
pace Cente
enter

1
00:00:11,040 --> 00:00:08,210
good afternoon and welcome to today's

2
00:00:12,710 --> 00:00:11,050
sts-135 mission status briefing the

3
00:00:15,720 --> 00:00:12,720
first for the final mission of Atlantis

4
00:00:17,460 --> 00:00:15,730
we have today quatie Oliver oho the lead

5
00:00:19,109 --> 00:00:17,470
flight director for this mission they'll

6
00:00:20,310 --> 00:00:19,119
start off with some opening comments and

7
00:00:23,370 --> 00:00:20,320
then we'll move on to your questions

8
00:00:25,470 --> 00:00:23,380
pottsy thank you good morning on good

9
00:00:28,639 --> 00:00:25,480
afternoon to some of you we've had an

10
00:00:32,100 --> 00:00:28,649
absolutely outstanding morning on orbit

11
00:00:35,220 --> 00:00:32,110
today we executed the inspection of the

12
00:00:37,380 --> 00:00:35,230
shuttles thermal protection system that

13
00:00:39,689 --> 00:00:37,390

was carried out by manipulating the

14
00:00:42,180 --> 00:00:39,699
shuttle's robotic arm as well as the

15
00:00:44,580 --> 00:00:42,190
orbiter boom sensor system to do

16
00:00:48,720 --> 00:00:44,590
detailed scans of the wing leading edge

17
00:00:50,729 --> 00:00:48,730
the shuttles nose cap and other areas

18
00:00:53,910 --> 00:00:50,739
associated with ground support

19
00:00:56,750 --> 00:00:53,920
umbilicals those scans were executed in

20
00:00:59,610 --> 00:00:56,760
absolute professional style by our crew

21
00:01:02,310 --> 00:00:59,620
led by commander Chris Ferguson pilot

22
00:01:04,560 --> 00:01:02,320
Doug Hurley mission specialists sandy

23
00:01:07,350 --> 00:01:04,570
Magnus and Rex Walheim they got through

24
00:01:11,670 --> 00:01:07,360
all of the activities of the inspection

25
00:01:14,550 --> 00:01:11,680
and ended up running about an hour to an

26
00:01:16,260 --> 00:01:14,560
hour and a half in ahead of time now as

27
00:01:20,520 --> 00:01:16,270
far as the efficiencies that they gained

28
00:01:24,060 --> 00:01:20,530
in in executing the activities about 30

29
00:01:27,030 --> 00:01:24,070
the 35 minutes of that time was was due

30
00:01:28,950 --> 00:01:27,040
to them just executing things quite well

31
00:01:30,540 --> 00:01:28,960
and being very efficient but they also

32
00:01:32,190 --> 00:01:30,550
chose to work through their their lunch

33
00:01:34,290 --> 00:01:32,200
break we get typically give them about

34
00:01:35,460 --> 00:01:34,300
an hour for lunch and so because they

35
00:01:37,560 --> 00:01:35,470
work through their lunch break to try to

36
00:01:39,750 --> 00:01:37,570
get ahead of the timeline we ended up

37
00:01:42,210 --> 00:01:39,760
completing the inspections an hour ahead

38
00:01:44,400 --> 00:01:42,220

of schedule what the crew has left on

39
00:01:47,340 --> 00:01:44,410
their day today is check out of their

40
00:01:49,620 --> 00:01:47,350
rendezvous tools as well as check out of

41
00:01:51,360 --> 00:01:49,630
the orbiter docking system both of these

42
00:01:53,100 --> 00:01:51,370
are required in preparation for

43
00:01:57,180 --> 00:01:53,110
rendezvous and docking tomorrow

44
00:01:59,250 --> 00:01:57,190
additionally we have a second of two

45
00:02:01,980 --> 00:01:59,260
rendezvous burns that were on the plan

46
00:02:03,960 --> 00:02:01,990
today we executed the so-called NC to

47
00:02:06,990 --> 00:02:03,970
burn earlier today and now we're going

48
00:02:08,609 --> 00:02:07,000
to execute the NC three burn in just a

49
00:02:10,680 --> 00:02:08,619
couple of hours we're going to do that

50
00:02:12,720 --> 00:02:10,690
that burned about an hour and a half

51
00:02:13,730 --> 00:02:12,730
earlier than we had originally scheduled

52
00:02:16,550 --> 00:02:13,740
it in the timeline

53
00:02:19,820 --> 00:02:16,560
and basically that's to give the crew

54
00:02:21,200 --> 00:02:19,830
