

**NASA LIVE**

# ARTEMIS I



ORION'S RE-ENTRY AND SPLASHDOWN

1  
00:00:00,770 --> 00:00:21,790  
[Music]

2  
00:00:21,800 --> 00:00:34,130  
thank you

3  
00:00:34,140 --> 00:00:38,810  
[Music]

4  
00:01:00,940 --> 00:00:40,400  
foreign

5  
00:01:41,630 --> 00:01:11,510  
[Music]

6  
00:01:41,640 --> 00:01:52,940  
I'm landing a man on the moon

7  
00:01:52,950 --> 00:02:01,670  
[Music]

8  
00:02:01,680 --> 00:02:06,550  
foreign

9  
00:02:36,729 --> 00:02:25,100  
[Music]

10  
00:02:44,270 --> 00:02:40,070  
25 feet down to two

11  
00:02:48,710 --> 00:02:44,280  
feels good 20 feet

12  
00:02:51,530 --> 00:02:50,270  
dancing

13  
00:02:54,650 --> 00:02:51,540

that contact

14

00:02:56,089 --> 00:02:54,660

[Applause]

15

00:02:58,970 --> 00:02:56,099

that push

16

00:03:00,350 --> 00:02:58,980

and then stop engine arm proceed command

17

00:03:03,890 --> 00:03:00,360

override off

18

00:03:07,729 --> 00:03:03,900

control I had old things Auto

19

00:03:09,890 --> 00:03:07,739

okay Houston the charger has landed

20

00:03:19,430 --> 00:03:09,900

Houston you can tell America that

21

00:03:25,070 --> 00:03:22,790

50 years ago today Apollo 17 Commander

22

00:03:27,589 --> 00:03:25,080

Gene cernan and lunar module pilot Jack

23

00:03:29,630 --> 00:03:27,599

Schmidt guided Challenger to a Pinpoint

24

00:03:32,570 --> 00:03:29,640

Landing on a Barren Rock strewn area of

25

00:03:34,610 --> 00:03:32,580

the Moon called Taurus litro a half

26

00:03:37,610 --> 00:03:34,620

century later NASA's newest moon

27

00:03:39,649 --> 00:03:37,620

Explorer the Orion spacecraft is

28

00:03:41,990 --> 00:03:39,659

barreling its way back home after

29

00:03:44,270 --> 00:03:42,000

circumnavigating the moon and Beyond in

30

00:03:46,850 --> 00:03:44,280

an elliptical distant retrograde orbit

31

00:03:49,550 --> 00:03:46,860

now less than two hours away from

32

00:03:52,190 --> 00:03:49,560

splashing down in the Pacific Ocean West

33

00:03:54,589 --> 00:03:52,200

of Baja California to complete its

34

00:03:57,949 --> 00:03:54,599

Shakedown mission that has opened a new

35

00:03:59,869 --> 00:03:57,959

era of deep space exploration

36

00:04:01,610 --> 00:03:59,879

good morning from the Artemis flight

37

00:04:03,350 --> 00:04:01,620

control room here at the Johnson Space

38

00:04:05,390 --> 00:04:03,360

Center in Houston and Mission Control

39

00:04:07,910 --> 00:04:05,400

where the entry team of flight

40

00:04:10,550 --> 00:04:07,920

controllers is on duty ready to bring

41

00:04:13,670 --> 00:04:10,560

Orion home to complete a 25 and a half

42

00:04:16,849 --> 00:04:13,680

day Mission as he was for the launch of

43

00:04:18,890 --> 00:04:16,859

Orion more than 25 days ago NASA flight

44

00:04:20,750 --> 00:04:18,900

director Judd frieling is leading the

45

00:04:23,990 --> 00:04:20,760

entry team here on the white flight

46

00:04:29,030 --> 00:04:26,870

the target for Orion is growing larger

47

00:04:31,370 --> 00:04:29,040

in the field of view Moment by moment

48

00:04:34,670 --> 00:04:31,380

this is a live view of the Earth from a

49

00:04:37,249 --> 00:04:34,680

distance of 15 000 Miles Away about

50

00:04:39,230 --> 00:04:37,259

three hours and 40 minutes ago Orion

51  
00:04:41,390 --> 00:04:39,240  
conducted the final major maneuver of

52  
00:04:43,490 --> 00:04:41,400  
its Mission a return trajectory

53  
00:04:45,409 --> 00:04:43,500  
correction burn of its thrusters to

54  
00:04:47,749 --> 00:04:45,419  
further fine-tune its path toward its

55  
00:04:50,150 --> 00:04:47,759  
Splashdown site in the Pacific we'll be

56  
00:04:51,950 --> 00:04:50,160  
heading out to the Pacific shortly for

57  
00:04:55,730 --> 00:04:51,960  
the first in a series of reports from

58  
00:04:58,249 --> 00:04:55,740  
the scene where Orion will be recovered

59  
00:05:00,590 --> 00:04:58,259  
after launching atop the space launch

60  
00:05:03,710 --> 00:05:00,600  
system more than 25 days ago and

61  
00:05:05,749 --> 00:05:03,720  
traversing some 1.4 million miles in its

62  
00:05:07,909 --> 00:05:05,759  
circuitous orbit past the moon and back

63  
00:05:11,090 --> 00:05:07,919

the most critical phase of the Artemis

64

00:05:13,010 --> 00:05:11,100

One mission for Orion is at hand it is

65

00:05:14,810 --> 00:05:13,020

homecoming day so let's run down the

66

00:05:17,629 --> 00:05:14,820

Milestones you'll be hearing about and

67

00:05:19,850 --> 00:05:17,639

seeing over the next couple of hours

68

00:05:21,950 --> 00:05:19,860

next up for Orion will be the crew

69

00:05:24,710 --> 00:05:21,960

module's separation from the European

70

00:05:26,749 --> 00:05:24,720

service module that pyrotechnic

71

00:05:29,029 --> 00:05:26,759

separation is scheduled at 11 A.M

72

00:05:31,430 --> 00:05:29,039

central time just 20 minutes before

73

00:05:34,189 --> 00:05:31,440

Orion begins its entry into the Earth's

74

00:05:37,850 --> 00:05:34,199

atmosphere at an altitude of 3200

75

00:05:40,610 --> 00:05:37,860

statute miles now we had planned for

76  
00:05:43,189 --> 00:05:40,620  
Orion to conduct a maneuver called the

77  
00:05:45,230 --> 00:05:43,199  
raise maneuver a 16 second Thruster

78  
00:05:46,969 --> 00:05:45,240  
firing to orient itself with the proper

79  
00:05:49,610 --> 00:05:46,979  
angle for its plunge back into the

80  
00:05:51,710 --> 00:05:49,620  
atmosphere but the latest targeting for

81  
00:05:54,350 --> 00:05:51,720  
Orion from the flight Dynamics folks

82  
00:05:57,050 --> 00:05:54,360  
here in Mission Control indicates such a

83  
00:05:58,790 --> 00:05:57,060  
precise trajectory for the spacecraft it

84  
00:06:02,170 --> 00:05:58,800  
was determined that the raised maneuver

85  
00:06:05,029 --> 00:06:02,180  
was not required that could still change

86  
00:06:08,090 --> 00:06:05,039  
following crew module service module

87  
00:06:10,730 --> 00:06:08,100  
separation but at the moment the raised

88  
00:06:13,010 --> 00:06:10,740

maneuver will not be required

89

00:06:14,510 --> 00:06:13,020

the major objective of this mission is

90

00:06:16,790 --> 00:06:14,520

to test the spacecraft's heat shield

91

00:06:18,430 --> 00:06:16,800

against the Searing heat of Entry where

92

00:06:21,409 --> 00:06:18,440

temperatures will build up to around

93

00:06:23,930 --> 00:06:21,419

5000 degrees Fahrenheit around Orion

94

00:06:25,909 --> 00:06:23,940

half as hot as the outer surface of the

95

00:06:28,370 --> 00:06:25,919

Sun twice as hot as the temperatures

96

00:06:31,129 --> 00:06:28,380

endured by returning space shuttles and

97

00:06:34,010 --> 00:06:31,139

other crew Vehicles Orion will perform

98

00:06:35,930 --> 00:06:34,020

what is called a skip entry dipping into

99

00:06:38,450 --> 00:06:35,940

the atmosphere then lifting out of the

100

00:06:41,090 --> 00:06:38,460

atmosphere and dipping Back In Like A

101  
00:06:42,890 --> 00:06:41,100  
Flat Rock skimming across a pond this

102  
00:06:45,170 --> 00:06:42,900  
will provide Aero braking for the

103  
00:06:47,150 --> 00:06:45,180  
vehicle will help to dissipate some of

104  
00:06:49,850 --> 00:06:47,160  
the vehicle's inertia and will provide

105  
00:06:52,309 --> 00:06:49,860  
data needed in the future to select

106  
00:06:53,990 --> 00:06:52,319  
multiple Splashdown sites for crude

107  
00:06:56,510 --> 00:06:54,000  
missions

108  
00:06:58,610 --> 00:06:56,520  
we are expecting two periods during

109  
00:07:01,129 --> 00:06:58,620  
entry when the buildup of heat generated

110  
00:07:03,110 --> 00:07:01,139  
plasma around Orion will block

111  
00:07:04,689 --> 00:07:03,120  
Communications and the receipt of data

112  
00:07:07,070 --> 00:07:04,699  
with flight controllers here in Houston

113  
00:07:09,529 --> 00:07:07,080

the first blackout should begin around

114

00:07:11,930 --> 00:07:09,539

11 20 a.m central time for just under

115

00:07:14,330 --> 00:07:11,940

five minutes right around the time of

116

00:07:17,390 --> 00:07:14,340

peak heating on Orion as it travels

117

00:07:19,309 --> 00:07:17,400

about 25 times the speed of sound the

118

00:07:22,550 --> 00:07:19,319

second blackout period is expected

119

00:07:25,249 --> 00:07:22,560

around 11 29 a.m central time for just

120

00:07:27,589 --> 00:07:25,259

under three minutes right after the skip

121

00:07:29,749 --> 00:07:27,599

entry maneuver is complete

122

00:07:31,670 --> 00:07:29,759

about five minutes after we regain

123

00:07:33,830 --> 00:07:31,680

Communications with Orion the

124

00:07:35,990 --> 00:07:33,840

pre-programmed commands stored on board

125

00:07:38,689 --> 00:07:36,000

will trigger the deployment of three

126

00:07:40,610 --> 00:07:38,699

parachutes at the top of Orion to pull

127

00:07:43,129 --> 00:07:40,620

the forward Bay cover off of the crew

128

00:07:45,469 --> 00:07:43,139

module that will initiate the sequential

129

00:07:48,110 --> 00:07:45,479

deployment of two drogue shoots and

130

00:07:50,390 --> 00:07:48,120

three pilot parachutes followed by the

131

00:07:52,909 --> 00:07:50,400

three large main shoots to slow down

132

00:07:55,249 --> 00:07:52,919

Orion enabling it to gently splash down

133

00:07:59,570 --> 00:07:55,259

in the Pacific the current Splashdown

134

00:08:03,890 --> 00:07:59,580

time 11 39 and 42 seconds am Central

135

00:08:06,050 --> 00:08:03,900

Time 9 39 and 42 seconds am Pacific time

136

00:08:08,749 --> 00:08:06,060

we'll be talking more about those

137

00:08:11,150 --> 00:08:08,759

parachutes shortly the weather forecast

138

00:08:13,370 --> 00:08:11,160

at the Splashdown site west of Baja

139

00:08:14,990 --> 00:08:13,380

California is excellent the space flight

140

00:08:16,850 --> 00:08:15,000

meteorology group here at the Johnson

141

00:08:19,550 --> 00:08:16,860

Space Center has just issued a forecast

142

00:08:22,129 --> 00:08:19,560

calling for scattered clouds at 1700

143

00:08:25,010 --> 00:08:22,139

feet winds peaking to about nine knots

144

00:08:27,290 --> 00:08:25,020

with periodic wave heights of about five

145

00:08:29,570 --> 00:08:27,300

feet that is all within flight Rule

146

00:08:44,650 --> 00:08:29,580

limits and it should be a splendid day

147

00:08:50,090 --> 00:08:47,150

out in the Pacific aboard the prime

148

00:08:51,530 --> 00:08:50,100

recovery ship the USS Portland embedded

149

00:08:53,630 --> 00:08:51,540

with the Kennedy Space Center's

150

00:08:56,090 --> 00:08:53,640

exploration ground systems recovery team

151  
00:08:57,970 --> 00:08:56,100  
and the U.S Navy is my colleague from

152  
00:09:00,590 --> 00:08:57,980  
the Kennedy Space Center Daryl nail

153  
00:09:03,050 --> 00:09:00,600  
Daryl good morning to you and as they

154  
00:09:09,949 --> 00:09:03,060  
say in the Navy give us a sit rep on

155  
00:09:13,910 --> 00:09:11,870  
well good morning to you Rob and that's

156  
00:09:16,070 --> 00:09:13,920  
right we're live on the deck just

157  
00:09:18,769 --> 00:09:16,080  
outside the bridge here on the USS

158  
00:09:20,570 --> 00:09:18,779  
Portland with a fantastic view of the

159  
00:09:22,670 --> 00:09:20,580  
area of Splashdown I just spoke with the

160  
00:09:24,710 --> 00:09:22,680  
recovery team they say we are currently

161  
00:09:27,470 --> 00:09:24,720  
five miles away from the Splashdown

162  
00:09:30,050 --> 00:09:27,480  
location right here in the Pacific Ocean

163  
00:09:32,690 --> 00:09:30,060

the location as you mentioned just off

164

00:09:34,430 --> 00:09:32,700

the coast of Baja Mexico we got the

165

00:09:36,290 --> 00:09:34,440

great weather report Seas as you

166

00:09:38,329 --> 00:09:36,300

mentioned four to five feet we're

167

00:09:39,829 --> 00:09:38,339

looking good there let me show you the

168

00:09:42,290 --> 00:09:39,839

bridge deck where we are currently

169

00:09:44,750 --> 00:09:42,300

positioned this is looking forward for

170

00:09:46,850 --> 00:09:44,760

the ship I talked to Captain John Ryan

171

00:09:49,730 --> 00:09:46,860

who says that he currently has the ship

172

00:09:52,009 --> 00:09:49,740

in a race track going around the

173

00:09:54,710 --> 00:09:52,019

location near where Splashdown is just

174

00:09:56,870 --> 00:09:54,720

upwind of it so that the debris that

175

00:09:59,210 --> 00:09:56,880

comes down that being the crew module

176  
00:10:02,090 --> 00:09:59,220  
and the parachutes the Ford Bay cover

177  
00:10:04,490 --> 00:10:02,100  
when it separates will be all downwind

178  
00:10:07,070 --> 00:10:04,500  
of us now preparations are already

179  
00:10:08,870 --> 00:10:07,080  
underway we can hear the helicopter

180  
00:10:12,470 --> 00:10:08,880  
engines running so we want to take you

181  
00:10:14,449 --> 00:10:12,480  
to a live view of the flight deck this

182  
00:10:17,030 --> 00:10:14,459  
is towards the back of the ship

183  
00:10:19,070 --> 00:10:17,040  
where just five minutes ago the Navy

184  
00:10:22,190 --> 00:10:19,080  
started the engines on two of the three

185  
00:10:24,290 --> 00:10:22,200  
Navy mh-60s or Nighthawk helicopters

186  
00:10:27,110 --> 00:10:24,300  
that will be used for the operation

187  
00:10:28,850 --> 00:10:27,120  
there you see them on your screen the

188  
00:10:30,470 --> 00:10:28,860

two helicopters on the left side of the

189

00:10:32,870 --> 00:10:30,480

flight deck they will be involved in the

190

00:10:34,610 --> 00:10:32,880

operation the third to the right is a

191

00:10:36,650 --> 00:10:34,620

backup helicopter now one of the

192

00:10:38,389 --> 00:10:36,660

helicopters will use the Navy's infrared

193

00:10:40,310 --> 00:10:38,399

targeting system which will start

194

00:10:43,130 --> 00:10:40,320

looking for Orion an altitude of about

195

00:10:45,170 --> 00:10:43,140

50 000 feet should be able to quickly

196

00:10:47,449 --> 00:10:45,180

lock onto Orion's heat shield which

197

00:10:50,030 --> 00:10:47,459

should be still very hot after reaching

198

00:10:52,310 --> 00:10:50,040

5000 degrees Fahrenheit on the heat of

199

00:10:54,530 --> 00:10:52,320

re-entry the second helicopter will

200

00:10:56,630 --> 00:10:54,540

track the forward Bay cover a one

201  
00:10:59,150 --> 00:10:56,640  
thousand pound nine and a half foot wide

202  
00:11:01,130 --> 00:10:59,160  
Titanium cover on top of Orion which

203  
00:11:03,410 --> 00:11:01,140  
protects the parachutes during the heat

204  
00:11:05,690 --> 00:11:03,420  
of re-entry it is jettisoned to allow

205  
00:11:08,210 --> 00:11:05,700  
them to come out now NASA's plan going

206  
00:11:09,650 --> 00:11:08,220  
in was to recover it but they've made an

207  
00:11:12,230 --> 00:11:09,660  
adjustment due to the Seas and the

208  
00:11:13,970 --> 00:11:12,240  
limitations of a small boat crane needed

209  
00:11:16,790 --> 00:11:13,980  
to lift it out of the water

210  
00:11:18,470 --> 00:11:16,800  
both helicopters if you can see just to

211  
00:11:19,670 --> 00:11:18,480  
the left of that helicopter at the

212  
00:11:22,910 --> 00:11:19,680  
bottom of your screen

213  
00:11:26,030 --> 00:11:22,920

have GSS cameras mounted to them these

214

00:11:28,670 --> 00:11:26,040

are ultra high def cameras to record 8K

215

00:11:31,310 --> 00:11:28,680

resolution video for engineering

216

00:11:33,050 --> 00:11:31,320

purposes now with those helicopters just

217

00:11:35,210 --> 00:11:33,060

minutes away from flying out let's take

218

00:11:37,610 --> 00:11:35,220

a look underneath this very Flight Deck

219

00:11:40,490 --> 00:11:37,620

you can see into the well deck and this

220

00:11:43,850 --> 00:11:40,500

is the multi-purpose capability of this

221

00:11:45,889 --> 00:11:43,860

vessel the USS Portland down on the well

222

00:11:48,710 --> 00:11:45,899

deck is where the Final Phase of

223

00:11:51,769 --> 00:11:48,720

recovery will happen two teams of Navy

224

00:11:53,750 --> 00:11:51,779

divers are preparing to launch the small

225

00:11:56,030 --> 00:11:53,760

boats you see them at the bottom of your

226

00:11:58,430 --> 00:11:56,040

screen just partially protruding there

227

00:12:01,190 --> 00:11:58,440

at the bottom those are inflatable boats

228

00:12:03,170 --> 00:12:01,200

so the Navy will use six in all will

229

00:12:05,389 --> 00:12:03,180

pre-position themselves in the open sea

230

00:12:08,569 --> 00:12:05,399

to recover debris from The Descent

231

00:12:11,389 --> 00:12:08,579

operation and then of course secure the

232

00:12:14,449 --> 00:12:11,399

Orion crew module itself the Navy dive

233

00:12:16,430 --> 00:12:14,459

team will also take above water and

234

00:12:19,190 --> 00:12:16,440

underneath water photography of the heat

235

00:12:21,650 --> 00:12:19,200

shield before the crew module is moved

236

00:12:23,810 --> 00:12:21,660

this is for all engineering purposes so

237

00:12:26,329 --> 00:12:23,820

they can see it freshly returned from

238

00:12:28,430 --> 00:12:26,339

space once the divers have Orion

239

00:12:30,350 --> 00:12:28,440

stabilized with tow ropes you see that

240

00:12:32,690 --> 00:12:30,360

bright yellow structure right dead in

241

00:12:35,210 --> 00:12:32,700

the middle of your screen that is the

242

00:12:37,850 --> 00:12:35,220

cradle that the boats and the winch

243

00:12:40,370 --> 00:12:37,860

lines will pull into position and put it

244

00:12:42,110 --> 00:12:40,380

right down on top of that cradle they

245

00:12:44,690 --> 00:12:42,120

will flood that deck with water roughly

246

00:12:48,110 --> 00:12:44,700

about six feet and then with a careful

247

00:12:49,850 --> 00:12:48,120

choreography of winch line and uh lines

248

00:12:51,710 --> 00:12:49,860

being pulled and maintained by Sailors

249

00:12:54,170 --> 00:12:51,720

they'll put it in position for its ride

250

00:12:56,569 --> 00:12:54,180

back to San Diego now coming up we'll

251  
00:12:58,670 --> 00:12:56,579  
speak to one of the Navy divers who will

252  
00:13:00,829 --> 00:12:58,680  
be in the water helping in fact he's on

253  
00:13:03,230 --> 00:13:00,839  
deck standing by in just a few minutes

254  
00:13:05,870 --> 00:13:03,240  
he's ready to go into the water we'll

255  
00:13:08,090 --> 00:13:05,880  
get some words from him before uh he

256  
00:13:10,310 --> 00:13:08,100  
goes out on his assignment looking good

257  
00:13:13,670 --> 00:13:10,320  
on the ship right now Rob we'll send it

258  
00:13:20,030 --> 00:13:16,790  
thanks Daryl and again a live view from

259  
00:13:22,610 --> 00:13:20,040  
Orion as it continues its pinpoint

260  
00:13:24,650 --> 00:13:22,620  
Journey back uh towards its Splashdown

261  
00:13:27,110 --> 00:13:24,660  
site not far from where you are out on

262  
00:13:28,730 --> 00:13:27,120  
the Pacific we will be going back to

263  
00:13:31,250 --> 00:13:28,740

Daryl nail on the USS Portland

264

00:13:32,870 --> 00:13:31,260

frequently during the course of today's

265

00:13:35,569 --> 00:13:32,880

coverage

266

00:13:38,990 --> 00:13:35,579

Orion is wrapping up as we said earlier

267

00:13:42,290 --> 00:13:39,000

a mission that will have spanned 1.4

268

00:13:43,790 --> 00:13:42,300

million miles having flown further away

269

00:13:46,310 --> 00:13:43,800

from Earth than any human rated

270

00:13:48,410 --> 00:13:46,320

spacecraft designed to return humans to

271

00:13:50,629 --> 00:13:48,420

Earth and of course the big test that's

272

00:13:54,350 --> 00:13:50,639

coming up the ultimate test of its heat

273

00:13:56,269 --> 00:13:54,360

shield that will repel temperatures that

274

00:13:59,870 --> 00:13:56,279

will build up around the base of Orion

275

00:14:02,269 --> 00:13:59,880

to about 5000 degrees Fahrenheit at Peak

276  
00:14:05,750 --> 00:14:02,279  
heating as Orion barrels back into the

277  
00:14:07,490 --> 00:14:05,760  
Earth's atmosphere it has been an

278  
00:14:10,129 --> 00:14:07,500  
incredibly successful mission for the

279  
00:14:12,129 --> 00:14:10,139  
Orion spacecraft we'll be talking to a

280  
00:14:14,810 --> 00:14:12,139  
variety of people about all that

281  
00:14:16,670 --> 00:14:14,820  
officials and managers and Engineers

282  
00:14:18,949 --> 00:14:16,680  
throughout the course of our coverage

283  
00:14:20,690 --> 00:14:18,959  
today but for the moment let's take a

284  
00:14:23,269 --> 00:14:20,700  
visual and interactive look at this

285  
00:14:25,250 --> 00:14:23,279  
Mission with NASA's Philip Hargrove who

286  
00:14:27,009 --> 00:14:25,260  
will use the moon board to explain it

287  
00:14:29,690 --> 00:14:27,019  
all

288  
00:14:31,910 --> 00:14:29,700

yes Welcome To The Moon board here at

289

00:14:34,069 --> 00:14:31,920

the Apollo Saturn 5 center it's been a

290

00:14:36,050 --> 00:14:34,079

super exciting month since the Artemis 1

291

00:14:37,490 --> 00:14:36,060

launch so let's take a look back at

292

00:14:39,290 --> 00:14:37,500

everything that happened just a few

293

00:14:43,490 --> 00:14:39,300

miles away from where I'm standing right

294

00:14:46,250 --> 00:14:43,500

now now on November 16th at 1 47 a.m the

295

00:14:48,530 --> 00:14:46,260

SLS lifted off from launch pad 39b here

296

00:14:50,329 --> 00:14:48,540

at Kennedy Space Center and it put on an

297

00:14:52,250 --> 00:14:50,339

incredible show for everybody watching

298

00:14:54,110 --> 00:14:52,260

here from the space coast I can't even

299

00:14:56,449 --> 00:14:54,120

describe to you how amazing it was to

300

00:14:58,430 --> 00:14:56,459

watch that core stage those solid rocket

301  
00:15:01,430 --> 00:14:58,440  
boosters provide over 8 million pounds

302  
00:15:03,230 --> 00:15:01,440  
of thrust at liftoff now those uh

303  
00:15:05,870 --> 00:15:03,240  
boosters and the core stage got us going

304  
00:15:07,490 --> 00:15:05,880  
from zero to over 17 000 miles per hour

305  
00:15:09,170 --> 00:15:07,500  
in just about eight minutes and then

306  
00:15:11,509 --> 00:15:09,180  
once all that propellant was depleted

307  
00:15:14,509 --> 00:15:11,519  
the responsibility was passed on to the

308  
00:15:16,850 --> 00:15:14,519  
interim cryogenic propulsion stage now

309  
00:15:19,009 --> 00:15:16,860  
the first job of the icps was to perform

310  
00:15:20,629 --> 00:15:19,019  
a pairs you raise maneuver and this

311  
00:15:22,850 --> 00:15:20,639  
means that we're getting into a low

312  
00:15:24,530 --> 00:15:22,860  
earth circular orbit that allows us to

313  
00:15:26,629 --> 00:15:24,540

deploy those solar panels start

314

00:15:28,430 --> 00:15:26,639

harvesting energy and do systems

315

00:15:30,290 --> 00:15:28,440

checkouts to make sure that we are ready

316

00:15:33,769 --> 00:15:30,300

for our journey

317

00:15:36,470 --> 00:15:33,779

and we stayed in that orbit for about 30

318

00:15:38,449 --> 00:15:36,480

minutes and then we did our trans lunar

319

00:15:40,790 --> 00:15:38,459

injection burn this is the primary

320

00:15:42,710 --> 00:15:40,800

responsibility of the icps because it

321

00:15:45,710 --> 00:15:42,720

gives us the energy to escape low earth

322

00:15:47,689 --> 00:15:45,720

orbit and commits us on a path out to

323

00:15:51,170 --> 00:15:47,699

the moon now once it completed that burn

324

00:15:52,970 --> 00:15:51,180

the icps separated from the Orion and it

325

00:15:55,370 --> 00:15:52,980

performed one final burn to completely

326

00:15:57,829 --> 00:15:55,380

leave the Earth Moon system and after

327

00:15:59,750 --> 00:15:57,839

doing that Orion was on its way out to

328

00:16:02,990 --> 00:15:59,760

the moon so it spent about four days

329

00:16:05,689 --> 00:16:03,000

heading out towards the moon and then we

330

00:16:07,370 --> 00:16:05,699

quickly dipped in about 60 miles above

331

00:16:09,470 --> 00:16:07,380

the surface of the Moon and did an

332

00:16:11,210 --> 00:16:09,480

outbound powered flyby now that powered

333

00:16:13,850 --> 00:16:11,220

flyby means that we're taking advantage

334

00:16:15,829 --> 00:16:13,860

of the speed we already have the gravity

335

00:16:18,530 --> 00:16:15,839

of the moon and the energy we get from

336

00:16:20,930 --> 00:16:18,540

the service modules engines in order to

337

00:16:23,569 --> 00:16:20,940

Target our orbit and the orbit that we

338

00:16:26,030 --> 00:16:23,579

were targeting is called a Dro or a

339

00:16:28,250 --> 00:16:26,040

distant retrograde orbit and what that

340

00:16:29,990 --> 00:16:28,260

means is that instead of moving

341

00:16:32,509 --> 00:16:30,000

counterclockwise relative to the Earth

342

00:16:34,550 --> 00:16:32,519

like the moon does naturally we are

343

00:16:35,629 --> 00:16:34,560

moving clockwise so we're going in this

344

00:16:37,970 --> 00:16:35,639

opposite direction that's what

345

00:16:39,889 --> 00:16:37,980

retrograde means and distant means that

346

00:16:41,810 --> 00:16:39,899

we we are going farther away than we

347

00:16:44,629 --> 00:16:41,820

have with any human spacecraft before

348

00:16:46,490 --> 00:16:44,639

we're orbiting about 38 000 miles above

349

00:16:47,930 --> 00:16:46,500

the surface of the Moon and this is a

350

00:16:49,790 --> 00:16:47,940

really convenient orbit because we're

351  
00:16:52,970 --> 00:16:49,800  
able to stay there without having to use

352  
00:16:55,910 --> 00:16:52,980  
a ton of fuel for station keeping and it

353  
00:16:58,009 --> 00:16:55,920  
also provides a safe efficient path back

354  
00:16:59,870 --> 00:16:58,019  
home when we're ready so this allowed us

355  
00:17:01,910 --> 00:16:59,880  
to learn how to operate in deep space

356  
00:17:04,490 --> 00:17:01,920  
one of the core tenants of this Mission

357  
00:17:07,370 --> 00:17:04,500  
and then once we were ready we started

358  
00:17:10,010 --> 00:17:07,380  
our trip back home so we performed one

359  
00:17:12,470 --> 00:17:10,020  
more powered flyby this time targeting

360  
00:17:14,270 --> 00:17:12,480  
our return where we lit up those engines

361  
00:17:16,250 --> 00:17:14,280  
as we dipped close to the surface of the

362  
00:17:18,530 --> 00:17:16,260  
Moon and then we began our return

363  
00:17:20,809 --> 00:17:18,540

Transit which took about seven days and

364

00:17:22,789 --> 00:17:20,819

that leads us to today so next time

365

00:17:25,730 --> 00:17:22,799

we'll talk a bit more about what that

366

00:17:26,929 --> 00:17:25,740

return looks like and what our entry is

367

00:17:29,650 --> 00:17:26,939

actually going to look like but until

368

00:17:32,750 --> 00:17:29,660

then back to you

369

00:17:36,289 --> 00:17:32,760

Thank You Phillip and again uh a live

370

00:17:40,610 --> 00:17:36,299

view of Orion closing in on planet Earth

371

00:17:43,730 --> 00:17:40,620

now about 11 000 miles away from Earth

372

00:17:46,370 --> 00:17:43,740

as it continues a very very precise

373

00:17:49,250 --> 00:17:46,380

trajectory for a Splashdown that is

374

00:17:52,370 --> 00:17:49,260

scheduled at 11 39 and 42 seconds am

375

00:17:54,230 --> 00:17:52,380

central time this morning

376

00:17:56,210 --> 00:17:54,240

for Orion launched from the Kennedy

377

00:17:58,430 --> 00:17:56,220

Space Center occurred on November 16th

378

00:18:01,070 --> 00:17:58,440

on the world's most powerful rock at the

379

00:18:03,230 --> 00:18:01,080

space launch system the first outbound

380

00:18:06,470 --> 00:18:03,240

power to flyby of the moon was performed

381

00:18:08,630 --> 00:18:06,480

five days later on November 21st dipping

382

00:18:11,510 --> 00:18:08,640

to within about 81 miles of the lunar

383

00:18:13,850 --> 00:18:11,520

surface that placed Orion on a very

384

00:18:16,310 --> 00:18:13,860

precise trajectory for its ultimate goal

385

00:18:18,650 --> 00:18:16,320

that racetrack trajectory called the

386

00:18:20,870 --> 00:18:18,660

distant retrograde orbit that would

387

00:18:22,850 --> 00:18:20,880

allow Orion the time and the space

388

00:18:25,789 --> 00:18:22,860

environment needed to test its metal

389

00:18:28,250 --> 00:18:25,799

four days later Orion executed an engine

390

00:18:31,070 --> 00:18:28,260

firing to enter into that orbit and the

391

00:18:34,549 --> 00:18:31,080

next day Orion surpassed the record set

392

00:18:36,230 --> 00:18:34,559

during Apollo 13 52 years ago for the

393

00:18:37,909 --> 00:18:36,240

greatest distance ever traveled by a

394

00:18:40,310 --> 00:18:37,919

human rated spacecraft designed to

395

00:18:42,830 --> 00:18:40,320

return humans to the Earth

396

00:18:44,390 --> 00:18:42,840

on November 28th Orion reached its

397

00:18:47,930 --> 00:18:44,400

farthest distance from the earth some

398

00:18:50,150 --> 00:18:47,940

268 thousand miles before departing the

399

00:18:53,570 --> 00:18:50,160

distant retrograde Orbit on December 1st

400

00:18:56,029 --> 00:18:53,580

and this past Monday Orion conducted a

401  
00:18:58,549 --> 00:18:56,039  
three-minute 27 second engine firing

402  
00:19:00,289 --> 00:18:58,559  
behind the moon to whip around Earth's

403  
00:19:02,990 --> 00:19:00,299  
closest neighbor for the final leg of

404  
00:19:05,570 --> 00:19:03,000  
its flight passing to within 80 miles of

405  
00:19:08,090 --> 00:19:05,580  
the surface turning for home and it

406  
00:19:12,289 --> 00:19:08,100  
splashed down that is scheduled just one

407  
00:19:13,789 --> 00:19:12,299  
hour 21 minutes 44 seconds from now the

408  
00:19:15,830 --> 00:19:13,799  
initial mission of the Artemis one

409  
00:19:18,529 --> 00:19:15,840  
program was always designed to be a test

410  
00:19:20,750 --> 00:19:18,539  
flight ringing out all of the systems of

411  
00:19:23,270 --> 00:19:20,760  
the space launch system and the Orion

412  
00:19:25,730 --> 00:19:23,280  
spacecraft and for more than 25 days it

413  
00:19:27,890 --> 00:19:25,740

did just that setting the stage for

414

00:19:31,730 --> 00:19:27,900

recruit aboard an Orion vehicle for a

415

00:19:34,730 --> 00:19:31,740

trip around the moon in two years

416

00:19:37,190 --> 00:19:34,740

so with that uh out in the Pacific where

417

00:19:39,770 --> 00:19:37,200

Orion will be splashing down not long

418

00:19:42,310 --> 00:19:39,780

from now we're going to go back here in

419

00:19:46,610 --> 00:19:42,320

a moment to Daryl nail who's standing by

420

00:19:49,610 --> 00:19:46,620

with uh one of the uh first uh persons

421

00:19:51,890 --> 00:19:49,620

that will actually be in the water to

422

00:19:59,090 --> 00:19:51,900

execute the recovery and the securing of

423

00:20:03,950 --> 00:20:01,370

that's right Rob and his name is Wayne

424

00:20:06,710 --> 00:20:03,960

Shearer and he is the Navy diver first

425

00:20:08,810 --> 00:20:06,720

class aboard boat number two he is the

426  
00:20:10,490 --> 00:20:08,820  
lead on one of the two small boats

427  
00:20:13,010 --> 00:20:10,500  
called cricks which are essentially

428  
00:20:14,810 --> 00:20:13,020  
small inflatable Navy boats he's just

429  
00:20:16,669 --> 00:20:14,820  
about 20 or so minutes away from getting

430  
00:20:18,169 --> 00:20:16,679  
into that boat thank you Wayne for

431  
00:20:20,990 --> 00:20:18,179  
coming up here making some time for us

432  
00:20:23,890 --> 00:20:21,000  
to tell us about the operation today so

433  
00:20:26,690 --> 00:20:23,900  
tell me exactly how your team goes about

434  
00:20:28,669 --> 00:20:26,700  
securing this spacecraft after it comes

435  
00:20:30,950 --> 00:20:28,679  
back from space splashes down the water

436  
00:20:32,870 --> 00:20:30,960  
just a few miles from us well sequence

437  
00:20:34,610 --> 00:20:32,880  
of events are going to go splash down

438  
00:20:36,590 --> 00:20:34,620

wait two hours we're gonna do in a

439

00:20:38,210 --> 00:20:36,600

hazard analysis make sure there's no gas

440

00:20:39,650 --> 00:20:38,220

coming off of it I'm gonna come up take

441

00:20:41,810 --> 00:20:39,660

those pictures like you said earlier for

442

00:20:44,450 --> 00:20:41,820

those engineering purposes once that's

443

00:20:46,610 --> 00:20:44,460

done then we put the uh what's called a

444

00:20:48,169 --> 00:20:46,620

pony collar on it and then basically

445

00:20:49,370 --> 00:20:48,179

it's a sequence of events of pulling all

446

00:20:51,470 --> 00:20:49,380

those ropes out like you said earlier

447

00:20:54,049 --> 00:20:51,480

and pulling it into the well deck easy

448

00:20:55,850 --> 00:20:54,059

day easy day and we know that there's

449

00:20:58,310 --> 00:20:55,860

certainly going to be some challenges

450

00:21:00,169 --> 00:20:58,320

right C's are four to five foot uh

451  
00:21:01,850 --> 00:21:00,179  
currently which is within your limit

452  
00:21:03,950 --> 00:21:01,860  
let's take a look now underneath the

453  
00:21:05,870 --> 00:21:03,960  
well deck to the boats that are

454  
00:21:07,669 --> 00:21:05,880  
currently being prepared you're really

455  
00:21:09,470 --> 00:21:07,679  
literally going to be going down here

456  
00:21:11,810 --> 00:21:09,480  
and right to that boat after we've

457  
00:21:14,510 --> 00:21:11,820  
conclude our interview how will you

458  
00:21:16,490 --> 00:21:14,520  
manage the four to five foot Seas with a

459  
00:21:19,130 --> 00:21:16,500  
bobbing spacecraft and bobbing

460  
00:21:20,570 --> 00:21:19,140  
inflatable board a boat with your team

461  
00:21:22,130 --> 00:21:20,580  
well it's just another day in the park

462  
00:21:24,230 --> 00:21:22,140  
for us you know we've trained for the

463  
00:21:26,450 --> 00:21:24,240

last year and a half for this uh we've

464

00:21:28,430 --> 00:21:26,460

been in Worst season this recovering

465

00:21:29,390 --> 00:21:28,440

anything uh under the water it's just

466

00:21:30,590 --> 00:21:29,400

different instead of recovering

467

00:21:31,730 --> 00:21:30,600

something from under the water we're

468

00:21:33,770 --> 00:21:31,740

gonna recover something that fell from

469

00:21:35,510 --> 00:21:33,780

the sky you can see on our screen those

470

00:21:37,010 --> 00:21:35,520

are the the tip edges of your two

471

00:21:39,049 --> 00:21:37,020

inflatable boats

472

00:21:40,970 --> 00:21:39,059

um I imagine you'll be positioned uh

473

00:21:42,110 --> 00:21:40,980

somewhere towards the front or back a

474

00:21:43,970 --> 00:21:42,120

musician toward the middle of the boat

475

00:21:45,770 --> 00:21:43,980

towards the middle of the boat and as

476

00:21:48,649 --> 00:21:45,780

you do this operation

477

00:21:51,230 --> 00:21:48,659

have you thought about just the

478

00:21:53,510 --> 00:21:51,240

um the importance of it reflecting that

479

00:21:55,370 --> 00:21:53,520

it is uh you who will be one of the

480

00:21:56,990 --> 00:21:55,380

first people to put your hands on a

481

00:21:59,390 --> 00:21:57,000

spacecraft that just came back from

482

00:22:01,430 --> 00:21:59,400

space I mean definitely this is probably

483

00:22:03,950 --> 00:22:01,440

every kid's Little Dream or every little

484

00:22:05,990 --> 00:22:03,960

kid's dream to be able to do uh exactly

485

00:22:07,190 --> 00:22:06,000

what I'm doing today you know and uh I

486

00:22:08,570 --> 00:22:07,200

think I can speak for the whole dive

487

00:22:10,430 --> 00:22:08,580

team that we're honored to be part of

488

00:22:13,549 --> 00:22:10,440

history and to be part of something so

489

00:22:15,230 --> 00:22:13,559

monumentous and just ready just ready

490

00:22:16,490 --> 00:22:15,240

and excited to go out and do this on a

491

00:22:19,010 --> 00:22:16,500

personal note that you and I were

492

00:22:21,289 --> 00:22:19,020

talking about how you got in to the Navy

493

00:22:23,810 --> 00:22:21,299

and and the dive team what was it that

494

00:22:26,029 --> 00:22:23,820

motivated you to become a Navy diver and

495

00:22:28,250 --> 00:22:26,039

then ultimately uh now that you're on

496

00:22:29,090 --> 00:22:28,260

this operation uh looking back at that

497

00:22:31,850 --> 00:22:29,100

choice

498

00:22:33,890 --> 00:22:31,860

well uh February 2003 from Leesville

499

00:22:35,570 --> 00:22:33,900

Louisiana and I heard a loud boom

500

00:22:38,029 --> 00:22:35,580

outside my window one morning and I ran

501  
00:22:39,409 --> 00:22:38,039  
outside and talked to my dad and a few

502  
00:22:41,090 --> 00:22:39,419  
hours later watching the news and

503  
00:22:42,470 --> 00:22:41,100  
unfortunately what we heard was the USS

504  
00:22:45,230 --> 00:22:42,480  
Columbia

505  
00:22:46,850 --> 00:22:45,240  
um break up so

506  
00:22:48,649 --> 00:22:46,860  
um you know it's not a not a great thing

507  
00:22:50,450 --> 00:22:48,659  
to hear but it kind of jump started my

508  
00:22:52,669 --> 00:22:50,460  
career of like hey what do I want to do

509  
00:22:54,409 --> 00:22:52,679  
and I wanted to be about be out there to

510  
00:22:57,049 --> 00:22:54,419  
help people and the Navy just kind of

511  
00:23:00,230 --> 00:22:57,059  
fell into my lap and you know 20 years

512  
00:23:02,690 --> 00:23:00,240  
later to be able to to be part of

513  
00:23:05,330 --> 00:23:02,700

history of the first next thing we flow

514

00:23:07,789 --> 00:23:05,340

into space like that is absolutely a uh

515

00:23:10,250 --> 00:23:07,799

a dream come true for myself certainly a

516

00:23:12,590 --> 00:23:10,260

tragedy for NASA one that has created

517

00:23:31,029 --> 00:23:12,600

many Lessons Learned for our agency but

518

00:23:35,029 --> 00:23:33,770

we have around the world and briefly

519

00:23:36,950 --> 00:23:35,039

Wayne as you look out here to the

520

00:23:38,270 --> 00:23:36,960

Pacific Ocean where you will literally

521

00:23:40,070 --> 00:23:38,280

be in the water in just a few minutes

522

00:23:43,370 --> 00:23:40,080

will you be sharing any words with your

523

00:23:44,750 --> 00:23:43,380

team uh good luck be safe and let's be

524

00:23:46,310 --> 00:23:44,760

part of History all right we wish you

525

00:23:48,350 --> 00:23:46,320

the best Wayne thank you for taking the

526  
00:23:52,010 --> 00:23:48,360  
time and good luck out there thank you

527  
00:23:56,630 --> 00:23:54,350  
thanks Daryl it looks like a great day

528  
00:24:00,649 --> 00:23:56,640  
out in the Pacific uh west of Baja

529  
00:24:02,810 --> 00:24:00,659  
California where Orion is headed and you

530  
00:24:05,330 --> 00:24:02,820  
can't beat this view though the view of

531  
00:24:07,909 --> 00:24:05,340  
the Earth where Orion is headed uh tried

532  
00:24:10,610 --> 00:24:07,919  
and true on a pinpoint course for a

533  
00:24:11,990 --> 00:24:10,620  
Splashdown just one hour and 16 minutes

534  
00:24:13,850 --> 00:24:12,000  
from now

535  
00:24:15,710 --> 00:24:13,860  
after Orion enters the Earth's

536  
00:24:17,810 --> 00:24:15,720  
atmosphere at the conclusion of this 25

537  
00:24:20,690 --> 00:24:17,820  
and a half day Mission the spacecraft is

538  
00:24:23,210 --> 00:24:20,700

going to rely on a very heavily tested

539

00:24:25,450 --> 00:24:23,220

parachute system to slow down its speed

540

00:24:27,830 --> 00:24:25,460

and allow for a very gentle Splashdown

541

00:24:30,350 --> 00:24:27,840

Cokey manchin the chief engineer of

542

00:24:33,169 --> 00:24:30,360

Orion's parachute assembly system now

543

00:24:34,850 --> 00:24:33,179

describes the process and the path to

544

00:24:39,909 --> 00:24:34,860

the certification of the parachute

545

00:24:45,950 --> 00:24:42,830

a series of 11 parachutes will be

546

00:24:48,289 --> 00:24:45,960

deployed in sequential fashion a very

547

00:24:51,770 --> 00:24:48,299

dramatic return to Earth lying ahead for

548

00:24:55,310 --> 00:24:51,780

the Orion spacecraft our design is

549

00:24:58,130 --> 00:24:55,320

almost exactly the Apollo design the the

550

00:25:01,070 --> 00:24:58,140

shape of the mains the shape of the

551

00:25:04,669 --> 00:25:01,080

drugs the only major difference is we

552

00:25:08,630 --> 00:25:04,679

are bigger Apollo weighed roughly 13 000

553

00:25:11,270 --> 00:25:08,640

13 500 pounds and we weigh 22 and change

554

00:25:13,190 --> 00:25:11,280

a thousand pounds and so our parachutes

555

00:25:14,870 --> 00:25:13,200

are larger because we have more energy

556

00:25:17,450 --> 00:25:14,880

to take out of the system and our

557

00:25:19,730 --> 00:25:17,460

parachutes are stronger

558

00:25:22,010 --> 00:25:19,740

so at a fundamental level all around

559

00:25:24,649 --> 00:25:22,020

parachutes are alike the Orion system

560

00:25:26,630 --> 00:25:24,659

has drug parachutes that initially

561

00:25:28,250 --> 00:25:26,640

decelerate the system and because

562

00:25:31,070 --> 00:25:28,260

they're deployed at a much higher

563

00:25:32,990 --> 00:25:31,080

velocity they're made of ribbons the

564

00:25:34,370 --> 00:25:33,000

ribbons can take the fluttering

565

00:25:36,710 --> 00:25:34,380

associated with high velocity

566

00:25:39,110 --> 00:25:36,720

deployments much better than a solid can

567

00:25:42,049 --> 00:25:39,120

if you can and once the system slows

568

00:25:44,029 --> 00:25:42,059

down it deploys domains domains are much

569

00:25:46,070 --> 00:25:44,039

closer to a Personnel shoot they're

570

00:25:48,110 --> 00:25:46,080

called ring sales the major difference

571

00:25:51,890 --> 00:25:48,120

would be that a Personnel shoot could be

572

00:25:55,549 --> 00:25:51,900

28 to 30 feet in diameter and a c pass

573

00:25:57,769 --> 00:25:55,559

main is 116 feet in diameter City Orion

574

00:26:00,649 --> 00:25:57,779

parachutes are what we refer to as

575

00:26:03,049 --> 00:26:00,659

hybrid parachutes the drag surfaces are

576

00:26:05,149 --> 00:26:03,059

nylon but then the structural grid how

577

00:26:07,010 --> 00:26:05,159

we take the drag on that nylon surface

578

00:26:10,549 --> 00:26:07,020

and transmit it down to the vehicle is

579

00:26:13,430 --> 00:26:10,559

made of Kevlar and Kevlar is quite a bit

580

00:26:15,529 --> 00:26:13,440

stronger and stiffer and it just

581

00:26:18,049 --> 00:26:15,539

completely different material than the

582

00:26:21,110 --> 00:26:18,059

drag surfaces are so to see pass system

583

00:26:23,269 --> 00:26:21,120

is designed to safely recover the crew

584

00:26:27,049 --> 00:26:23,279

with just two Mains deployed

585

00:26:28,789 --> 00:26:27,059

the problem with deploying the backup

586

00:26:30,470 --> 00:26:28,799

shoot after you deploy the first two

587

00:26:32,450 --> 00:26:30,480

shoots is you have to negotiate the

588

00:26:34,549 --> 00:26:32,460

shoot that's already out there so what

589

00:26:37,070 --> 00:26:34,559

we chose to do and what Apollo chose to

590

00:26:39,710 --> 00:26:37,080

do was to deploy the backup shoot with

591

00:26:42,529 --> 00:26:39,720

the main system itself and as a result

592

00:26:44,930 --> 00:26:42,539

we get a much softer Landing when all

593

00:26:47,870 --> 00:26:44,940

the parachutes work properly but both

594

00:26:51,590 --> 00:26:47,880

systems were designed to land both just

595

00:26:56,090 --> 00:26:53,690

when we did the pad abort test at White

596

00:26:58,250 --> 00:26:56,100

Sands I was quite scared but I wasn't

597

00:27:00,950 --> 00:26:58,260

scared for our system I was scared for

598

00:27:03,110 --> 00:27:00,960

the repositioning after the Rockets took

599

00:27:05,630 --> 00:27:03,120

off the capsule and repositioned it it

600

00:27:08,450 --> 00:27:05,640

was perfect that thing reoriented like

601  
00:27:10,730 --> 00:27:08,460  
it was on Rails and I I swear to you

602  
00:27:12,470 --> 00:27:10,740  
this this huge relief came over me when

603  
00:27:14,810 --> 00:27:12,480  
the cover came off because I thought wow

604  
00:27:19,210 --> 00:27:14,820  
we're not done but we're done I know my

605  
00:27:19,220 --> 00:27:23,180  
all right

606  
00:27:32,110 --> 00:27:24,950  
[Music]

