space Station and provide a pressurized

183 00:07:32,500 --> 00:07:36,730
path to allow astronauts to go from

184 00:07:34,509 --> 00:07:39,099
inside Atlantis to the space station in

185 00:07:36,730 --> 00:07:40,450
the center of the payload Bay is the
integrated cargo carrier that will provide critical spares to the International Space Station and then in the back of the payload Bay we have the miniature research module number one a pressurized module that will be installed on the Russian segment later on the mission Emily will provide additional details later on in the briefing regarding the mrm one as well as the integrated cargo carrier on flight day one I'll jump into the mission timeline now on flight day one we'll check the weather and the vehicle
systems out at the Kennedy Space Center

with our colleagues and Richard Jones

once we see good conditions in a good

vehicle will launch Atlantis after

launch will convert Atlantis from a

orbiting spacecraft or from a launch

vehicle to an orbiting spacecraft by

opening the payload bay doors deactivate

all of the launch systems and then

activate a lot of the orbital systems

will again break out the shuttle's

robotic arm check it out make sure it's

ready to go for the inspection

activities on the second day of the
mission and the crew will set up the

00:08:42,668 --> 00:08:47,710
laptop network onboard the Atlantis so

00:08:45,759 --> 00:08:50,350
that we can gather all of the the launch

data launch imagery and download that to

00:08:50,350 --> 00:08:56,129
the ground our second day of the mission

00:08:54,299 --> 00:08:58,409
consists primarily of the heat shield

00:08:56,129 --> 00:09:01,649
inspection if we could roll our second

00:08:58,409 --> 00:09:05,129
video will show you the inspection of

00:09:01,649 --> 00:09:07,830
the heat shield the day will start off

00:09:05,129 --> 00:09:10,799
by the crew pulling the shuttle's

00:09:07,830 --> 00:09:12,69
robotic arm out of its what we call pre

00:09:10,799 --> 00:09:14,549
cradle position which is an overnight

00:09:12,69 --> 00:09:16,649
stow position they'll reach over across

the payload bay to grapple onto the

00:09:14,549 --> 00:09:18,870
orbiter boom and then maneuver it into
position to perform a pan and tilt

survey using the camera on the end of the boom to inspect the aft end of Atlantis to ensure that there were no thermal blankets damaged during the launch phase and that there's no residual ice on the umbilical area where we flow cryogenic fluids into into Atlantis after that pan and tilt survey is complete the crew will maneuver the arm over the starboard wing and perform a series of racetrack scans up and down the starboard wing and then once they're done with that go over to the nose cap
and then port wing and basically do a mirror-image survey of what they did on the starboard side all toll the inspection activities takes six hours it's about two hours for the starboard wing about two hours for the nose cap and two hours for the port wing the activities will be conducted by a pilot tony antonelli and mission specialists garrett reisman and pierce sellers all of the imagery gathered during the inspection will allow us to clear the vehicle from the launch phase and ensure that atlantis is ready to come home
following the imagery will be reviewed by a ground analysis team here in Houston the engineers and imagery analyst will use all of the sensor data gathered and over the course of roughly a day and a half we'll review that in combination with the rendezvous pitch maneuver data gathered on flight day three to clear Atlantis we expect a decision from the debris assessment team in those engineers late on flight day three and they'll either area identify additional areas of interest that we need to go off and
gather further imagery on to support a focus inspection on flight day five or

they'll clear the vehicle with that you can see here the the nose cap is nearly complete when the crew finishes surveying all of the areas of the reinforced carbon-carbon that see the hottest temperatures during the re-entry phase as well as survey the port side of the of the ohms pot in the aft end of the vehicle but put the orbiter boom away to support docking operations get it out of the way the path of the docking mechanism for the for the final
approach to the International Space Station and then they'll put the shuttles arm into a stowage position as well at the tail end of flight day to the crew will also check out a number of systems associated with the rendezvous and docking they'll install the centerline camera that is used to provide a line of sight and verify the corridor alignment for the final approach and docking they'll extend the docking ring and make sure that it is in a good configuration and ready to support the docking as well as check out
a number of the rendezvous tools that will be used to pilot the pilot Atlantis to the international space station on the mid-deck steve bowen and garrett garrett reisman and my goodwill check out the suits that will be used later on the mission to support the three planned spacewalks on flight day 3 our rendezvous and docking will culminate midday with the docking to the International Space Station if we could roll our third video I'll show you the final approach to the International Space Station in the morning the crew
will wake up roughly 40 nautical miles

from station perform a series of rendezvous burns too close in it a range of roughly 600 feet directly below the international space station commander Ken Ham will stabilize Atlantis as the astronauts and cosmonauts onboard the International Space Station take digital still images out the window of the Russian segment of the heat shield on Atlantis using both a 400 millimeter and an 800 millimeter lens you can see depicted here by the boxes emanating from the space station all of
the imminent images will be loaded onto

00:13:41,360 --> 00:13:47,240
laptops for downlink to the ground here

00:13:44,539 --> 00:13:50,419
in Houston again for review by the

00:13:47,240 --> 00:13:52,698
imagery analyst and engineers to help

00:13:50,419 --> 00:13:54,169
clear the vehicle and ensure that we

00:13:52,698 --> 00:13:56,240
have no additional areas of interest

00:13:54,169 --> 00:13:59,929
that we need to go review via further

00:13:56,240 --> 00:14:02,058
inspection following the rendezvous

00:13:59,929 --> 00:14:05,568
pitch maneuver commander Ken Ham will

00:14:02,058 --> 00:14:07,818
stabilize Atlantis directly below the

00:14:05,568 --> 00:14:11,799
international space station and then

00:14:07,818 --> 00:14:15,828
perform a quarter lap fly around to

00:14:11,799 --> 00:14:18,438
maneuver Atlantis and align it with the

00:14:15,828 --> 00:14:20,748
docking system onboard the International

00:14:18,438 --> 00:14:22,909
Space Station from there he'll approach
the International Space Station down a very narrow two and a half degree corridor that will allow it to have good alignment for the final contact conditions once he verifies final alignment at 30 feet will press in and perform the docking to the International Space Station after a series of leak checks the hatches will be open the crew will greet each other perform a safety briefing transfer a couple of critical items including the suits used to perform the spacewalk on the next day of the mission and the docked mission will
begin and with that I'd like to turn the briefing over to Emily Nelson thanks.

Mike good morning thanks for being here.

the sts-132 you love for mission is a flight with a real international flavor.

to it this will be the first time in about 15 years we've launched a Russian module in the shuttle payload Bay that last time was on sts 74 back in 1995 to the MIR space station this is the first time we've taken one of our Russian modules to ISS in the shuttle payload.

Bay and we've been working hard with our Russian colleagues over the last year to
get both the module and our teams in
both Moscow and Houston ready for this flight we're also flying the enhanced
your temporary platform which is a Canadian piece of hardware along with several science experiments from the Jackson japanese space agency so several of our partners have significant participation in this flight in terms of us hardware our biggest objectives are to install a backup k you band communication system and to replace six of the very large batteries out on the
p6 truss that are a part of the primary power system those batteries have been on orbit since november of two thousand and we're going to take this opportunity to do some preventive maintenance to ensure that our primary power system is good to go for years to come before I get into a summary of the doct mission timeline I'd like to introduce our teams both on the ground and on orbit I'll be as lead Space Station flight director I'll be working the orbit two shift that will be centered on the crude a largely centered on the spacewalks themselves for orbit one we have poly
writings and one of our more experienced space station flight directors this will be her fourth mission joint mission she's also been an expedition lead flight director her team will be working in the crew morning timeframe and they'll be working to get the crew started on their activities each day and then on EV a day is getting the crew suited up and out the door then on orbit the sleep shift we have Scott Stover this is his first flight as a space station flight director and his team will be wrapping up the crews activities
each day and then working to incorporate any changes that we've encountered over the course of the day into new plans for the next day and the rest of the mission.