credit for finishing the TPS inspections

55
00:02:24,440 --> 00:02:21,210
early we'll let them do their rendezvous

56
00:02:26,990 --> 00:02:24,450
burn early and thus we can give them a

57
00:02:29,090 --> 00:02:27,000
little bit more of a relaxed pre-sleep

58
00:02:31,400 --> 00:02:29,100
time frame tonight so there won't be as

59
00:02:33,670 --> 00:02:31,410
fatigue going into the critical phases

60
00:02:37,610 --> 00:02:33,680
of rendezvous and docking in the morning

61
00:02:40,490 --> 00:02:37,620
we continue to observe stellar

62
00:02:42,560 --> 00:02:40,500
performance from Atlantis the ship has

63
00:02:44,000 --> 00:02:42,570

been performing in beautiful fashion

64
00:02:47,120 --> 00:02:44,010
we're not tracking any significant

65
00:02:48,680 --> 00:02:47,130
issues the spacecraft and her crew all

66
00:02:51,620 --> 00:02:48,690
seemed to be doing very well and

67
00:02:53,630 --> 00:02:51,630
honestly we we couldn't be more happy

68
00:02:56,510 --> 00:02:53,640
with what we've seen from the crew n

69
00:02:59,300 --> 00:02:56,520
from atlantis in this first half of

70
00:03:01,930 --> 00:02:59,310
flight date too so we're looking forward

71
00:03:03,800 --> 00:03:01,940
to a productive rest of the afternoon

72
00:03:07,580 --> 00:03:03,810
looking forward to putting the crew to

73
00:03:09,230 --> 00:03:07,590
bed on time they may even have have some

74
00:03:11,840 --> 00:03:09,240
time to get to bed a little early if

75
00:03:13,850 --> 00:03:11,850
they wish and I think we'll be in in

76
00:03:15,230 --> 00:03:13,860
good shape for an excellent rendezvous

77
00:03:18,290 --> 00:03:15,240
docking with the international space

78
00:03:20,240 --> 00:03:18,300
station tomorrow that concludes my

79
00:03:22,850 --> 00:03:20,250
opening comments and we'll be happy to

80
00:03:24,350 --> 00:03:22,860
take your questions okay we'll start

81
00:03:26,510 --> 00:03:24,360
here with questions of the Johnson Space

82
00:03:28,270 --> 00:03:26,520
Center in Houston and then we'll move on

83
00:03:31,420 --> 00:03:28,280
to our phone bridge participants

84
00:03:34,600 --> 00:03:31,430
questions from here in Houston Phil

85
00:03:37,160 --> 00:03:34,610
Phillips loss with NASA Space Flight com

86
00:03:38,900 --> 00:03:37,170
the crew got as you said the crew got

87
00:03:42,490 --> 00:03:38,910
way ahead of the timeline today on the

88
00:03:45,530 --> 00:03:42,500

inspections is that typical for them and

89
00:03:47,180 --> 00:03:45,540
do you think that's going to help you in

90
00:03:49,400 --> 00:03:47,190
the during the docked phase with all the

91
00:03:53,840 --> 00:03:49,410
work that needs to be done ok there's

92
00:03:56,510 --> 00:03:53,850
great questions the performance of the

93
00:03:59,210 --> 00:03:56,520
activities on flight day two are often

94
00:04:02,180 --> 00:03:59,220
subject to a lot of variability depends

95
00:04:06,560 --> 00:04:02,190
on the cruise how the crews are feeling

96
00:04:07,760 --> 00:04:06,570
as well as as the overall tasking the

97
00:04:10,070 --> 00:04:07,770
number of people we have on the flight

98
00:04:12,560 --> 00:04:10,080
deck today I think we had a lot of

99
00:04:14,780 --> 00:04:12,570
things working in our favor first of all

100
00:04:17,800 --> 00:04:14,790
even though we did have we do have a

101
00:04:20,990 --> 00:04:17,810
smaller crew and of course that tends to

102
00:04:24,110 --> 00:04:21,000
put pressure on getting the activities

103
00:04:26,850 --> 00:04:24,120
completed on time we did have fewer

104
00:04:30,059 --> 00:04:26,860
bodies for the crew to trip over all

105
00:04:32,700 --> 00:04:30,069
so we are flying a very experienced crew

106
00:04:35,339 --> 00:04:32,710
that knows how to adapt to space

107
00:04:38,010 --> 00:04:35,349