607  
00:27:37,490 --> 00:27:35,390  
the view of the earth we're about 33

608  
00:27:40,250 --> 00:27:37,500  
minutes away from the first big

609  
00:27:42,110 --> 00:27:40,260  
milestone that will be the separation of

610  
00:27:45,890 --> 00:27:42,120  
the crew module and the service module

611  
00:27:47,870 --> 00:27:45,900  
uh signaling the beginning of Orion's

612  
00:27:50,690 --> 00:27:47,880  
entrance into the home stretch of its

613  
00:27:53,810 --> 00:27:50,700

1.4 million mile Journey

614

00:27:56,510 --> 00:27:53,820

with us at this hour is the Deputy

615

00:27:59,450 --> 00:27:56,520

associate administrator for exploration

616

00:28:01,010 --> 00:27:59,460

systems Kathy Kerner Kathy thanks for

617

00:28:01,850 --> 00:28:01,020

joining us this morning it's great to

618

00:28:03,409 --> 00:28:01,860

see you

619

00:28:05,450 --> 00:28:03,419

glad to be here

620

00:28:07,130 --> 00:28:05,460

you know this is a little bit of deja vu

621

00:28:09,230 --> 00:28:07,140

for you you were a flight director in

622

00:28:12,110 --> 00:28:09,240

this room for a number of years your

623

00:28:13,610 --> 00:28:12,120

thoughts as Orion approaches the end of

624

00:28:15,289 --> 00:28:13,620

this Maiden flight

625

00:28:17,149 --> 00:28:15,299

yeah certainly a lot of history and

626

00:28:19,130 --> 00:28:17,159

human space flight has been made in this

627

00:28:21,110 --> 00:28:19,140

room and we're making some more today

628

00:28:23,149 --> 00:28:21,120

and really excited there's a lot of

629

00:28:25,190 --> 00:28:23,159

energy in the room and it's uh it's it's

630

00:28:27,110 --> 00:28:25,200

very familiar but it's also very

631

00:28:30,649 --> 00:28:27,120

different as we step into this next

632

00:28:32,750 --> 00:28:30,659

episode in human exploration

633

00:28:34,669 --> 00:28:32,760

you know the uh the mission had its

634

00:28:38,630 --> 00:28:34,679

trials and tribulations getting off the

635

00:28:41,450 --> 00:28:38,640

ground but once it did uh so far so good

636

00:28:44,630 --> 00:28:41,460

the mission has exceeded expectations in

637

00:28:48,289 --> 00:28:44,640

many areas uh of course the post-flight

638

00:28:49,730 --> 00:28:48,299

analysis is yet to come but from uh the

639

00:28:52,130 --> 00:28:49,740

top level the thousand foot level

640

00:28:53,450 --> 00:28:52,140

looking down at the mission uh what are

641

00:28:55,370 --> 00:28:53,460

your thoughts about what has been

642

00:28:57,590 --> 00:28:55,380

accomplished in setting the stage for a

643

00:28:59,930 --> 00:28:57,600

crude mission two years from now

644

00:29:01,370 --> 00:28:59,940

absolutely this has been a phenomenal

645

00:29:04,310 --> 00:29:01,380

Mission thus far if you asked me to

646

00:29:06,169 --> 00:29:04,320

grade it I'd give us an A plus I think

647

00:29:08,930 --> 00:29:06,179

that the work that has been performed

648

00:29:11,210 --> 00:29:08,940

both by the exploration ground systems

649

00:29:13,250 --> 00:29:11,220

team the SLS team and the Orion team has

650

00:29:15,830 --> 00:29:13,260

been fantastic we've been learning how

651  
00:29:18,529 --> 00:29:15,840  
the spacecraft operates we've been

652  
00:29:20,389 --> 00:29:18,539  
learning how to fly this amazing machine

653  
00:29:22,850 --> 00:29:20,399  
and it's gone so well that we've

654  
00:29:25,430 --> 00:29:22,860  
actually been able to add tests during

655  
00:29:26,870 --> 00:29:25,440  
the mission that help expand the the

656  
00:29:28,610 --> 00:29:26,880  
envelope that we're going to be able to

657  
00:29:30,409 --> 00:29:28,620  
use to operate the spacecraft once we

658  
00:29:32,810 --> 00:29:30,419  
have crew on board

659  
00:29:34,850 --> 00:29:32,820  
the major objective of the mission lies

660  
00:29:36,529 --> 00:29:34,860  
ahead that's the rigorous testing of the

661  
00:29:37,450 --> 00:29:36,539  
heat shield as we've just seen in our

662  
00:29:39,950 --> 00:29:37,460  
features

663  
00:29:42,289 --> 00:29:39,960

5000 degrees Fahrenheit building up

664

00:29:43,909 --> 00:29:42,299

around the spacecraft twice as much as

665

00:29:46,789 --> 00:29:43,919

space shuttles endured when they

666

00:29:48,649 --> 00:29:46,799

re-enter the Earth's atmosphere uh how

667

00:29:51,289 --> 00:29:48,659

do you think it's all going to fare and

668

00:29:53,690 --> 00:29:51,299

what then needs to be done to analyze

669

00:29:55,850 --> 00:29:53,700

the performance of the heat shield in

670

00:29:58,190 --> 00:29:55,860

certifying that we are good to put a

671

00:30:01,370 --> 00:29:58,200

crew on board in a couple of years so

672

00:30:03,769 --> 00:30:01,380

this test this is the primary objective

673

00:30:05,630 --> 00:30:03,779

of this test mission but we've got a lot

674

00:30:07,010 --> 00:30:05,640

more object objectives that we need to

675

00:30:09,110 --> 00:30:07,020

accomplish between now and when we

676  
00:30:11,450 --> 00:30:09,120  
launch crew we have an environmental

677  
00:30:13,549 --> 00:30:11,460  
test that we need to conduct of the

678  
00:30:15,289 --> 00:30:13,559  
entire integrated spacecraft once we get

679  
00:30:18,169 --> 00:30:15,299  
the environmental and life support

680  
00:30:19,789 --> 00:30:18,179  
systems on board so this is just one of

681  
00:30:22,070 --> 00:30:19,799  
many tests that we have going forward

682  
00:30:23,810 --> 00:30:22,080  
and one of many analyzes that we need to

683  
00:30:26,149 --> 00:30:23,820  
do with all of the post flight data that

684  
00:30:28,430 --> 00:30:26,159  
we retrieve from the spacecraft

685  
00:30:31,370 --> 00:30:28,440  
we opened up the broadcast uh paying

686  
00:30:33,889 --> 00:30:31,380  
homage to Apollo 17 landing on the moon

687  
00:30:35,750 --> 00:30:33,899  
50 years ago today

688  
00:30:38,029 --> 00:30:35,760

it's only coincidence that this happened

689

00:30:40,250 --> 00:30:38,039

but it seems very appropriate doesn't it

690

00:30:43,610 --> 00:30:40,260

it does it seems fitting that we would

691

00:30:45,649 --> 00:30:43,620

honor Apollo with the new Legacy of the

692

00:30:47,570 --> 00:30:45,659

Artemis generation and this Mission

693

00:30:49,610 --> 00:30:47,580

today

694

00:30:51,289 --> 00:30:49,620

thanks very much Kathy Kathy Kerner the

695

00:30:53,930 --> 00:30:51,299

deputy associate administrator for

696

00:30:55,970 --> 00:30:53,940

exploration systems and uh

697

00:30:57,590 --> 00:30:55,980

we're nearing the end of the home

698

00:31:07,990 --> 00:30:57,600

stretch here of this very first mission

699

00:31:14,510 --> 00:31:10,789

and as the Earth grows larger and larger

700

00:31:17,330 --> 00:31:14,520

in the field of view Orion continues its

701  
00:31:20,090 --> 00:31:17,340  
Trek back home with crew module service

702  
00:31:22,789 --> 00:31:20,100  
module separation just 30 minutes from

703  
00:31:25,250 --> 00:31:22,799  
now entry interface just 20 minutes

704  
00:31:27,529 --> 00:31:25,260  
after that in the meantime let's go back

705  
00:31:30,289 --> 00:31:27,539  
out to the Pacific the destination for

706  
00:31:32,570 --> 00:31:30,299  
Orion today where Daryl nail from the

707  
00:31:34,130 --> 00:31:32,580  
Kennedy Space Center again embedded with

708  
00:31:36,830 --> 00:31:34,140  
the exploration ground systems and

709  
00:31:43,930 --> 00:31:36,840  
Recovery teams is standing by with

710  
00:31:48,529 --> 00:31:46,370  
that's right Rob Shannon Walker Mass

711  
00:31:51,049 --> 00:31:48,539  
astronaut has been on board since we

712  
00:31:52,430 --> 00:31:51,059  
departed on Wednesday to come out to the

713  
00:31:54,769 --> 00:31:52,440

site thank you for being here to take

714

00:31:56,870 --> 00:31:54,779

some time to talk to us amidst this

715

00:31:58,970 --> 00:31:56,880

important operation to recover the Orion

716

00:32:01,190 --> 00:31:58,980

crew module absolutely I am happy to be

717

00:32:04,070 --> 00:32:01,200

here so tell me a little bit about

718

00:32:09,350 --> 00:32:06,529

operations today yeah of course we do

719

00:32:11,510 --> 00:32:09,360

not have crew on this uh capsule but I

720

00:32:13,070 --> 00:32:11,520

am here because the next RMS flight will

721

00:32:15,110 --> 00:32:13,080

have crew on it and so we are starting

722

00:32:16,789 --> 00:32:15,120

the process of assessing how we're going

723

00:32:18,289 --> 00:32:16,799

to operate with crew how do we extract

724

00:32:20,450 --> 00:32:18,299

the crew from the capsule how do we get

725

00:32:21,950 --> 00:32:20,460

them to the ship safely how do we do all

726

00:32:24,169 --> 00:32:21,960

the medical tricks we want to do so

727

00:32:26,330 --> 00:32:24,179

we're starting the process of getting

728

00:32:28,490 --> 00:32:26,340

ready for the next starting position and

729

00:32:30,710 --> 00:32:28,500

with this capsule being recovered today

730

00:32:32,450 --> 00:32:30,720

it will be brought back I imagine that

731

00:32:35,450 --> 00:32:32,460

the astronauts will be very interested

732

00:32:38,149 --> 00:32:35,460

in the data that comes off of it this uh

733

00:32:39,830 --> 00:32:38,159

particular capsule has sensors all over

734

00:32:41,870 --> 00:32:39,840

it more than any future capsule will

735

00:32:44,510 --> 00:32:41,880

have yeah absolutely so this is going to

736

00:32:51,529 --> 00:32:44,520

tell us what we need to do change uh

737

00:32:55,190 --> 00:32:52,669

what you're hearing are some

738

00:32:57,649 --> 00:32:55,200

announcements from the ship pa uh

739

00:32:59,690 --> 00:32:57,659

informing the crew at what stage in the

740

00:33:02,210 --> 00:32:59,700

operation we're at I should mention that

741

00:33:04,730 --> 00:33:02,220

we just had helicopters the uh the

742

00:33:07,850 --> 00:33:04,740

mh-60s at the back of the flight deck

743

00:33:10,430 --> 00:33:07,860

just launched off and uh are in flight

744

00:33:13,009 --> 00:33:10,440

now to the recovery area they play an

745

00:33:15,230 --> 00:33:13,019

important role uh here

746

00:33:18,049 --> 00:33:15,240

um Shannon continuing Now with uh with

747

00:33:19,970 --> 00:33:18,059

our interview when you look at the

748

00:33:23,570 --> 00:33:19,980

operation as a whole they're currently

749

00:33:24,950 --> 00:33:23,580

trying to determine how the astronauts

750

00:33:26,750 --> 00:33:24,960

will be recovered that's not happening

751  
00:33:29,149 --> 00:33:26,760  
today that's right but that will have to

752  
00:33:31,430 --> 00:33:29,159  
be integrated into the operation do they

753  
00:33:33,889 --> 00:33:31,440  
come off immediately after the crew

754  
00:33:35,450 --> 00:33:33,899  
splashes down or there's an idea kicking

755  
00:33:37,549 --> 00:33:35,460  
around there to have them stay in the

756  
00:33:39,710 --> 00:33:37,559  
capsule and come to the back of the ship

757  
00:33:41,450 --> 00:33:39,720  
what are your thoughts on on both of

758  
00:33:43,490 --> 00:33:41,460  
those what are the pluses and minuses on

759  
00:33:45,710 --> 00:33:43,500  
those well certainly the plus of having

760  
00:33:47,509 --> 00:33:45,720  
the crew come off immediately is that

761  
00:33:49,430 --> 00:33:47,519  
the crew is not staying in the capsule

762  
00:33:50,990 --> 00:33:49,440  
for an extended period of time there'll

763  
00:33:53,029 --> 00:33:51,000

be a time when we'll have to turn off

764

00:33:54,950 --> 00:33:53,039

the cooler in the capsule which would

765

00:33:56,570 --> 00:33:54,960

mean the crew will start getting very

766

00:33:59,210 --> 00:33:56,580

warm in their suits so it's better to

767

00:34:00,830 --> 00:33:59,220

get them off before that also you'll

768

00:34:02,210 --> 00:34:00,840

probably see later the operations in the

769

00:34:03,470 --> 00:34:02,220

well deck there are a lot of waves in

770

00:34:05,210 --> 00:34:03,480

there and it's probably not going to be

771

00:34:07,669 --> 00:34:05,220

a fun ride for the crew to be in there

772

00:34:09,770 --> 00:34:07,679

so uh you're right we're looking at it

773

00:34:11,930 --> 00:34:09,780

the actual uh let's see next summer

774

00:34:13,609 --> 00:34:11,940

we're going to have another test run

775

00:34:14,450 --> 00:34:13,619

we'll be out on the ship and we will be

776

00:34:16,190 --> 00:34:14,460

looking at all the different

777

00:34:18,530 --> 00:34:16,200

methodologies for getting crew off the

778

00:34:19,909 --> 00:34:18,540

capsule and uh may I ask what your

779

00:34:20,930 --> 00:34:19,919

particular favorite would be I mean I

780

00:34:22,790 --> 00:34:20,940

think you've already kind of indicated

781

00:34:25,129 --> 00:34:22,800

you're leaning more towards let's get

782

00:34:27,710 --> 00:34:25,139

off uh the ship off immediately yeah so

783

00:34:28,970 --> 00:34:27,720

I think we will uh probably now don't

784

00:34:32,149 --> 00:34:28,980

quote me on this but we'll probably

785

00:34:34,250 --> 00:34:32,159

extract the crew via helicopter from the

786

00:34:36,290 --> 00:34:34,260

capsule and helicopter them over to the

787

00:34:38,629 --> 00:34:36,300

ship and as an astronaut just briefly

788

00:34:41,329 --> 00:34:38,639

when you come back from space physically

789

00:34:43,730 --> 00:34:41,339

you're in a condition where

790

00:34:46,070 --> 00:34:43,740

um how would you describe it physically

791

00:34:48,589 --> 00:34:46,080

and mentally yeah so when we come back

792

00:34:50,570 --> 00:34:48,599

we we consider a crew deconditioned well

793

00:34:52,490 --> 00:34:50,580

on the space station for example we have

794

00:34:54,710 --> 00:34:52,500

lots of exercise eyes are really strong

795

00:34:57,050 --> 00:34:54,720

when we come back it is still a big

796

00:35:00,410 --> 00:34:57,060

adjustment to being in Earth's gravity

797

00:35:01,730 --> 00:35:00,420

again the lunar missions is kind of in

798

00:35:03,109 --> 00:35:01,740

the middle between what we did in the

799

00:35:05,150 --> 00:35:03,119

shuttle days and what we're doing on the

800

00:35:06,470 --> 00:35:05,160

space station so we don't know exactly

801  
00:35:08,089 --> 00:35:06,480  
how the crew is going to feel but

802  
00:35:09,829 --> 00:35:08,099  
they're going to be exhausted

803  
00:35:11,030 --> 00:35:09,839  
um and so their balance may be off a

804  
00:35:12,890 --> 00:35:11,040  
little bit so it's better just to get

805  
00:35:15,470 --> 00:35:12,900  
them out of the capsule as far as the

806  
00:35:17,569 --> 00:35:15,480  
mental side goes I found that when I am

807  
00:35:20,870 --> 00:35:17,579  
back on Earth it's just a huge sigh of

808  
00:35:22,730 --> 00:35:20,880  
relief in that somebody else is worrying

809  
00:35:24,890 --> 00:35:22,740  
all the details and I can just sit and

810  
00:35:26,210 --> 00:35:24,900  
relax a little bit well we appreciate

811  
00:35:27,589 --> 00:35:26,220  
you being here thank you for all the

812  
00:35:28,910 --> 00:35:27,599  
insight you're doing a great job of

813  
00:35:31,550 --> 00:35:28,920

staying balanced so this is the four to

814

00:35:33,770 --> 00:35:31,560

five foot seas and going up and down

815

00:35:35,390 --> 00:35:33,780

right it is definitely a challenge thank

816

00:35:37,970 --> 00:35:35,400

you very much Shannon Rob will send it

817

00:35:41,089 --> 00:35:37,980

back to you in Houston

818

00:35:43,490 --> 00:35:41,099

thanks Daryl thank you Shannon and happy

819

00:35:45,109 --> 00:35:43,500

sailing out there as we continue to

820

00:35:45,770 --> 00:35:45,119

watch this scintillating view of the

821

00:35:48,230 --> 00:35:45,780

Earth

822

00:35:50,990 --> 00:35:48,240

as we are just one hour five minutes

823

00:35:53,210 --> 00:35:51,000

away from Splashdown now as Shannon

824

00:35:56,089 --> 00:35:53,220

Walker alluded to in that interview with

825

00:35:57,650 --> 00:35:56,099

Daryl nail on the USS Portland uh we're

826

00:36:01,370 --> 00:35:57,660

going to be on the air here for a couple

827

00:36:03,770 --> 00:36:01,380

of hours after Splashdown while a number

828

00:36:06,770 --> 00:36:03,780

of flight objectives and test objectives

829

00:36:08,510 --> 00:36:06,780

are being conducted data gathering on

830

00:36:11,810 --> 00:36:08,520

the Orion spacecraft but the whole

831

00:36:13,970 --> 00:36:11,820

recovery issue to get Orion into the

832

00:36:16,790 --> 00:36:13,980

well deck of the USS Portland is no

833

00:36:19,069 --> 00:36:16,800

small feat Melissa Jones who is the

834

00:36:20,690 --> 00:36:19,079

landing director and the recovery

835

00:36:24,290 --> 00:36:20,700

director from the Kennedy Space Center

836

00:36:25,849 --> 00:36:24,300

has worked tirelessly to choreograph all

837

00:36:28,609 --> 00:36:25,859

of the elements of that recovery

838

00:36:32,450 --> 00:36:28,619

operation let's take a look now at how

839

00:36:38,089 --> 00:36:35,030

today we are aboard the USS John P

840

00:36:41,329 --> 00:36:38,099

mirtha and behind me is a mock-up

841

00:36:43,490 --> 00:36:41,339

capsule of the Orion crew module and we

842

00:36:45,770 --> 00:36:43,500

are training the team to be ready to do

843

00:36:48,349 --> 00:36:45,780

Artemis 1 recovery operations

844

00:36:50,390 --> 00:36:48,359

my role is the NASA recovery director is

845

00:36:52,730 --> 00:36:50,400

to lead the interagency team that will

846

00:36:55,069 --> 00:36:52,740

recover the capsule ever since the

847

00:36:56,690 --> 00:36:55,079

Apollo program NASA and the Navy have

848

00:36:58,670 --> 00:36:56,700

worked together to recover NASA's

849

00:37:00,470 --> 00:36:58,680

capsules in the water

850

00:37:02,390 --> 00:37:00,480

so one of the huge benefits of working

851

00:37:04,310 --> 00:37:02,400

with the Navy is the fact that they're

852

00:37:06,650 --> 00:37:04,320

operational and we leverage their core

853

00:37:08,930 --> 00:37:06,660

competencies to bring the flight

854

00:37:11,690 --> 00:37:08,940

hardware and the crew back safely from

855

00:37:13,910 --> 00:37:11,700

the Moon on the Artemis One recovery day

856

00:37:16,130 --> 00:37:13,920

my job will be to direct the team

857

00:37:18,470 --> 00:37:16,140

through the integrated operation to

858

00:37:20,630 --> 00:37:18,480

recover the capsule the ship will get to

859

00:37:22,010 --> 00:37:20,640

the recovery location 24 hours before we

860

00:37:24,950 --> 00:37:22,020

will start launching weather balloons

861

00:37:26,870 --> 00:37:24,960

and that data will go back to Houston

862

00:37:29,150 --> 00:37:26,880

and will help inform where we splash

863

00:37:30,829 --> 00:37:29,160

down a couple hours before Splashdown

864

00:37:32,930 --> 00:37:30,839

the Navy launches small boats off of the

865

00:37:34,790 --> 00:37:32,940

knuckle boom Crane and helicopters will

866

00:37:36,710 --> 00:37:34,800

take off and they will do their circles

867

00:37:38,690 --> 00:37:36,720

in the air and they are waiting for the

868

00:37:41,930 --> 00:37:38,700

castle to re-enter so that they can get

869

00:37:44,329 --> 00:37:41,940

good data and photo imagery of the

870

00:37:45,950 --> 00:37:44,339

capsule on its way back to Earth once

871

00:37:47,810 --> 00:37:45,960

that is done and we splash down we will

872

00:37:49,970 --> 00:37:47,820

save the capsule approach the capsule

873

00:37:51,950 --> 00:37:49,980

attach lines to the capsule and recover

874

00:37:54,050 --> 00:37:51,960

it into the well deck of the ship

875

00:37:56,270 --> 00:37:54,060

Artemis 1 recovery operations will take

876

00:37:57,650 --> 00:37:56,280

about five hours to perform all of the

877

00:37:59,750 --> 00:37:57,660

work we need to do because we are

878

00:38:02,089 --> 00:37:59,760

gathering data so that we can fly crew

879

00:38:03,530 --> 00:38:02,099

mission on Artemis 2. when Artemis one

880

00:38:05,630 --> 00:38:03,540

slashes down it's going to be the

881

00:38:07,790 --> 00:38:05,640

culmination of all of the hard work that

882

00:38:11,150 --> 00:38:07,800

we've put in as a team it's going to be

883

00:38:13,069 --> 00:38:11,160

an amazing feeling hearing that we've

884

00:38:15,650 --> 00:38:13,079

met Earth's interface and that we can

885

00:38:18,650 --> 00:38:15,660

see three good main parachutes and when

886

00:38:24,370 --> 00:38:18,660

we hear Splashdown I'm gonna get

887

00:38:29,569 --> 00:38:27,170

and again that whole recovery operation

888

00:38:31,970 --> 00:38:29,579

will take several hours we are going to

889

00:38:35,690 --> 00:38:31,980

remain on the air for at least two hours

890

00:38:37,790 --> 00:38:35,700

or so after Splashdown uh so that we can

891

00:38:41,150 --> 00:38:37,800

bring you all the information regarding

892

00:38:43,310 --> 00:38:41,160

the initial safing of the vehicle and uh

893

00:38:45,050 --> 00:38:43,320

the test objectives that the flight

894

00:38:47,329 --> 00:38:45,060

control team here in Houston led by

895

00:38:50,630 --> 00:38:47,339

flight director Judd freeling will be

896

00:38:52,970 --> 00:38:50,640

absorbing uh all of that data mostly

897

00:38:55,130 --> 00:38:52,980

about the thermal conditions of the

898

00:38:58,970 --> 00:38:55,140

spacecraft which will have come through

899

00:39:01,790 --> 00:38:58,980

some 5000 degrees Fahrenheit in in entry

900

00:39:04,190 --> 00:39:01,800

and with us at this moment is the man

901  
00:39:07,250 --> 00:39:04,200  
who is going to be watching all of that

902  
00:39:09,470 --> 00:39:07,260  
very very carefully John kowal who's the

903  
00:39:12,230 --> 00:39:09,480  
Orion thermal protection system manager

904  
00:39:15,109 --> 00:39:12,240  
John your big moment is lying ahead here

905  
00:39:16,550 --> 00:39:15,119  
the uh the plunge back into the Earth's

906  
00:39:19,490 --> 00:39:16,560  
atmosphere This Is The Moment of Truth

907  
00:39:21,410 --> 00:39:19,500  
to test the heat shield what kind of

908  
00:39:24,230 --> 00:39:21,420  
thermal environment are you expecting

909  
00:39:26,450 --> 00:39:24,240  
for Orion as it makes its way into the

910  
00:39:29,329 --> 00:39:26,460  
Earth's atmosphere and then back through

911  
00:39:32,150 --> 00:39:29,339  
the atmosphere itself

912  
00:39:34,069 --> 00:39:32,160  
attention 5000 degrees on the ship but

913  
00:39:36,890 --> 00:39:34,079

to back that up how do we get there so

914

00:39:38,990 --> 00:39:36,900

we that vehicle still has all that

915

00:39:42,170 --> 00:39:39,000

energy that's a launch rocket put into

916

00:39:44,710 --> 00:39:42,180

it during that first beautiful launch

917

00:39:47,450 --> 00:39:44,720

right so that gets converted into

918

00:39:49,910 --> 00:39:47,460

velocity so we're going at 25

919

00:39:52,190 --> 00:39:49,920

000 miles per hour which is how do you

920

00:39:55,730 --> 00:39:52,200

even fathom what that means it's seven

921

00:39:58,069 --> 00:39:55,740

miles per second wow so all that energy

922

00:40:00,109 --> 00:39:58,079

enough to power four thousand five

923

00:40:02,930 --> 00:40:00,119

thousand homes in a day

924

00:40:05,089 --> 00:40:02,940

we have to get rid of it and how do we

925

00:40:07,609 --> 00:40:05,099

do that with the vehicle comes slamming

926

00:40:09,050 --> 00:40:07,619

in to the atmosphere starts trying to

927

00:40:11,210 --> 00:40:09,060

push the air up

928

00:40:12,829 --> 00:40:11,220

out of the way that air is pushing back

929

00:40:15,290 --> 00:40:12,839

the pressures go up the temperatures go

930

00:40:17,630 --> 00:40:15,300

up you know we're talking

931

00:40:20,450 --> 00:40:17,640

you got better upwards of around 10 000

932

00:40:22,910 --> 00:40:20,460

degrees Fahrenheit in the flow field so

933

00:40:24,109 --> 00:40:22,920

that energy goes into the low field and

934

00:40:26,810 --> 00:40:24,119

then the flow field wants to give it

935

00:40:28,609 --> 00:40:26,820

back to the surface of the TPS so that's

936

00:40:30,530 --> 00:40:28,619

what the TPS is going to see or what the

937

00:40:32,390 --> 00:40:30,540

heat Shield's going to see and that's

938

00:40:34,790 --> 00:40:32,400

what pushes it up to 5000 degrees

939

00:40:37,910 --> 00:40:34,800

Fahrenheit

940

00:40:40,190 --> 00:40:37,920

what kind of testing was required

941

00:40:43,310 --> 00:40:40,200

throughout the course of uh the

942

00:40:46,010 --> 00:40:43,320

preparations for Orion to prepare the

943

00:40:48,230 --> 00:40:46,020

vehicle for launch that made you

944

00:40:50,569 --> 00:40:48,240

confident that it could withstand the

945

00:40:52,550 --> 00:40:50,579

rigors of this sort of environment

946

00:40:54,829 --> 00:40:52,560

yeah there's been a lot of testing I

947

00:40:57,230 --> 00:40:54,839

mean we've been at this for

948

00:41:00,410 --> 00:40:57,240

since since uh

949

00:41:01,670 --> 00:41:00,420

the end of the shuttle program if you

950

00:41:03,950 --> 00:41:01,680

think back to

951  
00:41:05,750 --> 00:41:03,960  
that system that was a reusable system

952  
00:41:08,990 --> 00:41:05,760  
we had kind of been out of the business

953  
00:41:09,770 --> 00:41:09,000  
of these ablation materials for quite a

954  
00:41:12,890 --> 00:41:09,780  
while

955  
00:41:15,109 --> 00:41:12,900  
sense of hollow so we had to

956  
00:41:18,230 --> 00:41:15,119  
train a whole new generation of

957  
00:41:20,390 --> 00:41:18,240  
Engineers on developing that type of

958  
00:41:22,130 --> 00:41:20,400  
system as well as getting the materials

959  
00:41:24,950 --> 00:41:22,140  
back so

960  
00:41:26,750 --> 00:41:24,960  
there was a lot of testing in in Arc

961  
00:41:28,569 --> 00:41:26,760  
Jets that's the primary way that you

962  
00:41:31,550 --> 00:41:28,579  
test these types of

963  
00:41:34,190 --> 00:41:31,560

materials you can create these

964

00:41:36,109 --> 00:41:34,200

temperatures it's it's it's like a wind

965

00:41:37,790 --> 00:41:36,119

tunnel with a lightning bolt going down

966

00:41:40,970 --> 00:41:37,800

the center of it and that's how you you

967

00:41:43,970 --> 00:41:40,980

create this high temperature plasma and

968

00:41:45,650 --> 00:41:43,980

that gets impinged on to the test

969

00:41:48,710 --> 00:41:45,660

article so we do a lot of materials

970

00:41:51,609 --> 00:41:48,720

testing we've done

971

00:41:53,990 --> 00:41:51,619

quite a bit of of testing of the system

972

00:41:55,849 --> 00:41:54,000

you know where even though we're using

973

00:41:57,829 --> 00:41:55,859

the same material they have coat that

974

00:41:58,790 --> 00:41:57,839

they used in Apollo it's in a different

975

00:42:01,130 --> 00:41:58,800

form

976

00:42:03,710 --> 00:42:01,140

and so we made it into blocks those

977

00:42:05,450 --> 00:42:03,720

blocks have seams that have to be filled

978

00:42:07,790 --> 00:42:05,460

those seams are always one of the areas

979

00:42:09,589 --> 00:42:07,800

that you want to test the most is

980

00:42:11,930 --> 00:42:09,599

because that's where the problems happen

981

00:42:13,270 --> 00:42:11,940

and so we've done a lot of testing there

982

00:42:15,710 --> 00:42:13,280

in the thermal

983

00:42:18,890 --> 00:42:15,720

and also structurally we've had to do a

984

00:42:21,710 --> 00:42:18,900

lot of testing with to see how the

985

00:42:24,109 --> 00:42:21,720

abcoat blocks interact with the

986

00:42:27,410 --> 00:42:24,119

structure underneath and make sure that

987

00:42:29,990 --> 00:42:27,420

it's all going to hold up to those loads

988

00:42:32,210 --> 00:42:30,000

and John this is about 11 minutes or so

989

00:42:35,030 --> 00:42:32,220

from the time of Entry interface at an

990

00:42:36,890 --> 00:42:35,040

altitude of about 400 000 feet until we

991

00:42:38,329 --> 00:42:36,900

come out of that second blackout period

992

00:42:40,370 --> 00:42:38,339

so that's going to be a very interesting

993

00:42:42,349 --> 00:42:40,380

time on sort of a nail biting time if

994

00:42:44,690 --> 00:42:42,359

you will but after uh the vehicle

995

00:42:46,730 --> 00:42:44,700

splashes down and is back at the Kennedy

996

00:42:49,190 --> 00:42:46,740

Space Center in a few weeks for post

997

00:42:50,750 --> 00:42:49,200

flight analysis what are the sorts of

998

00:42:53,870 --> 00:42:50,760

things that you and your engineering

999

00:42:56,750 --> 00:42:53,880

team will be looking for to give it a

1000

00:42:58,370 --> 00:42:56,760

passing grade in preparation for putting

1001  
00:43:00,349 --> 00:42:58,380  
a crew on board a couple of years from

1002  
00:43:02,329 --> 00:43:00,359  
now yeah there's a couple things that we

1003  
00:43:04,069 --> 00:43:02,339  
look at I break it into two different

1004  
00:43:05,569 --> 00:43:04,079  
categories the first is the actual the

1005  
00:43:08,690 --> 00:43:05,579  
flight data we have instrumentation

1006  
00:43:10,430 --> 00:43:08,700  
embedded in the heat shield at a number

1007  
00:43:12,230 --> 00:43:10,440  
of locations so we get we measure

1008  
00:43:15,770 --> 00:43:12,240  
temperatures we measure heat rates we

1009  
00:43:16,970 --> 00:43:15,780  
measure pressures uh stresses all that

1010  
00:43:19,069 --> 00:43:16,980  
data

1011  
00:43:21,230 --> 00:43:19,079  
will tell us how the material actually

1012  
00:43:24,290 --> 00:43:21,240  
performed in that flight environment it

1013  
00:43:26,150 --> 00:43:24,300

will also help us to inform our computer

1014

00:43:27,470 --> 00:43:26,160

modeling methods and that's another

1015

00:43:30,230 --> 00:43:27,480

thing that we need to make sure that

1016

00:43:32,329 --> 00:43:30,240

that it's performing how we thought it

1017

00:43:34,849 --> 00:43:32,339

was going to perform so that we can use

1018

00:43:37,010 --> 00:43:34,859

those models in the future you know to

1019

00:43:38,450 --> 00:43:37,020

predict for other missions now the other

1020

00:43:39,890 --> 00:43:38,460

thing we'll do is we'll be looking at

1021

00:43:41,470 --> 00:43:39,900

the hardware itself you know the

1022

00:43:45,410 --> 00:43:41,480

instrumentation you only get

1023

00:43:47,450 --> 00:43:45,420

measurements where you put that that

1024

00:43:49,190 --> 00:43:47,460

instrument of course right but looking

1025

00:43:51,890 --> 00:43:49,200

at the heat shield just looking at it

1026  
00:43:53,569 --> 00:43:51,900  
the big picture you get you can see you

1027  
00:43:55,790 --> 00:43:53,579  
can see the stream lines you can see how

1028  
00:43:57,829 --> 00:43:55,800  
the flow was going across the heat

1029  
00:43:59,809 --> 00:43:57,839  
shield uh you can see where boundary

1030  
00:44:02,270 --> 00:43:59,819  
layer transition may have occurred so

1031  
00:44:04,069 --> 00:44:02,280  
there's so much to just visually see and

1032  
00:44:05,569 --> 00:44:04,079  
then we'll be taking samples of the heat

1033  
00:44:08,630 --> 00:44:05,579  
shield we'll be taking that material out

1034  
00:44:11,809 --> 00:44:08,640  
and looking at how much head ablated

1035  
00:44:14,510 --> 00:44:11,819  
looking at the Char thickness

1036  
00:44:16,069 --> 00:44:14,520  
um they're the density gradients as you

1037  
00:44:18,530 --> 00:44:16,079  
go through as the material burned off

1038  
00:44:20,690 --> 00:44:18,540

and comparing that to what our models

1039

00:44:22,430 --> 00:44:20,700

have predicted and again that'll that'll

1040

00:44:24,890 --> 00:44:22,440

help us to be able to validate and

1041

00:44:26,450 --> 00:44:24,900

correlate our models further

1042

00:44:28,730 --> 00:44:26,460

very good it's going to be a very

1043

00:44:31,250 --> 00:44:28,740

important time for the engineers of

1044

00:44:33,650 --> 00:44:31,260

course and uh we'll uh we'll see how

1045

00:44:36,109 --> 00:44:33,660

Orion fares here in the next hour or so

1046

00:44:37,790 --> 00:44:36,119

John Cowell Orion's thermal protection

1047

00:44:52,870 --> 00:44:37,800

system manager thanks very much for

1048

00:44:58,309 --> 00:44:55,849

now just 16 and a half minutes away from

1049

00:45:00,470 --> 00:44:58,319

the separation of the crew module from

1050

00:45:03,410 --> 00:45:00,480

the European service module that will

1051  
00:45:06,470 --> 00:45:03,420  
begin a triphammer series of events as

1052  
00:45:08,630 --> 00:45:06,480  
Orion begins the process of entering the

1053  
00:45:11,990 --> 00:45:08,640  
Earth's atmosphere entry interface just

1054  
00:45:14,390 --> 00:45:12,000  
36 minutes away so let's go back out to

1055  
00:45:21,829 --> 00:45:14,400  
the Pacific Ocean West of Baja where

1056  
00:45:26,329 --> 00:45:24,230  
that's right rob a quick update for you

1057  
00:45:29,510 --> 00:45:26,339  
on the out here in the Pacific Ocean

1058  
00:45:31,550 --> 00:45:29,520  
just off the coast of Mexico we have

1059  
00:45:34,250 --> 00:45:31,560  
these small boats the Navy small boats

1060  
00:45:36,589 --> 00:45:34,260  
all six boats are now in the water they

1061  
00:45:38,569 --> 00:45:36,599  
call them cricks these are Navy boats

1062  
00:45:40,010 --> 00:45:38,579  
that are inflatable uh highly

1063  
00:45:42,470 --> 00:45:40,020

maneuverable these are the ones that

1064

00:45:45,050 --> 00:45:42,480

will actually put hands on the

1065

00:45:46,849 --> 00:45:45,060

spacecraft in order to secure it and

1066

00:45:48,710 --> 00:45:46,859

eventually get it tied to limes that

1067

00:45:50,809 --> 00:45:48,720

brings it to the back of the ship and

1068

00:45:52,430 --> 00:45:50,819

into the well deck I want to talk a

1069

00:45:54,290 --> 00:45:52,440

little bit about this location here

1070

00:45:56,329 --> 00:45:54,300

today this location in the Pacific we're

1071

00:45:58,609 --> 00:45:56,339

just about five miles away from the

1072

00:46:01,550 --> 00:45:58,619

Splashdown area this was actually the

1073

00:46:03,470 --> 00:46:01,560

backup location initially this was

1074

00:46:05,270 --> 00:46:03,480

supposed to happen off the coast of San

1075

00:46:07,970 --> 00:46:05,280

Diego California but the weather

1076

00:46:10,910 --> 00:46:07,980

forecast for that area calls for a cold

1077

00:46:13,849 --> 00:46:10,920

front that has moved in today bringing

1078

00:46:16,970 --> 00:46:13,859

with it 12 foot high seas and those Seas

1079

00:46:19,130 --> 00:46:16,980

would have been too high to perform this

1080

00:46:21,770 --> 00:46:19,140

operation too high for the small boats

1081

00:46:23,390 --> 00:46:21,780

for recovery so recovery director

1082

00:46:28,130 --> 00:46:23,400

Melissa Jones in the mission management

1083

00:46:30,829 --> 00:46:28,140

team made the decision to back up and go

1084

00:46:32,569 --> 00:46:30,839

to the backup location 300 miles south

1085

00:46:34,790 --> 00:46:32,579

of San Diego and that's where we find

1086

00:46:38,150 --> 00:46:34,800

ourselves today with excellent weather

1087

00:46:40,130 --> 00:46:38,160

in order to do this operation as you

1088

00:46:42,290 --> 00:46:40,140

look off into the sky we're awaiting the

1089

00:46:44,210 --> 00:46:42,300

second to last weather balloon release

1090

00:46:46,670 --> 00:46:44,220

that we will have for the day this

1091

00:46:48,890 --> 00:46:46,680

weather data critical to the operation

1092

00:46:51,530 --> 00:46:48,900

that is happening today especially when

1093

00:46:54,109 --> 00:46:51,540

it comes to The Landing point of the

1094

00:46:55,849 --> 00:46:54,119

crew module in the ocean as well as the

1095

00:46:58,609 --> 00:46:55,859

debris that goes with it that debris

1096

00:47:00,410 --> 00:46:58,619

happens during the separation of the

1097

00:47:02,089 --> 00:47:00,420

forward Bay cover which covers the

1098

00:47:04,250 --> 00:47:02,099

parachutes and then of course the

1099

00:47:06,170 --> 00:47:04,260

parachutes and their Hardware themselves

1100

00:47:07,490 --> 00:47:06,180

all of it together they take in the

1101  
00:47:09,710 --> 00:47:07,500  
winds and you can feel the winds are

1102  
00:47:12,710 --> 00:47:09,720  
picking up a little bit that wind data

1103  
00:47:16,130 --> 00:47:12,720  
will give us refined information and

1104  
00:47:18,230 --> 00:47:16,140  
data in order to calculate exactly the

1105  
00:47:21,470 --> 00:47:18,240  
landing spot now we're not alone out

1106  
00:47:24,109 --> 00:47:21,480  
here in the Pacific Ocean we do have a

1107  
00:47:26,270 --> 00:47:24,119  
friend is helping us today and I want to

1108  
00:47:28,250 --> 00:47:26,280  
take a shot now of a ship off in the

1109  
00:47:31,730 --> 00:47:28,260  
distance that has joined us for today's

1110  
00:47:34,910 --> 00:47:31,740  
operation and that is the USS Montgomery

1111  
00:47:36,530 --> 00:47:34,920  
that ship is uh just a few miles away as

1112  
00:47:39,589 --> 00:47:36,540  
you can see it there

1113  
00:47:42,290 --> 00:47:39,599

the USS Montgomery is uh providing

1114

00:47:45,470 --> 00:47:42,300

Security today it is what the Navy calls

1115

00:47:48,770 --> 00:47:45,480

a littoral ship it specializes in close

1116

00:47:51,290 --> 00:47:48,780

to shore combat it's highly maneuverable

1117

00:47:53,210 --> 00:47:51,300

in that space today though it has a

1118

00:47:56,210 --> 00:47:53,220

peaceful Mission and that is to provide

1119

00:47:59,630 --> 00:47:56,220

security to this location during

1120

00:48:01,670 --> 00:47:59,640

Splashdown so for the public safety to

1121

00:48:05,270 --> 00:48:01,680

prevent boats from coming in and around

1122

00:48:08,990 --> 00:48:05,280

the area as well as provide additional

1123

00:48:11,510 --> 00:48:09,000

Eyes to the Sky in tracking Orion crew

1124

00:48:13,010 --> 00:48:11,520

module as it comes down you can see a

1125

00:48:15,470 --> 00:48:13,020

little bit of a bounce there and that's

1126  
00:48:17,390 --> 00:48:15,480  
caused by the Seas that we are currently

1127  
00:48:20,450 --> 00:48:17,400  
experiencing which are in the range of

1128  
00:48:22,430 --> 00:48:20,460  
four to five feet those Seas closely

1129  
00:48:24,530 --> 00:48:22,440  
tracked by our NASA team with a wave

1130  
00:48:26,270 --> 00:48:24,540  
management system they have wave

1131  
00:48:28,790 --> 00:48:26,280  
monitoring system rather they are

1132  
00:48:31,250 --> 00:48:28,800  
closely monitoring the Seas

1133  
00:48:33,829 --> 00:48:31,260  
for the moment where we bring the Orion

1134  
00:48:36,109 --> 00:48:33,839  
capsule into the well deck that is a

1135  
00:48:37,430 --> 00:48:36,119  
highly choreographed and very Dynamic

1136  
00:48:39,109 --> 00:48:37,440  
operation

1137  
00:48:40,910 --> 00:48:39,119  
with the Seas being what they are when

1138  
00:48:43,849 --> 00:48:40,920

those waves come into the well deck it

1139

00:48:46,309 --> 00:48:43,859

can create a very Dynamic environment

1140

00:48:49,069 --> 00:48:46,319

with waves splashing back and forth

1141

00:48:51,829 --> 00:48:49,079

inside the well deck and uh teams on

1142

00:48:53,569 --> 00:48:51,839

ropes trying to stabilize Orion to get

1143

00:48:56,089 --> 00:48:53,579

it in just the right position here on

1144

00:48:57,050 --> 00:48:56,099

the ship to then allow the well deck to

1145

00:48:59,450 --> 00:48:57,060

drain out

1146

00:49:02,150 --> 00:48:59,460

have the Orion crew module put in place

1147

00:49:04,190 --> 00:49:02,160

for its ride back to San Diego

1148

00:49:06,410 --> 00:49:04,200