then on call in the event that we run into technical challenges will be Royce Renfrew and he'll be leaving our team for support and finally supporting from Moscow specifically for mrm one installation will be Courtney McMillan national partner liaison to help us out if we run into any trouble with mr m1 and for the ISS crew on orbit today we have a photo from left to right we have
flight engineer Mikhail Kornienko flight

engineer Tracy Caldwell Dyson flight

engineer Alexander Skvortsov the ISS

commander Oleg Kotov flight engineer TJ

créamer and flight engineer Sweetie

noguchi the ISS crew we’re going to

play several key roles during this

mission with only six shuttle crew

members we are using the ISS crew maybe

more than we have in the past tracy is

trained to be a critical part of several

of our robotic activities throughout the

flight TJ and tracy will both be helping

can get the crew ready for EBA

activities on several of our EBA days

00:18:02,809 --> 00:18:06,139
and then Oleg will be working with

00:18:04,549 --> 00:18:10,180
Garrett and piers on the emer and one

00:18:06,140 --> 00:18:12,980
installation day let's see in addition

00:18:10,180 --> 00:18:14,509
ISS has been a very busy spaceport this

00:18:12,980 --> 00:18:17,509
spring possibly as busy as we've ever

00:18:14,509 --> 00:18:19,099
seen it with not only Atlantis arriving

00:18:17,509 --> 00:18:20,420
soon but a number of other vehicles

00:18:19,099 --> 00:18:23,089
arriving and departing in the weeks

00:18:20,420 --> 00:18:25,580
before and after the flight this past

00:18:23,089 --> 00:18:28,819
Saturday on may first we had the arrival

00:18:25,579 --> 00:18:31,099
and successful docking of progress 37 to

00:18:28,819 --> 00:18:33,549
the Pierce docking module in this

00:18:31,099 --> 00:18:36,109
graphic you can see where 37 ended up

00:18:33,549 --> 00:18:38,899
then one week from today on May tenth
will have Progress 36 departure from the AFT port of the Zvezda module at the very back of the ISS. I think we have a graphic of that one as well and then two days after that will have on March twelfth so we use 21 which is currently docked to the nadir or earth-facing port of the Zarya module. It'll be relocated to the aft port of the Zvezda module which was just vacated by Progress 36. This relocation is critical to the launch of Atlantis because it frees up the nadir port on Zarya for us to install MRM One there so we need to have
a port for that installation before we can get off the ground then during the
sts-132 mission itself sweetie Oleg and TJ will begin preparation for their
return trip Soyuz 21 will undock from the ISS about nine days after Atlantis
is scheduled for departure and they'll land in kha'zix on June first at approximately 10:25
central time let's see if we can review our payloads in the paler bay in a little bit more detail we have a video
of our mrm one module called Russ vet or dawn mrm one was built by the energy a
corporation at their facility on the outskirts of Moscow delivered to KSC on December 17th of last year in addition to the science facilities inside the module there are a number of important items on that external of the module you have the European robotic arm spare elbow and the grapple fixture that will be used by the SS RMS to position the module for installation then on top of the module in the graphic you have a radiator and an airlock both of which will ultimately be installed on the Russian multi-purpose laboratory module
which is scheduled for launch in early 2012 on top of the airlock you can see the second grapple fixture this one will be used by the shuttle robotic arm to pull the module out of the payload Bay and then we have a portable work platform that will ultimately be used by evie a crew members to control the European robotic arm from outside the space station we can go directly into video we have of em room 1 while it was being processed at Cape Canaveral here you see mr m1 outfitted and almost ready for transfer to the launch pad then we have the airlock again this one like the
514 00:20:48,180 --> 00:20:51,720
airlock on the Japanese module is sized

515 00:20:49,890 --> 00:20:54,810
for scientific payloads and hardware not

516 00:20:51,720 --> 00:20:57,630
for personnel and then back behind the

517 00:20:54,809 --> 00:21:00,990
airlock you can see the radiator that's

518 00:20:57,630 --> 00:21:03,930
destined for MLM as well as they're

519 00:21:00,990 --> 00:21:08,849
below the airlock the portable work

520 00:21:03,930 --> 00:21:11,279
platform mrm one as Mike mentioned will

521 00:21:08,849 --> 00:21:14,039
be installed on flight day 5 it'll be

522 00:21:11,279 --> 00:21:16,859
attached to the nadir port of the zarya

523 00:21:14,039 --> 00:21:18,299
module that's the earth-facing port here

524 00:21:16,859 --> 00:21:19,589
you see the docking system that will be

525 00:21:18,299 --> 00:21:21,569
so critical to our activation

526 00:21:19,589 --> 00:21:23,189
installation activities as it was

527 00:21:21,569 --> 00:21:24,779
installed by the inner gear personnel
there at the Cape this is the same docking system that is used on all of our progress and Soyuz vehicles so we have a great deal of experience both a mirror and ISS with this hardware here you see the opposite end of the module and this the docking port that will be used for future so use of progress flights then as the module spends can see the spare elbow joint for the European arm is shrouded there on a lower part of the module and then you see the grapple fixture that will be used by the station arm coming into view
there on the right that grapple fixture is critical to installation because it's the path for power and data to and from the module this is the first time we're going to install a module on ISS using the robotic arm to pass data and control to the active side of the docking mechanism usually four modules installed by the arm the active half of the mechanism is on ISS so that'll be a new operation for us the model is about 23 feet long weighs a little over 17,000 pounds and here finally you see it inserted in the payload canister ready
for transport to the launch pad where it

00:22:26,608 --> 00:22:29,728
is today and it will be inserted into

00:22:28,138 --> 00:22:32,459
the shuttle bay payload bay here sir

00:22:29,729 --> 00:22:39,389
shortly then we have another video with

00:22:32,460 --> 00:22:41,069
overview of the ICC V LD in the payload

00:22:39,388 --> 00:22:43,228
Bay just in front of mr m1 the

00:22:41,069 --> 00:22:46,648
integrated cargo carrier vertical light

00:22:43,229 --> 00:22:49,080
deployable or l ccv LD for short we'll

00:22:46,648 --> 00:22:51,268
start with the space to ground antenna

00:22:49,079 --> 00:22:52,888
boom which will be installed on the z1

00:22:51,269 --> 00:22:55,259
trust near an existing space to ground

00:22:52,888 --> 00:22:57,209
antenna system then the space to ground

00:22:55,259 --> 00:22:59,608
antenna itself which we call the dish

00:22:57,210 --> 00:23:01,528
for obvious reasons it will be installed

00:22:59,608 --> 00:23:03,478
on the boom and will become our backup k
you band communication system then we

have the enhanced oru temporary platform

will be installed on dexter the special

purpose dexterous manipulator and it

will be used as a pallet to house the

spares that dexter will install for us

and we have a couple of grapple fixtures

for moving the pallet around and finally

we have the six batteries that will be

installing out on the p6 truss and we'll

be taking the old batteries from the

trust and reinstalling them on this

carrier where they'll return home in the

payload Bay at the end of the mission so
moving back into the mission chronology

Mike left off with the docking of Atlantis to ISS as soon as we've had a chance for everyone to say hello get gotten the safety briefings the crew will get immediately back to work they will Garrett and Steve will be gathering items that they'll need to prepare the airlock for the EBA the next day while Tracy and piers extract the icc BLD from the payload bay and we have some video of that operation peers will grapple the ICC BLD in the payload Bay with the station arm pull it
out of the bay and then maneuver it up to a spot close to the z1 trust where Garrett and Steve will be doing much of their work on EBA one next morning it's of note that this is the first use of the cupola module which was installed by the sts-132 back in January we in the last couple of weeks have relocated one of our robotic workstations into the cupola so that it can now be used as a base for our robotic operate when we finish with these activities at the end of the day though this animation doesn't appear particularly fast this is quite a
bit faster than what we'll see in real