conditions and so I think they're their

108
00:04:40,740 --> 00:04:38,020
adaptation to spaces has gone very

109
00:04:43,290 --> 00:04:40,750
quickly relative to what we sometimes

110
00:04:44,730 --> 00:04:43,300
see from from from other crews and so

111
00:04:47,760 --> 00:04:44,740
all of these things taken in tandem

112
00:04:49,409 --> 00:04:47,770
their experience really allowed us to to

113
00:04:51,480 --> 00:04:49,419

get ahead on the timeline and to execute

114
00:04:54,600 --> 00:04:51,490
things efficiently so we're quite

115
00:04:57,629 --> 00:04:54,610
pleased we have seen this type of

116
00:04:59,309 --> 00:04:57,639
performance before although I think the

117
00:05:01,320 --> 00:04:59,319
performance of this particular crew on

118
00:05:03,209 --> 00:05:01,330
this set of activities is is probably

119
00:05:05,129 --> 00:05:03,219
near record breaking I think we we

120
00:05:06,929 --> 00:05:05,139
really were able to squeeze out

121
00:05:12,209 --> 00:05:06,939
considerable efficiencies from this crew

122
00:05:15,029 --> 00:05:12,219
today thanks mark Kuro for aviation week

123
00:05:16,830 --> 00:05:15,039
I had a couple of questions one I wonder

124
00:05:18,839 --> 00:05:16,840
during the inspection at least from what

125
00:05:20,640 --> 00:05:18,849
you could see in the control center did

126
00:05:26,010 --> 00:05:20,650
anything jump out or did you see

127
00:05:28,529 --> 00:05:26,020
basically pretty normal TPS ok not a

128
00:05:32,040 --> 00:05:28,539
great question we did not see anything

129
00:05:34,469 --> 00:05:32,050
so far that gave us great pause nothing

130
00:05:36,749 --> 00:05:34,479
that was that was immediately visible to

131
00:05:39,300 --> 00:05:36,759
the naked eye now of course as you know

132
00:05:41,279 --> 00:05:39,310
the process of analyzing the data we get

133
00:05:44,700 --> 00:05:41,289
from the sensor package on the OB SS

134
00:05:46,980 --> 00:05:44,710
takes several hours and we do expect

135
00:05:49,559 --> 00:05:46,990
that process to go normally so we'll

136
00:05:52,050 --> 00:05:49,569
hear official word concerning the

137
00:05:54,570 --> 00:05:52,060
condition of the reinforced

138
00:05:55,800 --> 00:05:54,580

carbon-carbon components of the thermal

139
00:05:59,399 --> 00:05:55,810
protection system will probably hear

140
00:06:00,719 --> 00:05:59,409
that late tomorrow maybe maybe early in

141
00:06:02,429 --> 00:06:00,729
the morning depending on how the

142
00:06:04,320 --> 00:06:02,439
engineers are doing but there was

143
00:06:05,579 --> 00:06:04,330
nothing that that immediately gave us

144
00:06:07,920 --> 00:06:05,589
pause or that we were concerned about

145
00:06:09,689 --> 00:06:07,930
going into the inspection and we also

146
00:06:11,360 --> 00:06:09,699
saw a very good debris performance from

147
00:06:15,510 --> 00:06:11,370
the tank on the way uphill yesterday so

148
00:06:19,079 --> 00:06:15,520
that also that also was very encouraging

149
00:06:20,670 --> 00:06:19,089
to us in fact we were extremely happy

150
00:06:23,219 --> 00:06:20,680
with the launch yesterday as you can

151
00:06:25,019 --> 00:06:23,229
imagine which is a testament not only to

152
00:06:26,760 --> 00:06:25,029
the the excellent performance of the

153
00:06:28,420 --> 00:06:26,770
team there at Kennedy Space Center but

154
00:06:30,310 --> 00:06:28,430
also the

155
00:06:32,320 --> 00:06:30,320
the wonderful performance of the asset

156
00:06:35,650 --> 00:06:32,330
team under the leadership of mr. Richard

157
00:06:37,870 --> 00:06:35,660
Jones so we were very comfortable and

158
00:06:40,390 --> 00:06:37,880
very happy looking at the TPS going into

159
00:06:41,860 --> 00:06:40,400
the inspection today and we'll see what

160
00:06:45,550 --> 00:06:41,870
the detailed scans revealed to us