that's the latest from here on the USS

1149

00:49:10,010 --> 00:49:06,420

Portland out in the Pacific Ocean Rob

1150

00:49:15,530 --> 00:49:12,770

thank you very much Daryl we can report

1151

00:49:18,349 --> 00:49:15,540

uh that all of Orion's systems are

1152

00:49:21,230 --> 00:49:18,359

performing magnificently at this hour at

1153

00:49:23,690 --> 00:49:21,240

an altitude of just under 6 000 nautical

1154

00:49:26,690 --> 00:49:23,700

miles we did lock up on the tracking and

1155

00:49:28,910 --> 00:49:26,700

data relay satellite system so Orion's

1156

00:49:31,910 --> 00:49:28,920

Telemetry is now being processed through

1157

00:49:34,250 --> 00:49:31,920

the tdrs network this worked in concert

1158

00:49:36,710 --> 00:49:34,260

with the deep space Network throughout

1159

00:49:38,630 --> 00:49:36,720

the course of the mission and now that

1160

00:49:41,569 --> 00:49:38,640

we're on tedris the rest of the way

1161

00:49:43,190 --> 00:49:41,579

we'll be able to have real-time data

1162

00:49:45,950 --> 00:49:43,200

through our tracking the data relay

1163

00:49:47,870 --> 00:49:45,960

satellite system constellation with just

1164

00:49:50,210 --> 00:49:47,880

11 and a half minutes away from crew

1165

00:49:52,910 --> 00:49:50,220

module service module separation the

1166

00:49:56,030 --> 00:49:52,920

first a major Milestone on the road home

1167

00:49:58,370 --> 00:49:56,040

in this Final Phase of Orion's 25 and a

1168

00:50:00,589 --> 00:49:58,380

half day Mission so let's take a visual

1169

00:50:02,510 --> 00:50:00,599

and interactive look at what is coming

1170

00:50:05,030 --> 00:50:02,520

up for Orion's Journey back to Earth

1171

00:50:06,950 --> 00:50:05,040

let's go back to NASA's Phillip Hargrove

1172

00:50:09,589 --> 00:50:06,960

at the Moon board

1173

00:50:12,109 --> 00:50:09,599

thank you welcome back to the Moon board

1174

00:50:14,329 --> 00:50:12,119

so we're going to talk a bit about the

1175

00:50:16,609 --> 00:50:14,339

European service module and the Orion

1176

00:50:18,230 --> 00:50:16,619

crew module so as we know these two

1177

00:50:20,329 --> 00:50:18,240

systems have been working in tandem for

1178

00:50:22,370 --> 00:50:20,339

a really long time and that extends

1179

00:50:25,730 --> 00:50:22,380

Beyond just this Artemis one test flight

1180

00:50:27,530 --> 00:50:25,740

for the past 26 days so back in 2019 was

1181

00:50:30,470 --> 00:50:27,540

when they were first integrated and

1182

00:50:32,809 --> 00:50:30,480

pieced together in 2020 was when they

1183

00:50:34,490 --> 00:50:32,819

were fully assembled including the solar

1184

00:50:36,589 --> 00:50:34,500

panels and the protective fairings that

1185

00:50:38,510 --> 00:50:36,599

protected them during launch and then

1186

00:50:41,690 --> 00:50:38,520

they were finally attached to the launch

1187

00:50:44,630 --> 00:50:41,700

abort system and made it on top of SLS

1188

00:50:47,049 --> 00:50:44,640

in October of 2021 prior to of course

1189

00:50:51,170 --> 00:50:47,059

launch on November 16th

1190

00:50:53,210 --> 00:50:51,180

just 26 days ago so we know that one of

1191

00:50:55,190 --> 00:50:53,220

the primary test objectives of this

1192

00:50:57,349 --> 00:50:55,200

mission is to make sure that this heat

1193

00:50:59,390 --> 00:50:57,359

shield at the bottom of the crew module

1194

00:51:01,970 --> 00:50:59,400

is able to safely bring our astronauts

1195

00:51:04,130 --> 00:51:01,980

home from deep space now for reference

1196

00:51:05,809 --> 00:51:04,140

when we bring astronauts home from the

1197

00:51:08,390 --> 00:51:05,819

International Space Station they're

1198

00:51:11,809 --> 00:51:08,400

coming in at about 17 000 miles per hour

1199

00:51:13,670 --> 00:51:11,819

but today Orion is coming in at 25 000

1200

00:51:15,710 --> 00:51:13,680

miles per hour so we're coming in way

1201  
00:51:17,690 --> 00:51:15,720  
hotter way faster than we have done

1202  
00:51:19,490 --> 00:51:17,700  
before so we need some new heat shield

1203  
00:51:21,710 --> 00:51:19,500  
technology and we also need some

1204  
00:51:23,510 --> 00:51:21,720  
additional Hardware in order to to slow

1205  
00:51:25,970 --> 00:51:23,520  
us down and make that really happen so

1206  
00:51:28,910 --> 00:51:25,980  
let's talk about what that looks like so

1207  
00:51:31,130 --> 00:51:28,920  
this forward segment of the Orion crew

1208  
00:51:33,410 --> 00:51:31,140  
module is called the forward Bay cover

1209  
00:51:36,049 --> 00:51:33,420  
and this section is actually designed to

1210  
00:51:37,790 --> 00:51:36,059  
completely be pulled off by three

1211  
00:51:39,770 --> 00:51:37,800  
parachutes so we have three parachutes

1212  
00:51:41,390 --> 00:51:39,780  
that's gonna pull that off we have two

1213  
00:51:43,910 --> 00:51:41,400

drove parachutes they're gonna come out

1214

00:51:45,589 --> 00:51:43,920

after that to slow us down a bit we have

1215

00:51:48,290 --> 00:51:45,599

three pilot parachutes they're gonna

1216

00:51:50,809 --> 00:51:48,300

pull our Mains out and then the stars of

1217

00:51:53,990 --> 00:51:50,819

the show are three main parachutes that

1218

00:51:56,329 --> 00:51:54,000

measure up to 116 feet in diameter each

1219

00:51:59,450 --> 00:51:56,339

so that gives us 11 parachutes that it

1220

00:52:00,650 --> 00:51:59,460

takes to get us safely back home so now

1221

00:52:02,690 --> 00:52:00,660

that we know a little bit about what

1222

00:52:04,970 --> 00:52:02,700

that Hardware looks like we can take a

1223

00:52:05,809 --> 00:52:04,980

look at what that Journey actually looks

1224

00:52:08,809 --> 00:52:05,819

like

1225

00:52:11,569 --> 00:52:08,819

so as we know we had a seven day return

1226  
00:52:13,910 --> 00:52:11,579  
Transit and as we approached the Earth

1227  
00:52:15,349 --> 00:52:13,920  
the service module and the crew module

1228  
00:52:17,329 --> 00:52:15,359  
was separated from another from one

1229  
00:52:19,309 --> 00:52:17,339  
another and the service module is going

1230  
00:52:20,809 --> 00:52:19,319  
to burn up in in the atmosphere above

1231  
00:52:23,150 --> 00:52:20,819  
the Pacific Ocean

1232  
00:52:24,829 --> 00:52:23,160  
as that happens the Orion crew module is

1233  
00:52:27,530 --> 00:52:24,839  
going to use its reaction control

1234  
00:52:29,990 --> 00:52:27,540  
thrusters to do a 180 flip and point

1235  
00:52:32,329 --> 00:52:30,000  
that heat shield towards the atmosphere

1236  
00:52:34,670 --> 00:52:32,339  
as we target re-entry so a really

1237  
00:52:37,130 --> 00:52:34,680  
important phase here is entry interface

1238  
00:52:39,290 --> 00:52:37,140

this is at an altitude of about 400 000

1239

00:52:42,049 --> 00:52:39,300

feet and this is where we Define a lot

1240

00:52:44,210 --> 00:52:42,059

of our entry conditions such as the

1241

00:52:45,829 --> 00:52:44,220

flight path angle and the velocity now

1242

00:52:47,750 --> 00:52:45,839

this is really important because if you

1243

00:52:49,250 --> 00:52:47,760

come in at too shallow of an angle you

1244

00:52:51,109 --> 00:52:49,260

may bounce right off the atmosphere and

1245

00:52:52,849 --> 00:52:51,119

not even re-enter but if you come into

1246

00:52:55,069 --> 00:52:52,859

steeply you're going to experience

1247

00:52:57,049 --> 00:52:55,079

forces that are beyond the design of

1248

00:53:00,950 --> 00:52:57,059

your spacecraft so what we're going to

1249

00:53:02,990 --> 00:53:00,960

do today is actually tow the line and do

1250

00:53:04,910 --> 00:53:03,000

a nominal skip maneuver where we're

1251  
00:53:07,190 --> 00:53:04,920  
actually going to bounce off once that

1252  
00:53:08,750 --> 00:53:07,200  
allows us to have a steeper re-entry and

1253  
00:53:10,130 --> 00:53:08,760  
that actually increases the heating

1254  
00:53:12,829 --> 00:53:10,140  
allowing us to really test the

1255  
00:53:15,829 --> 00:53:12,839  
capability of that heat shield and we

1256  
00:53:18,049 --> 00:53:15,839  
will also be minimizing the G loading

1257  
00:53:19,670 --> 00:53:18,059  
which leads to a softer ride for the

1258  
00:53:22,370 --> 00:53:19,680  
moon again and in the future for our

1259  
00:53:25,010 --> 00:53:22,380  
Artemis astronauts now once we do that

1260  
00:53:26,690 --> 00:53:25,020  
the atmosphere is going to slow us down

1261  
00:53:29,690 --> 00:53:26,700  
pretty significantly but will still be

1262  
00:53:32,030 --> 00:53:29,700  
going over 300 miles per hour and then

1263  
00:53:34,309 --> 00:53:32,040

we will slow down to 20 miles per hour

1264

00:53:37,069 --> 00:53:34,319

after that sequence of 11 parachute

1265

00:53:39,650 --> 00:53:37,079

deployments now once we splash down west

1266

00:53:41,690 --> 00:53:39,660

of California we will have these red

1267

00:53:43,670 --> 00:53:41,700

Inflatables that will make sure that no

1268

00:53:47,569 --> 00:53:43,680

matter what orientation we hit the water

1269

00:53:50,210 --> 00:53:47,579

at we will be right side up and then the

1270

00:53:52,069 --> 00:53:50,220

USS Portland is going to recover the

1271

00:53:54,829 --> 00:53:52,079

capsule and bring it back to the U.S

1272

00:53:57,349 --> 00:53:54,839

naval station in San Diego now there's a

1273

00:54:00,290 --> 00:53:57,359

really large team comprised of U.S Navy

1274

00:54:02,630 --> 00:54:00,300

Air Force NASA contractors who worked

1275

00:54:04,849 --> 00:54:02,640

really hard to prepare for today so I am

1276  
00:54:06,230 --> 00:54:04,859  
super excited to see them welcome Orion

1277  
00:54:15,230 --> 00:54:06,240  
home

1278  
00:54:19,910 --> 00:54:17,690  
thank you very much Philip we are coming

1279  
00:54:23,270 --> 00:54:19,920  
up on uh the critical stuff

1280  
00:54:25,190 --> 00:54:23,280  
leading up to Orion's return to Earth

1281  
00:54:27,770 --> 00:54:25,200  
and it's splashed down in the Pacific

1282  
00:54:30,410 --> 00:54:27,780  
just seven minutes away now from crew

1283  
00:54:33,049 --> 00:54:30,420  
module service module separation that

1284  
00:54:34,790 --> 00:54:33,059  
European service module has uh worked

1285  
00:54:37,910 --> 00:54:34,800  
like a champ throughout the course of

1286  
00:54:40,309 --> 00:54:37,920  
the mission the service module which of

1287  
00:54:43,010 --> 00:54:40,319  
course housed the solar arrays and all

1288  
00:54:44,750 --> 00:54:43,020

of the other propulsive functioning for

1289

00:54:47,870 --> 00:54:44,760

Orion throughout the course of the

1290

00:54:50,510 --> 00:54:47,880

mission has been monitored in the

1291

00:54:53,690 --> 00:54:50,520

European service module control room in

1292

00:54:55,910 --> 00:54:53,700

nordvike in the Netherlands where that

1293

00:54:58,430 --> 00:54:55,920

team of flight controllers is eagerly

1294

00:55:00,650 --> 00:54:58,440

awaiting the completion of the service

1295

00:55:03,950 --> 00:55:00,660

modules work just a few minutes from now

1296

00:55:07,010 --> 00:55:03,960

when it will pyrotech pyrotechnically

1297

00:55:09,950 --> 00:55:07,020

separate from the crew module leaving

1298

00:55:13,069 --> 00:55:09,960

the crew module on its own entry

1299

00:55:16,790 --> 00:55:13,079

interface is scheduled just 26 minutes

1300

00:55:19,069 --> 00:55:16,800

from now we'll be receiving reports from

1301

00:55:20,569 --> 00:55:19,079

flight director Judd freeling and his

1302

00:55:23,450 --> 00:55:20,579

team of flight controller others

1303

00:55:25,849 --> 00:55:23,460

throughout Orion's dissent back into the

1304

00:55:28,490 --> 00:55:25,859

Earth's atmosphere and through all of

1305

00:55:30,410 --> 00:55:28,500

the parachute deployment sequence events

1306

00:55:33,829 --> 00:55:30,420

leading up to Splashdown that is

1307

00:55:38,329 --> 00:55:33,839

scheduled at 11 39 and 42 seconds am

1308

00:55:42,650 --> 00:55:38,339

Central Time 9 39 and 42 seconds a.m

1309

00:55:49,490 --> 00:55:46,430

one thing worth noting is once Orion

1310

00:55:53,270 --> 00:55:49,500

splashes down in the Pacific it will

1311

00:55:55,910 --> 00:55:53,280

stabilize in one of two positions either

1312

00:55:58,849 --> 00:55:55,920

pointed up which is called stable one or

1313

00:56:01,010 --> 00:55:58,859

pointed down in stable two the crew

1314

00:56:03,670 --> 00:56:01,020

module up writing system known as the

1315

00:56:06,410 --> 00:56:03,680

seam M the cmus

1316

00:56:08,750 --> 00:56:06,420

deploys a series of five bright orange

1317

00:56:11,450 --> 00:56:08,760

helium filled bags on the top of the

1318

00:56:13,790 --> 00:56:11,460

capsule that will either flip Orion

1319

00:56:16,910 --> 00:56:13,800

right side up or keep it right side up

1320

00:56:19,069 --> 00:56:16,920

and it's stable one position those five

1321

00:56:21,650 --> 00:56:19,079

bags are packed in hard containers and

1322

00:56:23,150 --> 00:56:21,660

installed Atop The Capsule inside the

1323

00:56:25,370 --> 00:56:23,160

structural gussets between the

1324

00:56:27,410 --> 00:56:25,380

parachutes and other equipment they're

1325

00:56:29,870 --> 00:56:27,420

inflated with helium gas that is stored

1326  
00:56:32,390 --> 00:56:29,880  
in pressure vessels located close by the

1327  
00:56:35,930 --> 00:56:32,400  
bags each bag has its own independent

1328  
00:56:38,210 --> 00:56:35,940  
inflation system the cmus or crew module

1329  
00:56:40,730 --> 00:56:38,220  
operating system initiates after landing

1330  
00:56:43,730 --> 00:56:40,740  
and opens up a valve for helium to flow

1331  
00:56:47,450 --> 00:56:43,740  
into those uprighting bags it is

1332  
00:56:49,730 --> 00:56:47,460  
considered at least operational that we

1333  
00:56:51,829 --> 00:56:49,740  
have four out of those five bags to

1334  
00:56:54,589 --> 00:56:51,839  
inflate to maintain a stable one

1335  
00:56:58,490 --> 00:56:54,599  
configuration for Orion uh to enable

1336  
00:57:00,049 --> 00:56:58,500  
Navy divers to approach the vehicle one

1337  
00:57:02,569 --> 00:57:00,059  
of the first things that they'll be

1338  
00:57:05,450 --> 00:57:02,579

looking for is any leakage of toxic gas

1339

00:57:07,849 --> 00:57:05,460

or toxic fuel from the vehicle assuming

1340

00:57:10,010 --> 00:57:07,859

there isn't no such leak and that Orion

1341

00:57:12,589 --> 00:57:10,020

appears to be in good shape then they'll

1342

00:57:14,530 --> 00:57:12,599

begin the methodical process of

1343

00:57:18,710 --> 00:57:14,540

approaching the vehicle with other

1344

00:57:22,130 --> 00:57:18,720

personnel and other Navy assets in order

1345

00:57:24,770 --> 00:57:22,140

to begin the securing of Orion on the

1346

00:57:35,510 --> 00:57:24,780

ocean for its Towing back in the well

1347

00:57:40,190 --> 00:57:38,089

we're under four minutes now until the

1348

00:57:42,349 --> 00:57:40,200

crew module and service module separate

1349

00:57:44,930 --> 00:57:42,359

from one another we'll be standing by

1350

00:57:48,130 --> 00:57:44,940

for all of that

1351  
00:57:51,589 --> 00:57:48,140  
you can see uh in this Telemetry driven

1352  
00:57:53,329 --> 00:57:51,599  
animation that uh Orion is currently

1353  
00:57:54,890 --> 00:57:53,339  
traveling just under 17

1354  
00:57:58,430 --> 00:57:54,900  
000 miles an hour

1355  
00:58:01,130 --> 00:57:58,440  
just under 4 000 miles away from Earth

1356  
00:58:03,049 --> 00:58:01,140  
and a hefty 254

1357  
00:58:05,690 --> 00:58:03,059  
000 miles from the Moon which of course

1358  
00:58:09,290 --> 00:58:05,700  
was its Target in distant retrograde

1359  
00:58:11,569 --> 00:58:09,300  
orbit flying around the moon for its

1360  
00:58:15,230 --> 00:58:11,579  
outbound powered flyby at the beginning

1361  
00:58:18,049 --> 00:58:15,240  
of the mission to move to a distance of

1362  
00:58:20,870 --> 00:58:18,059  
some 268 thousand miles away from Earth

1363  
00:58:22,790 --> 00:58:20,880

farther than any human rated spacecraft

1364

00:58:25,549 --> 00:58:22,800

designed to return to Earth had ever

1365

00:58:28,609 --> 00:58:25,559

been uh

1366

00:58:31,250 --> 00:58:28,619

designed to do surpassing the distance

1367

00:58:52,789 --> 00:58:31,260

record established 52 years ago during

1368

00:58:58,250 --> 00:58:55,549

here in Mission Control

1369

00:59:00,289 --> 00:58:58,260

the flight Dynamics folks and the

1370

00:59:03,710 --> 00:59:00,299

guidance navigation and control folks

1371

00:59:05,930 --> 00:59:03,720

have put up a graphic which is

1372

00:59:09,170 --> 00:59:05,940

essentially the ground track for Orion

1373

00:59:12,170 --> 00:59:09,180

as it uh will make its way across the

1374

00:59:15,109 --> 00:59:12,180

southern Indian Ocean uh passing the

1375

00:59:17,329 --> 00:59:15,119

northwest coast of Australia on route to

1376

00:59:19,970 --> 00:59:17,339

its ultimate trajectory that will carry

1377

00:59:22,190 --> 00:59:19,980

it across the Pacific it will be moving

1378

00:59:24,950 --> 00:59:22,200

from south to North across the Pacific

1379

00:59:28,430 --> 00:59:24,960

Ocean to the Splashdown Zone almost a

1380

00:59:30,770 --> 00:59:28,440

direct straight line towards the point

1381

00:59:34,370 --> 00:59:30,780

of Splashdown which will be west of Baja

1382

01:00:23,750 --> 00:59:37,069

now just under two minutes until crew

1383

01:00:28,430 --> 01:00:26,150

now just one minute away from crew

1384

01:00:30,589 --> 01:00:28,440

module service module separation

1385

01:00:33,349 --> 01:00:30,599

we'll be standing by for confirmation of

1386

01:00:35,390 --> 01:00:33,359

that from the uh

1387

01:00:57,069 --> 01:00:35,400

mechanical systems officer here at

1388

01:01:02,390 --> 01:01:00,049

30 seconds until separation this will

1389

01:01:14,750 --> 01:01:02,400

come at an altitude of 3200 statute

1390

01:01:14,760 --> 01:01:30,190

10 seconds until set

1391

01:01:39,970 --> 01:01:33,890

we have confirmation of separation

1392

01:01:46,430 --> 01:01:42,890

again the separation occurred right on

1393

01:01:48,349 --> 01:01:46,440

time at 11 A.M and 11 seconds Central

1394

01:01:51,410 --> 01:01:48,359

Time

1395

01:01:55,490 --> 01:01:51,420

with Orion 3200 statute miles away from

1396

01:02:48,710 --> 01:01:58,069

the service module the European service

1397

01:02:53,569 --> 01:02:51,470

so with Orion flying on its own we're

1398

01:02:56,390 --> 01:02:53,579

about 18 and a half minutes away now

1399

01:02:58,849 --> 01:02:56,400

from the point of entry interface

1400

01:03:01,490 --> 01:02:58,859

where Orion will be put through its

1401  
01:03:03,109 --> 01:03:01,500  
Paces this is where the heat shield will

1402  
01:03:06,589 --> 01:03:03,119  
begin to feel

1403  
01:03:11,930 --> 01:03:09,410  
Peak heating of 5000 degrees Fahrenheit

1404  
01:03:14,270 --> 01:03:11,940  
on the heat shield and the beginning of

1405  
01:03:16,130 --> 01:03:14,280  
two blackout periods where the plasma

1406  
01:03:18,170 --> 01:03:16,140  
around the vehicle will build up such

1407  
01:03:20,450 --> 01:03:18,180  
that it will block data and

1408  
01:04:18,470 --> 01:03:20,460  
Communications between mission control

1409  
01:04:26,510 --> 01:04:22,010  
Orion continues to fly smoothly on all

1410  
01:05:00,130 --> 01:04:28,970  
less than 17 minutes until entry

1411  
01:05:06,289 --> 01:05:04,010  
and the crew module raise burn that we

1412  
01:05:09,289 --> 01:05:06,299  
thought was not going to be needed is

1413  
01:05:11,750 --> 01:05:09,299

being conducted just a basically a fine

1414

01:05:14,690 --> 01:05:11,760

tuning of the orientation of the angle a

1415

01:05:17,870 --> 01:05:14,700

16 second firing of the thrusters

1416

01:05:20,630 --> 01:05:17,880

Anna Goodburn reported 8.12 feet per

1417

01:05:24,530 --> 01:05:20,640

second in a change in velocity so the

1418

01:05:27,829 --> 01:05:24,540

raised burn was executed uh that will

1419

01:05:30,650 --> 01:05:27,839

further fine-tune Orion's path at the

1420

01:05:33,230 --> 01:05:30,660

proper Azimuth or orientation where the

1421

01:05:35,270 --> 01:05:33,240

heat shield is at its Optimum angle to

1422

01:05:37,069 --> 01:05:35,280

begin another the repulsion of the heat

1423

01:05:39,530 --> 01:05:37,079

that will build up around the heat

1424

01:05:41,750 --> 01:05:39,540

shield at the time that we begin entry

1425

01:05:43,789 --> 01:05:41,760

interface just about 15 and a half

1426

01:05:46,130 --> 01:05:43,799

minutes from now

1427

01:05:47,870 --> 01:05:46,140

so the crew module service module

1428

01:05:50,270 --> 01:05:47,880

separation went off as planned the

1429

01:05:55,150 --> 01:05:50,280

raised maneuver was executed at 1103 and

1430

01:06:01,130 --> 01:05:58,490

again the raised maneuver was executed

1431

01:06:03,950 --> 01:06:01,140

uh Orion now flying at the proper

1432

01:06:06,289 --> 01:06:03,960

orientation for entry interface into the

1433

01:06:09,770 --> 01:06:06,299

Earth's atmosphere entry interface is

1434

01:06:13,069 --> 01:06:09,780

scheduled at 11 20 and 14 seconds am

1435

01:06:15,109 --> 01:06:13,079

Central Time at an altitude of 400 000

1436

01:06:17,289 --> 01:06:15,119

feet at that point Orion will be

1437

01:06:20,809 --> 01:06:17,299

traveling 24

1438

01:06:37,329 --> 01:06:20,819

464 miles an hour with a range to splash

1439

01:06:41,630 --> 01:06:39,950

flight controllers reporting a solid

1440

01:06:43,130 --> 01:06:41,640

lock with the tracking and data relay

1441

01:06:45,349 --> 01:06:43,140

satellite system

1442

01:06:48,650 --> 01:06:45,359

receiving data that's being processed

1443

01:06:53,329 --> 01:06:51,529

just a reminder that after we pass into

1444

01:06:55,549 --> 01:06:53,339

the Earth's atmosphere

1445

01:06:57,289 --> 01:06:55,559

at the speed at which we're going and

1446

01:06:59,329 --> 01:06:57,299

with the temperatures expected to build

1447

01:07:01,789 --> 01:06:59,339

up very quickly for Peak heating around

1448

01:07:04,490 --> 01:07:01,799

the heat shield of Orion we will begin

1449

01:07:07,069 --> 01:07:04,500

the first of two blackout periods the

1450

01:07:10,190 --> 01:07:07,079

first of which is scheduled to begin at

1451  
01:07:13,510 --> 01:07:10,200  
11 20 and 16 seconds am Central Time and

1452  
01:07:17,029 --> 01:07:13,520  
will last about 4 minutes and 48 seconds

1453  
01:07:20,029 --> 01:07:17,039  
at that time entry guidance which has

1454  
01:07:22,130 --> 01:07:20,039  
been on stored on board a pre-programmed

1455  
01:07:24,170 --> 01:07:22,140  
commanding for Orion to continue to

1456  
01:07:27,349 --> 01:07:24,180  
point its way toward the Splashdown Zone

1457  
01:07:31,089 --> 01:07:27,359  
will take over the first blackout period

1458  
01:07:33,829 --> 01:07:31,099  
should end around 11 25 and 4 seconds

1459  
01:07:36,230 --> 01:07:33,839  
Central Time

1460  
01:07:39,470 --> 01:07:36,240  
that will set the stage for the skip

1461  
01:07:42,950 --> 01:07:39,480  
entry basically the maneuver that will

1462  
01:07:44,750 --> 01:07:42,960  
enable uh Orion to dip into the Earth's

1463  
01:07:46,609 --> 01:07:44,760

atmosphere and Skip back out of the

1464

01:07:49,069 --> 01:07:46,619

Earth's atmosphere and dip back into the

1465

01:07:51,289 --> 01:07:49,079

Earth's atmosphere like a rock A Flat

1466

01:07:53,750 --> 01:07:51,299

Rock on a pond

1467

01:07:57,049 --> 01:07:53,760

that will continue to dissipate energy

1468

01:07:59,809 --> 01:07:57,059

and heat on the spacecraft

1469

01:08:02,270 --> 01:07:59,819

and is a maneuver that data will be

1470

01:08:04,849 --> 01:08:02,280

gathered for to try to bring in multiple

1471

01:08:05,930 --> 01:08:04,859

Splashdown sites for crude missions in

1472

01:08:08,089 --> 01:08:05,940

the future

1473

01:08:10,490 --> 01:08:08,099

the second of the two blackout periods

1474

01:08:12,890 --> 01:08:10,500

is scheduled to begin at 11 29 in three

1475

01:08:15,589 --> 01:08:12,900

seconds am central time and that will

1476

01:08:20,269 --> 01:08:15,599

last for about two minutes and 55-0

1477

01:08:22,070 --> 01:08:20,279

seconds till about 11 31 and change uh

1478

01:08:23,689 --> 01:08:22,080

that'll be the final blackout period

1479

01:08:26,630 --> 01:08:23,699

after which show we should lock up

1480

01:09:19,729 --> 01:08:26,640

solidly for the remaining eight minutes

1481

01:09:25,550 --> 01:09:21,950

this is Mission Control Houston 12

1482

01:09:28,130 --> 01:09:25,560

minutes away from entry interface

1483

01:09:30,050 --> 01:09:28,140

everything is going by the book so far

1484

01:09:32,390 --> 01:09:30,060

here in Mission Control very quiet on

1485

01:09:34,010 --> 01:09:32,400

the loops entry flight director Judd

1486

01:09:36,110 --> 01:09:34,020

frieling and his team of flight

1487

01:09:40,610 --> 01:09:36,120

controllers watching carefully over

1488

01:09:43,070 --> 01:09:40,620

their data as they oversee the arrival

1489

01:09:44,749 --> 01:09:43,080

of Orion for its Splashdown site west of

1490

01:10:29,990 --> 01:09:44,759

Baja California

1491

01:10:38,950 --> 01:10:32,570

less than 11 minutes now until entry

1492

01:10:45,530 --> 01:10:42,229

During the period of the two blackouts

1493

01:10:47,930 --> 01:10:45,540

and even after we are have emerged from

1494

01:10:50,149 --> 01:10:47,940

the second of the two blackouts Orion

1495

01:10:53,030 --> 01:10:50,159

through a series of pre-programmed

1496

01:10:55,610 --> 01:10:53,040

commands stored on board will conduct a

1497

01:10:57,470 --> 01:10:55,620

series of role reversals this is very

1498

01:11:00,470 --> 01:10:57,480

much like space shuttles conducted

1499

01:11:03,229 --> 01:11:00,480

during their entries back to Earth where

1500

01:11:05,990 --> 01:11:03,239

it will roll to the left and then back

1501  
01:11:08,750 --> 01:11:06,000  
to the right banking role reversals that

1502  
01:11:11,390 --> 01:11:08,760  
will bleed off excess energy excess

1503  
01:11:13,310 --> 01:11:11,400  
inertia and speed and control the

1504  
01:11:17,090 --> 01:11:13,320  
thermal characteristics of the vehicle

1505  
01:11:21,709 --> 01:11:17,100  
as it heads towards its subsonic point

1506  
01:11:24,890 --> 01:11:21,719  
where it will go under Mach 1 it will uh

1507  
01:11:27,590 --> 01:11:24,900  
go subsonic at about 11 34 and 55

1508  
01:11:31,669 --> 01:11:27,600  
seconds am Central Time some five

1509  
01:11:36,770 --> 01:11:34,130  
if everything goes as planned

1510  
01:11:40,189 --> 01:11:36,780  
Orion will reach an altitude of 40 000

1511  
01:11:42,130 --> 01:11:40,199  
feet at 11 35 a.m central time just

1512  
01:11:45,770 --> 01:11:42,140  
about a minute before forward Bay cover

1513  
01:11:46,970 --> 01:11:45,780

shoot deploy Begins the series of 11

1514

01:11:48,709 --> 01:11:46,980

shoots

1515

01:11:55,149 --> 01:11:48,719

three that will pull the forward Bay

1516

01:12:00,590 --> 01:11:57,890

that'll be followed by the deployment of

1517

01:12:03,290 --> 01:12:00,600

the drug shoots and then the three large

1518

01:12:04,910 --> 01:12:03,300

main parachutes three orange and white

1519

01:12:08,030 --> 01:12:04,920

parachutes that'll be the moment we'll

1520

01:13:07,810 --> 01:12:10,130

Orion now 28 and a half minutes until

1521

01:13:13,970 --> 01:13:10,790

Orion is approaching uh

1522

01:13:16,370 --> 01:13:13,980

the northwest coast of Australia

1523

01:13:18,229 --> 01:13:16,380

27 and a half minutes until Splashdown

1524

01:13:21,169 --> 01:13:18,239

we're just eight minutes away from the

1525

01:13:24,050 --> 01:13:21,179

point at which Orion will dip into the

1526

01:13:27,410 --> 01:13:24,060

Earth's atmosphere and begin what

1527

01:13:29,450 --> 01:13:27,420

basically is a hellish entry where

1528

01:13:32,270 --> 01:13:29,460

temperatures around the spacecraft will

1529

01:13:35,030 --> 01:13:32,280

raise uh to about 5000 degrees

1530

01:13:51,709 --> 01:13:35,040

Fahrenheit that's half as hot as the

1531

01:13:56,750 --> 01:13:54,350

and correction Orion is actually

1532

01:14:00,290 --> 01:13:56,760

traveling over the South Pacific at the

1533

01:14:01,669 --> 01:14:00,300

moment moving from south to North

1534

01:14:03,890 --> 01:14:01,679

thank you

1535

01:14:44,050 --> 01:14:03,900

just uh seven and a half minutes until

1536

01:14:51,410 --> 01:14:48,050

and this view from a camera inside the

1537

01:14:54,229 --> 01:14:51,420

cabin of Orion this uh doesn't look like

1538

01:14:56,270 --> 01:14:54,239

much at the moment but it will soon when

1539

01:14:58,910 --> 01:14:56,280

it shows the forward Bay covered

1540

01:15:02,570 --> 01:14:58,920

jettisoning and the initiation of the

1541

01:15:04,610 --> 01:15:02,580

parachute deployment system

1542

01:15:38,330 --> 01:15:04,620

entry interface less than six and a half

1543

01:15:43,490 --> 01:15:40,430

just to recap

1544

01:15:45,169 --> 01:15:43,500

the crew module the Orion crew module

1545

01:15:47,810 --> 01:15:45,179

separated from the European service

1546

01:15:51,350 --> 01:15:47,820

module about 14 and a half minutes ago

1547

01:15:54,110 --> 01:15:51,360

right on target as it was planned and a

1548

01:15:57,229 --> 01:15:54,120

short raised maneuver a 16 second firing

1549

01:16:00,410 --> 01:15:57,239

of Orion's thrusters oriented the

1550

01:16:01,910 --> 01:16:00,420

vehicle raising it just a tad so that

1551

01:16:03,669 --> 01:16:01,920

its heat shield was at the proper

1552

01:16:07,189 --> 01:16:03,679

orientation of the direction of travel

1553

01:16:10,970 --> 01:16:07,199

to begin entry interface in about five

1554

01:16:13,689 --> 01:16:10,980

minutes at an altitude of 4 400 000 feet

1555

01:16:16,790 --> 01:16:13,699

above the Earth

1556

01:16:22,189 --> 01:16:16,800

Orion is making its way south to North

1557

01:16:39,350 --> 01:16:24,830

currently traveling at 23 000 miles an

1558

01:16:42,770 --> 01:16:41,149

we're about five minutes away from

1559

01:16:44,570 --> 01:16:42,780

entering the first of the two blackout

1560

01:17:14,830 --> 01:16:44,580

periods which will last about four

1561

01:17:20,930 --> 01:17:18,830

a journey that began with the power of

1562

01:17:23,149 --> 01:17:20,940

the launch of the space launch system 25

1563

01:17:26,810 --> 01:17:23,159

and a half days ago

1564

01:17:28,910 --> 01:17:26,820

about uh to reach its final minutes in

1565

01:17:30,830 --> 01:17:28,920

the Searing heat of re-entry where

1566

01:17:35,270 --> 01:17:30,840

temperatures around Orion will build up

1567

01:18:16,130 --> 01:17:37,250

just under four minutes until entry

1568

01:18:22,209 --> 01:18:20,209

once again at entry interface which we

1569

01:18:25,610 --> 01:18:22,219

will reach about three minutes from now

1570

01:18:28,550 --> 01:18:25,620

Orion will be at an altitude of 400 000

1571

01:18:31,010 --> 01:18:28,560

feet traveling just under 25

1572

01:18:41,229 --> 01:18:31,020

000 miles an hour with a range to splash

1573

01:18:45,410 --> 01:18:43,790

within seconds after a reaching entry

1574

01:18:48,470 --> 01:18:45,420

interface will begin the first of the

1575

01:18:50,030 --> 01:18:48,480

two blackout periods that will last just

1576

01:19:30,790 --> 01:18:50,040

under five minutes about four minutes

1577

01:19:36,229 --> 01:19:33,530

and here's uh the ground track of four

1578

01:19:38,930 --> 01:19:36,239

Orion as it passes uh well to the west

1579

01:19:41,630 --> 01:19:38,940

of South America

1580

01:19:43,850 --> 01:19:41,640

we're just a one minute 44 seconds away

1581

01:19:46,490 --> 01:19:43,860

from entry interface moving from south

1582

01:20:19,910 --> 01:19:46,500

to North to its Splashdown Target West

1583

01:20:30,430 --> 01:20:21,890

just one minute away from entry

1584

01:20:36,050 --> 01:20:33,470

and this view from the cabin camera

1585

01:20:39,169 --> 01:20:36,060

looking uh out of the upper hatch of

1586

01:20:41,870 --> 01:20:39,179

Orion you can see the limb of the Earth

1587

01:20:45,530 --> 01:20:41,880

we're going to be losing all of the data

1588

01:20:47,090 --> 01:20:45,540

here shortly once we enter into the

1589

01:21:17,229 --> 01:20:47,100

Earth's atmosphere and begin the first

1590

01:21:34,209 --> 01:21:19,729

standing by for entry interface and the

1591

01:21:43,970 --> 01:21:38,570

we are now in the entry phase

1592

01:21:49,729 --> 01:21:46,910

entry interface at 400 000 feet Orion

1593

01:21:57,590 --> 01:21:49,739

traveling just under 25 000 miles an

1594

01:22:02,810 --> 01:21:59,390

we've gone into the first blackout

1595

01:22:05,030 --> 01:22:02,820

period this is uh a visualization

1596

01:22:06,770 --> 01:22:05,040

based on what should be happening at the

1597

01:22:08,149 --> 01:22:06,780

moment where the temperatures around the

1598

01:22:10,189 --> 01:22:08,159

heat shield

1599

01:22:12,169 --> 01:22:10,199

are reaching about 5000 degrees

1600

01:22:18,610 --> 01:22:12,179

Fahrenheit This Is The Moment of Truth

1601  
01:22:22,790 --> 01:22:20,870  
we should be coming out of this first

1602  
01:22:35,149 --> 01:22:22,800  
blackout period just under four minutes

1603  
01:22:41,450 --> 01:22:39,050  
Orion should be traveling about 23 326

1604  
01:22:49,310 --> 01:22:41,460  
miles an hour at the moment

1605  
01:22:53,689 --> 01:22:51,590  
again this is a

1606  
01:22:55,729 --> 01:22:53,699  
visualization of what should be

1607  
01:22:57,729 --> 01:22:55,739  
happening with Orion at the moment

1608  
01:23:00,350 --> 01:22:57,739  
although we are in a blackout period

1609  
01:23:02,870 --> 01:23:00,360  
that should end about three minutes and

1610  
01:23:05,630 --> 01:23:02,880  
15 seconds from now

1611  
01:23:07,610 --> 01:23:05,640  
once we emerge from this first blackout

1612  
01:23:08,870 --> 01:23:07,620  
period we'll conduct the skip entry

1613  
01:23:12,110 --> 01:23:08,880

maneuver

1614

01:23:15,950 --> 01:23:12,120

that will further dissipate Heat

1615

01:23:17,209 --> 01:23:15,960

and energy and begin a very very

1616

01:23:20,570 --> 01:23:17,219

dramatic

1617

01:23:48,470 --> 01:23:20,580

reduction in the velocity of Orion as it

1618

01:23:53,330 --> 01:23:50,689

clocks here and Mission Control showing

1619

01:23:55,550 --> 01:23:53,340

the sequence of events Yet to Come the

1620

01:23:58,490 --> 01:23:55,560

first blackout period to end about two

1621

01:24:01,370 --> 01:23:58,500

minutes and 18 seconds from now

1622

01:24:04,550 --> 01:24:01,380

the second of the two blackout periods

1623

01:24:05,630 --> 01:24:04,560

uh would begin about six minutes from

1624

01:24:08,810 --> 01:24:05,640

now

1625

01:24:10,970 --> 01:24:08,820

for about seven minutes followed by the

1626  
01:24:14,330 --> 01:24:10,980  
jettisoning of the forward Bay cover

1627  
01:24:16,729 --> 01:24:14,340  
that will begin the sequence of the

1628  
01:24:19,729 --> 01:24:16,739  
deployment of the parachutes

1629  
01:24:22,250 --> 01:24:19,739  
first a pair of drug shoots three pilot

1630  
01:24:24,649 --> 01:24:22,260  
parachutes that will then pull three

1631  
01:24:27,470 --> 01:24:24,659  
main parachutes

1632  
01:24:29,810 --> 01:24:27,480  
to begin the final moments of Orion's

1633  
01:25:13,250 --> 01:24:29,820  
descent back to its Splashdown in the

1634  
01:25:21,370 --> 01:25:15,950  
one minute to go until we come out of

1635  
01:25:28,070 --> 01:25:24,350  
when we emerge from this first blackout

1636  
01:25:28,970 --> 01:25:28,080  
period we'll be at an altitude of 274

1637  
01:25:31,370 --> 01:25:28,980  
000 feet

1638  
01:25:33,530 --> 01:25:31,380

traveling just under 17

1639

01:26:09,610 --> 01:25:33,540

000 miles an hour with a range to splash

1640

01:27:12,350 --> 01:26:12,229

standing by for a re-acquisition of

1641

01:27:26,090 --> 01:27:15,770

and we have data from Orion Orion out of

1642

01:27:31,490 --> 01:27:29,030

flight Dynamics reports

1643

01:27:33,590 --> 01:27:31,500

that Orion is right on the money coming

1644

01:27:34,850 --> 01:27:33,600

right down the pike a good view out of

1645

01:27:37,610 --> 01:27:34,860

the uh

1646

01:27:48,610 --> 01:27:37,620

cabin camera looking out of the upper

1647

01:27:55,930 --> 01:27:51,110

we should be performing uh the skip

1648

01:28:06,290 --> 01:27:58,370

good Communications established with

1649

01:28:34,510 --> 01:28:08,149

the second blackout period to begin

1650

01:28:40,970 --> 01:28:38,510

Orion is at the apogee of the skip entry

1651

01:28:43,610 --> 01:28:40,980

maneuver beginning the second in a

1652

01:28:47,450 --> 01:28:43,620

series of role reversals again banking

1653

01:28:49,610 --> 01:28:47,460

Maneuvers to bleed off excess inertia

1654

01:29:01,689 --> 01:28:49,620

and to dissipate heat around the

1655

01:29:06,649 --> 01:29:04,430

the start of the second blackout period

1656

01:29:10,370 --> 01:29:06,659

about a minute and 13 seconds from now

1657

01:29:13,729 --> 01:29:10,380

will come at an altitude of 270 000 feet

1658

01:29:17,209 --> 01:29:13,739

with Orion traveling about 16 400 miles

1659

01:30:01,189 --> 01:29:17,219

an hour range to splash down less than a

1660

01:30:27,669 --> 01:30:03,350

coming up on the start of the second

1661

01:30:36,290 --> 01:30:30,530

we should be in that second blackout

1662

01:30:42,950 --> 01:30:40,370

Ryan approaching a velocity of 20 times

1663

01:30:45,050 --> 01:30:42,960

the speed of sound

1664

01:30:46,910 --> 01:30:45,060

if all goes as planned we should be out

1665

01:30:50,390 --> 01:30:46,920

of the blackout period with a solid lock

1666

01:31:56,570 --> 01:30:50,400

up on the vehicle

1667

01:32:02,470 --> 01:31:59,149

this is Mission Control Houston the

1668

01:32:04,610 --> 01:32:02,480

Airborne w you be 57

1669

01:32:07,669 --> 01:32:04,620

one of the

1670

01:32:10,430 --> 01:32:07,679

Airborne assets to track Orion's return

1671

01:32:14,149 --> 01:32:10,440

to Earth as visual acquisition of the

1672

01:32:18,770 --> 01:32:16,010

we should be coming out of this second

1673

01:32:30,669 --> 01:32:18,780

and final blackout about 30 seconds from

1674

01:32:36,050 --> 01:32:34,250

and hilo's flying off the deck of the

1675

01:32:38,390 --> 01:32:36,060

USS Portland now have a visual

1676

01:32:43,550 --> 01:32:38,400

acquisition of Orion as well

1677

01:32:47,270 --> 01:32:43,560

at an altitude of 174 000 feet traveling

1678

01:33:10,430 --> 01:32:47,280

12 600 miles an hour range to splash

1679

01:33:29,410 --> 01:33:13,129

this view on the deck of the USS

1680

01:33:33,649 --> 01:33:32,209

and there is a view out of the uh

1681

01:33:36,110 --> 01:33:33,659

cabin camera

1682

01:33:38,090 --> 01:33:36,120

of Orion as it continues a series of

1683

01:33:40,970 --> 01:33:38,100

role reversals we have data back from

1684

01:33:46,970 --> 01:33:44,750

flight Dynamics reports Orion straight

1685

01:33:48,709 --> 01:33:46,980

and narrow on a true course toward its

1686

01:33:50,930 --> 01:33:48,719

Splashdown site

1687

01:34:00,370 --> 01:33:50,940

forward Bay covered jettisoning less

1688

01:34:00,380 --> 01:34:15,050

150 000 feet off the ocean

1689

01:34:15,060 --> 01:34:53,169

well Ryan now traveling at mach 10

1690

01:34:53,179 --> 01:35:08,689

Orion's speed now down to Mach 6.