00:24:33,569 --> 00:24:41,730
life so to carry on with that operation

00:24:39,059 --> 00:24:43,799
piers is going to thread the ICC BLD to

00:24:41,730 --> 00:24:45,480
a spot in almost the center of the trust

00:24:43,799 --> 00:24:47,639
where will then grapple it with the

00:24:45,480 --> 00:24:50,490
mobile base system on what we call the

00:24:47,640 --> 00:24:51,990
poet that mobile base can then move from

00:24:50,490 --> 00:24:55,529
the center of the trust where we need it

00:24:51,990 --> 00:24:57,180
on EBA one near the z1 trust out to the

00:24:55,529 --> 00:24:58,889
far port end of the space station for

00:24:57,180 --> 00:25:01,470
EPA's two and three for those battery

00:24:58,890 --> 00:25:03,090
are NRS on flight day three we'll finish

00:25:01,470 --> 00:25:05,069
up by isolating Garrett and Steve in the

00:25:03,089 --> 00:25:07,589
airlock as they prepare for EBA one the

00:25:05,069 --> 00:25:10,529
next day moving on to flight day four
it's our first EV a day at least ashore

we'll be giving you a detailed EBA

briefing immediately after or shortly

after this briefing so I won't cover

those in detail will just cover them at

a very high level four EV a one-hour EV

crew members are garrett reisman and

steve bowen Garrett will be ev1 and

Steve will be ev2 can Mike and Tj will

be helping them get suited up in the air

lock Tony as Mike mentioned will be our

ITV crew member helping them through

their timelines through the EVs peers

and Tracy will be providing SS RMS
support and the SSR ms and EBA

operations for each of the three EPA's

are highly integrated and were highly dependent on that integrated timeline

going well big picture items for the CVA

are going to be the installation of the redundant space-to-ground antenna system

and the e OTP then we will send Steve

over to the ICC BLD where he will release the launch torques that were put on the ICC VL d batteries which will save us some time in

two and three we estimate the EBA is going to take about six hours and 30
minutes and then at the very end of the
day as the EV crew members coming back
inside Ken and Tony will be positioning
the shuttle arm immediately over the mrm
one so that we can pull it out of the
bay the next morning the highlight of
flight day 5 then will be the mrm one
installation and we have animation of
that one as well not shown in the video
Ken and Tony will grapple mrm one then
piers is going to deactivate the module
in the payload Bay it’ll be pulled from
the payload Bay to a position where the
station arm can reach it and then
Garrett and peers will grapple and

reactivate the module on ISS power the

shuttle arm will then ungrateful moved
to a viewing position while mrm one

begins its trip across the space station

over to the nadir port of the zarya

module again I expect these views to be

pretty spectacular piers once the once

mr m1 docking system is aligned with the

zaria docking cone which you'll hear

just see here shortly in the video peers

will initiate an automated docking

sequence that will complete all the

mechanical electrical and data

connections within the interface
automatically again this video is actually much faster than what we'll see in real life

once in room one installation is complete we'll use the station arm to pull opss off the side of the shuttle payload Bay hand it off to the shuttle arm then if there are any concerns about the integrity of the shuttles thermal protection system will inspect any trouble spots and if there are no issues then the OB SS will be positioned for viewing of epa's two and three well

finish up flight day five with the
review of the EBA two procedures and

then we'll get Steve and Mike in the airlock to get ready for EBA to

overnight the ground teams are going to transport translate the mobile transporter with the ICC BLD on top of it over to the port side of the vehicle and preparation for the EBA work the next day on flight day 6 we'll start the morning off with Garrett and piers taking the icc BLD off of that mobile based system and getting it positioned for the EBA crew members to have access to it meanwhile Steve Bowen who will be
our EV one for EV a2 and Mike good rev.2

for my EBA two will be getting ready in

the airlock this time Tracy and Ken will

be helping them get suited up Tony will

again be our IV a walking them through

the procedures and Garrett and peers

will provide the SSR ms support

throughout the EBA the big picture for

the CVA we're going to do three battery

aren't ours the goal at the end of the

day after about six hours and 30 minutes

is to have taken three batteries from

the palette put them on the trust taking

three batteries from the trust and put
them back on the palate then we move

728
00:29:02,519 --> 00:29:09,269
into flight day seven where we get some

729
00:29:06,119 --> 00:29:12,000
crude off-duty time at last the will be

730
00:29:09,269 --> 00:29:14,849
getting tools configured for our EBA 3

731
00:29:12,000 --> 00:29:16,349
and our Russian colleagues will be doing

732
00:29:14,849 --> 00:29:18,298
the very first steps to get mrm one

733
00:29:16,349 --> 00:29:20,398
opened up and begin filtering the air in

734
00:29:18,298 --> 00:29:22,589
that module we won't do a significant

735
00:29:20,398 --> 00:29:24,689
ingress of that module until after the

736
00:29:22,589 --> 00:29:26,189
doctrine is complete because it's so

737
00:29:24,690 --> 00:29:28,139
full of cargo you just can't get very

738
00:29:26,190 --> 00:29:29,490
far into it without having some space

739
00:29:28,138 --> 00:29:30,898
for that cargo and we just don't have

740
00:29:29,490 --> 00:29:33,419
that space when we've got six visitors

741
00:29:30,898 --> 00:29:35,099
on board station the end of the day will
be doing an EBA three procedure review

and then we'll get Mike and Garrett into the airlock for camp out in preparation for flight they ate EBA three this time

Michael good will be our ev1 garrett reisman will be ev2

Antonia's IV with Steve and Ken helping

them get suited up in the morning piers and Tracy will provide the SS rms

support will resume our p6 battery are in our activities replacing the old batteries on p6 with the new ones on the pallet again swapping those three out so that we should have six old batteries on
the palate and six new batteries on the trust by the end of this six hour and 15 minute EBA we'll do some p6 cleanup at the very end and then if time allows there is a grapple fixture attached to the port side of the shuttle payload Bay that we would like to have on ISS so we as time allows will send the crew down to retrieve it bring it inside it will then get some minor modifications and then be taken back outside on a ISS stage EBA for installation on the FGB at the very end of the day we'll have peers and tracy maneuver the icc back on to
the mobile based system so that
overnight the ground teams can translate
it back to the center of space station
and prepare preparation for it to be
returned to the payload bay on flight
day 9 and speaking of i think we have
video of that activity garritan piers
this time will grapple the icc BLD with
the SS rms and then will unravel it on
the PO a hair on the mobile base system
then swing it around and return it to
the payload bay and at this point the
only hardware left on that pallet should
be our six old batteries returning home
the rest of this day is crew off duty

00:31:23,058 --> 00:31:27,109
and we have several science experiments

00:31:25,339 --> 00:31:32,000
scheduled for execution on this day as

00:31:27,109 --> 00:31:33,709
well as a great deal of our transfer we

00:31:32,000 --> 00:31:35,269
don't get as much transfer done as we'd

00:31:33,710 --> 00:31:36,740
like while the guys are outside so we're

00:31:35,269 --> 00:31:39,259
going to make up some time on flight day

00:31:36,740 --> 00:31:41,240
nine with that I'd like to hand it back

00:31:39,259 --> 00:31:43,690
over to Mike to brief the undocking and

00:31:41,240 --> 00:31:47,450
the remainder of Atlantis's final flight

00:31:43,690 --> 00:31:50,269
thanks Emily flight day 10 will wrap up

00:31:47,450 --> 00:31:51,799
the joint mission activities between

00:31:50,269 --> 00:31:53,929
atlantis and the international space

00:31:51,799 --> 00:31:56,450
station crew the crew will check out a

00:31:53,929 --> 00:31:58,370
number of the systems required for
undocking and fly around the rendezvous

tools they'll have a press Barry

fing a joint press briefing with the

international space station crew say

their final goodbyes perform the hatch

closure and some leak checks to make

sure that the docking interface is ready

to go for the next space shuttle arrival

and then we'll perform the undocking and

fly around we have a animation of the

undocking that will show you pilot tony

antonelli will back Atlantis away from

the International Space Station at a

range of four to six hundred feet and
then complete a one revolution fly around again to obtain imagery of the exterior of the International Space Station will take digital still images those will be downloaded to the ground for review and analysis before performing a final separation burn the lap around the international space station will take about 45 minutes and it will be conducted during the daylight portion of the orbit following the fly round that will wrap up flight day 10 for the crew of Atlantis on flight day 11 they'll start the process of
00:33:04,970 --> 00:33:11,269
returning home as part of that to