161
00:06:48,730 --> 00:06:45,560
tomorrow thanks my other question sort

162
00:06:52,090 --> 00:06:48,740
of had to do with the the pace of work

163
00:06:55,030 --> 00:06:52,100

you mentioned today that the that Chris

164
00:06:57,730 --> 00:06:55,040
Ferguson and his crew got a head 60 to

165
00:06:59,050 --> 00:06:57,740
90 minutes in fact there's a lot to do

166
00:07:01,680 --> 00:06:59,060
on this mission and I wonder how

167
00:07:04,180 --> 00:07:01,690
cognizant you are in the control center

168
00:07:06,460 --> 00:07:04,190
of trying to kind of stay up on

169
00:07:09,520 --> 00:07:06,470
everything so that you don't fall behind

170
00:07:11,050 --> 00:07:09,530
and I guess that's kind of a quality not

171
00:07:13,240 --> 00:07:11,060
a quantitative question but I just

172
00:07:15,970 --> 00:07:13,250
wonder how conscious you are trying to

173
00:07:17,530 --> 00:07:15,980
make sure that they they don't fall back

174
00:07:21,490 --> 00:07:17,540
into a corner where they can't dig

175
00:07:23,320 --> 00:07:21,500
themselves out okay for all of the the

176
00:07:24,960 --> 00:07:23,330
controllers in on the flight control

177
00:07:27,820 --> 00:07:24,970
team starting with the flight director

178
00:07:30,700 --> 00:07:27,830
myself Capcom as well as the other

179
00:07:33,700 --> 00:07:30,710
controllers we all try to imagine

180
00:07:36,480 --> 00:07:33,710
ourselves executing the activities the

181
00:07:38,410 --> 00:07:36,490
crew has to execute each systems

182
00:07:40,930 --> 00:07:38,420
discipline specialist in the flight

183
00:07:44,680 --> 00:07:40,940
control room monitors their activities

184
00:07:47,200 --> 00:07:44,690
and and our first mandate really is to

185
00:07:48,940 --> 00:07:47,210
to stay abreast of what the crew is

186
00:07:50,920 --> 00:07:48,950
doing and try to imagine and visualize

187
00:07:54,150 --> 00:07:50,930
what they're doing is they prepare to

188
00:07:56,740 --> 00:07:54,160

throw switches as they are executing

189
00:07:59,890 --> 00:07:56,750
robotics operations as they work today

190
00:08:01,510 --> 00:07:59,900
for the TPS inspection and and the

191
00:08:03,220 --> 00:08:01,520
benefit that we as mission controllers

192
00:08:06,520 --> 00:08:03,230
can provide to the crew is that we can

193
00:08:09,640 --> 00:08:06,530
having imagine what they are doing and

194
00:08:11,920 --> 00:08:09,650
and and and having focused intently on

195
00:08:14,500 --> 00:08:11,930
each of their tasks we can try to

196
00:08:16,000 --> 00:08:14,510
anticipate areas where they might run

197
00:08:17,470 --> 00:08:16,010
into problems areas where they might

198
00:08:21,190 --> 00:08:17,480
have some tackling conflicts and

199
00:08:23,770 --> 00:08:21,200
recommend some some some redirection if

200
00:08:26,140 --> 00:08:23,780
you will or some additional efficiencies

201
00:08:27,970 --> 00:08:26,150
which might not have been built into the

202
00:08:29,290 --> 00:08:27,980
pre-flight timeline and which the crew

203
00:08:30,970 --> 00:08:29,300
themselves might not have been able to

204
00:08:33,220 --> 00:08:30,980
think of and so that's one of the things

205
00:08:35,110 --> 00:08:33,230
that work in our favor today is is we

206
00:08:37,420 --> 00:08:35,120
had not only wonderful performance from

207
00:08:41,020 --> 00:08:37,430
the crew but my flight control team also

208
00:08:42,190 --> 00:08:41,030
did a fantastic job doing what I asked

209
00:08:44,110 --> 00:08:42,200
them to do and what what

210
00:08:47,680 --> 00:08:44,120
they have trained to do which is to look

211
00:08:49,480 --> 00:08:47,690
ahead to stay in perfect lockstep with

212
00:08:52,750 --> 00:08:49,490
the crew and we actually did recommend

213
00:08:55,660 --> 00:08:52,760

some some surgical changes to the