1691

01:35:23,950 --> 01:35:10,550

two minutes until forward big cover

1692

01:35:23,960 --> 01:35:46,370

Orion 100 000 feet now

1693

01:35:46,380 --> 01:36:25,910

the spacecraft about to go subsonic

1694

01:36:34,149 --> 01:36:28,250

45 seconds until forward Bay covered

1695

01:36:34,159 --> 01:36:49,490

Orion now at 50 000 feet

1696

01:37:19,189 --> 01:36:51,950

forward big covered jettisoning pyros

1697

01:37:19,199 --> 01:37:28,570

25 000 feet

1698

01:37:28,580 --> 01:37:58,129

troves have been deployed

1699

01:38:05,270 --> 01:38:01,189

took good drug shoots reported by the

1700

01:38:12,649 --> 01:38:08,570

the decent rate is right on the money

1701

01:38:15,470 --> 01:38:12,659

Orion's velocity now down to 282 miles

1702

01:38:18,890 --> 01:38:15,480

an hour range to splash down one and a

1703

01:38:18,900 --> 01:38:39,729

ten thousand feet now

1704

01:38:49,850 --> 01:38:43,189

and we're on mains

1705

01:38:49,860 --> 01:39:05,030

reefing in progress

1706

01:39:05,040 --> 01:39:15,729

three good main shoots for Orion

1707

01:39:26,270 --> 01:39:20,090

we have three fully inflated main shoots

1708

01:39:26,280 --> 01:40:05,169

perfect descent rate reported

1709

01:40:10,669 --> 01:40:08,330

and there it is high over the Pacific

1710

01:40:13,970 --> 01:40:10,679

America's new Ticket to Ride To the Moon

1711

01:40:32,629 --> 01:40:16,490

Orion under its shoots descending

1712

01:40:46,669 --> 01:40:34,970

Orion in the perfect orientation for

1713

01:40:46,679 --> 01:41:00,290

one thousand feet

1714

01:41:00,300 --> 01:41:15,550

good decent rate

1715

01:41:15,560 --> 01:41:32,530

500 feet

1716

01:41:38,870 --> 01:41:35,350

splash down

1717

01:41:40,910 --> 01:41:38,880

from Tranquility base to Taurus litro to

1718

01:41:42,830 --> 01:41:40,920

the Tranquil Waters of the Pacific the

1719

01:41:46,790 --> 01:41:42,840

latest chapter of NASA's Journey to the

1720

01:41:48,709 --> 01:41:46,800

moon comes to a close Orion back on

1721

01:41:52,310 --> 01:41:48,719

Earth

1722

01:42:02,270 --> 01:41:52,320

unofficial Splashdown time 11 40

1723

01:42:09,350 --> 01:42:05,810

at a mission elapsed time of 25 days 10

1724

01:42:12,109 --> 01:42:09,360

hours 54 minutes 50 seconds that's

1725

01:42:22,189 --> 01:42:12,119

unofficial splashing down

1726  
01:42:29,330 --> 01:42:25,189  
crew module up riding system now being

1727  
01:42:29,340 --> 01:42:41,530  
for the bags currently being inflated

1728  
01:42:48,890 --> 01:42:44,510  
and we have a report that Orion is

1729  
01:43:00,430 --> 01:42:48,900  
stable one upright the way it should be

1730  
01:43:06,470 --> 01:43:03,770  
once again Splashdown occurring at 11 40

1731  
01:43:09,649 --> 01:43:06,480  
a.m Central Time 9 40 a.m Pacific Time

1732  
01:43:12,709 --> 01:43:09,659  
west of Baja California after a textbook

1733  
01:43:54,370 --> 01:43:12,719  
entry for the Orion spacecraft bringing

1734  
01:43:59,510 --> 01:43:57,530  
Orion's recovery Beacon is on we have

1735  
01:44:01,970 --> 01:43:59,520  
confirmation that four out of the five

1736  
01:44:04,310 --> 01:44:01,980  
accrue module operating system bags have

1737  
01:44:07,250 --> 01:44:04,320  
fully inflated standing by for word on

1738  
01:44:12,770 --> 01:44:10,310

but Orion is in great shape

1739

01:44:14,810 --> 01:44:12,780

stable one just in the orientation that

1740

01:45:02,930 --> 01:44:14,820

had been expected

1741

01:45:07,970 --> 01:45:05,270

this is Mission Control Houston once

1742

01:45:10,669 --> 01:45:07,980

again the Orion spacecraft

1743

01:45:15,770 --> 01:45:10,679

having completed a journey of 1.4

1744

01:45:20,930 --> 01:45:19,010

bobbing gently in the Pacific Ocean

1745

01:45:22,790 --> 01:45:20,940

four out of its five crew module

1746

01:45:24,649 --> 01:45:22,800

Uprising system bags have been deployed

1747

01:45:25,850 --> 01:45:24,659

we're standing by for word on the fifth

1748

01:45:28,430 --> 01:45:25,860

however

1749

01:45:30,709 --> 01:45:28,440

irrespective of that it is in stable one

1750

01:45:35,149 --> 01:45:30,719

configuration in good shape according to

1751

01:45:39,770 --> 01:45:37,790

and we are now receiving word that all

1752

01:45:42,470 --> 01:45:39,780

five of the crew module operating system

1753

01:45:44,870 --> 01:45:42,480

bags are fully inflated so that's

1754

01:45:47,930 --> 01:45:44,880

exactly what we had hoped for

1755

01:47:48,229 --> 01:45:47,940

Orion uh safely bobbing up and down in

1756

01:47:54,590 --> 01:47:50,810

this is Mission Control Houston uh

1757

01:47:57,229 --> 01:47:54,600

you're looking at the Orion spacecraft

1758

01:48:00,890 --> 01:47:57,239

that splashed down about six and a half

1759

01:48:04,550 --> 01:48:00,900

minutes ago at 11 40 a.m Central Time 9

1760

01:48:09,649 --> 01:48:07,189

we are estimating that it splashed down

1761

01:48:11,330 --> 01:48:09,659

around five nautical miles away from the

1762

01:48:14,270 --> 01:48:11,340

USS Portland

1763

01:48:17,149 --> 01:48:14,280

the uh recovery ship

1764

01:48:20,570 --> 01:48:17,159  
and Navy boats and divers will be

1765

01:48:23,689 --> 01:48:20,580  
approaching the vehicle before long

1766

01:48:26,450 --> 01:48:23,699  
the spacecraft is in what is called a

1767

01:48:30,530 --> 01:48:26,460  
stable one configuration upright

1768

01:48:34,189 --> 01:48:30,540  
just the way we had expected it to be

1769

01:48:37,010 --> 01:48:34,199  
five uh perfectly inflated crew module

1770

01:48:40,310 --> 01:48:37,020  
uprighting system bags maintaining a

1771

01:48:42,590 --> 01:48:40,320  
nice gentle configuration for Orion

1772

01:48:51,229 --> 01:48:42,600  
first of the Navy helicopters now

1773

01:48:56,330 --> 01:48:53,629  
and here in Mission Control some of

1774

01:48:58,850 --> 01:48:56,340  
Orion's systems no longer needed are

1775

01:49:00,950 --> 01:48:58,860  
being powered down many of them will

1776  
01:49:03,770 --> 01:49:00,960  
stay powered up for the next two hours

1777  
01:49:05,090 --> 01:49:03,780  
while we conduct a series of test

1778  
01:49:07,910 --> 01:49:05,100  
objectives

1779  
01:49:11,270 --> 01:49:07,920  
to characterize the thermal conditioning

1780  
01:49:14,450 --> 01:49:11,280  
of the spacecraft that will be important

1781  
01:49:17,030 --> 01:49:14,460  
for future data for crude missions to

1782  
01:49:19,609 --> 01:49:17,040  
determine how long the crews can remain

1783  
01:49:21,530 --> 01:49:19,619  
comfortable inside a vehicle returning

1784  
01:49:27,169 --> 01:49:21,540  
from the Moon

1785  
01:49:28,930 --> 01:49:27,179  
we also will be conducting tests of the

1786  
01:49:31,250 --> 01:49:28,940  
Beacon and

1787  
01:49:34,370 --> 01:49:31,260  
sarsat system

1788  
01:49:35,629 --> 01:49:34,380

for maintaining uh tracking of the

1789

01:49:38,390 --> 01:49:35,639

spacecraft

1790

01:49:41,209 --> 01:49:38,400

for Recovery forces that will be

1791

01:49:44,209 --> 01:49:41,219

approaching the spacecraft in the future

1792

01:49:46,070 --> 01:49:44,219

and uh coming up in the next hour and a

1793

01:49:48,950 --> 01:49:46,080

half will be the reactivation of an

1794

01:49:51,290 --> 01:49:48,960

ammonia boiler system that will provide

1795

01:49:54,770 --> 01:49:51,300

Cooling in the spacecraft as it will

1796

01:51:30,290 --> 01:49:54,780

Owen Crews return from their missions on

1797

01:51:35,330 --> 01:51:32,930

this is Mission Control Houston reports

1798

01:51:38,750 --> 01:51:35,340

from the USS Portland indicate that the

1799

01:51:40,970 --> 01:51:38,760

first of two Navy helicopters uh flying

1800

01:51:43,270 --> 01:51:40,980

in the vicinity of Orion which is about

1801  
01:51:46,609 --> 01:51:43,280  
five nautical miles away from the ship

1802  
01:51:49,370 --> 01:51:46,619  
indicate no damage to the spacecraft and

1803  
01:51:53,709 --> 01:51:49,380  
no hazardous fuel leaking from the

1804  
01:51:57,470 --> 01:51:53,719  
spacecraft good view of the helicopters

1805  
01:51:59,450 --> 01:51:57,480  
and the initial uh Navy boats that will

1806  
01:52:00,770 --> 01:51:59,460  
be approaching Orion a short time from

1807  
01:52:03,410 --> 01:52:00,780  
now

1808  
01:52:07,910 --> 01:52:03,420  
once again the Splashdown occurring at

1809  
01:55:43,870 --> 01:52:07,920  
11 40 a.m Central Time 9 40 a.m Pacific

1810  
01:55:49,850 --> 01:55:47,750  
this is Mission Control Houston Orion

1811  
01:55:52,430 --> 01:55:49,860  
in the Pacific Ocean

1812  
01:55:55,209 --> 01:55:52,440  
having splashed down at 11 40 a.m

1813  
01:55:58,370 --> 01:55:55,219

Central Time 9 40 a.m Pacific time

1814

01:56:00,410 --> 01:55:58,380

around five nautical miles or so from

1815

01:56:02,990 --> 01:56:00,420

the USS Portland

1816

01:56:05,390 --> 01:56:03,000

textbook entry for the vehicle

1817

01:56:07,070 --> 01:56:05,400

on the USS Portland at this hour my

1818

01:56:08,450 --> 01:56:07,080

colleague Daryl Nell from the Kennedy

1819

01:56:10,609 --> 01:56:08,460

Space Center who's with the exploration

1820

01:56:13,669 --> 01:56:10,619

ground systems recovery team

1821

01:56:19,550 --> 01:56:13,679

Daryl uh how did it look to you it

1822

01:56:26,030 --> 01:56:22,010

I'd say that's a great description Rob

1823

01:56:28,189 --> 01:56:26,040

uh perfectly landed here in the Pacific

1824

01:56:31,030 --> 01:56:28,199

Ocean and that's been confirmed by the

1825

01:56:33,410 --> 01:56:31,040

operations manager that I just spoke to

1826

01:56:35,270 --> 01:56:33,420

watching it from the deck as an observer

1827

01:56:36,890 --> 01:56:35,280

we have you know as you can see some

1828

01:56:38,510 --> 01:56:36,900

broken clouds in the sky like right

1829

01:56:41,090 --> 01:56:38,520

around 3000 feet

1830

01:56:42,890 --> 01:56:41,100

but uh we saw those three full main

1831

01:56:45,229 --> 01:56:42,900

parachutes pop out

1832

01:56:46,070 --> 01:56:45,239

it was a beautiful sight probably just

1833

01:56:47,750 --> 01:56:46,080

about

1834

01:56:49,550 --> 01:56:47,760

you know several thousand feet in the

1835

01:56:50,750 --> 01:56:49,560

sky and then we watched that slow

1836

01:56:53,209 --> 01:56:50,760

descent

1837

01:56:54,290 --> 01:56:53,219

as the Orion crew module made its way

1838

01:56:58,129 --> 01:56:54,300

down

1839

01:57:00,649 --> 01:56:58,139

uh to the Pacific Ocean saw the splash

1840

01:57:03,109 --> 01:57:00,659

and then uh of course the assets aboard

1841

01:57:05,510 --> 01:57:03,119

the USS Portland here immediately

1842

01:57:09,050 --> 01:57:05,520

started making their way towards the

1843

01:57:13,430 --> 01:57:09,060

Splashdown site and as you see live now

1844

01:57:15,470 --> 01:57:13,440

they uh they are close to being

1845

01:57:17,209 --> 01:57:15,480

next to the capsule now the helicopters

1846

01:57:19,669 --> 01:57:17,219

that you see flying there those are

1847

01:57:21,589 --> 01:57:19,679

inmates image 60s

1848

01:57:23,030 --> 01:57:21,599

we have two of them in the air and they

1849

01:57:25,910 --> 01:57:23,040

are right now

1850

01:57:27,770 --> 01:57:25,920

Gathering high quality high definition

1851

01:57:31,070 --> 01:57:27,780

imagery

1852

01:57:32,770 --> 01:57:31,080

of the capsule in the water

1853

01:57:35,390 --> 01:57:32,780

there's a spotter aboard we have

1854

01:57:37,370 --> 01:57:35,400

photographers as well

1855

01:57:38,990 --> 01:57:37,380

the doors are completely open on both

1856

01:57:40,669 --> 01:57:39,000

sides of the helicopters and so you can

1857

01:57:44,870 --> 01:57:40,679

see them flying

1858

01:57:47,750 --> 01:57:44,880

a circular track around the Splashdown

1859

01:57:51,709 --> 01:57:47,760

location they have marked if you can see

1860

01:57:53,149 --> 01:57:51,719

it you can see what looks like smoke

1861

01:57:55,250 --> 01:57:53,159

um coming off

1862

01:57:56,030 --> 01:57:55,260

a location just to the left there that

1863

01:57:59,270 --> 01:57:56,040

is

1864

01:58:01,850 --> 01:57:59,280

the boats having marked location where

1865

01:58:03,649 --> 01:58:01,860

some of the debris has come down the

1866

01:58:06,470 --> 01:58:03,659

debris that was part of the separation

1867

01:58:07,669 --> 01:58:06,480

event the part of the parachutes opening

1868

01:58:10,010 --> 01:58:07,679

event

1869

01:58:13,129 --> 01:58:10,020

so you have

1870

01:58:15,350 --> 01:58:13,139

the Sabo as well as the lid from the

1871

01:58:17,510 --> 01:58:15,360

parachutes all of that is being tracked

1872

01:58:19,910 --> 01:58:17,520

by the Sasquatch team

1873

01:58:20,810 --> 01:58:19,920

and the Navy boats are marking that with

1874

01:58:25,669 --> 01:58:20,820

uh

1875

01:58:30,770 --> 01:58:28,790

all of that Hardware the team wants to

1876  
01:58:32,570 --> 01:58:30,780  
recover because there's valuable

1877  
01:58:35,089 --> 01:58:32,580  
information in data

1878  
01:58:37,129 --> 01:58:35,099  
in it

1879  
01:58:40,129 --> 01:58:37,139  
the helicopters will be out

1880  
01:58:41,270 --> 01:58:40,139  
for another 20 minutes Gathering imagery

1881  
01:58:42,770 --> 01:58:41,280  
you can see

1882  
01:58:44,810 --> 01:58:42,780  
one of them

1883  
01:58:46,970 --> 01:58:44,820  
getting very close

1884  
01:58:50,089 --> 01:58:46,980  
to the crew module

1885  
01:58:53,450 --> 01:58:50,099  
there is an GSS camera

1886  
01:58:59,570 --> 01:58:53,460  
ultra high definition 8K

1887  
01:58:59,580 --> 01:59:03,950  
we are currently on course

1888  
01:59:09,169 --> 01:59:06,169

to go right by the Splashdown location

1889

01:59:12,770 --> 01:59:09,179

so we are right about three and a half

1890

01:59:17,870 --> 01:59:14,570

we are going to a point that's going to

1891

01:59:19,550 --> 01:59:17,880

be one mile out that's our next Waypoint

1892

01:59:23,089 --> 01:59:19,560

one mile out from the Splashdown

1893

01:59:28,850 --> 01:59:25,370

one of the things we're waiting for is

1894

01:59:31,189 --> 01:59:28,860

for ammonia boil off and that's why the

1895

01:59:32,870 --> 01:59:31,199

Navy boats are not yet next to the

1896

01:59:36,410 --> 01:59:32,880

capsule will still

1897

01:59:39,589 --> 01:59:36,420

going to wait that out the amount of

1898

01:59:41,390 --> 01:59:39,599

time that that's going to take is uh

1899

01:59:45,050 --> 01:59:41,400

has not been determined they have

1900

01:59:48,050 --> 01:59:45,060

allowed for as much as two hours

1901  
01:59:50,750 --> 01:59:48,060  
the ammonia on the capsule is used for

1902  
01:59:52,970 --> 01:59:50,760  
cooling purposes to keep the cabin cool

1903  
01:59:55,370 --> 01:59:52,980  
for crew of course there's no crew in

1904  
01:59:58,070 --> 01:59:55,380  
this capsule but uh

1905  
02:00:00,770 --> 01:59:58,080  
for future missions it will certainly be

1906  
02:00:02,330 --> 02:00:00,780  
an important part of keeping the

1907  
02:00:03,770 --> 02:00:02,340  
astronauts

1908  
02:00:06,410 --> 02:00:03,780  
cool

1909  
02:00:09,490 --> 02:00:06,420  
during the heat of re-entry but for now

1910  
02:00:12,890 --> 02:00:09,500  
they're going to vent off that ammonia

1911  
02:00:14,629 --> 02:00:12,900  
and as they do that it's not quite safe

1912  
02:00:19,750 --> 02:00:14,639  
to get close to the capsule with the

1913  
02:00:25,490 --> 02:00:23,510

so of course we'll keep our eyes

1914

02:00:28,010 --> 02:00:25,500

fixed to the location

1915

02:00:31,189 --> 02:00:28,020

our cameras as well

1916

02:00:33,470 --> 02:00:31,199

USS Portland's uh standing by for our

1917

02:00:35,870 --> 02:00:33,480

next Waypoint one mile from

1918

02:00:37,669 --> 02:00:35,880

the Splashdown site

1919

02:00:40,250 --> 02:00:37,679

and then once the completion of the

1920

02:00:43,129 --> 02:00:40,260

ammonia boil off the Navy boats will be

1921

02:00:48,770 --> 02:00:45,770

spectacular site from out here Rob toss

1922

02:00:52,729 --> 02:00:50,750

thanks Daryl uh back here in mission

1923

02:00:55,550 --> 02:00:52,739

control of the entry flight director

1924

02:00:58,070 --> 02:00:55,560

Judd freiling on the left to his left

1925

02:01:00,229 --> 02:00:58,080

flight director Rick henfling

1926

02:01:02,570 --> 02:01:00,239

and with me on Console here probably

1927

02:01:04,609 --> 02:01:02,580

none more important than the NASA

1928

02:01:09,290 --> 02:01:04,619

administrator Bill Nelson Senator thank

1929

02:01:15,649 --> 02:01:12,950

Rob I'm overwhelmed uh you know I'd say

1930

02:01:17,510 --> 02:01:15,659

it's good to see you but this is uh an

1931

02:01:20,089 --> 02:01:17,520

extraordinary day

1932

02:01:22,970 --> 02:01:20,099

I remember years ago when I saw you

1933

02:01:25,970 --> 02:01:22,980

return on Columbia from your mission

1934

02:01:28,070 --> 02:01:25,980

into space and it all conjures up a

1935

02:01:30,189 --> 02:01:28,080

tremendous amount of memories

1936

02:01:33,109 --> 02:01:30,199

Orion back on Earth having

1937

02:01:36,189 --> 02:01:33,119

circumnavigated the moon having survived

1938

02:01:39,649 --> 02:01:36,199

a critical test of its heat shield

1939

02:01:41,870 --> 02:01:39,659

you I think you have to be hesitant to

1940

02:01:44,930 --> 02:01:41,880

celebrate and throw confetti a little

1941

02:01:47,270 --> 02:01:44,940

bit too early but uh it certainly uh is

1942

02:01:50,629 --> 02:01:47,280

an important achievement is it not

1943

02:01:54,010 --> 02:01:50,639

uh it's historic because we are now

1944

02:01:57,229 --> 02:01:54,020

going back into space into deep space

1945

02:02:01,189 --> 02:01:57,239

with a new generation

1946

02:02:04,430 --> 02:02:01,199

uh Kennedy uh just uh stunned everybody

1947

02:02:06,530 --> 02:02:04,440

with the Apollo generation and said that

1948

02:02:09,109 --> 02:02:06,540

we were going to achieve what we thought

1949

02:02:11,750 --> 02:02:09,119

was impossible

1950

02:02:14,629 --> 02:02:11,760

uh and did that in a short period of

1951

02:02:18,290 --> 02:02:14,639

time and uh many things have happened

1952

02:02:20,510 --> 02:02:18,300

since but we knew we were going back

1953

02:02:25,310 --> 02:02:20,520

but we knew we were going back to the

1954

02:02:27,410 --> 02:02:25,320

Moon just to continue to explore outward

1955

02:02:31,970 --> 02:02:27,420

into the cosmos

1956

02:02:37,129 --> 02:02:31,980

and so that's why this is a defining day

1957

02:02:40,030 --> 02:02:37,139

uh it is one that marks new technology a

1958

02:02:45,169 --> 02:02:40,040

whole new breed of astronaut

1959

02:02:49,550 --> 02:02:45,179

uh a a vision for the future that

1960

02:02:52,129 --> 02:02:49,560

captures the DNA of particularly

1961

02:02:56,510 --> 02:02:52,139

Americans although we do this as an

1962

02:03:00,589 --> 02:02:56,520

international Venture and that DNA is we

1963

02:03:03,470 --> 02:03:00,599

are adventurers we are explorers

1964

02:03:06,609 --> 02:03:03,480

we always have a frontier

1965

02:03:10,669 --> 02:03:06,619

and that Frontier is now to continue

1966

02:03:12,830 --> 02:03:10,679

exploring the heavens

1967

02:03:14,450 --> 02:03:12,840

we had to wait a while for Artemis to

1968

02:03:17,270 --> 02:03:14,460

finally get to the point where the space

1969

02:03:19,910 --> 02:03:17,280

launch system uh got us underway back on

1970

02:03:21,950 --> 02:03:19,920

November 16th but once it did these

1971

02:03:24,290 --> 02:03:21,960

engineers and the other members of the

1972

02:03:26,030 --> 02:03:24,300

teams front room back room

1973

02:03:27,770 --> 02:03:26,040

they've been pretty giddy over the

1974

02:03:29,930 --> 02:03:27,780

amount of data that they've required and

1975

02:03:31,970 --> 02:03:29,940

how this vehicle appears to have

1976

02:03:33,350 --> 02:03:31,980

exceeded its expectations and its

1977

02:03:37,729 --> 02:03:33,360

performance

1978

02:03:40,609 --> 02:03:37,739

the whole vehicle uh the rocket uh the

1979

02:03:46,209 --> 02:03:40,619

European participation in the support

1980

02:03:49,729 --> 02:03:46,219

module uh the uh spacecraft itself Orion

1981

02:03:53,810 --> 02:03:49,739

performing so well that they added a lot

1982

02:03:56,390 --> 02:03:53,820

of tests and uh lo and behold we're

1983

02:04:00,109 --> 02:03:56,400

going to be uh we're going to be up to

1984

02:04:02,689 --> 02:04:00,119

our years in data thankfully and of

1985

02:04:06,470 --> 02:04:02,699

course today the the two main things

1986

02:04:08,030 --> 02:04:06,480

that had to happen was that uh that heat

1987

02:04:11,030 --> 02:04:08,040

shield had to work and it did

1988

02:04:14,089 --> 02:04:11,040

beautifully where they can skip off the

1989

02:04:16,490 --> 02:04:14,099

atmosphere and bleed that speed down

1990

02:04:17,990 --> 02:04:16,500

from 25

1991

02:04:21,770 --> 02:04:18,000

000 miles an hour

1992

02:04:24,229 --> 02:04:21,780

and uh and then uh the parachutes had to

1993

02:04:26,270 --> 02:04:24,239

work and they did it as well

1994

02:04:28,430 --> 02:04:26,280

you know the engineering the design of

1995

02:04:30,589 --> 02:04:28,440

this Mission all the work that will go

1996

02:04:33,229 --> 02:04:30,599

into the next flight when a crew is on

1997

02:04:35,330 --> 02:04:33,239

board right to orbit the Moon uh what

1998

02:04:38,209 --> 02:04:35,340

does this say about NASA and the

1999

02:04:41,149 --> 02:04:38,219

international partner cooperation and

2000

02:04:43,790 --> 02:04:41,159

the partnership that ultimately takes us

2001

02:04:46,030 --> 02:04:43,800

not only to the moon but beyond

2002

02:04:49,750 --> 02:04:46,040

well it says a lot about our country

2003

02:04:53,570 --> 02:04:49,760

because we don't do it secretively

2004

02:04:57,830 --> 02:04:53,580

we do it openly and we do it with our

2005

02:04:58,850 --> 02:04:57,840

friends and we invite all peoples of the

2006

02:05:02,570 --> 02:04:58,860

Earth

2007

02:05:05,689 --> 02:05:02,580

uh and uh we are doing it also with

2008

02:05:09,010 --> 02:05:05,699

commercial partners because when we go

2009

02:05:12,770 --> 02:05:09,020

into orbit uh on Apollo 3

2010

02:05:16,430 --> 02:05:12,780

we are going to Rendezvous and Doc with

2011

02:05:19,129 --> 02:05:16,440

a in this case SpaceX Lander

2012

02:05:21,770 --> 02:05:19,139

and the crew will go down to the surface

2013

02:05:24,470 --> 02:05:21,780

and and then we have another competition

2014

02:05:26,510 --> 02:05:24,480

going on now for another Lander so that

2015

02:05:30,109 --> 02:05:26,520

we will have two Landers

2016

02:05:32,990 --> 02:05:30,119

uh and again this is the the program of

2017

02:05:38,089 --> 02:05:33,000

going back to the Moon to learn to live

2018

02:05:41,570 --> 02:05:38,099

to invent to create in order to explore

2019

02:05:47,510 --> 02:05:44,990

50 years ago today Gene cernan Jack

2020

02:05:49,129 --> 02:05:47,520

Schmidt landed their lunar module

2021

02:05:51,950 --> 02:05:49,139

Challenger

2022

02:05:54,470 --> 02:05:51,960

on Taurus litro the final lunar Landing

2023

02:05:56,149 --> 02:05:54,480

it only seems fitting half a century

2024

02:05:58,310 --> 02:05:56,159

later to the day

2025

02:06:02,330 --> 02:05:58,320

Orion back home

2026

02:06:06,050 --> 02:06:02,340

and uh what a what a fitting opportunity

2027

02:06:08,589 --> 02:06:06,060

that I had last night to sit with Jack

2028

02:06:11,870 --> 02:06:08,599

Schmidt at the astronaut dinner

2029

02:06:15,890 --> 02:06:11,880

and uh to talk to him about those

2030

02:06:18,109 --> 02:06:15,900

experiences uh 50 years it's a long time

2031

02:06:20,209 --> 02:06:18,119

but look what we have done in the

2032

02:06:21,950 --> 02:06:20,219

meantime the space shuttle we built the

2033

02:06:25,129 --> 02:06:21,960

International Space Station we brought

2034

02:06:27,950 --> 02:06:25,139

in commercial Partners we now go to and

2035

02:06:32,149 --> 02:06:27,960

from regularly the International Space

2036

02:06:35,030 --> 02:06:32,159

Station with cargo and crew and here we

2037

02:06:37,790 --> 02:06:35,040

go we've got Scouts going to the Moon

2038

02:06:40,189 --> 02:06:37,800

that are commercial Scouts that land

2039

02:06:43,010 --> 02:06:40,199

that take NASA instruments and

2040

02:06:46,910 --> 02:06:43,020

scientific instruments in preparing us

2041

02:06:49,490 --> 02:06:46,920

for The Landings of our astronauts and

2042

02:06:51,290 --> 02:06:49,500

so it's it's a new day A New Day Has

2043

02:06:54,890 --> 02:06:51,300

dawned

2044

02:06:56,209 --> 02:06:54,900

um an Artemis generation is taking us

2045

02:07:00,709 --> 02:06:56,219

there

2046

02:07:02,689 --> 02:07:00,719

and uh Orion continues uh to await the

2047

02:07:04,850 --> 02:07:02,699

arrival of the USS Portland which

2048

02:07:07,189 --> 02:07:04,860

shouldn't be very much longer from now

2049

02:07:09,169 --> 02:07:07,199

and uh some flight test objectives that

2050

02:07:10,910 --> 02:07:09,179

will be uh taking place over the next

2051  
02:07:12,770 --> 02:07:10,920  
couple of hours before we here in

2052  
02:07:15,470 --> 02:07:12,780  
Houston hand the vehicle over to the

2053  
02:07:17,209 --> 02:07:15,480  
Kennedy Space Center recovery team NASA

2054  
02:07:19,310 --> 02:07:17,219  
administrator Bill Nelson pleasure to

2055  
02:07:20,330 --> 02:07:19,320  
see you today and thank you so much for

2056  
02:08:13,990 --> 02:07:20,340  
being with us

2057  
02:08:20,030 --> 02:08:16,669  
this is Mission Control Houston 26

2058  
02:08:22,310 --> 02:08:20,040  
minutes after the return of Orion from

2059  
02:08:24,530 --> 02:08:22,320  
its circumnavigation of the Moon and a

2060  
02:08:26,629 --> 02:08:24,540  
splash down in the Pacific a bull's-eye

2061  
02:08:29,030 --> 02:08:26,639  
Splashdown just about five nautical

2062  
02:08:33,470 --> 02:08:29,040  
miles away from the USS Portland as had

2063  
02:08:35,330 --> 02:08:33,480

been land the Portland about to arrive

2064

02:08:37,609 --> 02:08:35,340

near the spacecraft as you heard from

2065

02:08:39,830 --> 02:08:37,619

Daryl nail who at this moment is

2066

02:08:41,330 --> 02:08:39,840

standing by on the Portland with the

2067

02:08:47,450 --> 02:08:41,340

woman in charge of the recovery

2068

02:08:51,649 --> 02:08:49,070

thank you rob that's right Melissa Jones

2069

02:08:54,050 --> 02:08:51,659

the recovery director just uh came from

2070

02:08:56,229 --> 02:08:54,060

outside the ship's control center where

2071

02:08:59,209 --> 02:08:56,239

she was monitoring and of course

2072

02:09:01,370 --> 02:08:59,219

managing her team in the midst of this

2073

02:09:03,290 --> 02:09:01,380

recovery so Melissa thank you for being

2074

02:09:06,169 --> 02:09:03,300

here thank you for having me it's an

2075

02:09:08,870 --> 02:09:06,179

exciting day what a day it is right we

2076  
02:09:11,330 --> 02:09:08,880  
just had Splashdown and want to ask you

2077  
02:09:13,729 --> 02:09:11,340  
first of all operationally where do we

2078  
02:09:15,530 --> 02:09:13,739  
stand and what do we have to go

2079  
02:09:17,629 --> 02:09:15,540  
uh so we had a picture perfect

2080  
02:09:19,250 --> 02:09:17,639  
Splashdown and at this time we're

2081  
02:09:21,050 --> 02:09:19,260  
Gathering data

2082  
02:09:22,850 --> 02:09:21,060  
um with the CM powered up we'll get some

2083  
02:09:24,589 --> 02:09:22,860  
flight test objective data on thermal

2084  
02:09:26,089 --> 02:09:24,599  
conditioning

2085  
02:09:27,709 --> 02:09:26,099  
um and do we're doing some signal data

2086  
02:09:29,990 --> 02:09:27,719  
with the Tribune beacons making sure

2087  
02:09:31,790 --> 02:09:30,000  
that we can see the beacons on the

2088  
02:09:33,649 --> 02:09:31,800

capsules and on the astronaut suits to

2089

02:09:35,270 --> 02:09:33,659

prepare for Artemis too

2090

02:09:36,950 --> 02:09:35,280

um and once that that is complete the

2091

02:09:38,209 --> 02:09:36,960

vehicle will be powered down by the

2092

02:09:40,490 --> 02:09:38,219

Mission Control Center and they'll hand

2093

02:09:43,430 --> 02:09:40,500

that over officially to us here locally

2094

02:09:45,709 --> 02:09:43,440

in the Pacific and then we will approach

2095

02:09:47,149 --> 02:09:45,719

the capsule and attach some lines to it

2096

02:09:49,490 --> 02:09:47,159

and pull it into the back of the well

2097

02:09:51,709 --> 02:09:49,500

deck and that's a delicate mission right

2098

02:09:54,290 --> 02:09:51,719

uh because you will be attaching lines

2099

02:09:56,689 --> 02:09:54,300

and through the use of Navy boats and

2100

02:09:59,510 --> 02:09:56,699

then also a winch inside the well deck

2101  
02:10:01,310 --> 02:09:59,520  
and Navy sailors on the lines attached

2102  
02:10:02,930 --> 02:10:01,320  
to it as well it seems like a very

2103  
02:10:04,550 --> 02:10:02,940  
delicate operation especially getting in

2104  
02:10:06,589 --> 02:10:04,560  
the well deck where waves will be

2105  
02:10:08,810 --> 02:10:06,599  
sloshing around and we've got already

2106  
02:10:10,910 --> 02:10:08,820  
four to five foot Seas out here in the

2107  
02:10:13,609 --> 02:10:10,920  
Pacific correct so it is a delicate

2108  
02:10:15,050 --> 02:10:13,619  
balance to try to control the capsule in

2109  
02:10:18,050 --> 02:10:15,060  
the well Deck with all the water that we

2110  
02:10:19,790 --> 02:10:18,060  
have in there and to softly land it on

2111  
02:10:21,229 --> 02:10:19,800  
the Cradle so that we can capture as

2112  
02:10:24,290 --> 02:10:21,239  
much data from the heat shield as

2113  
02:10:26,149 --> 02:10:24,300

possible now as the capsule was coming

2114

02:10:33,890 --> 02:10:26,159

down just briefly tell me your reaction

2115

02:10:37,490 --> 02:10:35,629

aking this mission for a while and we've

2116

02:10:39,709 --> 02:10:37,500

done a ton of training and every time

2117

02:10:41,570 --> 02:10:39,719

you do training with a mock-up capsule

2118

02:10:44,089 --> 02:10:41,580

you don't have any of that you don't

2119

02:10:45,470 --> 02:10:44,099

have parachutes you don't you know hear

2120

02:10:47,030 --> 02:10:45,480

it coming back to the atmosphere the

2121

02:10:50,270 --> 02:10:47,040

Sonic booms and all that kind of stuff

2122

02:10:51,709 --> 02:10:50,280

and today that actually happened uh it's

2123

02:10:53,930 --> 02:10:51,719

just amazing

2124

02:10:56,149 --> 02:10:53,940

and your team it's worth noting has been

2125

02:10:58,970 --> 02:10:56,159

out here a long time from the moment of

2126  
02:11:01,310 --> 02:10:58,980  
launch you were on Console ready to

2127  
02:11:03,709 --> 02:11:01,320  
support if something off nominal

2128  
02:11:06,109 --> 02:11:03,719  
happened unusual you're going to be able

2129  
02:11:07,910 --> 02:11:06,119  
to recover that capsule wherever it was

2130  
02:11:09,470 --> 02:11:07,920  
needed to recover so you were working

2131  
02:11:12,770 --> 02:11:09,480  
that and then stayed through

2132  
02:11:14,330 --> 02:11:12,780  
Thanksgiving all the way to now so it's

2133  
02:11:15,950 --> 02:11:14,340  
been a long road it has been yeah

2134  
02:11:18,290 --> 02:11:15,960  
several of us supported launch and then

2135  
02:11:20,149 --> 02:11:18,300  
we deployed out here about 23 days

2136  
02:11:22,729 --> 02:11:20,159  
before and we're out here for

2137  
02:11:24,709 --> 02:11:22,739  
Thanksgiving as a team so it we have

2138  
02:11:25,850 --> 02:11:24,719

been waiting for this and preparing for

2139

02:11:27,109 --> 02:11:25,860

it for a while

2140

02:11:29,089 --> 02:11:27,119

and it looks like you're doing a great

2141

02:11:30,890 --> 02:11:29,099

job so far good luck the rest of the way

2142

02:11:32,330 --> 02:11:30,900

Melissa Jones and thank you for joining

2143

02:11:39,910 --> 02:11:32,340

us thank you very much thanks for having

2144

02:11:46,550 --> 02:11:43,189

thank you Daryl we'll be back to you on

2145

02:11:48,830 --> 02:11:46,560

the USS Portland here shortly as uh the

2146

02:11:50,570 --> 02:11:48,840

post Splashdown activities and the

2147

02:11:52,790 --> 02:11:50,580

recovery operations

2148

02:11:54,649 --> 02:11:52,800

will continue as mentioned earlier it

2149

02:11:57,709 --> 02:11:54,659

will take about two hours from the time

2150

02:11:59,330 --> 02:11:57,719

of Splashdown until the time that uh

2151  
02:12:01,609 --> 02:11:59,340  
flight director Judd frieling and his

2152  
02:12:04,310 --> 02:12:01,619  
team of Entry flight controllers here

2153  
02:12:06,609 --> 02:12:04,320  
will hand the vehicle over to the

2154  
02:12:10,010 --> 02:12:06,619  
exploration ground system recovery team

2155  
02:12:12,290 --> 02:12:10,020  
that will work over the next several

2156  
02:12:15,050 --> 02:12:12,300  
hours to bring the Orion into the well

2157  
02:12:18,350 --> 02:12:15,060  
deck of the USS Portland

2158  
02:12:21,470 --> 02:12:18,360  
with me a familiar face Bob Cabana

2159  
02:12:23,870 --> 02:12:21,480  
NASA's associate administrator Bob

2160  
02:12:26,510 --> 02:12:23,880  
it's great to see you here and with

2161  
02:12:28,390 --> 02:12:26,520  
Orion back on Earth another Milestone

2162  
02:12:31,250 --> 02:12:28,400  
accomplished on the road back to putting

2163  
02:12:33,589 --> 02:12:31,260

Americans on the surface of the Moon in

2164

02:12:36,770 --> 02:12:33,599

terms of the criticality of what we've

2165

02:12:40,490 --> 02:12:36,780

seen over the past four weeks your

2166

02:12:43,189 --> 02:12:40,500

thoughts on how this Mission evolved and

2167

02:12:45,410 --> 02:12:43,199

now the stepping stone that would put a

2168

02:12:48,589 --> 02:12:45,420

crew on board a couple of years from now

2169

02:12:50,810 --> 02:12:48,599

our rabbit's been absolutely critical to

2170

02:12:53,689 --> 02:12:50,820

get this Mission off safely this test

2171

02:12:56,089 --> 02:12:53,699

flight is what we need in order to prove

2172

02:12:57,530 --> 02:12:56,099

this vehicle so that we can fly with a

2173

02:12:59,209 --> 02:12:57,540

crew and that's the next step and I

2174

02:13:03,229 --> 02:12:59,219

can't wait

2175

02:13:04,970 --> 02:13:03,239

um you know the launch first uh yeah I

2176  
02:13:06,229 --> 02:13:04,980  
was uh on the roof of the launch control

2177  
02:13:07,850 --> 02:13:06,239  
center I went up there with the

2178  
02:13:09,350 --> 02:13:07,860  
administrator and Deputy Administrator

2179  
02:13:11,990 --> 02:13:09,360  
when we came out of the T-minus 10

2180  
02:13:14,149 --> 02:13:12,000  
minute hold and it was phenomenal it was

2181  
02:13:16,910 --> 02:13:14,159  
absolutely amazing the rocket performed

2182  
02:13:19,609 --> 02:13:16,920  
flawlessly and I haven't been that happy

2183  
02:13:22,910 --> 02:13:19,619  
in a long time after we came down off

2184  
02:13:25,250 --> 02:13:22,920  
the roof and then to see the mission go

2185  
02:13:27,229 --> 02:13:25,260  
as well as it did the shots that we got

2186  
02:13:29,810 --> 02:13:27,239  
from the vehicle that one from 40 000

2187  
02:13:32,209 --> 02:13:29,820  
miles away where you saw the the moon

2188  
02:13:34,310 --> 02:13:32,219

with the Earth in the background and

2189

02:13:36,530 --> 02:13:34,320

then this morning I mean we've learned

2190

02:13:38,569 --> 02:13:36,540

how to operate this vehicle a few minor

2191

02:13:41,330 --> 02:13:38,579

glitches along the way but it is

2192

02:13:43,310 --> 02:13:41,340

performed uh flawlessly and we're

2193

02:13:45,950 --> 02:13:43,320

learning how to work with it operate it

2194

02:13:47,450 --> 02:13:45,960

and that's what this JSC team does it is

2195

02:13:50,450 --> 02:13:47,460

so great to be back here in Mission

2196

02:13:53,270 --> 02:13:50,460

Control to be with the Ops Team I'm so

2197

02:13:55,129 --> 02:13:53,280

proud of these guys amazing but if you

2198

02:13:57,169 --> 02:13:55,139

were watching this morning I love the

2199

02:13:59,750 --> 02:13:57,179

video I don't know if it was on NASA TV

2200

02:14:01,189 --> 02:13:59,760

or not but the moon just kept I mean the

2201

02:14:03,229 --> 02:14:01,199

Earth just kept getting bigger and

2202

02:14:06,530 --> 02:14:03,239

bigger it was really hauling as it came

2203

02:14:08,149 --> 02:14:06,540

in and the preciseness with which they

2204

02:14:11,089 --> 02:14:08,159

were able to bring it down and seeing

2205

02:14:14,089 --> 02:14:11,099

the shoots come out and it's just I I'm

2206

02:14:18,950 --> 02:14:14,099

so proud of this team the Orion team the

2207

02:14:22,550 --> 02:14:18,960

entire SLS Artemis team the folks here

2208

02:14:24,530 --> 02:14:22,560

at JSC it's just been amazing now my

2209

02:14:26,930 --> 02:14:24,540

only I wish Gene cernan were still alive

2210

02:14:28,850 --> 02:14:26,940

you know here we are on the 50th

2211

02:14:30,589 --> 02:14:28,860

anniversary and Gene was such a

2212

02:14:32,450 --> 02:14:30,599

proponent of getting us back to the Moon

2213

02:14:33,950 --> 02:14:32,460

I wish I wish you were alive to have

2214

02:14:35,089 --> 02:14:33,960

seen this Mission it would have meant a

2215

02:14:37,370 --> 02:14:35,099

lot to them

2216

02:14:38,930 --> 02:14:37,380

I don't want to date you but I think 24

2217

02:14:41,330 --> 02:14:38,940

years ago

2218

02:14:43,370 --> 02:14:41,340

right this at this moment in time you

2219

02:14:47,990 --> 02:14:43,380

were building a space station I believe

2220

02:14:50,450 --> 02:14:48,000

with your crew on sts-88 uh we had so

2221

02:14:53,149 --> 02:14:50,460

many dramatic jaw-dropping images during

2222

02:14:57,229 --> 02:14:53,159

the course of this flight what for you

2223

02:15:02,569 --> 02:14:59,629

oh I I don't I'm not sure I can pick one

2224

02:15:04,850 --> 02:15:02,579

obviously the launch the team has worked

2225

02:15:08,390 --> 02:15:04,860

so hard uh to get to the point where we

2226

02:15:11,270 --> 02:15:08,400

successfully launched this rocket

2227

02:15:13,550 --> 02:15:11,280

um I think the successful Burns along

2228

02:15:16,189 --> 02:15:13,560

the way to actually get that go for the

2229

02:15:17,589 --> 02:15:16,199

tli burn and do it and be on our way to

2230

02:15:20,750 --> 02:15:17,599

the Moon again

2231

02:15:24,169 --> 02:15:20,760

absolutely awesome I think the pictures

2232

02:15:26,569 --> 02:15:24,179

that we saw but the Splashdown how can

2233

02:15:28,370 --> 02:15:26,579

you not I mean this was really emotional

2234

02:15:31,669 --> 02:15:28,380

going around and congratulating folks

2235

02:15:34,250 --> 02:15:31,679

for what we did so I uh it's hard to

2236

02:15:35,750 --> 02:15:34,260

pick just one I think what has meant the

2237

02:15:38,390 --> 02:15:35,760

most to me

2238

02:15:40,850 --> 02:15:38,400

more than just watching the mission more

2239

02:15:43,970 --> 02:15:40,860

than the mission highlights is being

2240

02:15:45,410 --> 02:15:43,980

with the teams at the Kennedy Space

2241

02:15:47,689 --> 02:15:45,420

Center at the Marshall space flight

2242

02:15:49,729 --> 02:15:47,699

center here at the Johnson Space Center

2243

02:15:52,490 --> 02:15:49,739

and just being able to go up and talk to

2244

02:15:54,350 --> 02:15:52,500

them and thank them for all their hard

2245

02:15:57,350 --> 02:15:54,360

work that got us to where we are I think

2246

02:16:00,770 --> 02:15:57,360