828
00:33:08,028 --> 00:33:13,849
perform the late inspection and give a

829
00:33:11,269 --> 00:33:16,308
review of the heat shield of Atlantis

830
00:33:13,849 --> 00:33:18,888
one more time we have an animation of

831
00:33:16,308 --> 00:33:20,629
the late inspection process this

832
00:33:18,888 --> 00:33:21,888
inspection is a little bit different

833
00:33:20,630 --> 00:33:26,570
than what we saw in flight day 2 we

834
00:33:21,888 --> 00:33:27,949
don't survey the the tail end of

835
00:33:26,569 --> 00:33:31,428
Atlantis because we're not worried about

836
00:33:27,950 --> 00:33:33,769
ice from the asset loading of the

837
00:33:31,429 --> 00:33:36,470
cryogenic fluids or the asset

838
00:33:33,769 --> 00:33:38,599
environment effects on the thermal

839
00:33:36,470 --> 00:33:42,589
blankets what we're looking for here is

840
00:33:38,599 --> 00:33:45,619
orbital debris or any damage on the

841
00:33:42,589 --> 00:33:47,089
hottest surfaces of Atlantis on the

00:33:45,619 --> 00:33:49,369
reinforced carbon-carbon along the

00:33:47,089 --> 00:33:52,490
leading edge if we do notice any damage

00:33:49,369 --> 00:33:55,449
the team will review that imagery and

00:33:52,490 --> 00:33:59,089
determine whether or not it exceeds the

00:33:55,450 --> 00:34:00,710
threshold that requires a repair if we

00:33:59,089 --> 00:34:02,589
need to repair we've got the tools and

00:34:00,710 --> 00:34:05,600
techniques in place to make that happen

00:34:02,589 --> 00:34:07,129
the imagery team on the ground will use

00:34:05,599 --> 00:34:09,318
a very similar process that what they

00:34:07,130 --> 00:34:11,809
did earlier in the mission to review all

00:34:09,318 --> 00:34:14,009
of the the inspection data from the boom

00:34:11,809 --> 00:34:16,199
after the starboard nose

00:34:14,010 --> 00:34:19,409
up in Port wings are surveyed and will

00:34:16,199 --> 00:34:22,279
provide a very quick turnaround on all
of that data that gets reviewed

roughly a day after the inspection

activity is complete at the tail end of

the inspection will put the robotics

away for the final time on this mission

so this will wrap up all of that man and

machine work that was conducted

throughout the mission the orbiter bloom

sensor system will be cradled on its on

the starboard side of the payload Bay

for its return along with the shuttle's

robotic arm this will allow us to close

the payload bay doors at the tail end of

the mission on the twelfth day of the
mission the crew will basically button up the cabin in Atlantis make sure all the stowage is ready for re-entry into the gravity field back on earth and director Tony ciccotti will bring in his entry team and they will fire up one of the AP auxiliary power units activate the hydraulic systems and make sure that all the flight controls as well as the reaction control jets are ready to support reentry the following day after stowing a few more items in doing a briefing in preparation for deorbit the
crew will come home on flight day 13 again under the leadership of entry

flight director Tony saatchi they'll be looking at the weather at the Kennedy Space Center in Florida as well as the Edwards Air Force Base in California and will decide whether it's appropriate to come home on flight day 13 or if we should extend you to weather if all goes as planned and we launched on the fourteenth and we fly a 12-day mission we should come home on May the 26th in the morning at the Kennedy Space Center at around seven thirty six
central time and with that the mission

of Atlantis and its final flight will be complete and with that I would

like to turn the floor over to Jerry Ross our most experienced flyer on board

Atlantis thank you Mike

I've been asked to talk to you briefly this morning about Atlantis obviously it is my favorite space shuttle as was already noted five of my seven flights in the orbit were aboard Atlantis that includes my first three flights as well as my most recent one which was doing assembly on the international space station Atlantis really is a great
flying bird and that mostly go to the credit of the outstanding team of engineers and technicians we have at the Kennedy Space Center that prepare Atlantis as well as her sister vehicles for flight into space first of all this morning I'd like to share a summary of some interesting facts about Atlantis and its illustrious history after that I'll be narrating a brief video summary of my flights on Atlantis as well as a couple other noteworthy flights that video has been prepared for me by the folks here at public affairs Atlantis
was NASA's fourth space rated space shuttle it was named for a two-masted ship that served as a primary research vessel for the Woods Hole Oceanographic Institute in Massachusetts it served in that capacity from 1932 1966 might be interesting to know that when we flew on my first space shuttle flight the second shuttle flight aboard atlantis in 1985 we actually flew a piece of the plank the decking plank from the atlantis vessel and after the flight we returned it back to Woods Hole the construction Atlantis began on March 30th 1980 just
over 30 years ago now and it was completed and about half the man-hours it was required to assemble the first space rated spacecraft of the Columbia it weighed a hundred and fifty one thousand pounds and rolled out of his assembly facilities there at Palmdale California in 1985 and that made it about three and a half tons lighter than what Columbia had been it was transported via 747 piggy back to the Cape it completed his flight RunAs firing on sep tember fifth of 1985 and was launched on its first flight in
october october third 1985 some of the

956
00:38:38,760 --> 00:38:41,190
more significant flights that it's

957
00:38:40,050 --> 00:38:45,329
completed

958
00:38:41,190 --> 00:38:47,970
obviously its maiden flight STS 51J on

959
00:38:45,329 --> 00:38:50,130
STS 30 we launched the first

960
00:38:47,969 --> 00:38:54,149
interplanetary probe from a space

961
00:38:50,130 --> 00:38:58,410
shuttle that was Magellan as TS 34 we

962
00:38:54,150 --> 00:39:01,170
sent Galileo off to explore Jupiter STS

963
00:38:58,409 --> 00:39:04,980
37 one of my flights was a deploy of the

964
00:39:01,170 --> 00:39:08,220
Compton gamma ray observatory on sf's

965
00:39:04,980 --> 00:39:10,588
STS 71 the first docking to a mir space

966
00:39:08,219 --> 00:39:13,618
station was completed it was also the

967
00:39:10,588 --> 00:39:18,210
first time who exchanged us / Russian

968
00:39:13,619 --> 00:39:21,210
crews STS 76 was the first time that we

969
00:39:18,210 --> 00:39:25,289
can performed a u.s. spacewalk on the
exterior mirror rather it was also the first time that we use the new mission control center for an entry STS 106 was the first time that the crew had entered into the service module and that did the final preparations of it in advance of the first long-duration stay of a crew on board the ISS STS 98 was the launching of the Destiny laboratory to the ISS and that flight also included the 100th EV a performed by the u.s. inner space flight history STS 98 was the launching of the Destiny laboratory to ISS sorry STS 104 was the addition of
the quest airlock to the station STS 110

my most recent flight was the addition of s02 thee to the trust network on the station STS 122 is a launch of the Columbus laboratory for ISA and its attachment to the station sts-125 was a last flight to service Hubble Space Telescope and STS 129 was the last time we use the shuttle to exchange crew on the ISS some numbers for you to date 31 flights that includes a total of two hundred and eighty two days on orbit during which the Atlantis traveled about 116 million miles during 4406
two orbits of the earth 185 crew members

have participated in those 31 flights

and they included seven dockings to

mirror and ten dockings to the

international space station now next

comes a snippet of videos that has been

prepared by the folks here of Atlantis's

maiden flight its first flight to docked

to the space station Mir and then a

quick summary of my flight five flights

on Atlantis STS 51 Jay Atlanta's first

launch was in 1985 and this is never

going to be routine and it's something

I'm really going to miss seeing four and
a half million pounds of hardware nearly