214
00:08:58,450 --> 00:08:55,670
sequence of events that allowed them to

215
00:09:03,250 --> 00:08:58,460
to extract the maximum efficiency from

216
00:09:05,230 --> 00:09:03,260
from from their great performance dan

217
00:09:06,820 --> 00:09:05,240
vergano with USA Today I two questions

218
00:09:08,830 --> 00:09:06,830
the first is could you discuss a little

219
00:09:10,210 --> 00:09:08,840
bit about what goes into the decision

220
00:09:11,680 --> 00:09:10,220
about extending the mission at this

221
00:09:13,840 --> 00:09:11,690
point is it mostly how much fuel and

222
00:09:15,430 --> 00:09:13,850
repellent gets used in the maneuver with

223
00:09:17,440 --> 00:09:15,440
the space station tomorrow or is it sort

224
00:09:19,540 --> 00:09:17,450
of overall performance that sort of

225
00:09:22,210 --> 00:09:19,550
builds you the margin to do that okay

226
00:09:24,040 --> 00:09:22,220
it's actually all the above as far as

227
00:09:26,080 --> 00:09:24,050
what what goes into our decision to

228
00:09:30,010 --> 00:09:26,090
extend a day in fact I'm glad you asked

229
00:09:32,020 --> 00:09:30,020
that because we do have have some run

230
00:09:34,510 --> 00:09:32,030
time on our fuel cells and and what I

231
00:09:36,850 --> 00:09:34,520
can report to you today is that with

232
00:09:38,410 --> 00:09:36,860
respect to our most limiting consumable

233
00:09:40,930 --> 00:09:38,420
which in this case is the cryogenic

234
00:09:43,720 --> 00:09:40,940
oxygen and hydrogen required to generate

235
00:09:46,390 --> 00:09:43,730
electrical power with respect to those

236
00:09:50,050 --> 00:09:46,400
consumables we lift it off with

237
00:09:53,410 --> 00:09:50,060
sufficient oxygen and hydrogen to to

238
00:09:57,430 --> 00:09:53,420

give us what we believe is about 20 22

239
00:10:00,250 --> 00:09:57,440
23 hours above our nominal 12 plus zero

240
00:10:03,130 --> 00:10:00,260
plus two day timeline so we are

241
00:10:07,090 --> 00:10:03,140
executing the power conserving measures

242
00:10:08,500 --> 00:10:07,100
that we develop pre-flight and so we're

243
00:10:10,810 --> 00:10:08,510
going to continue to watch the system

244
00:10:15,250 --> 00:10:10,820
over the next day or two and I fully

245
00:10:16,960 --> 00:10:15,260
expect that by about flight day 4 will

246
00:10:20,230 --> 00:10:16,970
be able to report to you that that we

247
00:10:22,450 --> 00:10:20,240
are seeing stable enough margins to

248
00:10:24,760 --> 00:10:22,460
where we can recommend extending a day

249
00:10:26,890 --> 00:10:24,770
we carried sufficient propellant to

250
00:10:28,810 --> 00:10:26,900
orbit with us to extend today with no

251
00:10:31,120 --> 00:10:28,820
problem and as I said we've got

252
00:10:33,160 --> 00:10:31,130
sufficient quantity of other consumables

253
00:10:36,010 --> 00:10:33,170
and the crew seems to be doing very well

254
00:10:38,860 --> 00:10:36,020
so I think we will probably get there

255
00:10:40,780 --> 00:10:38,870
again don't take that to the bank until

256
00:10:43,870 --> 00:10:40,790
until until we talk in another day or

257
00:10:46,120 --> 00:10:43,880
two but right now everything is is on

258
00:10:48,400 --> 00:10:46,130
track for us to be able to extend the

259
00:10:49,540 --> 00:10:48,410
day as long as we continue to see good

260
00:10:51,370 --> 00:10:49,550
performance from the crew good

261
00:10:52,750 --> 00:10:51,380
performance from the spacecraft and as

262
00:10:55,870 --> 00:10:52,760
long as the other mission activity

263
00:10:58,480 --> 00:10:55,880

go nominally and my second question was

264
00:10:59,710 --> 00:10:58,490
regarding just the quickness with which

265
00:11:01,990 --> 00:10:59,720
they are able to do the inspection today

266
00:11:04,000 --> 00:11:02,000