I just it means a lot to me

2247

02:16:02,930 --> 02:16:00,780

and Bob uh final question the The Next

2248

02:16:05,629 --> 02:16:02,940

Step Artemis 2 putting a crew on a

2249

02:16:07,370 --> 02:16:05,639

vehicle to orbit the Moon it's going to

2250

02:16:09,109 --> 02:16:07,380

be a complicated Mission it's a long

2251

02:16:12,530 --> 02:16:09,119

road it seems like a long time from now

2252

02:16:15,830 --> 02:16:12,540

but based on what we've just witnessed

2253

02:16:18,890 --> 02:16:15,840

and based on what we believe will be the

2254

02:16:21,050 --> 02:16:18,900

ultimate data flow out of this Mission

2255

02:16:22,970 --> 02:16:21,060

it doesn't seem that far away it doesn't

2256

02:16:25,129 --> 02:16:22,980

it is not that far away it's going to

2257

02:16:26,930 --> 02:16:25,139

mean a lot when we get the crew assigned

2258

02:16:29,629 --> 02:16:26,940

and we see them in training we get that

2259

02:16:32,750 --> 02:16:29,639

human face to this I've seen the flight

2260

02:16:34,969 --> 02:16:32,760

Hardware at KSC the Orion 2 spacecraft

2261

02:16:37,730 --> 02:16:34,979

for Artemis 2 is there it's in build we

2262

02:16:40,310 --> 02:16:37,740

got to get Artemis one back and transfer

2263

02:16:41,570 --> 02:16:40,320

some of the black boxes across to make

2264

02:16:43,190 --> 02:16:41,580

sure that they get checked out and

2265

02:16:45,610 --> 02:16:43,200

everything works

2266

02:16:49,790 --> 02:16:45,620

um you know the the Rockets being built

2267

02:16:51,410 --> 02:16:49,800

we are on the way and it I think when

2268

02:16:52,790 --> 02:16:51,420

you put a human face to that when you

2269

02:16:55,250 --> 02:16:52,800

actually see that hey we're sending

2270

02:16:57,230 --> 02:16:55,260

humans to the Moon again and we're going

2271

02:16:58,849 --> 02:16:57,240

to get this one year Cadence eventually

2272

02:17:02,030 --> 02:16:58,859

where we're doing this on an annual

2273

02:17:04,190 --> 02:17:02,040

basis this is our future and it's it's

2274

02:17:06,349 --> 02:17:04,200

different from how we went during Apollo

2275

02:17:09,049 --> 02:17:06,359

we're going in a sustainable way we're

2276

02:17:11,089 --> 02:17:09,059

Paving the way to go on to Mars not just

2277

02:17:12,830 --> 02:17:11,099

the moon and Mars but to establish a

2278

02:17:15,169 --> 02:17:12,840

presence in our solar system beyond our

2279

02:17:17,450 --> 02:17:15,179

home planet to explore to have those

2280

02:17:20,089 --> 02:17:17,460

Technologies in space to continue to

2281

02:17:21,950 --> 02:17:20,099

learn and uh and improve things here on

2282

02:17:23,810 --> 02:17:21,960

planet Earth

2283

02:17:25,129 --> 02:17:23,820

Bob Cabana NASA's associate

2284

02:17:27,830 --> 02:17:25,139

administrator thanks so much for being

2285

02:17:30,469 --> 02:17:27,840

with us Bob rob it is always a pleasure

2286

02:17:32,629 --> 02:17:30,479

to share a mic with the voice of NASA

2287

02:17:33,950 --> 02:17:32,639

I'm uh I think a lot of you buddy you

2288

02:17:36,049 --> 02:17:33,960

know that we've worked together a long

2289

02:17:37,910 --> 02:17:36,059

time you keep doing a great job

2290

02:17:39,770 --> 02:17:37,920

thank you very much Bob Bob Cabana

2291

02:18:24,169 --> 02:17:39,780

NASA's associate administrator with us

2292

02:18:29,330 --> 02:18:26,450

this is Mission Control Houston

2293

02:18:31,009 --> 02:18:29,340

about 37 minutes since uh Orion splashed

2294

02:18:33,830 --> 02:18:31,019

down in the Pacific

2295

02:18:35,389 --> 02:18:33,840

on the deck of the USS Portland as he

2296

02:18:37,429 --> 02:18:35,399

has been throughout the course of the

2297

02:18:40,669 --> 02:18:37,439

morning Daryl nail my colleague from the

2298

02:18:42,889 --> 02:18:40,679

Kennedy Space Center Daryl how uh how

2299

02:18:48,650 --> 02:18:42,899

are things going out there it looks like

2300

02:18:53,089 --> 02:18:50,450

yeah we're very close to that moment Rob

2301

02:18:55,849 --> 02:18:53,099

here on the USS Portland we're just

2302

02:18:58,370 --> 02:18:55,859

about 100 miles off the coast of Baja

2303

02:19:01,070 --> 02:18:58,380

Mexico the operation as you've heard and

2304

02:19:02,810 --> 02:19:01,080

uh been commenting commentating it is

2305

02:19:04,849 --> 02:19:02,820

going pretty smoothly at this point but

2306

02:19:07,969 --> 02:19:04,859

we are in a pre-planned waiting period

2307

02:19:10,190 --> 02:19:07,979

as we wait for the ammonia that is

2308

02:19:11,330 --> 02:19:10,200

inside the capsule it is used for

2309

02:19:13,910 --> 02:19:11,340

cooling

2310

02:19:16,250 --> 02:19:13,920

this is boiling off at this moment into

2311

02:19:19,129 --> 02:19:16,260

the atmosphere and until that's complete

2312

02:19:21,830 --> 02:19:19,139

uh the boats will be on hold now the

2313

02:19:25,549 --> 02:19:21,840

Navy divers right now at this moment are

2314

02:19:28,570 --> 02:19:25,559

outside of the 120 yard radius around

2315

02:19:32,089 --> 02:19:28,580

the capsule that was part of the plan

2316

02:19:35,570 --> 02:19:32,099

they will close within just a few feet

2317

02:19:38,530 --> 02:19:35,580

to start detecting if there are any

2318

02:19:41,509 --> 02:19:38,540

hazardous gases coming from the capsule

2319

02:19:44,150 --> 02:19:41,519

but that will only happen once our

2320

02:19:49,130 --> 02:19:44,160

recovery director Melissa Jones has

2321

02:19:52,130 --> 02:19:49,140

given them to go the go to close in

2322

02:19:55,429 --> 02:19:52,140

the ship meanwhile the USS Portland is

2323

02:19:57,110 --> 02:19:55,439

on its way to close within 2 000 yards

2324

02:19:59,570 --> 02:19:57,120

of

2325

02:20:02,690 --> 02:19:59,580

the capsule as you can see it floating

2326

02:20:08,870 --> 02:20:06,349

the bags fully inflated that are used to

2327

02:20:10,730 --> 02:20:08,880

Upright it

2328

02:20:12,469 --> 02:20:10,740

bright orange in color at the top of the

2329

02:20:15,290 --> 02:20:12,479

capsule

2330

02:20:17,030 --> 02:20:15,300

the ship will then come alongside the

2331

02:20:20,450 --> 02:20:17,040

capsule

2332

02:20:22,130 --> 02:20:20,460

and once the Navy divers have gone in

2333

02:20:24,530 --> 02:20:22,140

and uh

2334

02:20:26,210 --> 02:20:24,540

made sure that the capsule is safe to

2335

02:20:28,429 --> 02:20:26,220

approach

2336

02:20:30,070 --> 02:20:28,439

they will begin taking

2337

02:20:33,590 --> 02:20:30,080

imagery

2338

02:20:36,110 --> 02:20:33,600

photographs both on the top side of the

2339

02:20:39,290 --> 02:20:36,120

water and then also they have Navy

2340

02:20:42,650 --> 02:20:39,300

divers prepared to go underneath

2341

02:20:43,790 --> 02:20:42,660

the capsule and take pictures of the

2342

02:20:45,410 --> 02:20:43,800

heat shield

2343

02:20:48,770 --> 02:20:45,420

the all-important

2344

02:20:50,330 --> 02:20:48,780

component of this capsule which is the

2345

02:20:52,730 --> 02:20:50,340

primary objective

2346

02:20:55,010 --> 02:20:52,740

in terms of the test and this flight

2347

02:20:56,389 --> 02:20:55,020

test is to make sure that that heat

2348

02:20:58,969 --> 02:20:56,399

shield

2349

02:21:00,889 --> 02:20:58,979

works and works well

2350

02:21:03,590 --> 02:21:00,899

so fresh from space they want to make

2351

02:21:05,990 --> 02:21:03,600

sure that they have images of it

2352

02:21:08,929 --> 02:21:06,000

preserved as it is now

2353

02:21:11,389 --> 02:21:08,939

before the operation begins

2354

02:21:14,450 --> 02:21:11,399

or they pull it into the well deck of

2355

02:21:19,429 --> 02:21:14,460

the USS Portland that will involve the

2356

02:21:25,610 --> 02:21:21,650

as well as a winch line that then

2357

02:21:27,650 --> 02:21:25,620

connects to the USS Portland

2358

02:21:30,110 --> 02:21:27,660

the well deck of the USS Portland will

2359

02:21:32,510 --> 02:21:30,120

be flooded to about six feet

2360

02:21:35,809 --> 02:21:32,520

and those Navy boats will attach their

2361

02:21:37,849 --> 02:21:35,819

lines and then pull alongside

2362

02:21:40,190 --> 02:21:37,859

the Navy vessel

2363

02:21:42,230 --> 02:21:40,200

connect to a winch line and then

2364

02:21:47,870 --> 02:21:42,240

carefully tow it

2365

02:21:53,510 --> 02:21:50,330

again we are currently uh

2366

02:21:55,070 --> 02:21:53,520

awaiting the completion of ammonia boil

2367

02:21:58,910 --> 02:21:55,080

off

2368

02:22:04,849 --> 02:22:01,670

they've allowed for up to two hours but

2369

02:22:06,710 --> 02:22:04,859

it could take a shorter period of time

2370

02:22:09,889 --> 02:22:06,720

and once you see those Navy boats

2371

02:22:11,750 --> 02:22:09,899

closing in then you'll know that uh that

2372

02:22:14,809 --> 02:22:11,760

ammonia boil off is complete of course

2373

02:22:17,389 --> 02:22:14,819

we'll let you know when that happens

2374

02:22:20,630 --> 02:22:17,399

live on the deck of the USS Portland

2375

02:22:25,550 --> 02:22:23,030

thank you Daryl Daryl nail on the USS

2376

02:22:28,130 --> 02:22:25,560

Portland out in the Pacific West of Baja

2377

02:22:32,270 --> 02:22:28,140

California back here in Mission Control

2378

02:22:34,429 --> 02:22:32,280

as the flight controllers watch over the

2379

02:22:36,830 --> 02:22:34,439

initial phase of the recovery operations

2380

02:22:38,510 --> 02:22:36,840

we're joined by the director of the

2381

02:22:41,270 --> 02:22:38,520

Johnson Space Center Vanessa weich

2382

02:22:44,690 --> 02:22:41,280

Vanessa great Sunday to have you here

2383

02:22:47,270 --> 02:22:44,700

with us on Council fabulous Sunday what

2384

02:22:49,849 --> 02:22:47,280

a great day uh you know it's amazing

2385

02:22:51,410 --> 02:22:49,859

yeah to me everything that has been

2386

02:22:54,650 --> 02:22:51,420

accomplished throughout this entire

2387

02:22:56,690 --> 02:22:54,660

Mission but being here with the team and

2388

02:22:57,670 --> 02:22:56,700

seeing and witnessing this splash down

2389

02:23:00,950 --> 02:22:57,680

together

2390

02:23:03,110 --> 02:23:00,960

amazing wonderful I really can't

2391

02:23:05,270 --> 02:23:03,120

describe how I feel

2392

02:23:07,429 --> 02:23:05,280

you know it we were talking just a

2393

02:23:10,010 --> 02:23:07,439

moment ago it never ceases to amaze me

2394

02:23:11,870 --> 02:23:10,020

how these missions are designed the

2395

02:23:14,090 --> 02:23:11,880

execution is one thing but the design of

2396

02:23:16,910 --> 02:23:14,100

the mission here by the flight control

2397

02:23:18,770 --> 02:23:16,920

team and just down the hall by the way

2398

02:23:21,050 --> 02:23:18,780

there are humans orbiting the Earth in

2399

02:23:23,870 --> 02:23:21,060

the International Space Station so it's

2400

02:23:25,730 --> 02:23:23,880

almost like a two for one here it is I

2401  
02:23:27,770 --> 02:23:25,740  
mean you know to me this week and well

2402  
02:23:30,349 --> 02:23:27,780  
for the past 26 days being able to come

2403  
02:23:32,389 --> 02:23:30,359  
into the control center and know that we

2404  
02:23:34,429 --> 02:23:32,399  
had teams controlling the International

2405  
02:23:36,830 --> 02:23:34,439  
Space Station with our crew members on

2406  
02:23:39,410 --> 02:23:36,840  
board and we've had as you know

2407  
02:23:42,770 --> 02:23:39,420  
successfully Crews living off of this

2408  
02:23:45,530 --> 02:23:42,780  
planet for over 22 years but then in

2409  
02:23:48,170 --> 02:23:45,540  
another control center where we're

2410  
02:23:49,910 --> 02:23:48,180  
monitoring and making sure that the

2411  
02:23:52,969 --> 02:23:49,920  
Maneuvers everything that had to happen

2412  
02:23:56,210 --> 02:23:52,979  
on the Orion spacecraft that was being

2413  
02:23:58,910 --> 02:23:56,220

tracked followed and you know data

2414

02:24:00,469 --> 02:23:58,920

anything that needed to be sent up was

2415

02:24:03,050 --> 02:24:00,479

just done so perfectly and

2416

02:24:06,050 --> 02:24:03,060

professionally this team has trained

2417

02:24:08,330 --> 02:24:06,060

need for Years first you got to plan the

2418

02:24:10,790 --> 02:24:08,340

mission as you know then you have to

2419

02:24:12,830 --> 02:24:10,800

execute the mission and so the years of

2420

02:24:14,929 --> 02:24:12,840

planning the years of getting ready the

2421

02:24:16,490 --> 02:24:14,939

preparations really paid off

2422

02:24:18,469 --> 02:24:16,500

you know after a team wins the World

2423

02:24:20,389 --> 02:24:18,479

Series like the Astros did you can

2424

02:24:21,650 --> 02:24:20,399

celebrate for about 24 hours before you

2425

02:24:23,510 --> 02:24:21,660

have to worry about spring training

2426  
02:24:26,809 --> 02:24:23,520  
that's coming up there's almost never a

2427  
02:24:29,929 --> 02:24:26,819  
moment to breathe Artemis too not too

2428  
02:24:32,570 --> 02:24:29,939  
far down the pike yes absolutely so for

2429  
02:24:36,110 --> 02:24:32,580  
us you know this is great we've

2430  
02:24:39,170 --> 02:24:36,120  
accomplished uh Orion one this test

2431  
02:24:41,630 --> 02:24:39,180  
flight being able to test out the heat

2432  
02:24:44,809 --> 02:24:41,640  
shields those parachutes as you saw I

2433  
02:24:47,870 --> 02:24:44,819  
brought the spacecraft down but now we

2434  
02:24:50,150 --> 02:24:47,880  
have to get it ready for our crews to be

2435  
02:24:52,610 --> 02:24:50,160  
on board so all of the systems that we

2436  
02:24:54,590 --> 02:24:52,620  
need to integrate for our environmental

2437  
02:24:58,730 --> 02:24:54,600  
controls those are things that will be

2438  
02:25:00,770 --> 02:24:58,740

new as we go forward for Artemis 2 and

2439

02:25:03,290 --> 02:25:00,780

then it's the outfitting of the cabin

2440

02:25:05,030 --> 02:25:03,300

all the things simple things you think

2441

02:25:07,190 --> 02:25:05,040

about if they're going to be going for

2442

02:25:09,170 --> 02:25:07,200

10 days so we got to make sure that

2443

02:25:10,670 --> 02:25:09,180

we've have the food we have the clothing

2444

02:25:13,490 --> 02:25:10,680

all of the things that they're going to

2445

02:25:15,290 --> 02:25:13,500

need for their next trip but there's a

2446

02:25:17,090 --> 02:25:15,300

lot of additional training there there's

2447

02:25:19,130 --> 02:25:17,100

a lot of additional planning that has to

2448

02:25:20,809 --> 02:25:19,140

happen in order for us to be ready for

2449

02:25:22,670 --> 02:25:20,819

Artemis too

2450

02:25:23,929 --> 02:25:22,680

thank you so much Vanessa watch the

2451

02:25:26,870 --> 02:25:23,939

director of the Johnson Space Center

2452

02:25:28,849 --> 02:25:26,880

what a busy time this has been oh but I

2453

02:25:31,429 --> 02:25:28,859

also Rob though I want to say thank you

2454

02:25:34,429 --> 02:25:31,439

and congratulations to all of the

2455

02:25:36,710 --> 02:25:34,439

employees our entire Workforce here at

2456

02:25:39,290 --> 02:25:36,720

NASA Johnson Space Center but I also

2457

02:25:41,690 --> 02:25:39,300

want to thank our European Partners I

2458

02:25:44,929 --> 02:25:41,700

want to thank our industry Partners it

2459

02:25:47,150 --> 02:25:44,939

took thousands of people to make this

2460

02:25:50,210 --> 02:25:47,160

possible and now the recovery that's

2461

02:25:53,210 --> 02:25:50,220

been done by the Navy I just want to say

2462

02:25:54,889 --> 02:25:53,220

major thank you to the brave individuals

2463

02:25:58,070 --> 02:25:54,899

that are out and they're going to be

2464

02:26:00,950 --> 02:25:58,080

bringing the Orion spacecraft in to the

2465

02:26:03,830 --> 02:26:00,960

Portland and then she'll be back going

2466

02:26:06,650 --> 02:26:03,840

to Florida and my friends in Florida are

2467

02:26:08,389 --> 02:26:06,660

ready to receive her we're super excited

2468

02:26:11,090 --> 02:26:08,399

and just want to say thank you to

2469

02:26:13,190 --> 02:26:11,100

everyone that has made this possible

2470

02:26:14,809 --> 02:26:13,200

thank you so much Vanessa Weiss director

2471

02:26:16,730 --> 02:26:14,819

of the Johnson Space Center time to

2472

02:26:22,490 --> 02:26:16,740

celebrate just a little bit before we

2473

02:26:22,500 --> 02:27:37,210

Vanessa watch thank you so much

2474

02:27:43,309 --> 02:27:39,889

back here in Mission Control it has now

2475

02:27:45,830 --> 02:27:43,319

been 46 minutes since uh the Splashdown

2476  
02:27:47,929 --> 02:27:45,840  
of the Orion spacecraft to complete its

2477  
02:27:49,730 --> 02:27:47,939  
25 and a half day mission

2478  
02:27:52,670 --> 02:27:49,740  
uh flight controllers here in Houston

2479  
02:27:53,750 --> 02:27:52,680  
are reporting uh that the vehicle looks

2480  
02:27:56,210 --> 02:27:53,760  
great

2481  
02:27:58,010 --> 02:27:56,220  
in the initial visual inspections being

2482  
02:28:00,469 --> 02:27:58,020  
made by the helicopter teams as you

2483  
02:28:02,690 --> 02:28:00,479  
heard Daryl nail reference just a short

2484  
02:28:04,490 --> 02:28:02,700  
time ago we just heard from Vanessa

2485  
02:28:05,809 --> 02:28:04,500  
White show the Johnson Space Center

2486  
02:28:08,389 --> 02:28:05,819  
Director

2487  
02:28:10,790 --> 02:28:08,399  
now let's turn our attention to the east

2488  
02:28:12,530 --> 02:28:10,800

coast to the Kennedy Space Center where

2489

02:28:15,050 --> 02:28:12,540

the director of the Kennedy Space Center

2490

02:28:18,469 --> 02:28:15,060

Janet Petro is standing by with us Janet

2491

02:28:20,750 --> 02:28:18,479

uh good afternoon and what a moment does

2492

02:28:29,330 --> 02:28:20,760

your exploration ground systems folks

2493

02:28:35,750 --> 02:28:31,730

can't wait for our teams to get to work

2494

02:28:37,610 --> 02:28:35,760

out there on the west coast so

2495

02:28:39,590 --> 02:28:37,620

you know we heard a short time ago from

2496

02:28:43,070 --> 02:28:39,600

Melissa Jones from the deck of the USS

2497

02:28:44,929 --> 02:28:43,080

Portland how complicated uh has been the

2498

02:28:48,170 --> 02:28:44,939

development of this recovery operation

2499

02:28:50,750 --> 02:28:48,180

that your team is executing as we speak

2500

02:28:53,510 --> 02:28:50,760

well it's uh pretty complicated but you

2501  
02:28:55,969 --> 02:28:53,520  
know our teams uh make uh it look easy I

2502  
02:28:57,950 --> 02:28:55,979  
I will start out by saying

2503  
02:29:00,889 --> 02:28:57,960  
um or giving I should say a big shout

2504  
02:29:03,410 --> 02:29:00,899  
out to uh really um Vanessa and her

2505  
02:29:06,950 --> 02:29:03,420  
flight Ops Team and the whole Orion team

2506  
02:29:08,389 --> 02:29:06,960  
to to deliver an amazing Mission

2507  
02:29:10,370 --> 02:29:08,399  
um uh bringing us down through

2508  
02:29:13,309 --> 02:29:10,380  
Splashdown but now it's over to uh

2509  
02:29:15,170 --> 02:29:13,319  
Melissa and her team and she's done an

2510  
02:29:17,750 --> 02:29:15,180  
incredible amount of work to get to this

2511  
02:29:19,969 --> 02:29:17,760  
point you know what we do at Nasa really

2512  
02:29:21,889 --> 02:29:19,979  
is all about collaborations and the

2513  
02:29:23,809 --> 02:29:21,899

collaborations that we've had with the

2514

02:29:26,210 --> 02:29:23,819

Department of the of Defense in

2515

02:29:28,010 --> 02:29:26,220

particular over the past uh many many

2516

02:29:30,710 --> 02:29:28,020

years their hard work and their

2517

02:29:34,250 --> 02:29:30,720

dedication as they went through a great

2518

02:29:37,370 --> 02:29:34,260

deal of planning Hardware development

2519

02:29:39,830 --> 02:29:37,380

and processes and a lot of practicing to

2520

02:29:41,929 --> 02:29:39,840

get to this point make it look easy you

2521

02:29:43,670 --> 02:29:41,939

know that capsule uh sitting out there

2522

02:29:45,830 --> 02:29:43,680

on the ocean

2523

02:29:47,510 --> 02:29:45,840

um it looks uh very similar to the

2524

02:29:51,590 --> 02:29:47,520

Apollo capsule but it's actually about

2525

02:29:54,590 --> 02:29:51,600

30 percent larger and so the complexity

2526

02:29:56,990 --> 02:29:54,600

of recovering that larger vehicle is a

2527

02:29:58,969 --> 02:29:57,000

little bit more but Melissa and her team

2528

02:30:00,230 --> 02:29:58,979

has been have been practicing you know

2529

02:30:02,809 --> 02:30:00,240

their latest

2530

02:30:05,450 --> 02:30:02,819

um underwater underway recovery tests

2531

02:30:08,389 --> 02:30:05,460

they completed it was a ninth one and

2532

02:30:11,630 --> 02:30:08,399

they completed that last November 21st

2533

02:30:13,010 --> 02:30:11,640

of last year 2021 so they're they're

2534

02:30:15,349 --> 02:30:13,020

ready

2535

02:30:18,530 --> 02:30:15,359

um watching these teams uh precisely

2536

02:30:20,270 --> 02:30:18,540

perform these recovery operations

2537

02:30:22,130 --> 02:30:20,280

um is amazing and so I think we're gonna

2538

02:30:24,410 --> 02:30:22,140

have a really really great day I'm going

2539

02:30:27,230 --> 02:30:24,420

to be traveling to San Diego to watch

2540

02:30:29,809 --> 02:30:27,240

the ship come in port in a couple days I

2541

02:30:32,450 --> 02:30:29,819

look forward to seeing that capsule on

2542

02:30:35,870 --> 02:30:32,460

board the uh well Tech ship

2543

02:30:37,790 --> 02:30:35,880

Janet uh there's uh there's a lot of

2544

02:30:40,670 --> 02:30:37,800

work to be done before Artemis 2 but the

2545

02:30:42,950 --> 02:30:40,680

first uh Milestone here will be getting

2546

02:30:46,429 --> 02:30:42,960

the vehicle back to your Center in

2547

02:30:49,010 --> 02:30:46,439

Florida for a detailed uh inspection and

2548

02:30:51,410 --> 02:30:49,020

detailed analysis what's the basic

2549

02:30:54,469 --> 02:30:51,420

timeline for all of that work

2550

02:30:57,469 --> 02:30:54,479

yeah so uh Splashtown today is really um

2551  
02:31:00,410 --> 02:30:57,479  
uh the beginning of the journey back to

2552  
02:31:02,450 --> 02:31:00,420  
KSC so as I mentioned I'll be

2553  
02:31:04,730 --> 02:31:02,460  
um I'll be there in San Diego when the

2554  
02:31:06,290 --> 02:31:04,740  
ship comes into port in a couple of days

2555  
02:31:08,150 --> 02:31:06,300  
and then

2556  
02:31:10,250 --> 02:31:08,160  
um Orion will then be loaded onto a

2557  
02:31:12,410 --> 02:31:10,260  
truck and transported back to the

2558  
02:31:14,750 --> 02:31:12,420  
Kennedy Space Center and that's going to

2559  
02:31:16,550 --> 02:31:14,760  
take a couple of days because of Road

2560  
02:31:18,590 --> 02:31:16,560  
related conditions you know the Orion

2561  
02:31:22,130 --> 02:31:18,600  
will still have some residual hazardous

2562  
02:31:24,349 --> 02:31:22,140  
waste on it and of course uh planning on

2563  
02:31:26,090 --> 02:31:24,359

the roadways as it gets truck back to

2564

02:31:29,030 --> 02:31:26,100

the Kennedy Space Center takes some

2565

02:31:31,190 --> 02:31:29,040

careful uh navigation so by the end of

2566

02:31:33,469 --> 02:31:31,200

this month the end of December

2567

02:31:35,150 --> 02:31:33,479

um we expect to have Orion coming back

2568

02:31:36,889 --> 02:31:35,160

onto our Center we think that's going to

2569

02:31:39,530 --> 02:31:36,899

be a really great Christmas present for

2570

02:31:42,050 --> 02:31:39,540

us here at the Kenny space center and

2571

02:31:44,570 --> 02:31:42,060

it'll go right into our multi payload

2572

02:31:47,450 --> 02:31:44,580

processing facility for its post flight

2573

02:31:50,710 --> 02:31:47,460

assessment and that's where the

2574

02:31:53,990 --> 02:31:50,720

remaining residual uh hazardous

2575

02:31:57,710 --> 02:31:54,000

fluids will be removed from it and then

2576

02:31:59,750 --> 02:31:57,720

just after after the New Year the teams

2577

02:32:02,630 --> 02:31:59,760

will be opening up the hatch of the

2578

02:32:04,250 --> 02:32:02,640

Orion and then once that's complete I

2579

02:32:06,290 --> 02:32:04,260

think I think Robbie called it the

2580

02:32:08,530 --> 02:32:06,300

Moment of Truth they'll remove that heat

2581

02:32:11,929 --> 02:32:08,540

shield and begin a really detailed

2582

02:32:14,090 --> 02:32:11,939

inspection an assessment of how that

2583

02:32:17,330 --> 02:32:14,100

heat shield performed during its

2584

02:32:19,010 --> 02:32:17,340

re-entry and Recovery operation

2585

02:32:20,090 --> 02:32:19,020

um so we're really looking forward I

2586

02:32:22,010 --> 02:32:20,100

know the whole team's really looking

2587

02:32:25,070 --> 02:32:22,020

forward to see how that assessment comes

2588

02:32:27,170 --> 02:32:25,080

out and then after that it's uh Ryan's

2589

02:32:29,030 --> 02:32:27,180

journey is not done it'll be making its

2590

02:32:31,790 --> 02:32:29,040

way up to the Glenn Research Center

2591

02:32:35,150 --> 02:32:31,800

where it will be doing some acoustic and

2592

02:32:38,150 --> 02:32:35,160

further Environmental Testing up in up

2593

02:32:40,250 --> 02:32:38,160

at that Center so Journey isn't over

2594

02:32:42,830 --> 02:32:40,260

um it's just kind of making its waste

2595

02:32:45,050 --> 02:32:42,840

here here on the terrestrial path uh

2596

02:32:47,450 --> 02:32:45,060

back so thanks

2597

02:32:50,030 --> 02:32:47,460

Janet Petro the director of the Kennedy

2598

02:32:51,830 --> 02:32:50,040

Space Center joining us uh here today uh

2599

02:32:56,150 --> 02:32:51,840

congratulations Janet and thanks so much

2600

02:33:02,270 --> 02:32:59,270

our 60th diamond anniversary to have

2601  
02:33:04,370 --> 02:33:02,280  
splash down uh successful Splashdown so

2602  
02:33:06,950 --> 02:33:04,380  
take care thanks Rob

2603  
02:33:08,990 --> 02:33:06,960  
thank you again Janet Petro the director

2604  
02:33:13,790 --> 02:33:09,000  
of the Kennedy Space Center joining us

2605  
02:33:17,630 --> 02:33:13,800  
today Orion safely uh upright and stable

2606  
02:33:21,170 --> 02:33:17,640  
one as the Navy uh and exploration

2607  
02:33:23,809 --> 02:33:21,180  
ground systems team continue to approach

2608  
02:33:25,630 --> 02:33:23,819  
the vehicle in the first

2609  
02:33:28,130 --> 02:33:25,640  
of a multi-hour

2610  
02:33:30,250 --> 02:33:28,140  
choreography that will bring the vehicle

2611  
02:33:33,770 --> 02:33:30,260  
into the well deck of the USS Portland

2612  
02:33:36,950 --> 02:33:33,780  
on the deck of the USS Portland uh right

2613  
02:33:39,290 --> 02:33:36,960

now is Daryl nail who has a NASA

2614

02:33:42,290 --> 02:33:39,300

astronaut Shannon Walker with him once

2615

02:33:47,630 --> 02:33:42,300

again a post splash down this time Daryl

2616

02:33:52,250 --> 02:33:50,270

Rob we've got a front row seat to this

2617

02:33:53,990 --> 02:33:52,260

operation as you can see behind me

2618

02:33:55,550 --> 02:33:54,000

Shannon Walker as you mentioned NASA

2619

02:33:58,550 --> 02:33:55,560

astronaut joining me with this

2620

02:34:00,770 --> 02:33:58,560

incredible view as we watch that capsule

2621

02:34:03,050 --> 02:34:00,780

floating in the Pacific Ocean just 100

2622

02:34:05,929 --> 02:34:03,060

miles off of Baja Mexico

2623

02:34:08,150 --> 02:34:05,939

we have an mh-60 Nighthawk helicopter

2624

02:34:09,830 --> 02:34:08,160

encircling it and the Navy boats in the

2625

02:34:12,349 --> 02:34:09,840

water first of all Shannon how about

2626

02:34:14,750 --> 02:34:12,359

this view this is amazing view and so

2627

02:34:17,570 --> 02:34:14,760

exciting to see the Orion capsule back

2628

02:34:20,750 --> 02:34:17,580

on earth that is a human rated capsule

2629

02:34:23,510 --> 02:34:20,760

that went around the moon and returned

2630

02:34:25,130 --> 02:34:23,520

and is now in the Pacific Ocean as an

2631

02:34:27,590 --> 02:34:25,140

astronaut what kind of thoughts do you

2632

02:34:29,570 --> 02:34:27,600

have see in A Moment Like This

2633

02:34:31,610 --> 02:34:29,580

well it's actually really emotional to

2634

02:34:33,349 --> 02:34:31,620

see something like this knowing that the

2635

02:34:36,230 --> 02:34:33,359

next time we're going to have people on

2636

02:34:38,330 --> 02:34:36,240

that capsule or the second Orion Castle

2637

02:34:39,469 --> 02:34:38,340

it's it's it's pretty amazing that we're

2638

02:34:42,889 --> 02:34:39,479

going to be able to go back to the Moon

2639

02:34:44,270 --> 02:34:42,899

soon incredible indeed and as we look at

2640

02:34:46,190 --> 02:34:44,280

let's paint the picture for the audience

2641

02:34:48,410 --> 02:34:46,200

as we look out at this operation

2642

02:34:50,870 --> 02:34:48,420

currently in a moment where we are

2643

02:34:53,150 --> 02:34:50,880

pausing for ammonia boil off that's the

2644

02:34:55,070 --> 02:34:53,160

cooling that the Orion crew module uses

2645

02:34:58,010 --> 02:34:55,080

to keep the astronauts astronauts cool

2646

02:35:00,170 --> 02:34:58,020

inside the cabin as they were as they

2647

02:35:01,849 --> 02:35:00,180

wait to be taken out of the capsule

2648

02:35:03,110 --> 02:35:01,859

there's none in this one but this would

2649

02:35:05,690 --> 02:35:03,120

be a period in which that would happen

2650

02:35:08,570 --> 02:35:05,700

you can see the Navy boats they are

2651  
02:35:10,849 --> 02:35:08,580  
roughly outside of 120 yards from the

2652  
02:35:14,270 --> 02:35:10,859  
capsule they have equipment that will

2653  
02:35:16,969 --> 02:35:14,280  
sniff out any hazardous gases near the

2654  
02:35:19,250 --> 02:35:16,979  
Orion and so they are holding in

2655  
02:35:22,070 --> 02:35:19,260  
position until that ammonia boil off

2656  
02:35:24,889 --> 02:35:22,080  
happens and then also in your view you

2657  
02:35:27,290 --> 02:35:24,899  
can see the mh-60 circling back around

2658  
02:35:29,870 --> 02:35:27,300  
it is leaning so the photographers

2659  
02:35:32,630 --> 02:35:29,880  
inside and a high resolution camera

2660  
02:35:35,809 --> 02:35:32,640  
mounted on the side can get imagery of

2661  
02:35:38,210 --> 02:35:35,819  
the capsule fresh from space my question

2662  
02:35:40,190 --> 02:35:38,220  
to you Shannon is as we watch this

2663  
02:35:42,590 --> 02:35:40,200

continue to wait and for the Navy

2664

02:35:44,809 --> 02:35:42,600

drivers to get closer

2665

02:35:46,010 --> 02:35:44,819

thoughts of Artemis 2 now come to mind

2666

02:35:47,750 --> 02:35:46,020

you've heard folks have been talking

2667

02:35:49,730 --> 02:35:47,760

about it Rob has been discussing it with

2668

02:35:51,889 --> 02:35:49,740

many of the leadership around NASA

2669

02:35:53,510 --> 02:35:51,899

people want to know

2670

02:35:56,990 --> 02:35:53,520

well who are the astronauts going to be

2671

02:35:59,929 --> 02:35:57,000

for us right too yeah so any idea that

2672

02:36:02,090 --> 02:35:59,939

is the question no I have no idea

2673

02:36:03,770 --> 02:36:02,100

um once we get this capsule back we'll

2674

02:36:05,750 --> 02:36:03,780

look it over and we'll be able to

2675

02:36:07,790 --> 02:36:05,760

determine when Artemis 2 will actually

2676  
02:36:09,170 --> 02:36:07,800  
be able to launch and once we know that

2677  
02:36:11,090 --> 02:36:09,180  
launch day we'll figure out the right

2678  
02:36:12,710 --> 02:36:11,100  
time to name the crew based on the

2679  
02:36:14,330 --> 02:36:12,720  
training flow so there's a there's

2680  
02:36:16,070 --> 02:36:14,340  
actually a period of training in which

2681  
02:36:17,929 --> 02:36:16,080  
you have to do a set amount of time to

2682  
02:36:20,330 --> 02:36:17,939  
get ready for that right but really

2683  
02:36:22,429 --> 02:36:20,340  
predicated on Artemis 2 and that launch

2684  
02:36:23,870 --> 02:36:22,439  
date absolutely we don't want to have

2685  
02:36:25,309 --> 02:36:23,880  
the crew just spinning their wheels if

2686  
02:36:27,410 --> 02:36:25,319  
Artemis 2 is going to be a long way out

2687  
02:36:29,630 --> 02:36:27,420  
but I don't think it will be so I would

2688  
02:36:31,250 --> 02:36:29,640

say sometime in the next six months

2689

02:36:32,750 --> 02:36:31,260

maybe is it just a guess don't hold me

2690

02:36:34,010 --> 02:36:32,760

to it we might be naming the crew all

2691

02:36:35,990 --> 02:36:34,020

right very good Shannon Walker nice

2692

02:36:38,990 --> 02:36:36,000

astronaut thanks for joining us today

2693

02:36:41,170 --> 02:36:39,000

one quick update and note the recovery

2694

02:36:43,910 --> 02:36:41,180

team was looking at the possibility of

2695

02:36:46,370 --> 02:36:43,920

recovering the parachutes as well as the

2696

02:36:48,050 --> 02:36:46,380

forward Bay cover but that is not going

2697

02:36:50,090 --> 02:36:48,060

to happen this time they did Mark their

2698

02:36:52,309 --> 02:36:50,100

locations but they did slip below the

2699

02:36:53,809 --> 02:36:52,319

surface of the ocean and so no recovery

2700

02:36:55,849 --> 02:36:53,819

of the parachutes or the forward Bay

2701

02:36:57,770 --> 02:36:55,859

cover that's it from right here on the

2702

02:37:00,830 --> 02:36:57,780

USS Portland Rob we'll send it back to

2703

02:37:05,389 --> 02:37:03,230

Daryl nail on the deck of the USS

2704

02:37:06,590 --> 02:37:05,399

Portland with NASA astronaut Shannon

2705

02:37:09,889 --> 02:37:06,600

Walker

2706

02:37:11,330 --> 02:37:09,899

it's been almost an hour since uh Orion

2707

02:37:14,570 --> 02:37:11,340

splashed down

2708

02:37:18,650 --> 02:37:14,580

everything with the entry and Splashdown

2709

02:37:22,330 --> 02:37:18,660

went by the book if you weren't with us

2710

02:37:24,590 --> 02:37:22,340

for the final minutes of Orion's dissent

2711

02:37:25,790 --> 02:37:24,600

toward the Pacific Ocean we have a

2712

02:37:28,130 --> 02:37:25,800

replay

2713

02:37:30,830 --> 02:37:28,140

after the deployment of the three main

2714

02:37:33,349 --> 02:37:30,840

shoots which

2715

02:37:35,809 --> 02:37:33,359

were pulled out in sequential Fashion

2716

02:37:37,670 --> 02:37:35,819

After pilot parachutes and Drug shoots

2717

02:37:40,990 --> 02:37:37,680

were deployed the main shoots came out

2718

02:37:44,090 --> 02:37:41,000

they reefed in perfect fashion

2719

02:37:48,050 --> 02:37:44,100

slowly descending towards the Splashdown

2720

02:37:52,490 --> 02:37:48,060

that was marked at 11 40 a.m Central

2721

02:37:54,830 --> 02:37:52,500

Time 9 40 a.m Pacific time at a point

2722

02:37:59,590 --> 02:37:54,840

about five nautical miles or so from the

2723

02:38:05,030 --> 02:38:02,349

foreign

2724

02:38:08,150 --> 02:38:05,040

entered the Earth's atmosphere traveling

2725

02:38:11,469 --> 02:38:08,160

25 times the speed of sound

2726

02:38:13,910 --> 02:38:11,479

it decelerated uh to a Splashdown

2727

02:38:16,370 --> 02:38:13,920

velocity of

2728

02:38:19,849 --> 02:38:16,380

just under 100 miles an hour it was a

2729

02:38:22,849 --> 02:38:19,859

very gentle Splashdown for Orion all of

2730

02:38:24,530 --> 02:38:22,859

its entry Milestones were performed in

2731

02:38:27,530 --> 02:38:24,540

perfect fashion

2732

02:38:28,610 --> 02:38:27,540

to blackout periods in which

2733

02:38:32,630 --> 02:38:28,620

oh

2734

02:38:34,910 --> 02:38:32,640

the plasma around Orion built up

2735

02:38:37,550 --> 02:38:34,920

preventing data and Communications with

2736

02:38:41,150 --> 02:38:37,560

the spacecraft as a natural function of

2737

02:38:42,830 --> 02:38:41,160

the heat of reentry which was about 5000

2738

02:38:45,950 --> 02:38:42,840

degrees Fahrenheit

2739

02:38:47,809 --> 02:38:45,960

twice as much as uh re-entering space

2740

02:38:51,110 --> 02:38:47,819

shuttles and other crude vehicles have

2741

02:38:53,690 --> 02:38:51,120

experienced but um

2742

02:38:55,910 --> 02:38:53,700

although some analysis must be performed

2743

02:38:57,309 --> 02:38:55,920

now and there's the Splashdown itself as

2744

02:39:00,290 --> 02:38:57,319

it occurred

2745

02:39:03,590 --> 02:39:00,300

analysis as you'll hear in a moment from

2746

02:39:05,990 --> 02:39:03,600

our next guest must be conducted to make

2747

02:39:08,150 --> 02:39:06,000

sure that everything went as had been

2748

02:39:10,070 --> 02:39:08,160

prescribed on the heat shield

2749

02:39:13,490 --> 02:39:10,080

particularly and there's a live view of

2750

02:39:15,650 --> 02:39:13,500

Orion as the Navy boats uh with the Navy

2751  
02:39:18,889 --> 02:39:15,660  
divers and other recovery Personnel

2752  
02:39:21,530 --> 02:39:18,899  
begin to approach the spacecraft

2753  
02:39:23,870 --> 02:39:21,540  
with us here in Mission Control is

2754  
02:39:25,309 --> 02:39:23,880  
Michelle's honor the Orion Mission

2755  
02:39:27,590 --> 02:39:25,319  
planning lead from the vehicle

2756  
02:39:29,809 --> 02:39:27,600  
integration office Michelle thank you

2757  
02:39:33,110 --> 02:39:29,819  
for joining us today and I guess the

2758  
02:39:35,330 --> 02:39:33,120  
natural and the big question is

2759  
02:39:37,670 --> 02:39:35,340  
unbelievable that all this uh just

2760  
02:39:42,290 --> 02:39:37,680  
ticked off uh in triphammer fashion the

2761  
02:39:46,910 --> 02:39:44,870  
yes it was an incredible Mission so uh

2762  
02:39:48,410 --> 02:39:46,920  
we accomplished all of our major mission

2763  
02:39:50,929 --> 02:39:48,420

objectives

2764

02:39:53,090 --> 02:39:50,939

um the vehicle performed every bit as

2765

02:39:55,010 --> 02:39:53,100

well as we hoped and even better in a

2766

02:39:57,349 --> 02:39:55,020

lot of ways so as an example the solar

2767

02:39:59,809 --> 02:39:57,359

rays generated more power throughout the

2768

02:40:01,969 --> 02:39:59,819

flight than we expected

2769

02:40:04,550 --> 02:40:01,979

um so this is the furthest any human

2770

02:40:07,010 --> 02:40:04,560

rated spacecraft has ever gone and that

2771

02:40:09,349 --> 02:40:07,020

required a lot of complex analysis and

2772

02:40:11,150 --> 02:40:09,359

Mission planning and trajectory planning

2773

02:40:13,429 --> 02:40:11,160

ahead of the mission and to see it all

2774

02:40:16,370 --> 02:40:13,439

come together and have such a successful

2775

02:40:19,070 --> 02:40:16,380

test mission was amazing

2776

02:40:22,370 --> 02:40:19,080

Michelle it was a test flight of course

2777

02:40:24,170 --> 02:40:22,380

there was a lot of risk involved uh an

2778

02:40:26,870 --> 02:40:24,180

elevated risk because there was no crew

2779

02:40:28,910 --> 02:40:26,880

on board and you could take uh shouldn't

2780

02:40:31,190 --> 02:40:28,920

say Liberties but you could expand the

2781

02:40:33,590 --> 02:40:31,200

envelope of what you needed to do in

2782

02:40:35,750 --> 02:40:33,600

order to acquire the data that you were

2783

02:40:37,610 --> 02:40:35,760

looking for in order to set the stage

2784

02:40:40,250 --> 02:40:37,620

for the next mission when a crew will be

2785

02:40:41,809 --> 02:40:40,260

on board from a vehicle standpoint

2786

02:40:44,389 --> 02:40:41,819

sitting in these Mission management

2787

02:40:45,830 --> 02:40:44,399

teams sitting with your engineers on a

2788

02:40:49,670 --> 02:40:45,840

day-to-day basis

2789

02:40:50,990 --> 02:40:49,680

how much data did you acquire and uh how

2790

02:40:53,030 --> 02:40:51,000

long do you think it's going to take to

2791

02:40:57,530 --> 02:40:53,040

pour over this so you write the textbook

2792