00:41:44,280 --> 00:41:48,600
seven million pounds of thrust coming

00:41:45,929 --> 00:41:53,960
off the pad a pretty rocky ride during

00:41:48,599 --> 00:41:56,130
first stage my first flight on was 61 be

00:41:53,960 --> 00:41:57,570
we launched three communication

00:41:56,130 --> 00:42:00,119
satellites and performed two spacewalks

00:41:57,570 --> 00:42:03,119
to investigate base station construction

00:42:00,119 --> 00:42:06,269
techniques ease and access with the two

00:42:03,119 --> 00:42:07,829
experiments we conducted and we we

00:42:06,269 --> 00:42:11,670
thought we did such a good job on this

00:42:07,829 --> 00:42:13,920
that we would go into business we

00:42:11,670 --> 00:42:16,800
decided to ourselves the ACE

00:42:13,920 --> 00:42:18,690
construction company and it's also

00:42:16,800 --> 00:42:22,580
during this timeframe that I was quoted

00:42:18,690 --> 00:42:22,579
as saying let's go build a space station
sts-27 was my next flight on Atlantis. It was a classified flight and all we could show you is us having some fun with an NFL football that we flew on board that football. It was subsequent to the flight return to Pete Rozelle, the Commissioner of football at that year's Superbowl on st s37, we deployed the Compton ray observatory and gamma ray observatory. and we had to go out and manually deploy the cube an antenna that you see here.
completed that looked inside the windows

there

a flight deck and saw the guys inside

eating our food after we completed our

check out of the gamma gray we deployed

it and we were supposed to be inside the

airlock except I think the only thing

that was inside the airlock at that point was our toes because we wanted to

have a great view as satellite was

released and deployed we did a plan

spacewalk on this flight also to look at

the prototype Space Station piece of

hardware called sedum and thus the
little railroad placard that you sell

their here we are demonstrating one of

the three configurations of the seat of

cart during that flight a couple views

here of STS 71 the first docking mission of a shuttle to the mayor station I

can kind of tell how close the shuttle components got to the MIR station and one of the reasons that on st s 70 for my next flight we added a russian-made docking compartment to the mirror station and that was then used by all subsequent shuttle flights to dock to the MIR station it's very similar in
design and structure and purpose to the

00:44:15,409 --> 00:44:25,039
hardware that we're flying here on

00:44:16,730 --> 00:44:30,230
sts-132 that's called mr m1a view as

00:44:25,039 --> 00:44:35,659
we're docking to the MIR station using

00:44:30,230 --> 00:44:37,309
the docking compartment and another view

00:44:35,659 --> 00:44:40,309
as we leave the docking compartment made

00:44:37,309 --> 00:44:42,679
it to the MIR station you can see that

00:44:40,309 --> 00:44:47,150
they also use that to mount quite a bit

00:44:42,679 --> 00:44:49,339
of hardware and exterior a view of us in

00:44:47,150 --> 00:44:52,250
a flat deck windows looking back to

00:44:49,340 --> 00:44:56,510
mirror as we depart all smiling to the

00:44:52,250 --> 00:44:58,340
crew I don't know what this picture is

00:44:56,510 --> 00:45:00,830
supposed to tell you this is sts 110

00:44:58,340 --> 00:45:05,030
this is when we installed the 43

00:45:00,829 --> 00:45:06,619
footlong s0 segment to the station this
is the center part of the station to

which all the other components have been

attached a great view as we're going

across the Nile Delta and Red Sea and

this is the last close-up view I had of

the ISS as

departed and did our fly around a very

beautiful touchdown of sts-110 at the

end of the mission at the Kennedy Space

Center that's always a great feeling to

have a nice pretty rollout get back

there to see your family and friends

take questions from reporters here in

Houston then go around the horn to KSC
and NASA headquarters and we'll start

off in the back marker oh thank you Mark

kuro representing Aviation Week and my

question is for Mike this is scheduled

to be the last mission of Atlantis and I

just wonder how you'll handle the

orbiter and and its condition for return

would you would you're going in

philosophy and flight rules say you

don't cut any corners or do you have

some margin if you needed to to let some

system go on the orbiter before you

landed and I guess I'm not really asking

the question exactly how I mean it but I
think my thought is there I mean do you

want to bring the ship back as though it were going to fly again someday or do

you have some leeway and how you would

handle the anvil the spacecraft that's

fair ? the flight of Atlantis on sts-132

is no different than any other mission

that we're setting up for whether it's

prior to this or after this we still

have the same engineering constraints

and the same physics apply to how the

vehicle flies and to how the actual

rendezvous docking and all the critical

activities are going to be performed
during the mission so we still need to

00:47:10,510 --> 00:47:14,260
class the mission in the same manner

00:47:11,980 --> 00:47:16,389
there is a little bit of reverence that

00:47:16,389 --> 00:47:17,980
the mission will be conducted with given

00:47:17,980 --> 00:47:20,650
that it's the final plan flight of

00:47:20,650 --> 00:47:25,659
Atlantis but in terms of how the overall

00:47:25,659 --> 00:47:29,259
mission is conducted it will be

00:47:29,259 --> 00:47:32,829
identical to previous flights and it had

00:47:32,829 --> 00:47:37,778
a question regarding the batteries that

00:47:37,778 --> 00:47:41,380
come back from the space station can

00:47:41,380 --> 00:47:45,219
dealt with yeah as I understand it we're

00:47:45,219 --> 00:47:49,778
working on some next generation
batteries so it's more likely that if we were to fly additional batteries we'd fly the next generation new technology style and then one of the other challenges is that these are really big and really heavy so once we're not flying the shuttle anymore it'll be much more difficult to get them to orbit bill
Harwood cbs4 emily on the mrm one in the clearance issue 44 node 1 nadir is their physical interference or is this thing just giving you a bit of breathing space for for dockings I was unclear as to how tight tolerances worth you mean in terms
of being able to dock Russian vehicles

mahram one was to add additional clearance for the node one later I'm just trying to understand if you didn't have it can you physically do this or is it just something to make everybody more comfortable we because we have a vehicle docked there now we're clearly able to dock vehicles to the FGB nadir port today it will give us some more capability in a little more leeway by having lowered that docking interface so that there's less likelihood we don't have to protect for as many different
contingencies if it's not as close to

the structure and nadir of note one and

one more from me on on the ke bande

system michael stillness in the previous

briefing that this is a cold back up

until 2011 when I guess there's some

avionics going up can you explain what's

what that's all about I didn't don't

know anything about that sure so today

we do have a ke bande system on orbit

it's used for our the larger files and

the larger amount of data that needs to

go back and forth between the ground and

the station so we use it for payloads
because they have quite a bit of data

00:49:21,429 --> 00:49:25,179
that goes back and forth it's used for

00:49:22,900 --> 00:49:26,499
video it's used for all of our timelines

00:49:25,179 --> 00:49:31,690
and our procedures that we give back and

00:49:26,498 --> 00:49:34,118
forth to the crew we are adding when we

00:49:31,690 --> 00:49:37,088
add this system it we can't just

00:49:34,119 --> 00:49:39,190
automatically with software today after

00:49:37,088 --> 00:49:41,920
it's installed just jump right over to

00:49:39,190 --> 00:49:44,650
this new system if the system we have on

00:49:41,920 --> 00:49:46,180
board today were to fail we have not yet

00:49:44,650 --> 00:49:48,340
installed some

00:49:46,179 --> 00:49:49,750
cabling internal to the modules once

00:49:48,340 --> 00:49:51,600
that cabling is installed which will be

00:49:49,750 --> 00:49:55,630
in the weeks following the mission the

00:49:51,599 --> 00:49:57,339
crew will still have to disconnect and
reconnect some cables inside the module