could you just maybe I'm repeating that

267
00:11:06,490 --> 00:11:04,010
the previous question but how much of

268
00:11:07,900 --> 00:11:06,500
that was this sort of crew being doing

269
00:11:09,700 --> 00:11:07,910
this a good job of this and how much of

270
00:11:11,670 --> 00:11:09,710
it was not seeing any marks that made

271
00:11:13,630 --> 00:11:11,680
you or problems and made you stop and

272
00:11:15,970 --> 00:11:13,640
inspect more carefully in a position

273
00:11:19,000 --> 00:11:15,980
okay well let me let me further address

274
00:11:23,380 --> 00:11:19,010
by saying that that the the presence or

275
00:11:25,150 --> 00:11:23,390
absence of any issues or any occlusions

276
00:11:28,120 --> 00:11:25,160
or imperfections in the thermal

277
00:11:30,280 --> 00:11:28,130
protection system that has no bearing on

278
00:11:34,420 --> 00:11:30,290
the amount of time that it takes we have

279
00:11:36,010 --> 00:11:34,430
a very set pattern of scan over the RCC

280
00:11:38,170 --> 00:11:36,020
that we will execute in all cases

281
00:11:40,150 --> 00:11:38,180
whether there are any areas of concern

282
00:11:44,260 --> 00:11:40,160
now if there are areas of concern that

283
00:11:47,380 --> 00:11:44,270
we identify prior to the scan we may may

284
00:11:49,930 --> 00:11:47,390
take additional time to stop and stare

285
00:11:53,260 --> 00:11:49,940
if you will once we get to that point in

286
00:11:55,330 --> 00:11:53,270
the scan but but but generally that has

287
00:11:57,550 --> 00:11:55,340
no bearing on it what would really

288
00:11:59,800 --> 00:11:57,560

allowed us to get from the beginning of

289
00:12:02,230 --> 00:11:59,810
the the TPS inspection to the end this

290
00:12:05,470 --> 00:12:02,240
time as quickly as we did I believe was

291
00:12:07,090 --> 00:12:05,480
was a positive convergence of all of the

292
00:12:09,250 --> 00:12:07,100
positive behaviors that we've tried to

293
00:12:12,220 --> 00:12:09,260
build into this aspect of the mission

294
00:12:14,200 --> 00:12:12,230
starting with the flight plan our flight

295
00:12:16,630 --> 00:12:14,210
activities officer and other planners

296
00:12:19,300 --> 00:12:16,640
put together a very efficient sequence

297
00:12:22,660 --> 00:12:19,310
of events in cooperation with all of the

298
00:12:24,730 --> 00:12:22,670
the various subsystem owners who make

299
00:12:27,730 --> 00:12:24,740
the input so we started with an

300
00:12:29,830 --> 00:12:27,740
efficient plan the training team

301
00:12:33,580 --> 00:12:29,840
contributed tremendously to the success

302
00:12:35,560 --> 00:12:33,590
today in training our crew to execute

303
00:12:37,270 --> 00:12:35,570
these activities efficiently as well as

304
00:12:39,310 --> 00:12:37,280
training the flight control team and

305
00:12:41,200 --> 00:12:39,320
training us together and challenging us

306
00:12:43,300 --> 00:12:41,210
to think about where we can extract

307
00:12:45,580 --> 00:12:43,310
further efficiencies and then of course

308
00:12:48,610 --> 00:12:45,590
there is the actual on-orbit crew who is

309
00:12:51,130 --> 00:12:48,620
is very experienced in and have given

310
00:12:54,190 --> 00:12:51,140
great attention to finding ways to be

311
00:12:58,150 --> 00:12:54,200
efficient and finding ways to leverage

312
00:13:00,490 --> 00:12:58,160
the human resource that they have on

313
00:13:03,190 --> 00:13:00,500

board in the best possible manner so you

314
00:13:05,860 --> 00:13:03,200
put all of these things together and

315
00:13:09,910 --> 00:13:05,870
and it ended up working to our benefit

316
00:13:12,580 --> 00:13:09,920
today in past missions we may have a

317
00:13:15,250 --> 00:13:12,590
great performance in say three out of

318
00:13:16,990 --> 00:13:15,260
four of these areas and and we may

319