02:41:00,290 --> 02:40:58,849

and so

2793

02:41:02,150 --> 02:41:00,300

um one of the first things that we'll do

2794

02:41:03,830 --> 02:41:02,160

Post mission is take several months to

2795

02:41:05,270 --> 02:41:03,840

go back through that data really dissect

2796

02:41:07,250 --> 02:41:05,280

it and understand the vehicle

2797

02:41:09,110 --> 02:41:07,260

performance you know we did a lot of

2798

02:41:10,910 --> 02:41:09,120

testing and Analysis prior to the

2799

02:41:12,889 --> 02:41:10,920

mission but nothing really compares to

2800

02:41:15,110 --> 02:41:12,899

seeing the the vehicle perform in the

2801  
02:41:16,250 --> 02:41:15,120  
harsh space environment so that's

2802  
02:41:18,110 --> 02:41:16,260  
certainly going to be our first Focus

2803  
02:41:19,490 --> 02:41:18,120  
after the mission is is looking at all

2804  
02:41:21,830 --> 02:41:19,500  
that data and as you mentioned you know

2805  
02:41:23,690 --> 02:41:21,840  
we pushed the vehicle further than we

2806  
02:41:25,550 --> 02:41:23,700  
probably would with the crew on board

2807  
02:41:26,990 --> 02:41:25,560  
but through that we learned a lot we

2808  
02:41:29,090 --> 02:41:27,000  
learned that the vehicle is more robust

2809  
02:41:31,370 --> 02:41:29,100  
than we thought in many areas and so

2810  
02:41:33,530 --> 02:41:31,380  
taking that information and expanding

2811  
02:41:35,090 --> 02:41:33,540  
our operational envelope will help as we

2812  
02:41:36,230 --> 02:41:35,100  
go forward to more complex missions in

2813  
02:41:38,570 --> 02:41:36,240

the future

2814

02:41:41,030 --> 02:41:38,580

and in the Orion vehicle integration

2815

02:41:43,130 --> 02:41:41,040

office for yourself and your colleagues

2816

02:41:44,929 --> 02:41:43,140

it's almost like wearing two hats you

2817

02:41:46,910 --> 02:41:44,939

have to go back and pour over the data

2818

02:41:48,830 --> 02:41:46,920

from this flight but now you got to

2819

02:41:50,630 --> 02:41:48,840

prepare a vehicle that will sustain a

2820

02:41:52,969 --> 02:41:50,640

crew including an environmental control

2821

02:41:55,429 --> 02:41:52,979

system a life support system for the

2822

02:41:57,170 --> 02:41:55,439

crew itself how how are you all going to

2823

02:41:58,429 --> 02:41:57,180

juggle all of this work over the next

2824

02:42:00,230 --> 02:41:58,439

couple of years

2825

02:42:03,290 --> 02:42:00,240

yeah there is a reason work that goes on

2826  
02:42:07,130 --> 02:42:04,969  
you it's going to be the top priority

2827  
02:42:08,570 --> 02:42:07,140  
for the first few months but at the same

2828  
02:42:09,710 --> 02:42:08,580  
time they

2829  
02:42:11,330 --> 02:42:09,720  
um the crew module in the European

2830  
02:42:13,370 --> 02:42:11,340  
service module for Artemis 2 is already

2831  
02:42:16,130 --> 02:42:13,380  
at Kennedy Space Center is already being

2832  
02:42:18,469 --> 02:42:16,140  
put through the paces and testing so

2833  
02:42:20,510 --> 02:42:18,479  
that vehicle is already there after

2834  
02:42:21,590 --> 02:42:20,520  
splash down here there are some avionics

2835  
02:42:23,870 --> 02:42:21,600  
that we're going to take off of the

2836  
02:42:25,730 --> 02:42:23,880  
Artemis one crew module refurbished and

2837  
02:42:27,469 --> 02:42:25,740  
then install on the RMS 2 crew module

2838  
02:42:29,330 --> 02:42:27,479

and then as you mentioned we have the

2839

02:42:30,950 --> 02:42:29,340

new environmental control life support

2840

02:42:33,230 --> 02:42:30,960

systems and a lot of other crew

2841

02:42:34,610 --> 02:42:33,240

interfaces like crew displays and all of

2842

02:42:37,309 --> 02:42:34,620

that is in the process of being

2843

02:42:38,870 --> 02:42:37,319

integrated and tested so we celebrate

2844

02:42:40,490 --> 02:42:38,880

our miss one today but tomorrow we get

2845

02:42:42,469 --> 02:42:40,500

back to work and we start focusing

2846

02:42:44,809 --> 02:42:42,479

heavily on Artemis too and making sure

2847

02:42:46,849 --> 02:42:44,819

we have a successful first crude mission

2848

02:42:48,950 --> 02:42:46,859

you have to delay those vacation plans

2849

02:42:50,510 --> 02:42:48,960

just a little bit Michelle's honor from

2850

02:42:52,309 --> 02:42:50,520

the Orion vehicle integration office

2851

02:43:36,550 --> 02:42:52,319

thank you so much for joining us today

2852

02:43:41,150 --> 02:43:39,469

back here in Mission Control uh about an

2853

02:43:43,429 --> 02:43:41,160

hour and two minutes now since the

2854

02:43:45,950 --> 02:43:43,439

Splashdown of Orion

2855

02:43:47,809 --> 02:43:45,960

just about five nautical miles away from

2856

02:43:49,969 --> 02:43:47,819

the USS Portland which is approaching

2857

02:43:53,630 --> 02:43:49,979

the vehicle as well as navy recovery

2858

02:43:55,309 --> 02:43:53,640

teams back on the USS Portland Daryl

2859

02:43:58,309 --> 02:43:55,319

nail from the Kennedy Space Center with

2860

02:44:00,410 --> 02:43:58,319

the exploration ground systems folks is

2861

02:44:06,830 --> 02:44:00,420

with Captain John Ryan the commanding

2862

02:44:11,210 --> 02:44:09,290

thanks Rob and uh Captain John Ryan here

2863

02:44:13,490 --> 02:44:11,220

thanks for making the time to come and

2864

02:44:15,349 --> 02:44:13,500

join us from off the bridge absolutely

2865

02:44:18,290 --> 02:44:15,359

appreciate you being here

2866

02:44:19,610 --> 02:44:18,300

so far this has been pretty amazing in

2867

02:44:22,010 --> 02:44:19,620

terms of the completion of the mission

2868

02:44:23,929 --> 02:44:22,020

from your Vantage Point

2869

02:44:27,230 --> 02:44:23,939

how did you see it and what are you

2870

02:44:29,630 --> 02:44:27,240

seeing now uh so uh right now we uh have

2871

02:44:30,950 --> 02:44:29,640

the orbital is uh in the water uh right

2872

02:44:34,849 --> 02:44:30,960

now we're kind of in that two to three

2873

02:44:37,849 --> 02:44:34,859

hour window where NASA and uh the Navy's

2874

02:44:41,870 --> 02:44:37,859

uh EOD teams are conducting some tests

2875

02:44:43,550 --> 02:44:41,880

uh we're getting imagery and data for

2876  
02:44:47,570 --> 02:44:43,560  
NASA which will help support the future

2877  
02:44:49,429 --> 02:44:47,580  
astronaut uh missions and From

2878  
02:44:50,570 --> 02:44:49,439  
perspective honestly I think this is one

2879  
02:44:52,610 --> 02:44:50,580  
of the coolest things I've ever gotten

2880  
02:44:54,410 --> 02:44:52,620  
to do I've been in the Navy uh 23 years

2881  
02:44:55,849 --> 02:44:54,420  
I've done a lot of missions and I've

2882  
02:44:57,830 --> 02:44:55,859  
been all over the world but to be part

2883  
02:44:59,570 --> 02:44:57,840  
of this NASA Mission today is probably

2884  
02:45:02,090 --> 02:44:59,580  
one of the coolest things I've ever been

2885  
02:45:04,730 --> 02:45:02,100  
part of that's impressive and that says

2886  
02:45:07,370 --> 02:45:04,740  
a lot as we look just behind us Captain

2887  
02:45:09,469 --> 02:45:07,380  
Ryan and and we see the operation

2888  
02:45:11,990 --> 02:45:09,479

currently in a moment of pause where

2889

02:45:14,270 --> 02:45:12,000

they're waiting for the capsule to vent

2890

02:45:15,889 --> 02:45:14,280

off the rest of its ammonia using its

2891

02:45:17,809 --> 02:45:15,899

cooling system we can see the Navy boats

2892

02:45:19,910 --> 02:45:17,819

in the water currently you've got the

2893

02:45:21,950 --> 02:45:19,920

ship on a course heading going around

2894

02:45:24,290 --> 02:45:21,960

this operation what has been your

2895

02:45:27,050 --> 02:45:24,300

instruction to your team commanding the

2896

02:45:28,910 --> 02:45:27,060

ship so uh what I just basically wanted

2897

02:45:31,550 --> 02:45:28,920

to keep the ship within a visual

2898

02:45:33,349 --> 02:45:31,560

distance of the orbital and our teams in

2899

02:45:35,450 --> 02:45:33,359

case they need anything it also is

2900

02:45:36,410 --> 02:45:35,460

providing let's be honest a lot of

2901  
02:45:38,450 --> 02:45:36,420  
people are out here and they're super

2902  
02:45:40,370 --> 02:45:38,460  
excited about this let's provide visual

2903  
02:45:42,530 --> 02:45:40,380  
opportunities for people to get photos

2904  
02:45:44,750 --> 02:45:42,540  
and you know get their digital part of

2905  
02:45:47,330 --> 02:45:44,760  
being the history of this event

2906  
02:45:49,610 --> 02:45:47,340  
so uh you know with a lot of time and

2907  
02:45:51,469 --> 02:45:49,620  
effort and training and years of work

2908  
02:45:52,969 --> 02:45:51,479  
went into this so I want everybody to

2909  
02:45:55,370 --> 02:45:52,979  
kind of get their moment and we're out

2910  
02:45:57,590 --> 02:45:55,380  
here getting ready to uh you know just

2911  
02:45:58,910 --> 02:45:57,600  
we'll be landing the helicopter soon and

2912  
02:46:02,090 --> 02:45:58,920  
uh you know just being a part of it

2913  
02:46:04,190 --> 02:46:02,100

certainly watching the sailors uh as it

2914

02:46:07,370 --> 02:46:04,200

splashed down they seem to really enjoy

2915

02:46:08,750 --> 02:46:07,380

the completion of the Splashdown part of

2916

02:46:11,270 --> 02:46:08,760

the mission you can see they're all

2917

02:46:12,950 --> 02:46:11,280

smiles cameras and so that was that was

2918

02:46:15,650 --> 02:46:12,960

good you provided us with a perfect view

2919

02:46:17,330 --> 02:46:15,660

of the rest of the operation I want to

2920

02:46:21,469 --> 02:46:17,340

talk a little bit about your ship the

2921

02:46:23,570 --> 02:46:21,479

USS Portland and why it was chosen for

2922

02:46:25,429 --> 02:46:23,580

this particular Mission and what

2923

02:46:28,790 --> 02:46:25,439

strengths does it bring to this

2924

02:46:31,010 --> 02:46:28,800

operation so the USS Portland is uh one

2925

02:46:35,270 --> 02:46:31,020

of the newest of the San Antonio class

2926

02:46:38,330 --> 02:46:35,280

lpds so an LPD Landing platform docking

2927

02:46:41,030 --> 02:46:38,340

ship so this type of ship normally known

2928

02:46:42,889 --> 02:46:41,040

as an amphibious ship in most of our

2929

02:46:46,250 --> 02:46:42,899

missions we'd be working with the Marine

2930

02:46:49,309 --> 02:46:46,260

Corps to embark Park their equipment and

2931

02:46:51,170 --> 02:46:49,319

deliver them to foreign Shores but the

2932

02:46:52,610 --> 02:46:51,180

capabilities of our ship can also be

2933

02:46:56,270 --> 02:46:52,620

used obviously for Missions like this

2934

02:46:57,889 --> 02:46:56,280

but I have an enormous Flight Deck with

2935

02:47:00,530 --> 02:46:57,899

an aviation Department that we can land

2936

02:47:02,090 --> 02:47:00,540

multiple various types of aircraft we

2937

02:47:04,130 --> 02:47:02,100

can put obviously a number of small

2938

02:47:06,530 --> 02:47:04,140

boats in the water and then probably the

2939

02:47:08,150 --> 02:47:06,540

special feature which NASA really likes

2940

02:47:10,070 --> 02:47:08,160

is we have a well deck which we can

2941

02:47:12,050 --> 02:47:10,080

later flood and we will bring the

2942

02:47:14,330 --> 02:47:12,060

orbital into the well deck to transport

2943

02:47:16,250 --> 02:47:14,340

it back to San Diego

2944

02:47:17,870 --> 02:47:16,260

those are some great assets that you

2945

02:47:20,809 --> 02:47:17,880

bring to the operation and I also know

2946

02:47:22,610 --> 02:47:20,819

on the next one an Artemis 2 it'll be a

2947

02:47:24,710 --> 02:47:22,620

critical component the medical

2948

02:47:27,770 --> 02:47:24,720

facilities that you have on board here

2949

02:47:29,690 --> 02:47:27,780

you could take care of somebody with any

2950

02:47:32,450 --> 02:47:29,700

number of injuries and in fact I believe

2951  
02:47:34,370 --> 02:47:32,460  
even have surgery if you need it yes we

2952  
02:47:37,010 --> 02:47:34,380  
have a uh a tremendous medical

2953  
02:47:39,530 --> 02:47:37,020  
capability on board

2954  
02:47:41,990 --> 02:47:39,540  
hopefully not that it will be needed but

2955  
02:47:45,349 --> 02:47:42,000  
we do have a operating room medical

2956  
02:47:48,950 --> 02:47:45,359  
staff and a lot of ability to take care

2957  
02:47:51,230 --> 02:47:48,960  
of personnel should anything uh you know

2958  
02:47:53,389 --> 02:47:51,240  
not work out as designed

2959  
02:47:55,490 --> 02:47:53,399  
this ship was just recently in Los

2960  
02:47:57,469 --> 02:47:55,500  
Angeles at a Fleet Week earlier this

2961  
02:47:59,690 --> 02:47:57,479  
year got to show it off to the public

2962  
02:48:01,849 --> 02:47:59,700  
and uh that's a matter of Pride I

2963  
02:48:03,550 --> 02:48:01,859

imagine for the team absolutely the ship

2964

02:48:06,590 --> 02:48:03,560

has had a very busy year the ship had

2965

02:48:09,230 --> 02:48:06,600

returned from an overseas deployment uh

2966

02:48:11,870 --> 02:48:09,240

Earl much earlier in the year supported

2967

02:48:13,670 --> 02:48:11,880

uh Los Angeles Fleet week and also the

2968

02:48:16,370 --> 02:48:13,680

rim at the Pacific exercise this summer

2969

02:48:18,290 --> 02:48:16,380

which had about 20 Nations participating

2970

02:48:19,550 --> 02:48:18,300

so it's been a very busy year for the

2971

02:48:22,730 --> 02:48:19,560

ship but I think this is really just

2972

02:48:25,670 --> 02:48:22,740

kind of the cherry on top uh where you

2973

02:48:28,190 --> 02:48:25,680

get to do an unusual Mission and support

2974

02:48:31,550 --> 02:48:28,200

history tell me about the footprint that

2975

02:48:33,050 --> 02:48:31,560

NASA takes up on this boat I'm sure I

2976

02:48:35,210 --> 02:48:33,060

haven't seen all of it I've seen a lot

2977

02:48:37,610 --> 02:48:35,220

of it the well deck certainly the

2978

02:48:40,429 --> 02:48:37,620

equipment that we have running on the

2979

02:48:44,090 --> 02:48:40,439

various decks outside and inside it's

2980

02:48:45,969 --> 02:48:44,100

pretty sizable yes this is a uh a very

2981

02:48:51,170 --> 02:48:45,979

good sized ship we have plenty of room

2982

02:48:53,990 --> 02:48:51,180

NASA has about 150 engineers and various

2983

02:48:55,370 --> 02:48:54,000

entities on board which we have plenty

2984

02:48:58,849 --> 02:48:55,380

of room for this ship would normally

2985

02:49:01,730 --> 02:48:58,859

deploy with upwards of 600 Marines on

2986

02:49:03,170 --> 02:49:01,740

board so NASA's footprint really isn't

2987

02:49:04,849 --> 02:49:03,180

too bad it's well within our

2988

02:49:07,070 --> 02:49:04,859

capabilities well there's been plenty of

2989

02:49:09,170 --> 02:49:07,080

room and you've been a tremendous host

2990

02:49:11,570 --> 02:49:09,180

to us and so thank you Captain John Ryan

2991

02:49:13,730 --> 02:49:11,580

for having us and for successfully

2992

02:49:16,790 --> 02:49:13,740

bringing us to this part in this moment

2993

02:49:19,490 --> 02:49:16,800

of the operation it's been an honor to

2994

02:49:20,990 --> 02:49:19,500

support the NASA engineers and to be out

2995

02:49:23,210 --> 02:49:21,000

there and be part of this thank you very

2996

02:49:25,490 --> 02:49:23,220

much thank you Captain John Ryan the

2997

02:49:28,610 --> 02:49:25,500

commanding officer of the USS Portland

2998

02:49:31,610 --> 02:49:28,620

and as we push out our view here in the

2999

02:49:35,090 --> 02:49:31,620

Pacific Ocean just 100 miles off the

3000

02:49:36,650 --> 02:49:35,100

Baja Peninsula you can see Orion now as

3001

02:49:40,670 --> 02:49:36,660

a silhouette

3002

02:49:42,830 --> 02:49:40,680

still floating the Orion Command Module

3003

02:49:46,429 --> 02:49:42,840

with its Seamus bags those are the

3004

02:49:48,050 --> 02:49:46,439

upriding bags fully deployed it's in a

3005

02:49:50,690 --> 02:49:48,060

stable condition

3006

02:49:52,550 --> 02:49:50,700

and to the right of that you see the

3007

02:49:55,429 --> 02:49:52,560

first Navy boat that's a rigid whole

3008

02:50:00,110 --> 02:49:57,530

that one is the one that's uh going to

3009

02:50:02,090 --> 02:50:00,120

get uh a little closer and provide a

3010

02:50:04,010 --> 02:50:02,100

stabilizing toe line

3011

02:50:07,010 --> 02:50:04,020

once it's been determined that the Navy

3012

02:50:08,750 --> 02:50:07,020

boats can get a little closer as we pan

3013

02:50:11,690 --> 02:50:08,760

just to the right of that you will see

3014

02:50:14,809 --> 02:50:11,700

the remaining four boats

3015

02:50:17,929 --> 02:50:14,819

two of those boats are inflatable boats

3016

02:50:21,950 --> 02:50:17,939

with Navy sailors aboard

3017

02:50:23,929 --> 02:50:21,960

those Navy sailors will put hands on

3018

02:50:29,270 --> 02:50:23,939

the capsule

3019

02:50:33,770 --> 02:50:30,650

they will then

3020

02:50:39,950 --> 02:50:33,780

maneuver to bring that capsule

3021

02:50:44,570 --> 02:50:42,469

will then throw out a more than thousand

3022

02:50:50,150 --> 02:50:44,580

foot rope

3023

02:50:51,650 --> 02:50:50,160

and that long rope will then attach to

3024

02:50:54,469 --> 02:50:51,660

the capsule

3025

02:50:57,050 --> 02:50:54,479

it'll connect up

3026

02:50:58,969 --> 02:50:57,060

and then begin pulling

3027

02:51:01,309 --> 02:50:58,979

the Orion in now this is a very complex

3028

02:51:03,770 --> 02:51:01,319

operation think about this

3029

02:51:05,690 --> 02:51:03,780

that capsule does not have a keel so

3030

02:51:08,630 --> 02:51:05,700

it's a smooth bottom

3031

02:51:11,510 --> 02:51:08,640

16 and a half feet in diameter

3032

02:51:13,429 --> 02:51:11,520

so when it is pulled it doesn't track in

3033

02:51:16,190 --> 02:51:13,439

the water very well

3034

02:51:18,230 --> 02:51:16,200

so what has to happen is there are ropes

3035

02:51:20,990 --> 02:51:18,240

attached to Four Points

3036

02:51:24,830 --> 02:51:21,000

around the capsule

3037

02:51:27,530 --> 02:51:24,840

that helps stabilize it Navy sailors a

3038

02:51:30,650 --> 02:51:27,540

team on each of the four ropes and then

3039

02:51:33,230 --> 02:51:30,660  
on a fifth rope will be the winch

3040

02:51:36,530 --> 02:51:33,240  
that winch will apply

3041

02:51:37,490 --> 02:51:36,540  
enough pressure required enough pulling

3042

02:51:40,670 --> 02:51:37,500  
Force

3043

02:51:41,690 --> 02:51:40,680  
bring that capsule into the well deck of

3044

02:51:44,030 --> 02:51:41,700  
the ship

3045

02:51:46,610 --> 02:51:44,040  
at the moment as we've been telling you

3046

02:51:49,130 --> 02:51:46,620  
we are currently standing by awaiting

3047

02:51:51,290 --> 02:51:49,140  
ammonia boil off

3048

02:51:53,269 --> 02:51:51,300  
is the coolant that's provided on the

3049

02:51:55,849 --> 02:51:53,279  
Orion capsule keeps the astronauts

3050

02:51:58,670 --> 02:51:55,859  
should there once they eventually go

3051  
02:52:01,070 --> 02:51:58,680  
into the capsule and go on missions to

3052  
02:52:03,469 --> 02:52:01,080  
the moon currently no astronauts in this

3053  
02:52:05,690 --> 02:52:03,479  
capsule but we've got to vent off the

3054  
02:52:10,250 --> 02:52:05,700  
ammonia nonetheless

3055  
02:52:12,710 --> 02:52:10,260  
be allotted time for that is two hours

3056  
02:52:17,990 --> 02:52:12,720  
and so we are just one hour and 10

3057  
02:52:19,429 --> 02:52:18,000  
minutes into that uh waiting period

3058  
02:52:20,929 --> 02:52:19,439  
and then once it's clear you'll see

3059  
02:52:23,269 --> 02:52:20,939  
those Navy boats get closer but

3060  
02:52:24,950 --> 02:52:23,279  
currently we are still standing by

3061  
02:52:27,950 --> 02:52:24,960  
waiting for the completion of a moon

3062  
02:52:31,309 --> 02:52:30,050  
that's it live from the deck of the USS

3063  
02:52:33,230 --> 02:52:31,319

Portland of course we'll have more

3064

02:52:35,210 --> 02:52:33,240

interviews for you as we go along

3065

02:52:39,550 --> 02:52:35,220

but for now send it back to rob navius

3066

02:52:45,950 --> 02:52:42,530

thank you Daryl looks like a beautiful

3067

02:52:47,750 --> 02:52:45,960

day out there west of Baja California

3068

02:52:49,130 --> 02:52:47,760

a lot of smiles here in Mission Control

3069

02:52:51,769 --> 02:52:49,140

in Houston

3070

02:52:55,130 --> 02:52:51,779

we're about an hour and 11 minutes since

3071

02:52:58,550 --> 02:52:55,140

the Splashdown of Orion to wrap up its

3072

02:53:00,469 --> 02:52:58,560

25 and a half day Mission integral into

3073

02:53:05,210 --> 02:53:00,479

the flight of Orion was the performance

3074

02:53:08,210 --> 02:53:05,220

of the European service module that uh

3075

02:53:10,610 --> 02:53:08,220

function perfectly to take Orion out of

3076

02:53:12,230 --> 02:53:10,620

Earth orbit on its way to the moon and

3077

02:53:14,269 --> 02:53:12,240

did everything it was asked to do

3078

02:53:16,670 --> 02:53:14,279

throughout the course of the flight and

3079

02:53:18,650 --> 02:53:16,680

joining us is Philippe de Lou who's the

3080

02:53:21,230 --> 02:53:18,660

Orion European service module program

3081

02:53:23,690 --> 02:53:21,240

manager from the European Space Agency

3082

02:53:26,090 --> 02:53:23,700

Philippe congratulations thank you for

3083

02:53:27,110 --> 02:53:26,100

joining us today thank you and good

3084

02:53:28,550 --> 02:53:27,120

afternoon

3085

02:53:31,010 --> 02:53:28,560

Philippe

3086

02:53:34,070 --> 02:53:31,020

that service module went through its

3087

02:53:37,790 --> 02:53:34,080

paces and was spot on every time it was

3088

02:53:39,710 --> 02:53:37,800

asked to conduct a burn everything that

3089

02:53:41,830 --> 02:53:39,720

it was planned to do was executed

3090

02:53:44,570 --> 02:53:41,840

perfectly your thoughts on this Mission

3091

02:53:46,309 --> 02:53:44,580

well well I have to say that I'm the

3092

02:53:49,490 --> 02:53:46,319

happiest man in the world at the moment

3093

02:53:53,090 --> 02:53:49,500

with a successful performance of the

3094

02:53:55,790 --> 02:53:53,100

service module he eat it she did what

3095

02:53:59,150 --> 02:53:55,800

she was supposed to do and even better

3096

02:54:01,250 --> 02:53:59,160

so it's it's a wonderful Mission I could

3097

02:54:04,910 --> 02:54:01,260

not run more

3098

02:54:06,710 --> 02:54:04,920

now the service module for the next

3099

02:54:08,269 --> 02:54:06,720

flight in which a crew will be on board

3100

02:54:10,670 --> 02:54:08,279

is at the Kennedy Space Center

3101  
02:54:13,070 --> 02:54:10,680  
undergoing testing and it's going to be

3102  
02:54:15,830 --> 02:54:13,080  
a while uh for all of that Hardware to

3103  
02:54:17,929 --> 02:54:15,840  
come together but you all are often

3104  
02:54:19,790 --> 02:54:17,939  
running on preparations for the next

3105  
02:54:23,030 --> 02:54:19,800  
mission in a couple of years that's

3106  
02:54:25,010 --> 02:54:23,040  
correct yes uh well we have already

3107  
02:54:27,290 --> 02:54:25,020  
assembled the service module back in

3108  
02:54:29,929 --> 02:54:27,300  
Europe and then delivered it now it's

3109  
02:54:33,050 --> 02:54:29,939  
being integrated with the crew module in

3110  
02:54:36,790 --> 02:54:33,060  
Kennedy and that's uh if I don't mistake

3111  
02:54:39,710 --> 02:54:36,800  
should happen in the next summer

3112  
02:54:41,750 --> 02:54:39,720  
Philippe the um the work that the

3113  
02:54:43,790 --> 02:54:41,760

service module did obviously invaluable

3114

02:54:46,190 --> 02:54:43,800

you can't conduct this Mission without

3115

02:54:48,110 --> 02:54:46,200

uh the work of the European service

3116

02:54:51,469 --> 02:54:48,120

module

3117

02:54:54,590 --> 02:54:51,479

what what kind of process was involved

3118

02:54:57,170 --> 02:54:54,600

in getting to the point where this the

3119

02:54:58,790 --> 02:54:57,180

design of this Mission the requirements

3120

02:55:01,610 --> 02:54:58,800

that the service module was asked to

3121

02:55:04,429 --> 02:55:01,620

perform and then ultimately conducted

3122

02:55:07,429 --> 02:55:04,439

over the last four weeks what uh how did

3123

02:55:10,429 --> 02:55:07,439

this evolution of this Mission unfold

3124

02:55:12,830 --> 02:55:10,439

for you and your team well this is a

3125

02:55:16,309 --> 02:55:12,840

story that started uh quite a long time

3126  
02:55:20,090 --> 02:55:16,319  
ago in 2011 when there was a decision

3127  
02:55:22,190 --> 02:55:20,100  
that the crew module would be built by

3128  
02:55:23,650 --> 02:55:22,200  
Europe so there's been a long process

3129  
02:55:26,870 --> 02:55:23,660  
into

3130  
02:55:28,790 --> 02:55:26,880  
setting up the requirements proposing a

3131  
02:55:30,610 --> 02:55:28,800  
design discussing the design also

3132  
02:55:33,650 --> 02:55:30,620  
involving NASA

3133  
02:55:36,170 --> 02:55:33,660  
and agreeing on what should be the final

3134  
02:55:38,389 --> 02:55:36,180  
design take up the challenges which are

3135  
02:55:40,429 --> 02:55:38,399  
associated with the design eventually

3136  
02:55:43,309 --> 02:55:40,439  
built the hardware

3137  
02:55:47,450 --> 02:55:43,319  
integrated and then preparing for the

3138  
02:55:49,490 --> 02:55:47,460

mission so this has been a long way and

3139

02:55:51,830 --> 02:55:49,500

a lot of work by

3140

02:55:53,630 --> 02:55:51,840

the European space agency and the

3141

02:55:55,429 --> 02:55:53,640

European industry

3142

02:55:56,870 --> 02:55:55,439

and you know down the hall where the

3143

02:55:59,510 --> 02:55:56,880

International Space Station is

3144

02:56:01,790 --> 02:55:59,520

controlled out of Esa is a frequent

3145

02:56:04,730 --> 02:56:01,800

flyer to the International Space Station

3146

02:56:07,730 --> 02:56:04,740

and the international Partnership of

3147

02:56:11,150 --> 02:56:07,740

which is such a critical contributor is

3148

02:56:13,550 --> 02:56:11,160

is so valuable to human space flight now

3149

02:56:14,650 --> 02:56:13,560

and in the years ahead talk a little bit

3150

02:56:17,750 --> 02:56:14,660

about that

3151  
02:56:21,290 --> 02:56:17,760  
that's clear I mean going to explore

3152  
02:56:22,190 --> 02:56:21,300  
deep space is a challenge is a big

3153  
02:56:26,269 --> 02:56:22,200  
challenge

3154  
02:56:28,190 --> 02:56:26,279  
and we need all the Excellence over the

3155  
02:56:31,130 --> 02:56:28,200  
world in order to tackle that challenge

3156  
02:56:34,490 --> 02:56:31,140  
and make it sustainable going there once

3157  
02:56:37,750 --> 02:56:34,500  
yes is doable but in order to go there

3158  
02:56:40,190 --> 02:56:37,760  
on a regular basis and for a sustainable

3159  
02:56:42,170 --> 02:56:40,200  
exploration of what is out there first

3160  
02:56:45,969 --> 02:56:42,180  
on the moon then Mars and then beyond

3161  
02:56:48,530 --> 02:56:45,979  
this will require all the forces and

3162  
02:56:52,849 --> 02:56:48,540  
skills of the engineer around the world

3163  
02:56:54,110 --> 02:56:52,859

and that's was Easter and NASA we are we

3164

02:56:56,269 --> 02:56:54,120

have started that process with the

3165

02:56:59,269 --> 02:56:56,279

timist program

3166

02:57:01,790 --> 02:56:59,279

Philippe de Liu a little moment perhaps

3167

02:57:03,650 --> 02:57:01,800

to sample some bubbly to celebrate this

3168

02:57:04,910 --> 02:57:03,660

moment but a lot of hard work ahead and

3169

02:57:07,670 --> 02:57:04,920

thank you so much for being with us

3170

02:57:10,070 --> 02:57:07,680

today you're welcome it was my pleasure

3171

02:57:12,110 --> 02:57:10,080

Philippe dulu the European service

3172

02:57:14,990 --> 02:57:12,120

module program manager joining us here

3173

02:57:32,590 --> 02:57:15,000

in Mission Control

3174

02:57:39,830 --> 02:57:35,630

this is Mission Control Houston and uh

3175

02:57:43,010 --> 02:57:39,840

all of the action now is focused on the

3176

02:57:49,070 --> 02:57:43,020

USS Portland west of Baja California my

3177

02:57:53,150 --> 02:57:51,230

Rob thank you yep we're here on the deck

3178

02:57:55,130 --> 02:57:53,160

of the USS Portland just 100 miles off

3179

02:57:57,769 --> 02:57:55,140

the coast to Baja Mexico and I'm joined

3180

02:57:59,570 --> 02:57:57,779

by Valerie Vinciolo she's the General

3181

02:58:01,550 --> 02:57:59,580

Dynamics supplied physical sciences

3182

02:58:04,070 --> 02:58:01,560

senior engineer thanks for being here

3183

02:58:06,170 --> 02:58:04,080

yes of course great so Valerie has some

3184

02:58:09,050 --> 02:58:06,180

fresh information and Analysis that

3185

02:58:11,809 --> 02:58:09,060

she's been doing uh as it pertains to

3186

02:58:14,750 --> 02:58:11,819

this operation bringing the Iran Command

3187

02:58:18,230 --> 02:58:14,760

Module into the well deck of USS

3188

02:58:21,650 --> 02:58:18,240

Portland and so she has been looking at

3189

02:58:24,650 --> 02:58:21,660

the wave heights with a system that you

3190

02:58:27,469 --> 02:58:24,660

use and tell me you've just now analyzed

3191

02:58:29,990 --> 02:58:27,479

the sea Heights what kind of sea Heights

3192

02:58:31,790 --> 02:58:30,000

are we dealing with and what does that

3193

02:58:33,410 --> 02:58:31,800

mean for the recovery of the Orion

3194

02:58:35,690 --> 02:58:33,420

capsule out there in the ocean right now

3195

02:58:38,929 --> 02:58:35,700

um yes so we have two wave monitoring

3196

02:58:40,550 --> 02:58:38,939

systems two Radars on board the ship so

3197

02:58:42,290 --> 02:58:40,560

we're monitoring the waves measuring the

3198

02:58:44,570 --> 02:58:42,300

Doppler velocity of the waves in the

3199

02:58:46,190 --> 02:58:44,580

vicinity of the ship so from that we're

3200

02:58:48,110 --> 02:58:46,200

able to get the significant wave height

3201  
02:58:49,910 --> 02:58:48,120  
and where the direction of the waves are

3202  
02:58:51,530 --> 02:58:49,920  
coming from along with the period so

3203  
02:58:53,809 --> 02:58:51,540  
right now we're seeing about four to

3204  
02:58:55,929 --> 02:58:53,819  
five feet of waves at about 13 seconds

3205  
02:58:58,370 --> 02:58:55,939  
from North Northwest

3206  
02:59:00,590 --> 02:58:58,380  
so with that information we're able to

3207  
02:59:03,050 --> 02:59:00,600  
provide a recovery heading for the ship

3208  
02:59:04,910 --> 02:59:03,060  
that'll optimize you know minimizing the

3209  
02:59:06,469 --> 02:59:04,920  
motion in the well deck so we're really

3210  
02:59:08,690 --> 02:59:06,479  
trying to minimize that sloshing and

3211  
02:59:10,190 --> 02:59:08,700  
bore wave in the well deck and that's a

3212  
02:59:11,809 --> 02:59:10,200  
key point right there Valerie of course

3213  
02:59:14,630 --> 02:59:11,819

as I don't know if you could tell at

3214

02:59:16,790 --> 02:59:14,640

home but we're on the ship deck leaning

3215

02:59:18,349 --> 02:59:16,800

back and forth to those four to five

3216

02:59:20,469 --> 02:59:18,359

foot waves that we're dealing with out

3217

02:59:23,030 --> 02:59:20,479

there in the ocean right now so imagine

3218

02:59:25,429 --> 02:59:23,040

Orion bobbing out there in the ocean

3219

02:59:28,070 --> 02:59:25,439

coming into a well deck where those

3220

02:59:30,469 --> 02:59:28,080

waves come into the well deck so what

3221

02:59:32,809 --> 02:59:30,479

has been your recommendation to the team

3222

02:59:34,429 --> 02:59:32,819

about how to deal with these waves as

3223

02:59:35,990 --> 02:59:34,439

they bring that capsule closer right so

3224

02:59:38,510 --> 02:59:36,000

right now we're recommending a recovery

3225

02:59:40,550 --> 02:59:38,520

course of 320 to kind of mitigate that

3226

02:59:42,469 --> 02:59:40,560

motion so we're kind of looking at the

3227

02:59:45,650 --> 02:59:42,479

role of the ship to minimize that

3228

02:59:48,250 --> 02:59:45,660

sloshing wave in the course of 320s

3229

02:59:50,389 --> 02:59:48,260

looking like the best for that recovery

3230

02:59:52,490 --> 02:59:50,399

that will give us a little bit of a bore

3231

02:59:53,990 --> 02:59:52,500

wave that we're going to experience but

3232

02:59:56,090 --> 02:59:54,000

it's something that we think we can deal

3233

02:59:57,250 --> 02:59:56,100

with and it um we're looking forward to

3234

03:00:00,050 --> 02:59:57,260

the recovery

3235

03:00:01,910 --> 03:00:00,060

this is important because of course

3236

03:00:04,010 --> 03:00:01,920

inside the well deck I've heard it

3237

03:00:06,309 --> 03:00:04,020

explained that once those waves come in

3238

03:00:10,190 --> 03:00:06,319

and then the ship as it's moving about

3239

03:00:11,690 --> 03:00:10,200

creates a big wave pool inside yes yeah

3240

03:00:13,250 --> 03:00:11,700

that's not good for a spacecraft that

3241

03:00:14,990 --> 03:00:13,260

you're trying to stabilize no you don't

3242

03:00:17,210 --> 03:00:15,000

you really want to minimize those

3243

03:00:19,070 --> 03:00:17,220

missions to the best of our ability and

3244

03:00:20,809 --> 03:00:19,080

in doing so we're just looking at

3245

03:00:22,429 --> 03:00:20,819

everything out there all the waves what

3246

03:00:24,650 --> 03:00:22,439

we're dealing with and we have

3247

03:00:26,269 --> 03:00:24,660

hydrodynamic ship models of the ship and

3248

03:00:28,610 --> 03:00:26,279

of the well deck so we're running

3249

03:00:31,910 --> 03:00:28,620

through all of our models live taking

3250

03:00:33,469 --> 03:00:31,920

the live radar data and just trying to

3251

03:00:35,630 --> 03:00:33,479

provide the best information available

3252

03:00:38,570 --> 03:00:35,640

here

3253

03:00:40,550 --> 03:00:38,580

and so when they have that information

3254

03:00:42,830 --> 03:00:40,560

um what is your role after you've given

3255

03:00:45,290 --> 03:00:42,840

do you continue to monitor yes we're

3256

03:00:47,570 --> 03:00:45,300

constantly monitoring um and running the

3257

03:00:49,070 --> 03:00:47,580

system we're always recording data to

3258

03:00:52,070 --> 03:00:49,080

analyze later

3259

03:00:53,150 --> 03:00:52,080

um so constantly doing that and we'll

3260

03:00:55,130 --> 03:00:53,160

provide

3261

03:00:57,290 --> 03:00:55,140

um little tweaks and updates you know as

3262

03:00:59,150 --> 03:00:57,300

we get closer but once they've started

3263

03:01:00,950 --> 03:00:59,160

flooding we're really on that course so

3264

03:01:02,929 --> 03:01:00,960

we'll just keep think monitoring what's

3265

03:01:05,210 --> 03:01:02,939

going on those two Radars on the ship

3266

03:01:07,070 --> 03:01:05,220

where are they located and what

3267

03:01:09,290 --> 03:01:07,080

frequency they're using

3268

03:01:12,170 --> 03:01:09,300

um so they're located on the o5 and it's

3269

03:01:14,450 --> 03:01:12,180

an x-band radar and over here on the 04s

3270

03:01:16,130 --> 03:01:14,460

we have two and that gives us putting

3271

03:01:18,950 --> 03:01:16,140

them both together gives us a full 360

3272

03:01:19,910 --> 03:01:18,960

Degrees which is what you want you want

3273

03:01:21,830 --> 03:01:19,920

to be able to see all the ways around

3274

03:01:23,510 --> 03:01:21,840

the ship and they're actually an x-band

3275

03:01:26,090 --> 03:01:23,520

radar that's been vertically polarized

3276

03:01:27,950 --> 03:01:26,100

so we can see the Doppler velocity as

3277

03:01:30,230 --> 03:01:27,960

it's coming in to calculate that wave

3278

03:01:31,250 --> 03:01:30,240

height and the swells and the wind waves

3279

03:01:33,050 --> 03:01:31,260

and the direction they're coming in

3280

03:01:35,090 --> 03:01:33,060

that's high-tech stuff I mean it's you

3281

03:01:36,769 --> 03:01:35,100

know we've got Doppler radar many people

3282

03:01:39,230 --> 03:01:36,779

may be familiar familiar with how that

3283

03:01:41,269 --> 03:01:39,240

helps with weather you know telling our

3284

03:01:43,070 --> 03:01:41,279

audience and other people where the

3285

03:01:44,990 --> 03:01:43,080

weather is where the storm clouds are

3286

03:01:47,269 --> 03:01:45,000

but it literally can map out in three

3287

03:01:49,190 --> 03:01:47,279

dimensions the waves around the ship yes

3288

03:01:50,450 --> 03:01:49,200

yeah so we're looking a lot of expand

3289

03:01:53,690 --> 03:01:50,460

Radars you know they're looking for

3290

03:01:56,750 --> 03:01:53,700

targets right um you know another ship

3291

03:01:58,790 --> 03:01:56,760

avoidance but we've polarized our Radars

3292

03:02:00,530 --> 03:01:58,800

to try to look at the waves and just

3293

03:02:02,030 --> 03:02:00,540

what other people might consider noise

3294

03:02:03,469 --> 03:02:02,040

is what we want to capture that's

3295

03:02:05,990 --> 03:02:03,479

interesting it's just the opposite yeah

3296

03:02:07,610 --> 03:02:06,000

it's typically used for well Valerie

3297

03:02:09,769 --> 03:02:07,620

last question I want to ask you you've

3298

03:02:12,769 --> 03:02:09,779

done the ship since we departed San

3299

03:02:14,030 --> 03:02:12,779

Diego on Wednesday it's been a long

3300

03:02:16,130 --> 03:02:14,040

journey to get to this point this

3301

03:02:19,490 --> 03:02:16,140

weather alternate spot where the seas

3302

03:02:21,290 --> 03:02:19,500

are much lower they're now 12 feet or so

3303

03:02:22,730 --> 03:02:21,300

off of San Diego so it's certainly

3304

03:02:23,690 --> 03:02:22,740

something yeah you probably appreciate

3305

03:02:24,769 --> 03:02:23,700

yes yes

3306

03:02:26,210 --> 03:02:24,779

um but let me ask you about that

3307

03:02:28,190 --> 03:02:26,220

operation and looking out there and

3308

03:02:30,349 --> 03:02:28,200

seeing that Space Capsule in the water

3309

03:02:32,389 --> 03:02:30,359

almost like that for you watching oh my

3310

03:02:33,769 --> 03:02:32,399

gosh it was amazing it's something I

3311

03:02:36,650 --> 03:02:33,779

will probably remember the rest of my

3312

03:02:39,410 --> 03:02:36,660

life hearing that sonic boom and then

3313

03:02:41,750 --> 03:02:39,420

seeing the shoots oh my gosh it was it's

3314

03:02:43,190 --> 03:02:41,760

incredible Valerie Chulo thank you so

3315

03:02:44,929 --> 03:02:43,200

much for joining us yeah thank you for

3316

03:02:48,010 --> 03:02:44,939

having me here all right Rob we'll send

3317

03:02:54,130 --> 03:02:50,210

thanks Daryl

3318

03:02:57,469 --> 03:02:54,140

the work continues out in the Pacific

3319

03:03:00,710 --> 03:02:57,479

where you uh have the Orion spacecraft

3320

03:03:03,710 --> 03:03:00,720

with all five of its uh operating system

3321

03:03:07,550 --> 03:03:03,720

bags fully inflated following its

3322

03:03:11,389 --> 03:03:07,560

Splashdown one hour 21 minutes ago

3323

03:03:15,349 --> 03:03:11,399

at 11 40 a.m Central Time

3324

03:03:17,750 --> 03:03:15,359

9 40 a.m Pacific time to ramp up a

3325

03:03:21,469 --> 03:03:17,760

mission of 1.4 million miles that span

3326

03:03:24,710 --> 03:03:21,479

25 and a half days a mission that saw

3327

03:03:26,690 --> 03:03:24,720

the vehicle launched from the Kennedy

3328

03:03:29,450 --> 03:03:26,700

Space Center atop the space launch

3329

03:03:32,090 --> 03:03:29,460

system the maiden Flight of the world's

3330

03:03:33,410 --> 03:03:32,100

most powerful rocket an hour and a half

3331

03:03:36,530 --> 03:03:33,420

after a launch

3332

03:03:38,330 --> 03:03:36,540

Orion was sent out of Earth orbit in its

3333

03:03:39,969 --> 03:03:38,340

translunar injection

3334

03:03:43,670 --> 03:03:39,979

to begin

3335