in order to disconnect the current k you system and connect the one that we're about to install but until we fly the spare the only way to get another string of k you is to go outside and get the dish that 127 installed on one of our spares pallets last summer so this is a huge step forward for us in terms of all we have to do is tell the crew to go move some jumpers around and then we have our second k you system available did that answer your question mark mark Redman interspace news this questions
for jerry and i'm afraid you probably won't have an answer but i'm gonna ask. it anyways i realize shuttles don't fly

that often but in the airplane world. flyers generally equate quirks to every tale dumper you know every airplane has its little little nuances and i was wondering if the astronaut office and among the crews whether that's the case for awareness if you have anything you can tell me about it that's different than the other orbiters it comes to mind actually atlantis has felt different on different flights which is
unlike most airplanes that you fly in I
think if you flew airplanes with
different types of payloads or loads on
the outside under the wings or in the belly of a Bombay or something like that
you have different dynamics of the airplane most of the differences that I think we've all sensed between the various different orbiters are the various different flights have to do primarily with what's in the payload Bay of the orbiter because each of those has its own unique set of characteristics and frequencies natural frequencies and
we will actually feel a little bit of a

vibration going uphill depending upon

what the configuration is out in the

payload Bay hi Robert Pearlman with

collectspace.com first with a question

for Emily how different is the mating of

the mrm to the station as compared to us

in regards to arm operations as compared

to a CBM docking both from the station

crews perspective and the shuttle crew

and comparing it to a progress and so

use automated or even manually

controlled approach and do you have to

do that docking wall

while Moscow Mission Control is within
communication direct communication with

the station let's see to start it's very
different from the way that we would

normally install a module with the CBM

and also somewhat different from the way

that you would dock a progress or so use

the CBM operations are executed with the

active portion of the CBM the parts that

are moving are the side that are on ISS

so if you run into trouble you can

always go and change out those parts if

you had to and get fresh parts installed

or scavenge them from another location

gives you a little bit more a little bit
more leeway if you run into problems

with mr m one because the docking system

is exactly the same with one minor delta

we have added an extra motor to add

redundancy to this docking system it's

otherwise exactly the same as progress

in soil use where you're accustomed to

having an assault you're accustomed to

having the crew on the Soyuz side of the

document ism and it's coming in as a

free flying vehicle with propulsion and

and thrust so there are a couple of

things that we've had to overcome first

of all is getting data power
00:53:13,869 --> 00:53:17,680
communication all of that's going

1284
00:53:15,429 --> 00:53:20,108
through the arm but the control goes

1285
00:53:17,679 --> 00:53:21,690
from a laptop at the cupola robotic

1286
00:53:20,108 --> 00:53:24,730
workstation that beers will be running

1287
00:53:21,690 --> 00:53:26,559
that's connected through our Ethernet

1288
00:53:24,730 --> 00:53:28,900
connections on board all the way back to

1289
00:53:26,559 --> 00:53:32,739
the russian central computer and then

1290
00:53:28,900 --> 00:53:35,220
comes back through the same ethernet

1291
00:53:32,739 --> 00:53:37,419
connections over through the arm into

1292
00:53:35,219 --> 00:53:39,009
mm1 so all of that data is going through

1293
00:53:37,420 --> 00:53:41,050
a pretty long path to get to where it's

1294
00:53:39,010 --> 00:53:42,460
headed which is new and different we've

1295
00:53:41,050 --> 00:53:46,480
spent a lot of time testing that to make

1296
00:53:42,460 --> 00:53:48,429
sure that's going to work out ok also I

1297
00:53:46,480 --> 00:53:49,750
don't know how many of you really

1298
00:53:48,429 --> 00:53:52,118
watched progress until you stockings but

1299
00:53:49,750 --> 00:53:53,260
those vehicles don't come in slowly they

1300
00:53:52,119 --> 00:53:55,780
come in with quite a bit of force

1301
00:53:53,260 --> 00:53:58,390
there's a great deal of spring force in

1302
00:53:55,780 --> 00:53:59,980
the probe head of the docking probe that

1303
00:53:58,389 --> 00:54:01,690
has to be overcome and so we've also

1304
00:53:59,980 --> 00:54:03,490
worked hard to ensure that we've got the

1305
00:54:01,690 --> 00:54:05,530
right rates on the arm and that the arm

1306
00:54:03,489 --> 00:54:07,569
is able to provide sufficient rates to

1307
00:54:05,530 --> 00:54:09,339
overcome those spring forces so that we

1308
00:54:07,570 --> 00:54:13,110
can actually get the docking probe into

1309
00:54:09,338 --> 00:54:15,840
the docking cone for the first physical

1310
00:54:13,110 --> 00:54:18,030
aight then you had another question that

1311
00:54:15,840 --> 00:54:20,070
I'm afraid of RT forgotten do you need
to do that meeting wall moscow's and
direct connection with the station the
the ability to see Russian data via
their ground stations would be helpful
in a contingency case but for a nominal
case we don't require it so we are
scheduling it to occur in the crew
morning which is when we do have regular
ground sites and that's simply because
if we run into trouble we're going to
want to have access to the additional
data that's available in those ground
sites on the FGB side we get all the
data we need from mrm one through the
arm but if we need for instance for fgb

to let go of the probe if it has gotten

a hold of it then we'd need to get a

ground site in order to tell the FGB to

let go of the module thank you and an a

question for Jerry if do you plan to be

at the at the launch and and or landing

to see Atlantis come down for its last

plan flight and do you know if your if

your many crew members are planning to

do the same and what do you think that

will mean to watch Atlantis fly that

last light giving you said that your

favorite orbiter well I first of all I
will be down there and my current job is a vehicle integration test office boss.

I've I'm there for every launch every landing every practice countdown so I spend a good share of my time with the Cape I don't know about any of the other crew members who've flown on Atlantis I've not heard from any of them I have heard that there are quite a few crew members former crew members in fact that are hoping to try to get down for one of these last three flights and there are some discussions about possibly trying to have some type of a
reunion during one of these last three missions as well as far as feelings I think we're all have very mixed feelings with respect to the termination of the program here I'm kind of hoping that we will find a way to fly 135 and land also get one last hurrah but it's not certain I personally feel that it is the proper thing to do to stop the shuttle program I think it's time I wish we had not had the gap developed between the terminate this program and the start of the next but all that being said I am looking forward to seeing it fly like I said it is a great flying bird and personally I
think it's the best one of the fleet

Stephen Clark with spaceflight now for

Emily do you have any contingency plans

if you aren't able to get the mini research module hooked up during the dock phase or can you bump that later

what was what's your plan if something goes wrong yeah we've clearly spent a lot of time talking about that

officially we are on the hook to return the module to ground if we're unable to get it installed however that hardware on the exterior that modulus is very important to our Russian partners the
cargo on the inside of the module is very important to us so we're going to do absolutely everything we can to get the thing attached to station every portion of the docking system is fully redundant in one way or another either because there was redundancy built in the emer and one or because there's redundancy by nature of the interface with fgb the functional cargo block module that we're installing it too so we have walked through every different scenario for if a given system fails and how do we engage the backup system how
do we accommodate that if we absolutely

were unable to install the module then

worst case we would return it to the

payload bay and send it home ok let's go

down the Kennedy Space Center now for

questions we'll be back here Jim

thank you it's irene klotz with Reuters

I'm just a quick question for Emily

first what are you said the rates are

pretty fast for what we normally see on

us hardware what is it exactly I'm

afraid I don't have those numbers but we

can get those for you okay thanks and

for jerry thank you for that trip down
memory lane its covers a lot of years I

1412
00:58:28,389 --> 00:58:35,719
just was wondering what you think about

1413
00:58:31,548 --> 00:58:38,389
the prospect of people flying to the

1414
00:58:35,719 --> 00:58:41,689
station and low Earth orbit without

1415
00:58:38,389 --> 00:58:43,068
having NASA being the entity in charge

1416
00:58:41,690 --> 00:58:47,750
of it all you know going to this

1417
00:58:43,068 --> 00:58:51,079
commercial model my own personal

1418
00:58:47,750 --> 00:58:52,608
opinions here first of all I don't think

1419
00:58:51,079 --> 00:58:55,579
we're doing things right if we don't

1420
00:58:52,608 --> 00:58:57,650
open up more routine and flexible ways

1421
00:58:55,579 --> 00:59:00,769
for anybody who wants to fly in space to

1422
00:59:00,768 --> 00:59:04,220
go there that being said I think that

1423
00:59:00,768 --> 00:59:08,659
the US government has an obligation to

1424
00:59:04,219 --> 00:59:11,838
its flyers to provide a safe and proper

1425
00:59:08,659 --> 00:59:13,190
way for them to fly into space and that
we ought to be in control of the requirements we have to be in control of how those vehicles are certified and we ought to have our own people that are helping us to get trained on those vehicles and to help us operate those from the ground if we can meet those constraints that I'm happy to fly whatever vehicle as long as it meets all of our requirements are certifications it's under our control and our crews are properly trained and happy to go fly this is Marcia Dunn of the Associated Press with a few more Atlanta's
00:59:47,599 --> 00:59:50,599
questions please Mike Seraphin you

00:59:49,340 --> 00:59:52,970
mentioned that you're going to be

00:59:50,599 --> 00:59:54,710
looking at this mission with reverence

00:59:52,969 --> 00:59:56,659
treating it with reverence could you

00:59:54,710 --> 00:59:58,699
expand a little and is there anything

00:59:56,659 --> 01:00:01,159
out of the ordinary that your flight

00:59:58,699 --> 01:00:04,849
team will be planning because this is

01:00:01,159 --> 01:00:07,219
the last planned flight yeah the last

01:00:04,849 --> 01:00:09,589
plane flight of Atlantis is going to be

01:00:07,219 --> 01:00:11,809
treated with a bit of reverence I to use

01:00:09,590 --> 01:00:15,860
a sports analogy with liking it to the

01:00:11,809 --> 01:00:17,509
final season of the champion athlete you

01:00:15,860 --> 01:00:20,240
know when when a champion athlete

01:00:17,510 --> 01:00:23,000
announces their retirement folks show up
in large numbers to show their respect for that particular athlete

stadiums around the country will be sold out wherever they're appearing and we're seeing that right now with the space

shuttle program we're seeing a lot of interest from the public shown up for not only the launches but also the other events the rollout from the VA be to the launch pad the landings and it's just an increase in ups well in public interest and public support that doesn't take away from the fact that we need to retire the space shuttle or a space
shuttle program we are in the 9th inning

1469
01:00:59,449 --> 01:01:03,949
and as Jared mentioned there is a

1470
01:01:01,130 --> 01:01:07,099
possibility that we'll have a launch on

1471
01:01:03,949 --> 01:01:08,389
need flight or an sts-135 Atlantis may

1472
01:01:07,099 --> 01:01:11,179
go into extra innings we don't know

1473
01:01:08,389 --> 01:01:14,329
we'll see how all that plays out as far

1474
01:01:11,179 --> 01:01:16,519
as the the ground team is concerned you

1475
01:01:14,329 --> 01:01:19,039
know right now I'm sure that we'll have

1476
01:01:16,519 --> 01:01:21,980
a few events along the way I don't have

1477
01:01:19,039 --> 01:01:23,750
any in mind at this very instant in time

1478
01:01:21,980 --> 01:01:26,449
but I've got a little more time to think

1479
01:01:23,750 --> 01:01:28,940
about that I'm sure the team being is

1480
01:01:26,449 --> 01:01:30,829
invested in in the flight of Atlantis

1481
01:01:28,940 --> 01:01:32,000
and the space shuttle program as it is

1482
01:01:30,829 --> 01:01:34,460
we'll come up with something creative
and I will certainly welcome any ideas that they have thank you and for Jerry Ross so why is it lantus your favorite other than the fact that they've flown it so many times is there something in particular that makes it your favorite and you know you are involved with all the cruise going up and coming back and I'm wondering if you could somehow summarize the rest of the astronaut corps is feelings as Atlantis gets set to make its last flight and there were only three plan more flights left to the
entire program well first of all Marcia

the primary reason that Atlantis is my

favorites because the number of times

I've flown on it also was when I flew

for my first three times as well as the

last and the other one was a visit to

mirror which was a fascinating

opportunity as well so it would be hard

when five of your seven are on one

vehicle to not have that as your

favorite one besides that I mentioned

earlier is a great flying vehicle it's a

e testament to the talents of the

people that design the hardware but also
to all the folks at the Cape who spend countless hours prepping the vehicles to go fly and Atlantis has given us outstanding support on orbit and I expect the two owners here it's its last plan flight I think if you talk to the folks in the office you get as many different opinions and what they're feeling right now is as there are people and maybe you and you know what the one of the common sayings we have any office is if you want multiple opinions ask to people and you'll get Piper probably five or six it's very mixed feelings
there there is an anticipation of where

1526
01:03:09,559 --> 01:03:13,969
we could go in the future there is a

1527
01:03:11,960 --> 01:03:16,490
frustration with where we are now in

1528
01:03:13,969 --> 01:03:20,029
terms of the mixed messages we seem to

1529
01:03:16,489 --> 01:03:25,159
continue to get from headquarters there

1530
01:03:20,030 --> 01:03:26,690
is and some people's minds a fact that

1531
01:03:25,159 --> 01:03:27,949
we ought to continue to operate the

1532
01:03:26,690 --> 01:03:29,809
vehicle it seems to be flowing the

1533
01:03:27,949 --> 01:03:32,239
vehicles the shuttle seem to be flying

1534
01:03:29,809 --> 01:03:34,670
about as well as they've ever flown with

1535
01:03:32,239 --> 01:03:36,469
flying longer missions and having less

1536
01:03:34,670 --> 01:03:39,980
problems on orbit than we've ever had on

1537
01:03:36,469 --> 01:03:41,839
the vehicles basically the couple of

1538
01:03:39,980 --> 01:03:44,269
hiccups we had a couple years ago with

1539
01:03:41,840 --> 01:03:46,309
low-level cut off sensors and things
like that are all behind us the

countdowns have been very smooth and

very reliable recently the only thing

that we can't control it seems like

right now is the weather that all being

said like I said you're going to get a

lot of different opinions on what's

going on as I expressed earlier my own

private personal opinion is that the

shuttle has run its course it's time to

press on with something different

thank you for that answer and you

mentioned that the brush mojo is going

to be stuffed with the cargo I'm
wondering could you sort of summarize what cargos going up is that all Russian or is it a motley of international things and for your flight do you get is this a plus one flight or is it just straight 12 days into two or three wave off days the cargo inside of emma room one is all nasa cargo we have spare parts some of our we're pre positioning items for future station crews food clothes those kinds of things we have some medical supplies a lot of what you would expect in a module that doesn't have to be unpacked right away
all of the stuff that we need more