03:03:45,530 --> 03:03:43,680

a voyage out to what is called a distant

3336

03:03:48,290 --> 03:03:45,540

retrograde orbit a highly elliptical

3337

03:03:52,370 --> 03:03:48,300

race track shaped orbit

3338

03:03:55,490 --> 03:03:52,380

that enabled Orion to be put through its

3339

03:03:57,230 --> 03:03:55,500

Paces for almost a month Gathering all

3340

03:03:59,510 --> 03:03:57,240

the data that it needed

3341

03:04:02,510 --> 03:03:59,520

and that the Orion program and Mission

3342

03:04:05,150 --> 03:04:02,520

managers had hoped for and more

3343

03:04:06,889 --> 03:04:05,160

all of the engineering data that will

3344

03:04:09,889 --> 03:04:06,899

set the tone

3345

03:04:12,110 --> 03:04:09,899

and answer a lot of the questions that

3346

03:04:13,730 --> 03:04:12,120

will pave the way for the Artemis 2

3347

03:04:15,830 --> 03:04:13,740

mission in which accrue will be placed

3348

03:04:16,670 --> 03:04:15,840

on board the vehicle in a couple of

3349

03:04:19,790 --> 03:04:16,680

years

3350

03:04:21,830 --> 03:04:19,800

for a orbital Mission around the Moon

3351

03:04:23,570 --> 03:04:21,840

again in a highly elliptical orbit a

3352

03:04:26,330 --> 03:04:23,580

mission that would be about 10 days in

3353

03:04:28,969 --> 03:04:26,340

length or so

3354

03:04:31,670 --> 03:04:28,979

that crew yet to be named

3355

03:04:34,130 --> 03:04:31,680

but the pace will pick up after the

3356

03:04:37,370 --> 03:04:34,140

first of the year in a fairly dramatic

3357

03:04:40,070 --> 03:04:37,380

fashion as the work continues to prepare

3358

03:04:43,550 --> 03:04:40,080

the space launch system the next space

3359

03:04:47,210 --> 03:04:43,560

launch system rocket and the Artemis 2

3360

03:04:49,969 --> 03:04:47,220

Orion vehicle to support a crew during

3361

03:04:52,969 --> 03:04:49,979

its Mission around the Moon and back to

3362

03:04:58,010 --> 03:04:55,130

in the meantime a number of test

3363

03:05:01,309 --> 03:04:58,020

objectives are still underway for the

3364

03:05:04,790 --> 03:05:01,319

vehicle most notably characterizing the

3365

03:05:06,530 --> 03:05:04,800

thermal environment of uh the Orion

3366

03:05:11,210 --> 03:05:06,540

spacecraft itself

3367

03:05:13,130 --> 03:05:11,220

Orion endured temperatures of up to 5000

3368

03:05:16,370 --> 03:05:13,140

degrees Fahrenheit during its high speed

3369

03:05:18,830 --> 03:05:16,380

entry out of lunar orbit and back into

3370

03:05:20,870 --> 03:05:18,840

the Earth's atmosphere where it slammed

3371

03:05:24,590 --> 03:05:20,880

into the atmosphere at 25 times the

3372

03:05:27,050 --> 03:05:24,600

speed of sound and then underwent a skip

3373

03:05:29,450 --> 03:05:27,060

entry maneuver basically uh

3374

03:05:31,670 --> 03:05:29,460

skipping into the atmosphere then

3375

03:05:34,429 --> 03:05:31,680

dipping back out of the atmosphere again

3376

03:05:37,550 --> 03:05:34,439

and then back into the atmosphere to

3377

03:05:41,630 --> 03:05:37,560

bleed off excess energy an important

3378

03:05:44,630 --> 03:05:41,640

maneuver that was designed and executed

3379

03:05:49,190 --> 03:05:44,640

to Perfection to bleed off excess

3380

03:05:51,769 --> 03:05:49,200

inertia and to gain data on how we can

3381

03:05:54,469 --> 03:05:51,779

better bring in multiple Splashdown

3382

03:05:57,410 --> 03:05:54,479

sites if required in the Pacific for

3383

03:06:01,370 --> 03:05:57,420

future crude missions

3384

03:06:04,610 --> 03:06:01,380

all of the shoots were deployed in good

3385

03:06:07,550 --> 03:06:04,620

shape uh the three main shoots deployed

3386

03:06:11,510 --> 03:06:07,560

as planned they reefed uh to their full

3387

03:06:14,330 --> 03:06:11,520

extent and uh Orion gently splashed down

3388

03:06:16,610 --> 03:06:14,340

after entering the Earth's atmosphere at

3389

03:06:20,510 --> 03:06:16,620

25 times the speed of sound it splashed

3390

03:06:23,870 --> 03:06:20,520

down at a meager velocity of just 19

3391

03:06:26,389 --> 03:06:23,880

miles an hour very gentle Splashdown

3392

03:06:29,450 --> 03:06:26,399

velocity had a crew been on board and

3393

03:06:34,010 --> 03:06:29,460

here's a replay of the final seconds for

3394

03:06:36,710 --> 03:06:34,020

Orion as it descended below a deck of

3395

03:06:39,410 --> 03:06:36,720

clouds at about 7 10 1700 feet of

3396

03:06:41,450 --> 03:06:39,420

scattered clouds that was the final deck

3397

03:06:43,790 --> 03:06:41,460

of the space flight meteorology group

3398

03:06:47,090 --> 03:06:43,800

had forecast a very benign conditions

3399

03:06:51,170 --> 03:06:47,100

for Orion it did play out exactly that

3400

03:06:57,969 --> 03:06:51,180

way as Orion touched down at 11 40 a.m

3401  
03:07:03,830 --> 03:07:01,490  
and there was Splashdown the shoots were

3402  
03:07:07,309 --> 03:07:03,840  
cut automatically

3403  
03:07:10,490 --> 03:07:07,319  
the five crew module operating system

3404  
03:07:14,570 --> 03:07:10,500  
inflatable bags inflated with helium gas

3405  
03:07:18,950 --> 03:07:14,580  
as planned and Orion is gently bobbing

3406  
03:07:21,889 --> 03:07:18,960  
out uh with the Navy divers uh very very

3407  
03:07:23,630 --> 03:07:21,899  
close to the spacecraft it's going to

3408  
03:07:26,090 --> 03:07:23,640  
take several hours for them to hook up

3409  
03:07:28,130 --> 03:07:26,100  
the equipment that they need to haul the

3410  
03:09:40,130 --> 03:07:28,140  
vehicle into the well deck of the USS

3411  
03:09:43,309 --> 03:09:41,450  
okay

3412  
03:09:45,830 --> 03:09:43,319  
back here in Mission Control the entry

3413  
03:09:48,889 --> 03:09:45,840

team of flight controllers uh watching

3414

03:09:50,030 --> 03:09:48,899

uh the data of the post Splashdown test

3415

03:09:52,910 --> 03:09:50,040

objectives

3416

03:09:55,690 --> 03:09:52,920

in which data is being acquired on the

3417

03:09:57,950 --> 03:09:55,700

thermal characteristics of Orion

3418

03:10:01,550 --> 03:09:57,960

there'll be a restart of the ammonia

3419

03:10:05,150 --> 03:10:01,560

boiler system to gain data on long range

3420

03:10:07,610 --> 03:10:05,160

and extra cooling for the vehicle that

3421

03:10:09,889 --> 03:10:07,620

will be in the offing when a crew gets

3422

03:10:12,710 --> 03:10:09,899

on board we'll be talking more about the

3423

03:10:14,389 --> 03:10:12,720

crew aspect of what lies ahead a couple

3424

03:10:17,389 --> 03:10:14,399

of years from now a short time from now

3425

03:10:19,790 --> 03:10:17,399

but now it is time to go back to what is

3426

03:10:25,090 --> 03:10:19,800

a very busy place on the USS Portland

3427

03:10:31,370 --> 03:10:28,130

thanks Rob yep I'm here with Cody Kelly

3428

03:10:34,250 --> 03:10:31,380

who is the national Affairs manager and

3429

03:10:37,849 --> 03:10:34,260

the search and rescue office at NASA

3430

03:10:39,830 --> 03:10:37,859

in terms of your job we had good visual

3431

03:10:42,050 --> 03:10:39,840

today of the capsule coming down we

3432

03:10:44,030 --> 03:10:42,060

clearly have the visual right now we can

3433

03:10:46,610 --> 03:10:44,040

see it in the water we know where it is

3434

03:10:49,070 --> 03:10:46,620

but that might not always be the case

3435

03:10:52,130 --> 03:10:49,080

the capsule may be beyond our visual

3436

03:10:54,469 --> 03:10:52,140

site as well as an Artemis 2 the

3437

03:10:57,349 --> 03:10:54,479

astronauts tell me about what your role

3438

03:10:59,090 --> 03:10:57,359

is and and how you help find out where

3439

03:11:01,010 --> 03:10:59,100

they are in a situation like that yes

3440

03:11:02,690 --> 03:11:01,020

sir my name again my Cody Kelly I work

3441

03:11:04,790 --> 03:11:02,700

in our star Mission office basically we

3442

03:11:06,889 --> 03:11:04,800

work with all of our our federal

3443

03:11:08,870 --> 03:11:06,899

International Partners to ensure that

3444

03:11:10,550 --> 03:11:08,880

our spacecraft are interoperable with

3445

03:11:13,010 --> 03:11:10,560

the search and rescue satellite aided

3446

03:11:15,110 --> 03:11:13,020

tracking system or the sarsat system so

3447

03:11:17,330 --> 03:11:15,120

today for Artemis one we tested out the

3448

03:11:18,889 --> 03:11:17,340

vehicle tri-band Beacon which was using

3449

03:11:20,389 --> 03:11:18,899

swept tones for the helicopters that are

3450

03:11:22,130 --> 03:11:20,399

flying around behind us to be able to

3451  
03:11:23,809 --> 03:11:22,140  
locate that spacecraft in the kind of

3452  
03:11:25,309 --> 03:11:23,819  
what we call the terminal area which

3453  
03:11:27,110 --> 03:11:25,319  
within about a you know one nautical

3454  
03:11:29,809 --> 03:11:27,120  
mile where you can get visuals as well

3455  
03:11:31,010 --> 03:11:29,819  
as the 406 megahertz beacons that were

3456  
03:11:32,150 --> 03:11:31,020  
on the capsule as well as what the

3457  
03:11:34,730 --> 03:11:32,160  
astronauts are going to wear in Artemis

3458  
03:11:36,290 --> 03:11:34,740  
too we were using What's called the our

3459  
03:11:38,690 --> 03:11:36,300  
intelligent terminal or the saint

3460  
03:11:40,070 --> 03:11:38,700  
application which is a system that ties

3461  
03:11:41,929 --> 03:11:40,080  
into our ground station at The Goddard

3462  
03:11:43,969 --> 03:11:41,939  
space flight center to pull in all the

3463  
03:11:45,769 --> 03:11:43,979

data from these beacons so we can see

3464

03:11:47,690 --> 03:11:45,779

them anywhere in the world and that's

3465

03:11:49,550 --> 03:11:47,700

incredibly important especially when we

3466

03:11:50,990 --> 03:11:49,560

have crude missions where we you know if

3467

03:11:52,670 --> 03:11:51,000

we had some kind of an emergency abort

3468

03:11:54,469 --> 03:11:52,680

or some kind of Landing we'd have to be

3469

03:11:56,690 --> 03:11:54,479

able to get data to our DOD Partners

3470

03:11:58,370 --> 03:11:56,700

extremely fast even if they're Landing

3471

03:11:59,750 --> 03:11:58,380

internationally and this is something

3472

03:12:02,630 --> 03:11:59,760

that we do for all of our human space

3473

03:12:03,830 --> 03:12:02,640

life programs but Artemis really has a a

3474

03:12:06,050 --> 03:12:03,840

kind of special place in my heart

3475

03:12:08,690 --> 03:12:06,060

because all this effort started way back

3476

03:12:10,250 --> 03:12:08,700

in 2016 with urt5 so we actually

3477

03:12:13,250 --> 03:12:10,260

demonstrated some of our Advanced

3478

03:12:14,269 --> 03:12:13,260

Technologies on urt5 and slowly was able

3479

03:12:16,190 --> 03:12:14,279

to be integrated with the landing

3480

03:12:18,170 --> 03:12:16,200

recovery team to provide them that key

3481

03:12:20,030 --> 03:12:18,180

data on the day of Landing if there was

3482

03:12:22,490 --> 03:12:20,040

any kind of emergency

3483

03:12:24,349 --> 03:12:22,500

um are going to wear What's called the

3484

03:12:26,030 --> 03:12:24,359

angel beacons which are the advanced

3485

03:12:27,710 --> 03:12:26,040

Next Generation emergency locator

3486

03:12:29,210 --> 03:12:27,720

beacons that are located on their life

3487

03:12:30,650 --> 03:12:29,220

preserver equipment and that's going to

3488

03:12:32,090 --> 03:12:30,660

be able to track an astronaut if they

3489

03:12:33,410 --> 03:12:32,100

had to get out of the capsule if there's

3490

03:12:35,510 --> 03:12:33,420

an ammonia leak or some kind of

3491

03:12:37,550 --> 03:12:35,520

emergency as well as tying that into

3492

03:12:39,050 --> 03:12:37,560

what the vehicle Telemetry is saying to

3493

03:12:40,370 --> 03:12:39,060

be able to give a good SAR picture to

3494

03:12:42,769 --> 03:12:40,380

these guys that are flying helicopters

3495

03:12:45,170 --> 03:12:42,779

looking for survivors or being able to

3496

03:12:47,750 --> 03:12:45,180

go rescue astronauts and so let's talk a

3497

03:12:49,250 --> 03:12:47,760

little bit about that uh further the

3498

03:12:51,170 --> 03:12:49,260

astronauts will be wearing GPS

3499

03:12:53,809 --> 03:12:51,180

essentially their GPS locators right

3500

03:12:56,630 --> 03:12:53,819

exactly they're beacons uh and then of

3501

03:12:58,910 --> 03:12:56,640

course the crew module itself has a tri

3502

03:13:01,429 --> 03:12:58,920

Beacon yes sir so how do you delineate

3503

03:13:03,410 --> 03:13:01,439

between those two and that's really the

3504

03:13:05,210 --> 03:13:03,420

the power of our ground station and all

3505

03:13:06,889 --> 03:13:05,220

these web applications they're two

3506

03:13:08,809 --> 03:13:06,899

different Legacy beacons you have a

3507

03:13:10,610 --> 03:13:08,819

first generation starset Beacon which is

3508

03:13:12,590 --> 03:13:10,620

what you have on a standard boat even

3509

03:13:14,450 --> 03:13:12,600

the ship itself has a first generation

3510

03:13:16,370 --> 03:13:14,460

Beacon and then we have what is called a

3511

03:13:17,870 --> 03:13:16,380

second generation Beacon which is an

3512

03:13:20,269 --> 03:13:17,880

advanced waveform that's specifically

3513

03:13:21,469 --> 03:13:20,279

for the astronauts themselves in our

3514

03:13:23,870 --> 03:13:21,479

application we're able to actually

3515

03:13:25,730 --> 03:13:23,880

identify each of those Beacon IDs and

3516

03:13:26,690 --> 03:13:25,740

tie them to a specific crew member so

3517

03:13:28,010 --> 03:13:26,700

that when they turn it on we know

3518

03:13:29,870 --> 03:13:28,020

exactly who's speaking that isn't

3519

03:13:31,190 --> 03:13:29,880

exactly where it's at and the power

3520

03:13:33,110 --> 03:13:31,200

behind that is with these emerging

3521

03:13:35,389 --> 03:13:33,120

Technologies we're able to do this even

3522

03:13:36,889 --> 03:13:35,399

if we have bad GP s connection or we're

3523

03:13:38,150 --> 03:13:36,899

really where in the world and this is

3524

03:13:40,429 --> 03:13:38,160

the kind of stuff that you'll be you can

3525

03:13:42,290 --> 03:13:40,439

have is you go to a vendor and buy it

3526

03:13:44,210 --> 03:13:42,300

for your boat if you're out hiking we're

3527

03:13:46,010 --> 03:13:44,220

using those Technologies for civilians

3528

03:13:48,349 --> 03:13:46,020

for astronaut use and kind of vetting it

3529

03:13:49,610 --> 03:13:48,359

out here out in the open ocean knowing

3530

03:13:52,490 --> 03:13:49,620

that you know astronauts are really one

3531

03:13:55,070 --> 03:13:52,500

of our our Prime customers so you ran a

3532

03:13:57,530 --> 03:13:55,080

test today right as this operation was

3533

03:14:00,349 --> 03:13:57,540

unfolding the crew module was sending

3534

03:14:01,670 --> 03:14:00,359

out it's uh its Beacon it's tri-beacon

3535

03:14:03,650 --> 03:14:01,680

but then you also had those Angel

3536

03:14:05,450 --> 03:14:03,660

beacons for the astronauts they were

3537

03:14:06,769 --> 03:14:05,460

what they put them on the boats when we

3538

03:14:08,150 --> 03:14:06,779

put them on the ribs or the rigid holes

3539

03:14:09,769 --> 03:14:08,160

inflatable boats that are out there

3540

03:14:11,389 --> 03:14:09,779

attending the capsule as well as on the

3541

03:14:12,950 --> 03:14:11,399

fan sell the ship what we're doing is

3542

03:14:14,750 --> 03:14:12,960

we're looking to make sure the air air

3543

03:14:16,490 --> 03:14:14,760

crews could delineate between these

3544

03:14:18,290 --> 03:14:16,500

various beacons if the crew members ever

3545

03:14:19,790 --> 03:14:18,300

had to get out as well as looking at the

3546

03:14:21,830 --> 03:14:19,800

performance of the vehicle tri-band

3547

03:14:23,809 --> 03:14:21,840

Beacon after it spent almost two weeks

3548

03:14:25,370 --> 03:14:23,819

in space so we're looking at you know

3549

03:14:27,469 --> 03:14:25,380

not only today's technology but

3550

03:14:30,170 --> 03:14:27,479

tomorrow's technology to kind of serve

3551

03:14:31,670 --> 03:14:30,180

Artemis emerging partners and really the

3552

03:14:33,530 --> 03:14:31,680

folks are going to be In Harm's Way on a

3553

03:14:34,910 --> 03:14:33,540

daily basis your test was part of the

3554

03:14:36,889 --> 03:14:34,920

operation today day and how did it

3555

03:14:38,750 --> 03:14:36,899

perform uh it went phenomenally I can't

3556

03:14:40,130 --> 03:14:38,760

you know I can't give more kudos to the

3557

03:14:42,110 --> 03:14:40,140

crew of the Portland um you know first

3558

03:14:43,849 --> 03:14:42,120

Air Force debt three setting that all up

3559

03:14:45,170 --> 03:14:43,859

with the Navy the Air Force as well as

3560

03:14:47,090 --> 03:14:45,180

some of our national Partners in the US

3561

03:14:49,250 --> 03:14:47,100

sarsar program that made this all happen

3562

03:14:50,510 --> 03:14:49,260

so it was really a team effort and it

3563

03:14:52,490 --> 03:14:50,520

went flawlessly just like this Mission

3564

03:14:53,990 --> 03:14:52,500

so I couldn't be more happy and you

3565

03:14:55,969 --> 03:14:54,000

could you could clearly identify the

3566

03:14:57,469 --> 03:14:55,979

capsule and the two Angel beacons I mean

3567

03:14:58,309 --> 03:14:57,479

it was clear as day it was clear as day

3568

03:15:00,769 --> 03:14:58,319

and we've been working on this

3569

03:15:02,750 --> 03:15:00,779

application for over two years with this

3570

03:15:04,849 --> 03:15:02,760

mission in mind and it executed

3571

03:15:06,110 --> 03:15:04,859

flawlessly and the the coders and

3572

03:15:07,969 --> 03:15:06,120

developers that Goddard space flight

3573

03:15:10,309 --> 03:15:07,979

center did a phenomenal job being able

3574

03:15:12,950 --> 03:15:10,319

to get this ready on time on Mission and

3575

03:15:14,269 --> 03:15:12,960

on location Cody Kelly manager of

3576

03:15:16,070 --> 03:15:14,279

national Affairs search and rescue

3577

03:15:17,450 --> 03:15:16,080

officer NASA thank you very much thank

3578

03:15:22,010 --> 03:15:17,460

you

3579

03:15:26,750 --> 03:15:25,309

thanks Daryl uh great job out there by

3580

03:15:30,710 --> 03:15:26,760

the way throughout the course of the day

3581

03:15:32,090 --> 03:15:30,720

a great view of Orion as it uh sits

3582

03:15:34,730 --> 03:15:32,100

passively

3583

03:15:37,429 --> 03:15:34,740

in the fairly calm Waters of the Pacific

3584

03:15:40,250 --> 03:15:37,439

West of Baja California

3585

03:15:42,650 --> 03:15:40,260

with me here sitting very calmly

3586

03:15:45,349 --> 03:15:42,660

veteran astronaut Randy bresnick Randy

3587

03:15:47,929 --> 03:15:45,359

thanks for joining us today

3588

03:15:49,190 --> 03:15:47,939

you have been an integral part of the

3589

03:15:51,650 --> 03:15:49,200

preparation

3590

03:15:55,190 --> 03:15:51,660

of not only this Mission but all of the

3591

03:15:57,530 --> 03:15:55,200

astronaut office activities associated

3592

03:15:59,750 --> 03:15:57,540

with requirements that will ultimately

3593

03:16:02,570 --> 03:15:59,760

lead to putting a crew on the next

3594

03:16:03,650 --> 03:16:02,580

vehicle that will orbit the Moon in two

3595

03:16:06,469 --> 03:16:03,660

years

3596

03:16:10,429 --> 03:16:06,479

what did you see today that a thrilled

3597

03:16:12,889 --> 03:16:10,439

you and B was most important for you to

3598

03:16:15,290 --> 03:16:12,899

see as a result of all the work that has

3599

03:16:18,230 --> 03:16:15,300

gone in to make this Mission possible

3600

03:16:19,790 --> 03:16:18,240

that is a great question Robin and Tim

3601  
03:16:20,929 --> 03:16:19,800  
thanks let me come join you guys this

3602  
03:16:22,010 --> 03:16:20,939  
morning

3603  
03:16:24,469 --> 03:16:22,020  
um certainly watching the team

3604  
03:16:26,389 --> 03:16:24,479  
throughout uh the past 26 days was

3605  
03:16:27,950 --> 03:16:26,399  
certainly the culmination of CNN walking

3606  
03:16:30,230 --> 03:16:27,960  
in here and see this team be able to see

3607  
03:16:32,809 --> 03:16:30,240  
the fruits of their labors

3608  
03:16:35,030 --> 03:16:32,819  
um seeing that we have a launch platform

3609  
03:16:37,309 --> 03:16:35,040  
that was nearly Flawless practically

3610  
03:16:39,170 --> 03:16:37,319  
Flawless you know getting our our Orion

3611  
03:16:43,030 --> 03:16:39,180  
uphill and then having our service

3612  
03:16:46,370 --> 03:16:43,040  
module you know give us power and the uh

3613  
03:16:48,469 --> 03:16:46,380

flight control and the burns that all

3614

03:16:51,410 --> 03:16:48,479

went off so well was so small residuals

3615

03:16:54,469 --> 03:16:51,420

we hardly had to do any trimming and it

3616

03:16:56,090 --> 03:16:54,479

uh was then great to see all the cameras

3617

03:16:59,210 --> 03:16:56,100

that we put on that vehicle to bring

3618

03:17:00,710 --> 03:16:59,220

everybody along on the mission and you

3619

03:17:02,630 --> 03:17:00,720

know put selfie is a word that we use

3620

03:17:03,889 --> 03:17:02,640

now in space flight you know and Artemis

3621

03:17:05,809 --> 03:17:03,899

one getting the Selfies while we're up

3622

03:17:07,670 --> 03:17:05,819

there and then certainly everyone

3623

03:17:09,290 --> 03:17:07,680

holding their breaths we did the burns

3624

03:17:10,250 --> 03:17:09,300

to get into the distant retrograde orbit

3625

03:17:11,990 --> 03:17:10,260

and then get out of the distant

3626

03:17:13,490 --> 03:17:12,000

retrograde orbit and then be able to

3627

03:17:15,469 --> 03:17:13,500

make the trim Burns to be able to get

3628

03:17:17,269 --> 03:17:15,479

right hit entry interfaces accurately as

3629

03:17:19,849 --> 03:17:17,279

we did here you'll see the service

3630

03:17:22,370 --> 03:17:19,859

module separate which is another big big

3631

03:17:23,750 --> 03:17:22,380

milestone and then see the last few

3632

03:17:26,330 --> 03:17:23,760

minutes of flight with Orion flying on

3633

03:17:29,150 --> 03:17:26,340

its own for the very first time and then

3634

03:17:31,550 --> 03:17:29,160

see how well it controlled itself and

3635

03:17:33,410 --> 03:17:31,560

how the four big cover came off on time

3636

03:17:35,269 --> 03:17:33,420

the throws came out slowed it down Mains

3637

03:17:36,650 --> 03:17:35,279

came out and we landed you know two and

3638

03:17:38,809 --> 03:17:36,660

a half miles

3639

03:17:41,450 --> 03:17:38,819

um from the you know pinpoint Bullseye

3640

03:17:43,370 --> 03:17:41,460

and we had expected maybe you know five

3641

03:17:45,889 --> 03:17:43,380

five and a half miles so it was awesome

3642

03:17:47,389 --> 03:17:45,899

to see all of that and that whole

3643

03:17:49,070 --> 03:17:47,399

collection is what gives us confidence

3644

03:17:51,050 --> 03:17:49,080

for the next time you know all of these

3645

03:17:54,050 --> 03:17:51,060

things that were individually areas of

3646

03:17:56,450 --> 03:17:54,060

concern have now been proven in flight

3647

03:17:58,250 --> 03:17:56,460

you know we've talked often during the

3648

03:17:59,809 --> 03:17:58,260

course of the broadcast today about the

3649

03:18:02,750 --> 03:17:59,819

fact that this is the 50th anniversary

3650

03:18:05,929 --> 03:18:02,760

of Apollo 17's landing on the moon Gene

3651  
03:18:08,389 --> 03:18:05,939  
cernan Jack Schmidt passed his prologue

3652  
03:18:10,670 --> 03:18:08,399  
as they say and now from an astronaut

3653  
03:18:12,650 --> 03:18:10,680  
office perspective as you look down the

3654  
03:18:15,530 --> 03:18:12,660  
road over the next two years a lot of

3655  
03:18:18,490 --> 03:18:15,540  
work to do but certainly a leg up on

3656  
03:18:20,809 --> 03:18:18,500  
what we think will be a launch in the uh

3657  
03:18:23,750 --> 03:18:20,819  
2024 time frame

3658  
03:18:26,330 --> 03:18:23,760  
absolutely the you know post flight data

3659  
03:18:28,730 --> 03:18:26,340  
reduction and everything else will be

3660  
03:18:30,469 --> 03:18:28,740  
amazing uh to see in the next few weeks

3661  
03:18:32,210 --> 03:18:30,479  
and months but we're I mean starting

3662  
03:18:34,010 --> 03:18:32,220  
next week we're right into Artemis 2

3663  
03:18:36,170 --> 03:18:34,020

continuing process and we got Artemis

3664

03:18:37,730 --> 03:18:36,180

one uh two crew module and service

3665

03:18:39,410 --> 03:18:37,740

modules sitting there KSC right now

3666

03:18:41,090 --> 03:18:39,420

going through it's file you know their

3667

03:18:42,889 --> 03:18:41,100

their final assembly and then we have to

3668

03:18:44,510 --> 03:18:42,899

do the verification validation test out

3669

03:18:45,889 --> 03:18:44,520

and make sure everything's working

3670

03:18:47,630 --> 03:18:45,899

and things like systems like the

3671

03:18:49,190 --> 03:18:47,640

ecosystem which we didn't have on this

3672

03:18:50,510 --> 03:18:49,200

and so the first time that we're flying

3673

03:18:52,429 --> 03:18:50,520

with that system will be when crew were

3674

03:18:54,290 --> 03:18:52,439

on board and so that'll be a you know

3675

03:18:56,150 --> 03:18:54,300

really important thorough checkout here

3676

03:18:57,590 --> 03:18:56,160

here on the deck

3677

03:18:59,929 --> 03:18:57,600

um certainly you know in the next

3678

03:19:01,309 --> 03:18:59,939

quarter uh ideally assigning the crew to

3679

03:19:02,450 --> 03:19:01,319

it so then we can start building their

3680

03:19:03,830 --> 03:19:02,460

spacesuits getting them involved in

3681

03:19:05,570 --> 03:19:03,840

training getting them ready to go in

3682

03:19:07,250 --> 03:19:05,580

that two-year Market hopefully we will

3683

03:19:08,990 --> 03:19:07,260

either meet or beat that two-year Mark

3684

03:19:10,730 --> 03:19:09,000

and so that'll be exciting to see if we

3685

03:19:12,710 --> 03:19:10,740

can move that fast to continue the

3686

03:19:14,870 --> 03:19:12,720

momentum that we got from this flight

3687

03:19:17,630 --> 03:19:14,880

and an interesting flight design for

3688

03:19:19,490 --> 03:19:17,640

Artemis 2 where another highly

3689

03:19:21,830 --> 03:19:19,500

elliptical orbit around the moon this is

3690

03:19:24,050 --> 03:19:21,840

not like your your father's Apollo 8

3691

03:19:26,570 --> 03:19:24,060

where we simply orbited almost at an

3692

03:19:28,849 --> 03:19:26,580

equatorial nature but we're going to be

3693

03:19:30,710 --> 03:19:28,859

chasing the interim cryogenic propulsion

3694

03:19:33,349 --> 03:19:30,720

stage as well

3695

03:19:35,809 --> 03:19:33,359

yeah certainly uh

3696

03:19:37,130 --> 03:19:35,819

when you look at how bold Apollo was you

3697

03:19:38,570 --> 03:19:37,140

know we had never been to the movie we

3698

03:19:40,130 --> 03:19:38,580

didn't know we could do it we planned on

3699

03:19:42,050 --> 03:19:40,140

having Apollo seven and we flew that

3700

03:19:43,490 --> 03:19:42,060

crew module in low earth orbit and then

3701

03:19:45,469 --> 03:19:43,500

Apollo 8 we launched it around the moon

3702

03:19:47,510 --> 03:19:45,479

and it stunned the world and you know

3703

03:19:48,889 --> 03:19:47,520

proved ourselves you know that we could

3704

03:19:50,330 --> 03:19:48,899

do this

3705

03:19:52,250 --> 03:19:50,340

well guess what we're doing that in one

3706

03:19:54,950 --> 03:19:52,260

mission on Artemis 2. we're doing Apollo

3707

03:19:57,170 --> 03:19:54,960

7 and 8 combined so that is a bold

3708

03:19:59,210 --> 03:19:57,180

statement and and goal for audacious

3709

03:20:00,349 --> 03:19:59,220

goal for NASA to set and like you said

3710

03:20:02,150 --> 03:20:00,359

the high elliptical orbit that we

3711

03:20:04,370 --> 03:20:02,160

launched of in here in Earth so we can

3712

03:20:05,590 --> 03:20:04,380

launch out get into a 24-hour orbit to

3713

03:20:09,349 --> 03:20:05,600

check out that environmental in life

3714

03:20:10,550 --> 03:20:09,359

life control system such that we know

3715

03:20:12,110 --> 03:20:10,560

that we can breathe we know that the

3716

03:20:14,150 --> 03:20:12,120

cooling works we know that all the

3717

03:20:15,410 --> 03:20:14,160

systems work scrub the CO2 take out the

3718

03:20:17,929 --> 03:20:15,420

humidity you know to try the exercise

3719

03:20:20,389 --> 03:20:17,939

device uh so we know that by the time we

3720

03:20:22,130 --> 03:20:20,399

end that period and we do the translator

3721

03:20:23,690 --> 03:20:22,140

injection burn we know that we're good

3722

03:20:26,389 --> 03:20:23,700

to go for the next nine days to be able

3723

03:20:28,849 --> 03:20:26,399

to get around the moon and come on back

3724

03:20:31,010 --> 03:20:28,859

and all of that just buying down risk

3725

03:20:34,250 --> 03:20:31,020

proving out the systems so that we go to

3726

03:20:36,170 --> 03:20:34,260

Artemis 3 we combine not only you know

3727

03:20:38,030 --> 03:20:36,180

Apollo 9 which is the first light of the

3728

03:20:39,830 --> 03:20:38,040

lamb and low earth orbit Apollo 10 which

3729

03:20:41,090 --> 03:20:39,840

with the Lambda lunar orbit and flew

3730

03:20:43,130 --> 03:20:41,100

down near to the surface and came back

3731

03:20:45,769 --> 03:20:43,140

and Apollo 11 Landing we do all those

3732

03:20:48,769 --> 03:20:45,779

three of those missions in one and that

3733

03:20:50,929 --> 03:20:48,779

is a very exciting very bold and it has

3734

03:20:52,730 --> 03:20:50,939

got to be exciting to anybody that's in

3735

03:20:54,349 --> 03:20:52,740

a space program is interested in the

3736

03:20:55,790 --> 03:20:54,359

space program or the young people out

3737

03:20:57,590 --> 03:20:55,800

there who are the first future Space

3738

03:20:59,150 --> 03:20:57,600

Explorers who will be uh be on those

3739

03:21:01,790 --> 03:20:59,160

later arms missions

3740

03:21:04,849 --> 03:21:01,800

I have a question Randy

3741

03:21:07,010 --> 03:21:04,859

you know space is no stranger to you

3742

03:21:08,929 --> 03:21:07,020

you've spent quite a bit of Time Shuttle

3743

03:21:10,730 --> 03:21:08,939

flight long duration mission on the

3744

03:21:13,309 --> 03:21:10,740

International Space Station but if there

3745

03:21:16,010 --> 03:21:13,319

was a singular image from the last 25

3746

03:21:19,190 --> 03:21:16,020

and a half days that sticks with you

3747

03:21:21,590 --> 03:21:19,200

that drove it home that we were going

3748

03:21:23,150 --> 03:21:21,600

well beyond the Earth what would that be

3749

03:21:24,830 --> 03:21:23,160

it would certainly be the missions we

3750

03:21:27,530 --> 03:21:24,840

were on the far part where we were you

3751

03:21:30,290 --> 03:21:27,540

know 268 000 miles away from Earth

3752

03:21:31,910 --> 03:21:30,300

and you saw Earth rise over the moon and

3753

03:21:33,290 --> 03:21:31,920

thinking that the next time we take

3754

03:21:35,750 --> 03:21:33,300

those pictures

3755

03:21:37,309 --> 03:21:35,760

that could be with somebody behind the

3756

03:21:39,889 --> 03:21:37,319

back of the camera not the vehicle

3757

03:21:41,450 --> 03:21:39,899

taking it himself

3758

03:21:43,130 --> 03:21:41,460

it's going to be an interesting couple

3759

03:21:45,110 --> 03:21:43,140

of years a very exciting couple of years

3760

03:21:47,269 --> 03:21:45,120

and Randy bresnick thanks for joining us

3761

03:21:49,190 --> 03:21:47,279

today appreciate it all right thank you

3762

03:21:50,870 --> 03:21:49,200

and congratulations to our Harvest team

3763

03:21:53,710 --> 03:21:50,880

everywhere all over the world they uh

3764

03:21:56,210 --> 03:21:53,720

deserve a very well deserved day off

3765

03:21:58,490 --> 03:21:56,220

after this Mission but certainly looking

3766

03:22:00,050 --> 03:21:58,500

forward to the next two years where we

3767

03:22:03,530 --> 03:22:00,060

are able to take that and capitalize on

3768

03:22:08,590 --> 03:22:03,540

it and as we say wash rinse repeat copy

3769

03:22:12,769 --> 03:22:10,849

Randy bresnick with us here in Mission

3770

03:22:14,929 --> 03:22:12,779

Control uh it's been about an hour and

3771

03:22:18,050 --> 03:22:14,939

40 minutes since Orion's splashed down

3772

03:22:19,969 --> 03:22:18,060

were continuing out in the Pacific to

3773

03:22:22,010 --> 03:22:19,979

secure the spacecraft and ultimately get

3774

03:22:39,550 --> 03:22:22,020

it into the well deck of the USS

3775

03:22:45,110 --> 03:22:42,190

as uh the team here in mission control

3776

03:22:47,030 --> 03:22:45,120

works through the post Splashdown

3777

03:22:49,690 --> 03:22:47,040

procedures before they hand the vehicle

3778

03:22:53,150 --> 03:22:49,700

over to the exploration ground systems

3779

03:22:56,510 --> 03:22:53,160

recovery team on the USS Portland again

3780

03:22:59,269 --> 03:22:56,520

let's go back out west of here to West

3781

03:23:01,429 --> 03:22:59,279

of Baja California where Daryl nail is

3782

03:23:05,150 --> 03:23:01,439

standing by on the deck of the USS

3783

03:23:10,969 --> 03:23:08,150

and it's simply beautiful out here Rob

3784

03:23:13,010 --> 03:23:10,979

and we've got a perfect view a front row

3785

03:23:16,250 --> 03:23:13,020

seat to the Orion Splashdown I want to

3786

03:23:18,769 --> 03:23:16,260

give you a quick update on the recovery

3787

03:23:21,229 --> 03:23:18,779

operations recovery director Melissa

3788

03:23:23,990 --> 03:23:21,239

Jones has decided to go the full

3789

03:23:26,150 --> 03:23:24,000

two-hour waiting period for uh ammonia

3790

03:23:32,809 --> 03:23:26,160

boil off and so that's going to push put

3791

03:23:35,630 --> 03:23:32,819

us at 11 40 a.m Pacific time for the

3792

03:23:38,030 --> 03:23:35,640

boats to then close in and get next to

3793

03:23:39,769 --> 03:23:38,040

the spacecraft and begin sniffing it for

3794

03:23:41,809 --> 03:23:39,779

any hazarded gases you can see it just

3795

03:23:44,150 --> 03:23:41,819

right off the port side of the USS

3796

03:23:46,490 --> 03:23:44,160

Portland still in the water the Navy

3797

03:23:48,410 --> 03:23:46,500

boats off to the left they're standing

3798

03:23:50,630 --> 03:23:48,420

by for that moment which is in just

3799

03:23:52,910 --> 03:23:50,640

about 18 minutes from now they're going

3800

03:23:54,950 --> 03:23:52,920

to go in and start that procedure both

3801  
03:23:56,570 --> 03:23:54,960  
helicopters though are back on the

3802  
03:23:58,729 --> 03:23:56,580  
flight deck as well those assets have

3803  
03:24:02,090 --> 03:23:58,739  
completed their part of the job want to

3804  
03:24:04,010 --> 03:24:02,100  
bring in now Jeremy vanderkam this is a

3805  
03:24:05,690 --> 03:24:04,020  
special individual well of course

3806  
03:24:07,490 --> 03:24:05,700  
everybody's special but when comes with

3807  
03:24:09,950 --> 03:24:07,500  
the heat shield this is something you

3808  
03:24:11,870 --> 03:24:09,960  
know well you are the deputy thermal

3809  
03:24:14,990 --> 03:24:11,880  
protection system manager for the Orion

3810  
03:24:18,349 --> 03:24:15,000  
program your team designed the heat

3811  
03:24:20,809 --> 03:24:18,359  
shield tested it and have been basically

3812  
03:24:22,729 --> 03:24:20,819  
there from the start of this and so I

3813  
03:24:25,130 --> 03:24:22,739

want to ask you this of course has been

3814

03:24:27,769 --> 03:24:25,140

the primary objective of this test

3815

03:24:29,450 --> 03:24:27,779

flight testing the very component the

3816

03:24:31,370 --> 03:24:29,460

heat shield that you and your team

3817

03:24:33,050 --> 03:24:31,380

helped design and so I want to ask you

3818

03:24:34,610 --> 03:24:33,060

first of all how much you just want to

3819

03:24:36,349 --> 03:24:34,620

get out there and take a look at that

3820

03:24:38,929 --> 03:24:36,359

heat shield which is right behind you I

3821

03:24:40,190 --> 03:24:38,939

can't wait uh yeah I tried to convince

3822

03:24:42,410 --> 03:24:40,200

lots of people that mean the small bus

3823

03:24:43,910 --> 03:24:42,420

didn't happen but that's okay we'll be

3824

03:24:45,530 --> 03:24:43,920

doing our inspections once we get hard

3825

03:24:47,450 --> 03:24:45,540

down in the well deck later this

3826

03:24:49,070 --> 03:24:47,460

afternoon and we'll get a good look at

3827

03:24:51,290 --> 03:24:49,080

how we did it do you have any early

3828

03:24:53,809 --> 03:24:51,300

information from the imagery that has

3829

03:24:55,490 --> 03:24:53,819

been taken thus far not a lot so far

3830

03:24:56,630 --> 03:24:55,500

we've been you know looking at the

3831

03:24:58,130 --> 03:24:56,640

capsules that floats in the water

3832

03:24:59,929 --> 03:24:58,140

through our binoculars and whatnot

3833

03:25:01,969 --> 03:24:59,939

everything looks great exactly as we

3834

03:25:04,130 --> 03:25:01,979

expected it so far but um yeah we'll get

3835

03:25:06,349 --> 03:25:04,140

the details going here in a few hours

3836

03:25:09,590 --> 03:25:06,359

so tell me about this particular heat

3837

03:25:11,929 --> 03:25:09,600

shield it is different and also similar

3838

03:25:13,790 --> 03:25:11,939

in ways to previous heat shields tell me

3839

03:25:15,769 --> 03:25:13,800

about it how does it work yeah so this

3840

03:25:18,469 --> 03:25:15,779

is the largest ablative heat shield that

3841

03:25:20,090 --> 03:25:18,479

humans have ever devised uh for a

3842

03:25:21,410 --> 03:25:20,100

spacecraft devised to take humans

3843

03:25:24,349 --> 03:25:21,420

farther away from our home planet than

3844

03:25:26,269 --> 03:25:24,359

ever so what we did is we combined some

3845

03:25:28,610 --> 03:25:26,279

older technology we actually resurrected

3846

03:25:32,150 --> 03:25:28,620

a material system from the Apollo

3847

03:25:34,309 --> 03:25:32,160

program called avcoat and we modified

3848

03:25:36,729 --> 03:25:34,319

the way that it's applied to our vehicle

3849

03:25:38,870 --> 03:25:36,739

for Orion in a more

3850

03:25:41,090 --> 03:25:38,880

programmatically modern way if you will

3851

03:25:43,010 --> 03:25:41,100

so the way that we do it now is uh

3852

03:25:45,889 --> 03:25:43,020

you've got a piece of I have a sample

3853

03:25:47,510 --> 03:25:45,899

here a test sample so the brown material

3854

03:25:50,030 --> 03:25:47,520

in the middle here is our avcoat

3855

03:25:51,889 --> 03:25:50,040

material and we make it in blocks and we

3856

03:25:53,809 --> 03:25:51,899

Bond those blocks to the base of the

3857

03:25:56,030 --> 03:25:53,819

Orion spacecraft onto the heat shield

3858

03:25:59,110 --> 03:25:56,040

there it looks like wood yeah it does it

3859

03:26:01,790 --> 03:25:59,120

does look like wood uh it's not

3860

03:26:03,229 --> 03:26:01,800

uh yeah and then there are seams between

3861

03:26:05,450 --> 03:26:03,239

those blocks which is the red element

3862

03:26:07,429 --> 03:26:05,460

that you see here and uh in this test

3863

03:26:09,410 --> 03:26:07,439

sample we've actually applied heat in

3864

03:26:11,389 --> 03:26:09,420

our test facilities at Ames Research

3865

03:26:13,610 --> 03:26:11,399

Center in Mountain View California to

3866

03:26:15,229 --> 03:26:13,620

simulate the heat of reentry to char the

3867

03:26:17,750 --> 03:26:15,239

surface just as it is on the on the base

3868

03:26:18,889 --> 03:26:17,760

of the spacecraft right now and then

3869

03:26:20,510 --> 03:26:18,899

what we'll do is when we get the

3870

03:26:22,070 --> 03:26:20,520

spacecraft back in we'll go and look at

3871

03:26:23,870 --> 03:26:22,080

how that heat shield Works compared to

3872