quickly we're going to put on the

shuttle mid deck and in terms of the

mission duration we are at twelve plus

zero flight day mission so we don't have

in the bag at launch an extra day to add

in so we'll have to juggle our

priorities as required if we run into

any contingencies okay time for

questions from NASA headquarters in

Washington thank you this is a relic

from space all common spaces and I have

a few for each of the presenters for

Mike and Emily I'm just curious if I


think that this is a very packed mission

01:05:42,068 --> 01:05:48,219
all around if there's a I guess one

01:05:46,389 --> 01:05:51,039
cheap item that really stands out is the

01:05:48,219 --> 01:05:52,598
maybe the biggest hurdle you see or is

01:05:51,039 --> 01:05:56,949
it pretty much going to be a marathon

01:05:52,599 --> 01:06:00,220
the entire time I can lead this one

01:05:56,949 --> 01:06:02,439
other thing is in terms of just the

01:06:00,219 --> 01:06:04,719
mission in general as I mentioned

01:06:02,440 --> 01:06:08,769
earlier the robotics on this flight is

01:06:04,719 --> 01:06:11,108
probably the single biggest key in being

01:06:08,769 --> 01:06:13,179
able to pull the mission off we've got a

01:06:11,108 --> 01:06:17,529
lot of cereal activities both on the

01:06:13,179 --> 01:06:20,289
shuttle and the station robotics side of

01:06:17,530 --> 01:06:22,099
the house and some of those you know

01:06:20,289 --> 01:06:24,288
just due to the low
occasion of the robotics activities on the International Space Station and the amount of time available in the mission timeline all need to happen within a fairly narrow window and in a serial manner such that if we don't get things done they could cascade and affect the ability to get all the content that we've got planned on this mission accomplished having said that we've looked at the plan and we've got a lot of contingencies available that the team has gone off and trained and is prepared to execute. I have a high level
of confidence that they will be able to
handle any problems that come our way

and whether we've planned it or not

because of the team in the system that

we've got place I would add that for me

emran one is probably the biggest hurdle

hopefully on flight day five it'll look

like it was effortless but if anything

does go awry there as Mike said we have

a very serial arm plan and and we need

our arms to be in an entirely different

place following the environment install

if we're going to continue with the VA's

two and three and if we're still
worrying about Mr. M1 then we won't be able to proceed into those activities so once we get to the afternoon of light day 5 successfully I'll feel like we will have accomplished our first mission objective for sure thank you and for us you mentioned earlier that you thought you know the view of a shuttle launches is spectacular and you're going to miss seeing it in the future and I was just curious what your feelings were you what you can recall about the first time you actually saw Atlantis in person may be touched it climbed inside it and got
that first ride I guess what what that

1640
01:08:06,048 --> 01:08:11,298
moment was like knowing that this could

1641
01:08:08,119 --> 01:08:13,489
be the last slide for well my first

1642
01:08:11,298 --> 01:08:16,548
shuttle flight on Atlantis was the 23rd

1643
01:08:13,489 --> 01:08:18,560
overall shuttle flight so I had listened

1644
01:08:16,548 --> 01:08:21,198
to 22 crews come back and give us very

1645
01:08:18,560 --> 01:08:22,849
excruciating details of what they saw

1646
01:08:21,198 --> 01:08:25,039
what they learned what they felt on each

1647
01:08:22,849 --> 01:08:27,650
of those missions and I put all that

1648
01:08:25,039 --> 01:08:28,969
information into my my think tank and

1649
01:08:27,649 --> 01:08:30,439
every time I'd go out running or

1650
01:08:28,969 --> 01:08:32,689
exercising or something like that I

1651
01:08:30,439 --> 01:08:34,759
would kind of daydream what was going to

1652
01:08:32,689 --> 01:08:35,028
be like to strap that puppy on and go

1653
01:08:34,759 --> 01:08:37,819
for a
right and I can frankly tell you that

about 20 seconds after liftoff on my first flight I was thinking to myself

Ross what and the world are you doing

here as you remember that was back and

we still are launching in cloth flight

suits and a motorcycle helmet and t-38 flight boots we didn't have our launch

and entry suits we weren't in a pressurized environment inside that little cocoon that that gives us those suits really do muffle out a lot of the sounds and a lot of vibrations that the vehicle generates during first stage and
so for me that first launch was pretty exciting right it was a lot of rumbling and shaking as I said since it's a lot easier to maneuver around the seat I was able to turn around on my seat I was in the back right seat behind the pilot for launch I was able to turn around and be looking back at the base of the pad and saw the water starting to come out for the sound suppression and I thought well I guess better turn around looks like they're going to do this I know more than got turned around and the engines were rumbling and then the
solids hit and the solids hitting is

kind of like somebody taking a baseball

bat and swinging it pretty smartly and

hitting the back of your chair and that

was the first sensation I had that will

this is really pretty impressive but

literally during the first 15 20 seconds

screeching through the atmosphere the

the wind noise on the outside the

vehicle vehicle was just really

incredible is very impressive much more

than ever experienced in a jet airplane

either commercial or military so I was

pretty impressive and when you throttle


down you don't really know that you're

1697
01:10:07.880 --> 01:10:11.690
throttling down but when you throttle

1698
01:10:09.859 --> 01:10:14.089
back up it feels like somebody just put

1699
01:10:11.689 --> 01:10:15.888
the afterburner in you're generating a

1700
01:10:14.090 --> 01:10:17.960
lot of thrust but you're adding back

1701
01:10:15.889 --> 01:10:19.699
maybe several hundred thousand pounds of

1702
01:10:17.960 --> 01:10:24.980
thrust but it feels like a lot more so a

1703
01:10:19.698 --> 01:10:27.979
lot of sensations a lot of memories and

1704
01:10:24.979 --> 01:10:31.698
a sensation that Disney's a ticket rides

1705
01:10:27.979 --> 01:10:32.779
would never come close thanks Jerry

1706
01:10:31.698 --> 01:10:35.509
we're back here in Houston for

1707
01:10:32.779 --> 01:10:37.279
follow-ups Jim yeah Jim Oberg with NBC

1708
01:10:35.510 --> 01:10:39.800
for Emily a couple questions on the mrm

1709
01:10:37.279 --> 01:10:41.359
this is this may be a program office

1710
01:10:39.800 --> 01:10:43.279
question but this is the slot that the
soul that science Power Platform one's

head so we may have swap about 10 years

ago yes we're flying in room one as part

of our long-standing agreements for a

hardware that we're basically poundage

that we need to get to orbit and Emma

and one is actually a piece of the

science power platform that's been

repurposed and in terms of the Russians

as payload owners how many Russians have

really been to KSC Max and a normal

Torian processing and how many Russians

will be here and what kind of office as

payload operators at the Cape I only
have ballpark numbers but I know we found on the order of 30 of their folks of the energy of folks in particular at the Cape for processing the payload itself Here I am personally aware of about a half a dozen of the Russian engineers that'll be here with us a couple of those are going to be sitting with our program integration folks a couple of those will be sitting in our paler control center talking directly to our payloads officers and then the rest of the team will be in Moscow and we of course will have our standard loop
communication with those teams our

day-to-day operations in space station

have prepared us well for that it's a

little bit different when the when the

modules in the payload Bay and that we

handle things a little bit differently

passing that communication to to Mike

over in the shuttle flight control room

but once we get the payload on the arm

then it's just as if it were any other

piece of Russian hardware and I talked

to sr pay and we talked through whatever

we need to all right Eric burger with a

houston chronicle Gerry thank you for um
for coming out and talking to us this morning it's been interesting you asked earlier a little bit about the differences between each of the shuttles and I just want to clarify when you're in the cabin can you really tell the difference between discovery in Atlantis endeavor the other vehicles or I mean it's are they it's everything the same in the same place yeah all the vehicles on the inside look pretty much the same there are minor differences and as we're going through different modifications to the vehicles you could tell a difference if that one
modification had or had not been completed but you know we have just two trainers to most emotion based on a fixed based simulator that we train all the crews in and so they basically look the same no matter which one you're in there are minor nuances but not that many ok any other follow-ups seeing none we'll call it a briefing a couple of programming notes will be coming up with a recap of all the video b-roll that will be fed out on NASA television that you've seen during this briefing and the prior briefing that will all be coming
up momentarily on NASA TV the next

briefing is at 1130am central time lead

spacewalk officer Lisa shore will be

here to give a comprehensive rundown on

all three spacewalks scheduled for

sts-132 and at one p.m. Central Time

Atlantis's six astronauts will be here

for their final pre-launch news

conference you'll want to be here for

that but that will wrap it up thanks

very much