03:26:25,729 --> 03:26:23,880

our test results

3873

03:26:27,550 --> 03:26:25,739

and that'll allow us to certify then the

3874

03:26:30,410 --> 03:26:27,560

heat shield first

3875

03:26:32,510 --> 03:26:30,420

you've done a lot of testing on this

3876

03:26:34,969 --> 03:26:32,520

heat shield but you were telling me that

3877

03:26:37,370 --> 03:26:34,979

no matter how much you test it you can't

3878

03:26:39,349 --> 03:26:37,380

duplicate what it just went through

3879

03:26:42,469 --> 03:26:39,359

that's correct yeah what I'm holding

3880

03:26:45,170 --> 03:26:42,479

here is about the largest size thing

3881

03:26:47,210 --> 03:26:45,180

that we can test and obviously the five

3882

03:26:49,670 --> 03:26:47,220

meter Orion heat shield is much larger

3883

03:26:52,309 --> 03:26:49,680

so we have a lot of extrapolation for

3884

03:26:54,469 --> 03:26:52,319

scale that we have to do and similarly

3885

03:26:58,130 --> 03:26:54,479

our Test Facilities can't reach the

3886

03:27:00,050 --> 03:26:58,140

combination of heat flux pressure Shear

3887

03:27:01,969 --> 03:27:00,060

stresses Etc that an actual entering

3888

03:27:04,490 --> 03:27:01,979

spacecraft does so we're always having

3889

03:27:06,530 --> 03:27:04,500

to to wait for that flight test to get

3890

03:27:09,290 --> 03:27:06,540

the final certification that our system

3891

03:27:11,389 --> 03:27:09,300

is good to go so I'll trade you uh props

3892

03:27:13,670 --> 03:27:11,399

here and we'll hold the actual Orion and

3893

03:27:16,849 --> 03:27:13,680

tell me from you you said you've used

3894

03:27:18,530 --> 03:27:16,859

binoculars you've cited the spacecraft

3895

03:27:20,150 --> 03:27:18,540

one side of it I guess gets a little

3896

03:27:22,309 --> 03:27:20,160

more charred than the other what have

3897

03:27:25,490 --> 03:27:22,319

you seen yeah so far it's uh it's

3898

03:27:28,130 --> 03:27:25,500

actually looking like we expected

3899

03:27:30,650 --> 03:27:28,140

it's on the word side all right it's the

3900

03:27:32,809 --> 03:27:30,660

hot side of the vehicle and so we can

3901  
03:27:34,610 --> 03:27:32,819  
see that for example the thermal control

3902  
03:27:35,990 --> 03:27:34,620  
tape that we put on the exterior of the

3903  
03:27:38,929 --> 03:27:36,000  
vehicle all that shininess that we saw

3904  
03:27:40,969 --> 03:27:38,939  
pre-launch uh is is basically gone on

3905  
03:27:42,830 --> 03:27:40,979  
the windward side as expected and then

3906  
03:27:44,570 --> 03:27:42,840  
on the uh the leeward side where the

3907  
03:27:46,849 --> 03:27:44,580  
windows are I'm seeing a fair amount of

3908  
03:27:49,010 --> 03:27:46,859  
tape remaining as expected so our

3909  
03:27:50,870 --> 03:27:49,020  
heating predictions how that uh the heat

3910  
03:27:52,309 --> 03:27:50,880  
Contours over the vehicle

3911  
03:27:55,010 --> 03:27:52,319  
we're predicted to be looks like that's

3912  
03:27:56,870 --> 03:27:55,020  
how they were so so far so good

3913  
03:27:58,670 --> 03:27:56,880

Jeremy vandercam thank you so much for

3914

03:28:00,469 --> 03:27:58,680

joining us he is the Deputy thermal

3915

03:28:02,929 --> 03:28:00,479

protection system manager for the Orion

3916

03:28:05,150 --> 03:28:02,939

program and I know you're anxious to get

3917

03:28:06,710 --> 03:28:05,160

that capsule in this well deck so you

3918

03:28:08,450 --> 03:28:06,720

can get your eyes on it yep I'm ready

3919

03:28:10,070 --> 03:28:08,460

good luck the rest of the way Jeremy all

3920

03:28:16,490 --> 03:28:10,080

right thank you all right we'll send it

3921

03:28:19,429 --> 03:28:18,349

thank you Daryl back here in Mission

3922

03:28:22,790 --> 03:28:19,439

Control

3923

03:28:25,309 --> 03:28:22,800

uh we're about 32 minutes or so away

3924

03:28:27,410 --> 03:28:25,319

from the point at which the entry team

3925

03:28:29,809 --> 03:28:27,420

of flight controllers planned to hand

3926

03:28:32,510 --> 03:28:29,819

the vehicle over to the exploration

3927

03:28:35,510 --> 03:28:32,520

ground systems recovery team that Daryl

3928

03:28:38,210 --> 03:28:35,520

has been involved with on the USS

3929

03:28:41,510 --> 03:28:38,220

Portland that will come after the

3930

03:28:42,830 --> 03:28:41,520

completion of uh detailed flight test

3931

03:28:45,530 --> 03:28:42,840

objectives

3932

03:28:47,990 --> 03:28:45,540

the last of which will be the restart of

3933

03:28:50,090 --> 03:28:48,000

an ammonia boiler system to provide

3934

03:28:53,210 --> 03:28:50,100

additional cooling for the vehicle this

3935

03:28:56,150 --> 03:28:53,220

is a test to see what kind of additional

3936

03:28:59,269 --> 03:28:56,160

cooling might be required once a crude

3937

03:29:02,929 --> 03:28:59,279

Mission returns from the Moon to

3938

03:29:05,389 --> 03:29:02,939

maintain the most comfortable level of

3939

03:29:07,490 --> 03:29:05,399

cooling for a crew on board that is

3940

03:29:09,950 --> 03:29:07,500

returning from the moon for an extended

3941

03:29:12,710 --> 03:29:09,960

period of time particularly if they wind

3942

03:29:15,830 --> 03:29:12,720

up splashing down a further distance

3943

03:29:18,550 --> 03:29:15,840

away from the recovery ship then Orion

3944

03:29:21,349 --> 03:29:18,560

did today everything went perfectly

3945

03:29:23,929 --> 03:29:21,359

during Orion's high-speed entry back

3946

03:29:25,870 --> 03:29:23,939

into the Earth's atmosphere and it

3947

03:29:28,490 --> 03:29:25,880

splashed down in all of the post

3948

03:29:32,929 --> 03:29:28,500

Splashdown activities that have occurred

3949

03:29:35,090 --> 03:29:32,939

so far as we will be continuing our

3950

03:29:37,429 --> 03:29:35,100

coverage until uh Judd freeing the

3951

03:29:39,290 --> 03:29:37,439

entry flight director hands back the

3952

03:30:42,309 --> 03:29:39,300

vehicle to the exploration ground

3953

03:30:47,090 --> 03:30:44,809

and again back here in Mission Control

3954

03:30:49,490 --> 03:30:47,100

you're looking at flight director Judd

3955

03:30:51,410 --> 03:30:49,500

freling uh in the middle of your screen

3956

03:30:54,229 --> 03:30:51,420

to his left flight director Rick

3957

03:30:55,429 --> 03:30:54,239

henfling as the entry team of flight

3958

03:30:57,170 --> 03:30:55,439

controllers heading into the home

3959

03:30:59,450 --> 03:30:57,180

stretch of their work here before they

3960

03:31:02,330 --> 03:30:59,460

hand the vehicle back to the exploration

3961

03:31:05,030 --> 03:31:02,340

ground systems folks on the deck of the

3962

03:31:07,429 --> 03:31:05,040

USS Portland where again my colleague

3963

03:31:12,469 --> 03:31:07,439

Daryl nail is standing by with yet

3964

03:31:17,030 --> 03:31:14,630

thank you Rob and as you can see behind

3965

03:31:20,269 --> 03:31:17,040

us still right here on the port side we

3966

03:31:22,849 --> 03:31:20,279

have Orion floating stable and the Navy

3967

03:31:24,889 --> 03:31:22,859

boats there attending the ship and we

3968

03:31:27,050 --> 03:31:24,899

should be sending them in in just about

3969

03:31:29,929 --> 03:31:27,060

10 minutes from now they will begin

3970

03:31:31,429 --> 03:31:29,939

sniffing for any hazardous gases that

3971

03:31:33,110 --> 03:31:31,439

will be coming off and then they'll

3972

03:31:36,290 --> 03:31:33,120

secure Orion in the meantime we have Dr

3973

03:31:38,630 --> 03:31:36,300

Emily spring Sasquatch team lead for

3974

03:31:40,849 --> 03:31:38,640

NASA and if you thought that your name

3975

03:31:42,290 --> 03:31:40,859

was unique well it is it surprised me

3976  
03:31:44,150 --> 03:31:42,300  
when I was on the ship walking by your

3977  
03:31:46,849 --> 03:31:44,160  
door and I saw a Sasquatch team I

3978  
03:31:49,190 --> 03:31:46,859  
thought what might that be and then I

3979  
03:31:51,530 --> 03:31:49,200  
found out and it's fascinating Emily

3980  
03:31:53,570 --> 03:31:51,540  
tell me first of all what what is the

3981  
03:31:55,150 --> 03:31:53,580  
Sasquatch team what do you do so

3982  
03:31:58,250 --> 03:31:55,160  
Sasquatch is in charge of generating

3983  
03:31:59,929 --> 03:31:58,260  
waypoints for the ship and for the small

3984  
03:32:01,490 --> 03:31:59,939  
boats as well as creating Footprints

3985  
03:32:04,250 --> 03:32:01,500  
which is where we get our name Sasquatch

3986  
03:32:06,050 --> 03:32:04,260  
so Sasquatch generates big Footprints

3987  
03:32:08,630 --> 03:32:06,060  
um and those Footprints contain the

3988  
03:32:10,010 --> 03:32:08,640

debris field as it's coming down and

3989

03:32:11,929 --> 03:32:10,020

that that's used to help position the

3990

03:32:13,670 --> 03:32:11,939

helos in the air and keep people safe

3991

03:32:15,590 --> 03:32:13,680

and outside the that's a brief field as

3992

03:32:17,570 --> 03:32:15,600

we are you know having a spacecraft

3993

03:32:19,550 --> 03:32:17,580

splash down absolutely and it's really

3994

03:32:22,790 --> 03:32:19,560

incredible you were explaining to me you

3995

03:32:26,330 --> 03:32:22,800

know how you calculate these Footprints

3996

03:32:28,910 --> 03:32:26,340

and uh just for background as the Orion

3997

03:32:31,130 --> 03:32:28,920

comes down and separates out the forward

3998

03:32:32,990 --> 03:32:31,140

Bay cover which reveals the parachutes

3999

03:32:35,990 --> 03:32:33,000

and then there are certain items around

4000

03:32:39,469 --> 03:32:36,000

that a Sabo a lid various pieces are

4001  
03:32:40,849 --> 03:32:39,479  
coming out of it and your team is able

4002  
03:32:43,610 --> 03:32:40,859  
to model

4003  
03:32:46,250 --> 03:32:43,620  
exactly or approximately where those

4004  
03:32:48,290 --> 03:32:46,260  
pieces fall in the water so that assets

4005  
03:32:51,050 --> 03:32:48,300  
can get close how do you figure that out

4006  
03:32:52,729 --> 03:32:51,060  
so a lot of the data came out of CPAs

4007  
03:32:54,290 --> 03:32:52,739  
drop tests that's capsule parachute

4008  
03:32:56,210 --> 03:32:54,300  
assembly system drop test those are done

4009  
03:32:58,790 --> 03:32:56,220  
out in Yuma that was used to prove the

4010  
03:33:00,410 --> 03:32:58,800  
Orion parachute system from that we were

4011  
03:33:02,150 --> 03:33:00,420  
able to derive a lot of the aerodynamic

4012  
03:33:04,849 --> 03:33:02,160  
properties of some of the debris objects

4013  
03:33:07,490 --> 03:33:04,859

which I've got some here sure do so

4014

03:33:09,410 --> 03:33:07,500

these are drove lid and sibos they're not

4015

03:33:12,170 --> 03:33:09,420

flight versions but they are you know

4016

03:33:14,269 --> 03:33:12,180

representative size these would be you

4017

03:33:16,670 --> 03:33:14,279

know on top and bottom of a parachute as

4018

03:33:19,610 --> 03:33:16,680

it's mortar deployed like a cannon out

4019

03:33:21,590 --> 03:33:19,620

from uh Ryan uh We've also got a smaller

4020

03:33:25,670 --> 03:33:21,600

piece of debris here and it's a pilot

4021

03:33:27,769 --> 03:33:25,680

Sabo uh so essentially at the drop tests

4022

03:33:29,450 --> 03:33:27,779

we were able to you know really hammer

4023

03:33:31,190 --> 03:33:29,460

down what those different aerodynamic

4024

03:33:32,870 --> 03:33:31,200

properties are using rate of descent and

4025

03:33:34,610 --> 03:33:32,880

then where those things touched down in

4026  
03:33:36,650 --> 03:33:34,620  
Yuma and we're able to use that in our

4027  
03:33:38,630 --> 03:33:36,660  
model here for actual Artemis one

4028  
03:33:41,929 --> 03:33:38,640  
operations and I as I understand it

4029  
03:33:45,050 --> 03:33:41,939  
there are 26 pieces of debris right that

4030  
03:33:46,610 --> 03:33:45,060  
came out from you know the separation of

4031  
03:33:49,070 --> 03:33:46,620  
the forward Bay cover and the in the

4032  
03:33:51,290 --> 03:33:49,080  
parachutes and you model every single

4033  
03:33:53,450 --> 03:33:51,300  
one of those 26 pieces their model is a

4034  
03:33:56,929 --> 03:33:53,460  
group so you know we've got a group of

4035  
03:33:59,210 --> 03:33:56,939  
kids you know that come off at Main well

4036  
03:34:00,530 --> 03:33:59,220  
I guess a drug parachute deployment

4037  
03:34:02,570 --> 03:34:00,540  
right so we've got you know a couple

4038  
03:34:04,370 --> 03:34:02,580

Lids that come off a couple of bows and

4039

03:34:07,130 --> 03:34:04,380

so we say you know the lids and sabos

4040

03:34:08,389 --> 03:34:07,140

they'll be in this footprint as that

4041

03:34:10,969 --> 03:34:08,399

footprint descends and then goes into

4042

03:34:13,550 --> 03:34:10,979

the ocean and as it lands into the ocean

4043

03:34:16,070 --> 03:34:13,560

I guess the the shape that it kind of

4044

03:34:18,710 --> 03:34:16,080

takes is that Sasquatch a giant foot

4045

03:34:20,750 --> 03:34:18,720

that's right a friend with all that

4046

03:34:22,969 --> 03:34:20,760

debris coming down I mean the different

4047

03:34:24,950 --> 03:34:22,979

aerodynamic properties this is going to

4048

03:34:26,630 --> 03:34:24,960

be different than say the larger one

4049

03:34:27,790 --> 03:34:26,640

which is going to be different from the

4050

03:34:30,349 --> 03:34:27,800

parachute

4051  
03:34:32,929 --> 03:34:30,359  
what kind of modeling goes in to be able

4052  
03:34:34,550 --> 03:34:32,939  
to to tell where that parachute's gonna

4053  
03:34:36,530 --> 03:34:34,560  
flow because the parachute doesn't takes

4054  
03:34:38,990 --> 03:34:36,540  
many forms as it's falling right so

4055  
03:34:40,670 --> 03:34:39,000  
we're taking in um you know we're using

4056  
03:34:42,769 --> 03:34:40,680  
that CPAs data but we're also taking in

4057  
03:34:45,349 --> 03:34:42,779  
day of weather conditions so we've got

4058  
03:34:48,110 --> 03:34:45,359  
you know weather people on board the USS

4059  
03:34:49,969 --> 03:34:48,120  
Portland with us and we're talking with

4060  
03:34:51,650 --> 03:34:49,979  
space flight meteorology back in Mission

4061  
03:34:52,969 --> 03:34:51,660  
Control in Houston and we're getting

4062  
03:34:54,769 --> 03:34:52,979  
information that we're using to take

4063  
03:34:56,030 --> 03:34:54,779

into account because once things are on

4064

03:34:58,729 --> 03:34:56,040

parachutes just like you said you know

4065

03:35:00,889 --> 03:34:58,739

they're drifting but with that you know

4066

03:35:02,570 --> 03:35:00,899

we were able to predict the CM

4067

03:35:04,969 --> 03:35:02,580

Splashdown location within a nautical

4068

03:35:06,530 --> 03:35:04,979

mile so that's impressive yeah we're

4069

03:35:09,170 --> 03:35:06,540

really really pleased it went

4070

03:35:10,729 --> 03:35:09,180

beautifully wow nice job to your team

4071

03:35:12,170 --> 03:35:10,739

and to you

4072

03:35:13,670 --> 03:35:12,180

um that uh that right there is

4073

03:35:15,530 --> 03:35:13,680

impressive now but was just going to ask

4074

03:35:17,090 --> 03:35:15,540

you how about the rest of the debris

4075

03:35:19,130 --> 03:35:17,100

field did were you able to determine

4076

03:35:21,290 --> 03:35:19,140

with what level of accuracy the rest of

4077

03:35:22,790 --> 03:35:21,300

it came down so right now uh you know

4078

03:35:24,889 --> 03:35:22,800

none of those other pieces have GPS

4079

03:35:26,690 --> 03:35:24,899

information on them we're hoping to get

4080

03:35:28,130 --> 03:35:26,700

some information about that later we'll

4081

03:35:30,170 --> 03:35:28,140

see what the ship's capabilities are and

4082

03:35:31,070 --> 03:35:30,180

what NASA is able to get from that but

4083

03:35:33,530 --> 03:35:31,080

that's something that's still in the

4084

03:35:36,830 --> 03:35:33,540

works so we'll see all right I'm pretty

4085

03:35:38,870 --> 03:35:36,840

certain Emily spring Sasquatch team lead

4086

03:35:40,429 --> 03:35:38,880

for NASA thank you to you and your team

4087

03:35:42,290 --> 03:35:40,439

for doing such a great job with us and

4088

03:35:46,010 --> 03:35:42,300

joining us today it's been great thank

4089

03:35:51,050 --> 03:35:48,050

thanks Cheryl we're coming up on the

4090

03:35:54,349 --> 03:35:51,060

two-hour Mark since uh

4091

03:35:57,290 --> 03:35:54,359

Orion Splashdown On Target in the

4092

03:36:00,950 --> 03:35:57,300

Pacific West of Baja California

4093

03:36:01,969 --> 03:36:00,960

the end to Orion's 25 and a half day

4094

03:36:07,790 --> 03:36:01,979

mission

4095

03:36:10,309 --> 03:36:07,800

punctuated by a tremendous number of

4096

03:36:13,010 --> 03:36:10,319

highlights so we can take a look back at

4097

03:36:15,650 --> 03:36:13,020

some of those highlights now

4098

03:36:18,410 --> 03:36:15,660

that began with the launch of the space

4099

03:36:21,830 --> 03:36:18,420

launch system from launch pad 39b at the

4100

03:36:31,990 --> 03:36:21,840

Kennedy Space Center at 1 47 a.m Eastern

4101  
03:36:37,190 --> 03:36:34,790  
the space launch system lifted off

4102  
03:36:39,349 --> 03:36:37,200  
conducted a roll program to place itself

4103  
03:36:43,250 --> 03:36:39,359  
on the proper azimuth

4104  
03:36:48,410 --> 03:36:43,260  
and the proper trajectory to enter a

4105  
03:36:53,929 --> 03:36:51,050  
it would spend the Orion spacecraft

4106  
03:36:57,110 --> 03:36:53,939  
itself with its Associated European

4107  
03:37:00,170 --> 03:36:57,120  
service module and the attached interim

4108  
03:37:05,150 --> 03:37:00,180  
cryogenic propulsion stage would spend

4109  
03:37:11,870 --> 03:37:08,510  
and there is the separation of the core

4110  
03:37:16,490 --> 03:37:15,050  
the vehicle conducted a trans lunar

4111  
03:37:19,370 --> 03:37:16,500  
injection burn

4112  
03:37:21,650 --> 03:37:19,380  
that enabled uh Orion to break out of

4113  
03:37:24,290 --> 03:37:21,660

low earth orbit and begin its uh

4114

03:37:27,469 --> 03:37:24,300  
trajectory toward the Moon

4115

03:37:29,630 --> 03:37:27,479  
and the elliptical orbit the highly

4116

03:37:34,309 --> 03:37:29,640  
elliptical orbit called the distant

4117

03:37:36,170 --> 03:37:34,319  
retrograde orbit that provided the time

4118

03:37:37,790 --> 03:37:36,180  
that was required

4119

03:37:40,910 --> 03:37:37,800  
for Orion

4120

03:37:43,610 --> 03:37:40,920  
to acquire data

4121

03:37:46,490 --> 03:37:43,620  
on the space environment and the time

4122

03:37:49,309 --> 03:37:46,500  
required for engineers to test all of

4123

03:37:52,790 --> 03:37:49,319  
its systems and collect as much data as

4124

03:37:55,729 --> 03:37:52,800  
possible in this first test flight that

4125

03:37:59,450 --> 03:37:55,739  
would precede placing a crew on board an

4126  
03:38:01,309 --> 03:37:59,460  
Orion spacecraft two years from now

4127  
03:38:04,610 --> 03:38:01,319  
this dramatic

4128  
03:38:05,929 --> 03:38:04,620  
video of the Earth Moon Transit that

4129  
03:38:07,969 --> 03:38:05,939  
took place

4130  
03:38:10,490 --> 03:38:07,979  
showed

4131  
03:38:13,190 --> 03:38:10,500  
and punctuated

4132  
03:38:16,210 --> 03:38:13,200  
the fact that we were pressing away from

4133  
03:38:18,710 --> 03:38:16,220  
our home planet to a distance of some

4134  
03:38:20,750 --> 03:38:18,720  
268 thousand miles away from Earth

4135  
03:38:23,450 --> 03:38:20,760  
further than any human rated spacecraft

4136  
03:38:25,670 --> 03:38:23,460  
had ever traveled

4137  
03:38:28,849 --> 03:38:25,680  
for a spacecraft designed to return

4138  
03:38:58,790 --> 03:38:28,859

humans to Earth eclipsing the mark set

4139

03:39:05,510 --> 03:39:01,370

the distant retrograde departure burn

4140

03:39:08,870 --> 03:39:05,520

that began the trip home for Orion this

4141

03:39:11,389 --> 03:39:08,880

past Monday you can see uh the effect of

4142

03:39:15,469 --> 03:39:11,399

that engine firing on the solar arrays

4143

03:39:19,250 --> 03:39:15,479

on Orion's service module

4144

03:39:22,910 --> 03:39:19,260

that in effect was what amounted to a

4145

03:39:24,769 --> 03:39:22,920

deorbit burn of sorts that placed Orion

4146

03:39:27,229 --> 03:39:24,779

on a trajectory

4147

03:39:29,809 --> 03:39:27,239

to return to Earth which it did today

4148

03:39:32,750 --> 03:39:29,819

with a splash down one hour and 58

4149

03:39:37,790 --> 03:39:34,729

as we

4150

03:39:41,870 --> 03:39:37,800

circled back around the Moon

4151  
03:39:44,330 --> 03:39:41,880  
for the out the return powered flyby

4152  
03:39:47,030 --> 03:39:44,340  
we saw a dramatic close-up of the moon

4153  
03:39:48,229 --> 03:39:47,040  
and the Crescent of the Earth in the

4154  
03:39:51,889 --> 03:39:48,239  
distance

4155  
03:39:53,630 --> 03:39:51,899  
using the moon's gravitational field has

4156  
03:39:57,530 --> 03:39:53,640  
a slingshot effect

4157  
03:40:00,410 --> 03:39:57,540  
to set our sights on the Earth

4158  
03:40:03,410 --> 03:40:00,420  
and the trajectory required to splash

4159  
03:40:07,510 --> 03:40:03,420  
down in the Pacific which we did

4160  
03:40:11,389 --> 03:40:07,520  
as Orion gently waits for the arrival

4161  
03:40:14,269 --> 03:40:11,399  
of the recovery team that will begin the

4162  
03:40:18,290 --> 03:40:14,279  
process of hauling the spacecraft into

4163  
03:40:23,750 --> 03:40:21,290

and this was the view from the cabin

4164

03:40:28,309 --> 03:40:23,760

camera looking upward out of the forward

4165

03:40:31,790 --> 03:40:28,319

Bay basically the top of Orion as the

4166

03:40:33,469 --> 03:40:31,800

first shoots were deployed

4167

03:40:36,050 --> 03:40:33,479

these were the forward Bay covered

4168

03:40:37,490 --> 03:40:36,060

parachutes that in turn pulled out drug

4169

03:40:38,870 --> 03:40:37,500

shoots and then the three main

4170

03:40:41,450 --> 03:40:38,880

parachutes

4171

03:40:43,309 --> 03:40:41,460

to dramatically slow down Orion's

4172

03:40:45,889 --> 03:40:43,319

descent back to Earth

4173

03:40:47,510 --> 03:40:45,899

and as you see here under three fully

4174

03:40:50,929 --> 03:40:47,520

reefed shoots

4175

03:40:55,130 --> 03:40:50,939

Orion finally splashed down at 11 40 a.m

4176  
03:42:00,050 --> 03:40:55,140  
Central Time 9 40 a.m Pacific time to

4177  
03:42:03,769 --> 03:42:02,330  
this is Mission Control Houston uh

4178  
03:42:06,229 --> 03:42:03,779  
flight controllers here reporting back

4179  
03:42:08,990 --> 03:42:06,239  
to like director Judd freeing that they

4180  
03:42:11,210 --> 03:42:09,000  
have begun the power down of Orion's

4181  
03:42:12,590 --> 03:42:11,220  
systems with everything looking good and

4182  
03:42:20,110 --> 03:42:12,600  
data

4183  
03:42:26,330 --> 03:42:23,450  
so the post Splashdown test objectives

4184  
03:42:28,429 --> 03:42:26,340  
are nearing an end the vehicle is being

4185  
03:42:31,010 --> 03:42:28,439  
powered down and we should be a short

4186  
03:42:32,690 --> 03:42:31,020  
time away from the point at which flight

4187  
03:42:34,610 --> 03:42:32,700  
director Judd freeing hands over the

4188  
03:42:37,550 --> 03:42:34,620

vehicle to the exploration ground

4189

03:43:38,090 --> 03:42:37,560

systems folks out in the Pacific

4190

03:43:38,100 --> 03:44:28,690

thank you

4191

03:44:34,670 --> 03:44:31,910

we'll be heading back shortly to the USS

4192

03:44:39,170 --> 03:44:34,680

Portland but as you can see uh

4193

03:44:43,670 --> 03:44:39,180

the first contingent of the Navy boats

4194

03:44:46,490 --> 03:44:43,680

are approaching the Orion spacecraft

4195

03:44:48,170 --> 03:44:46,500

which is in great shape following its

4196

03:44:51,110 --> 03:44:48,180

high-speed entry and Splashtown that

4197

03:44:53,690 --> 03:44:51,120

occurred just over two hours ago

4198

03:44:55,070 --> 03:44:53,700

we're just minutes away from handing

4199

03:46:43,750 --> 03:44:55,080

over the vehicle

4200

03:46:48,469 --> 03:46:46,610

this is Mission Control Houston entry

4201  
03:46:50,630 --> 03:46:48,479  
flight director Judd freeling who also

4202  
03:46:53,030 --> 03:46:50,640  
was the ascent flight director for

4203  
03:46:55,490 --> 03:46:53,040  
Orion's launch aboard the space launch

4204  
03:46:57,110 --> 03:46:55,500  
system 25 and a half days ago is

4205  
03:47:14,229 --> 03:46:57,120  
addressing his team of flight

4206  
03:47:19,250 --> 03:47:16,370  
with that um

4207  
03:47:21,889 --> 03:47:19,260  
Judd frieling has handed over the Orion

4208  
03:47:21,899 --> 03:47:26,570  
to a round of applause

4209  
03:47:31,010 --> 03:47:29,090  
the vehicle has now been handed over to

4210  
03:47:32,510 --> 03:47:31,020  
the exploration ground systems folks out

4211  
03:47:34,550 --> 03:47:32,520  
in the Pacific

4212  
03:47:36,769 --> 03:47:34,560  
where my colleague Daryl nail is

4213  
03:47:40,429 --> 03:47:36,779

standing by with members of the Navy

4214

03:47:46,130 --> 03:47:40,439

helicopter team that saw Orion up close

4215

03:47:49,790 --> 03:47:48,170

that's right Robin they were the first

4216

03:47:52,370 --> 03:47:49,800

to see it they picked up the heat

4217

03:47:54,590 --> 03:47:52,380

signature as it came above the Horizon

4218

03:47:57,050 --> 03:47:54,600

and they were the first to have a

4219

03:47:59,269 --> 03:47:57,060

close-up look of the Orion crew module

4220

03:48:01,790 --> 03:47:59,279

as it was in the water I have with me as

4221

03:48:04,729 --> 03:48:01,800

you mentioned three Navy Pilots with the

4222

03:48:07,269 --> 03:48:04,739

HSC 23 Squadron in the Navy they were

4223

03:48:09,830 --> 03:48:07,279

flying the mh-60s the Nighthawk

4224

03:48:13,070 --> 03:48:09,840

helicopters I've got Jacob Naylor

4225

03:48:14,809 --> 03:48:13,080

Jackson Cockney and Gabe weigelt thank

4226  
03:48:16,849 --> 03:48:14,819  
you ball for being here and it's great

4227  
03:48:18,349 --> 03:48:16,859  
to have you thanks for having us thank

4228  
03:48:19,790 --> 03:48:18,359  
you well tell me first of all this

4229  
03:48:21,530 --> 03:48:19,800  
operation

4230  
03:48:23,809 --> 03:48:21,540  
um for those who are watching earlier on

4231  
03:48:26,929 --> 03:48:23,819  
we saw your helicopters going around the

4232  
03:48:29,030 --> 03:48:26,939  
area almost immediately after Splashdown

4233  
03:48:31,790 --> 03:48:29,040  
tell me about how you're able to do that

4234  
03:48:34,309 --> 03:48:31,800  
and then what unfolded for your mission

4235  
03:48:36,170 --> 03:48:34,319  
Yeah so basically we have a flare camera

4236  
03:48:39,830 --> 03:48:36,180  
mounted on the front of the helicopter

4237  
03:48:41,389 --> 03:48:39,840  
and uh about seven uh NASA Personnel in

4238  
03:48:43,370 --> 03:48:41,399

the back so while they're riding in the

4239

03:48:45,769 --> 03:48:43,380

back they're giving us Azimuth and

4240

03:48:47,630 --> 03:48:45,779

elevation angles to take a look at and

4241

03:48:49,910 --> 03:48:47,640

basically right away even earlier than

4242

03:48:52,309 --> 03:48:49,920

we expected we picked up the capsule

4243

03:48:55,190 --> 03:48:52,319

coming in and so us three were the

4244

03:48:56,570 --> 03:48:55,200

backup uh backup aircraft Pilots but we

4245

03:48:58,969 --> 03:48:56,580

did hear it come over the radio that

4246

03:49:00,410 --> 03:48:58,979

they had it captured right away they

4247

03:49:02,870 --> 03:49:00,420

have basically a

4248

03:49:05,090 --> 03:49:02,880

clear that uses infrared so it's seeing

4249

03:49:06,950 --> 03:49:05,100

that how hot that capsule is coming down

4250

03:49:08,450 --> 03:49:06,960

they caught it a whole way down which

4251  
03:49:10,550 --> 03:49:08,460  
was exactly what we needed for that

4252  
03:49:12,769 --> 03:49:10,560  
engineering data easy to lock in on

4253  
03:49:14,929 --> 03:49:12,779  
right at 5000 degrees Fahrenheit the

4254  
03:49:16,729 --> 03:49:14,939  
bottom of the heat shield that FLIR was

4255  
03:49:19,070 --> 03:49:16,739  
just almost instantaneous as soon as

4256  
03:49:21,769 --> 03:49:19,080  
that thing came above the Horizon then

4257  
03:49:23,750 --> 03:49:21,779  
you began capturing imagery and we

4258  
03:49:25,250 --> 03:49:23,760  
watched as the helicopters circled and

4259  
03:49:28,429 --> 03:49:25,260  
sometimes they're doing some pretty nice

4260  
03:49:30,410 --> 03:49:28,439  
banks around uh around the Orion crew

4261  
03:49:32,870 --> 03:49:30,420  
module what was that about Jackson why

4262  
03:49:34,429 --> 03:49:32,880  
did they take that path around okay so

4263  
03:49:37,370 --> 03:49:34,439

the second part of the mission was to

4264

03:49:38,929 --> 03:49:37,380

get a hazard analysis of the capsule and

4265

03:49:41,330 --> 03:49:38,939

then just engineering level Fidelity

4266

03:49:42,830 --> 03:49:41,340

data uh like imagery from some of the

4267

03:49:44,450 --> 03:49:42,840

photographers on board and then we had

4268

03:49:47,870 --> 03:49:44,460

another helicopter up that was testing

4269

03:49:49,250 --> 03:49:47,880

out the new Angel Beacon at the crews

4270

03:49:51,590 --> 03:49:49,260

are going to wear eventually when the

4271

03:49:52,729 --> 03:49:51,600

capsule does come down so that all deals

4272

03:49:54,710 --> 03:49:52,739

with our primary Mission set of search

4273

03:49:57,530 --> 03:49:54,720

and rescue which is what we're hoping to

4274

03:49:59,030 --> 03:49:57,540

do uh in the next in Artemis 2 is to

4275

03:50:03,110 --> 03:49:59,040

actually pull the astronauts from the

4276

03:50:05,090 --> 03:50:03,120

capsule uh via the Hoist right and so

4277

03:50:07,190 --> 03:50:05,100

you you guys were also using data from

4278

03:50:08,929 --> 03:50:07,200

the Sasquatch team we just uh you know

4279

03:50:10,490 --> 03:50:08,939

interviewed them and and heard about the

4280

03:50:12,410 --> 03:50:10,500

great work that they did in predicting

4281

03:50:15,110 --> 03:50:12,420

where that debris field would be coming

4282

03:50:17,030 --> 03:50:15,120

down 26 different pieces as the crew

4283

03:50:19,190 --> 03:50:17,040

module was uh you know getting its

4284

03:50:22,070 --> 03:50:19,200

parachutes out and everything using that

4285

03:50:23,570 --> 03:50:22,080

data uh how accurate was and was it for

4286

03:50:26,210 --> 03:50:23,580

you and and how did it help you fly

4287

03:50:27,469 --> 03:50:26,220

around the area so there's actually a

4288

03:50:29,510 --> 03:50:27,479

one of the NASA Personnel on the back

4289

03:50:32,090 --> 03:50:29,520

had a tablet which had the debris field

4290

03:50:33,530 --> 03:50:32,100

on top of it and as time got when time

4291

03:50:35,330 --> 03:50:33,540

goes on that debris field could get a

4292

03:50:37,429 --> 03:50:35,340

little smaller and smaller and so they

4293

03:50:38,630 --> 03:50:37,439

helped give us headings and guidances on

4294

03:50:40,429 --> 03:50:38,640

where to turn and where to get the

4295

03:50:42,110 --> 03:50:40,439

aircraft to avoid any of that debris

4296

03:50:43,429 --> 03:50:42,120

field coming down hitting Us in the you

4297

03:50:46,550 --> 03:50:43,439

know hit us into head on the helicopter

4298

03:50:49,729 --> 03:50:46,560

so yeah right and successful you guys

4299

03:50:52,070 --> 03:50:49,739

were uh looked great out there at Sea uh

4300

03:50:54,349 --> 03:50:52,080

surrounding the the capsule flying in

4301  
03:50:56,570 --> 03:50:54,359  
fact at sometimes very closely we saw

4302  
03:50:58,309 --> 03:50:56,580  
you hover I I don't know what the feat

4303  
03:51:00,170 --> 03:50:58,319  
was but it looked you know pretty close

4304  
03:51:01,429 --> 03:51:00,180  
to the ocean surface probably about 50

4305  
03:51:04,010 --> 03:51:01,439  
feet above just said that the

4306  
03:51:05,990 --> 03:51:04,020  
photographer could get uh good data and

4307  
03:51:08,510 --> 03:51:06,000  
then we were kept safe by Emily and her

4308  
03:51:09,590 --> 03:51:08,520  
team the whole Sasquatch team helped us

4309  
03:51:12,290 --> 03:51:09,600  
with the footprints so that we knew

4310  
03:51:13,849 --> 03:51:12,300  
where we could fly so that we'd be safe

4311  
03:51:14,809 --> 03:51:13,859  
where does this rank for you guys in

4312  
03:51:16,429 --> 03:51:14,819  
terms of your mission I mean your young

4313  
03:51:18,530 --> 03:51:16,439

fellows so you know you don't have your

4314

03:51:20,630 --> 03:51:18,540

call signs yet which eventually you'll

4315

03:51:22,429 --> 03:51:20,640

get that but uh you know being a part of

4316

03:51:24,769 --> 03:51:22,439

this Mission it's very different right

4317

03:51:27,290 --> 03:51:24,779

the civilian nature where uh you know

4318

03:51:29,330 --> 03:51:27,300

most DOD missions are not of that nature

4319

03:51:31,790 --> 03:51:29,340

so where does it rank in terms review

4320

03:51:33,469 --> 03:51:31,800

what kind of what was it like it's

4321

03:51:35,210 --> 03:51:33,479

absolutely amazing and certainly a

4322

03:51:37,190 --> 03:51:35,220

career highlight for us up until this

4323

03:51:38,750 --> 03:51:37,200

point yeah we were still just in the

4324

03:51:40,849 --> 03:51:38,760

backup aircraft but just being able to

4325

03:51:42,670 --> 03:51:40,859

just support these awesome Pilots that

4326

03:51:45,469 --> 03:51:42,680

were out there with us we had uh

4327

03:51:47,450 --> 03:51:45,479

therapists and Ripper and stapler and

4328

03:51:49,790 --> 03:51:47,460

James all of them did such a great job

4329

03:51:52,309 --> 03:51:49,800

so we're just really excited that this

4330

03:51:54,410 --> 03:51:52,319

uh is both exciting for us and kind of

4331

03:51:56,630 --> 03:51:54,420

plant side seed to be exciting for

4332

03:51:58,610 --> 03:51:56,640

everyone else watching and excited for

4333

03:52:00,769 --> 03:51:58,620

the next mission with astronauts in it

4334

03:52:04,010 --> 03:52:00,779

so and that'll be the next great part

4335

03:52:06,469 --> 03:52:04,020

right so as navy Pilots you'll be able

4336

03:52:08,269 --> 03:52:06,479

to hover over top of the next capsule

4337

03:52:10,849 --> 03:52:08,279

that comes down and it's going to have

4338

03:52:13,990 --> 03:52:10,859

astronauts in it briefly describe what

4339

03:52:16,550 --> 03:52:14,000

you imagined that would be like

4340

03:52:18,170 --> 03:52:16,560

that's got to be an unreal experience I

4341

03:52:19,910 --> 03:52:18,180

I hope I'm still around to be able to be

4342

03:52:21,229 --> 03:52:19,920

a part of that because that's got to be

4343

03:52:22,670 --> 03:52:21,239

one of the greatest feelings that we're

4344

03:52:24,590 --> 03:52:22,680

pulling someone out of a capsule that's

4345

03:52:26,929 --> 03:52:24,600

just been to the Moon and back

4346

03:52:29,150 --> 03:52:26,939

unimaginable feeling I gotta say

4347

03:52:30,889 --> 03:52:29,160

absolutely well thank you all we

4348

03:52:33,950 --> 03:52:30,899

appreciate you Jacob Naylor Jackson

4349

03:52:36,290 --> 03:52:33,960

cotney and Gabe weigelt with the hs23

4350

03:52:37,910 --> 03:52:36,300

Squadron great job today thank you for

4351  
03:52:39,349 --> 03:52:37,920  
joining us and we appreciate you being

4352  
03:52:41,750 --> 03:52:39,359  
here thanks for having us so much

4353  
03:52:44,330 --> 03:52:41,760  
appreciate you all right and here on the

4354  
03:52:46,790 --> 03:52:44,340  
USS Portland uh the mission continues

4355  
03:52:49,130 --> 03:52:46,800  
the operation to recover the Orion

4356  
03:52:51,110 --> 03:52:49,140  
Command Module which you see is still

4357  
03:52:53,809 --> 03:52:51,120  
out there in the Pacific we're awaiting

4358  
03:52:55,670 --> 03:52:53,819  
the Navy boats to get a little closer to

4359  
03:52:57,889 --> 03:52:55,680  
begin their operations and sniffing out

4360  
03:53:00,050 --> 03:52:57,899  
hazardous gases and making sure that

4361  
03:53:03,530 --> 03:53:00,060  
they are able to connect up to that

4362  
03:53:06,950 --> 03:53:03,540  
capsule and tow it back inside the USS

4363  
03:53:08,929 --> 03:53:06,960

Portland our Navy ship on scene here

4364

03:53:10,550 --> 03:53:08,939

that's going to do it for us for the

4365

03:53:13,670 --> 03:53:10,560

expiration ground systems the Department

4366

03:53:21,370 --> 03:53:13,680

of Defense and NASA we want to send it

4367

03:53:26,210 --> 03:53:24,349

thank you Daryl and uh magnificent job

4368

03:53:28,010 --> 03:53:26,220

out there on the USS Portland and the

4369

03:53:30,530 --> 03:53:28,020

work is just beginning out there as you

4370

03:53:32,870 --> 03:53:30,540

heard here in Mission Control uh the

4371

03:53:34,370 --> 03:53:32,880

work is over for the entry team of

4372

03:53:36,469 --> 03:53:34,380

flight controllers who have handed the

4373

03:53:39,290 --> 03:53:36,479

vehicle over to the exploration ground

4374

03:53:41,450 --> 03:53:39,300

systems folks out in the Pacific with

4375

03:53:44,030 --> 03:53:41,460

the power down of Orion having been

4376  
03:53:47,450 --> 03:53:44,040  
completed entry flight director Judd

4377  
03:53:49,429 --> 03:53:47,460  
freeling has released his team and uh

4378  
03:53:52,969 --> 03:53:49,439  
they will be making their way out of

4379  
03:53:54,469 --> 03:53:52,979  
Mission Control with Orion's Handover

4380  
03:53:57,650 --> 03:53:54,479  
now complete

4381  
03:54:01,370 --> 03:53:57,660  
Splashdown occurring at 11 40 a.m

4382  
03:54:04,610 --> 03:54:01,380  
Central Time 9 40 a.m Pacific time the

4383  
03:54:07,090 --> 03:54:04,620  
team is posing for a team picture before

4384  
03:54:10,729 --> 03:54:07,100  
they are released for the day

4385  
03:54:13,790 --> 03:54:10,739  
upcoming you can follow if you wish all

4386  
03:54:16,130 --> 03:54:13,800  
of the remaining recovery work including

4387  
03:54:19,429 --> 03:54:16,140  
the Orion being brought into the well

4388  
03:54:22,510 --> 03:54:19,439

deck of the USS Portland on a the

4389

03:54:24,550 --> 03:54:22,520

YouTube channel that you see there

4390

03:54:27,650 --> 03:54:24,560

[www.youtube.com](http://www.youtube.com)

4391

03:54:29,990 --> 03:54:27,660

KSC Newsroom the Kennedy Space Center

4392

03:54:32,990 --> 03:54:30,000

exploration ground systems folks now in

4393

03:54:35,330 --> 03:54:33,000

charge of the operations to bring Orion

4394

03:54:37,550 --> 03:54:35,340

back into the well deck to get it back

4395

03:54:39,950 --> 03:54:37,560

on Shore and then transport it back to

4396

03:54:41,570 --> 03:54:39,960

the Kennedy Space Center for post-flight

4397

03:54:44,090 --> 03:54:41,580

analysis

4398

03:54:46,729 --> 03:54:44,100

that'll wrap up our coverage of Orion's

4399

03:54:49,010 --> 03:54:46,739

return to Earth and let's point you to

4400

03:54:51,889 --> 03:54:49,020

our post Splashdown news conference

4401

03:54:55,250 --> 03:54:51,899

that's coming up at 2 30 p.m Central

4402

03:54:58,490 --> 03:54:55,260

Time 3 30 p.m Eastern Time on NASA

4403

03:55:01,370 --> 03:54:58,500

Television as a variety of folks discuss

4404

03:55:03,769 --> 03:55:01,380

entry Splashdown and recovery and take a

4405

03:55:07,729 --> 03:55:03,779

look back at the 25 and a half day

4406

03:55:10,010 --> 03:55:07,739

mission of Orion its first flight next

4407

03:55:12,590 --> 03:55:10,020

stop a crew on board two years from now

4408

03:55:29,830 --> 03:55:12,600

with that we wish you a great Sunday

4409

03:55:29,840 --> 03:55:40,929

[Music]

4410

03:55:40,939 --> 03:56:02,980

thank you