00:13:19,720 --> 00:13:17,000
finish on time or may finish only

320
00:13:24,190 --> 00:13:19,730
slightly later than we planned and in

321
00:13:27,160 --> 00:13:24,200
other missions we might see some some

322
00:13:29,620 --> 00:13:27,170
misalignment with respect to satellite

323
00:13:33,220 --> 00:13:29,630
availability and our ability to get the

324
00:13:35,920 --> 00:13:33,230
sensor data down in real-time as as as

325
00:13:37,710 --> 00:13:35,930
well as we did today so it really is a

326
00:13:42,040 --> 00:13:37,720
combination of all of these factors

327
00:13:44,290 --> 00:13:42,050
which no one of which is more important

328
00:13:46,090 --> 00:13:44,300
than the other in my view that it really

329
00:13:48,490 --> 00:13:46,100
that have really worked 22 the good

330
00:13:52,120 --> 00:13:48,500
today so hopefully that that helps

331
00:13:53,680 --> 00:13:52,130
explain that a bit more okay we're going

332
00:13:55,600 --> 00:13:53,690
to go now questions from the phone

333
00:13:58,900 --> 00:13:55,610
bridge I think first hour less does the

334
00:14:01,300 --> 00:13:58,910
Associated Press yes thanks Seth

335
00:14:04,600 --> 00:14:01,310
Borenstein at 8p and if I I do have a

336
00:14:06,850 --> 00:14:04,610
follow-up just going that you're saying

337
00:14:09,670 --> 00:14:06,860
you said you were on a near record pace

338
00:14:12,990 --> 00:14:09,680

for efficiency here also you can't help

339
00:14:16,150 --> 00:14:13,000
in those when looking at the flight

340
00:14:18,040 --> 00:14:16,160
execute package no anomalies whatsoever

341
00:14:21,820 --> 00:14:18,050
I'm wondering if you can look at this

342
00:14:24,420 --> 00:14:21,830
and have you seen such a clean first

343
00:14:29,140 --> 00:14:24,430
full day in orbit combined with such a

344
00:14:31,870 --> 00:14:29,150
such an efficient day I'm wondering if

345
00:14:36,220 --> 00:14:31,880
this is you know once you've got into

346
00:14:38,800 --> 00:14:36,230
over one of the cleanest best most

347
00:14:41,530 --> 00:14:38,810
efficient flights you've seen apne I

348
00:14:43,900 --> 00:14:41,540
know you you're relatively new in the

349
00:14:47,610 --> 00:14:43,910
position but in general is this one of

350
00:14:50,350 --> 00:14:47,620
the best so start so far to a mission I

351
00:14:52,600 --> 00:14:50,360
think this is certainly one of the

352
00:14:55,750 --> 00:14:52,610
better starts that we have seen and i'll

353
00:14:59,410 --> 00:14:55,760
tell you one area where i think that

354
00:15:02,860 --> 00:14:59,420
Atlantis has really helped us is the the

355
00:15:05,800 --> 00:15:02,870
absence of anomalies also equals the

356
00:15:07,480 --> 00:15:05,810
relative absence of distraction from the

357
00:15:09,610 --> 00:15:07,490
efficiencies that you try to gain and

358
00:15:11,530 --> 00:15:09,620
executing the nominal timeline you know

359
00:15:13,330 --> 00:15:11,540
even though we we haven't had really

360
00:15:15,470 --> 00:15:13,340
serious problems with a shuttle in a

361
00:15:18,949 --> 00:15:15,480
while when you do have the

362
00:15:21,920 --> 00:15:18,959
mendham heater failure or a sensor bias

363
00:15:24,889 --> 00:15:21,930

or some other little thing you know we

364
00:15:26,930 --> 00:15:24,899
go through a fairly rigorous process to

365
00:15:28,670 --> 00:15:26,940
try to examine anomalies and to try to

366
00:15:31,160 --> 00:15:28,680
make sure that they are not symptoms of

367
00:15:32,629 --> 00:15:31,170
more serious problems that might be

368
00:15:34,069 --> 00:15:32,639
threatening to the the mission or

369
00:15:37,819 --> 00:15:34,079
threatening to the spacecraft or crew

370
00:15:39,310 --> 00:15:37,829
and so examining every failure or every

371
00:15:41,569 --> 00:15:39,320
anomaly that we have does take

372
00:15:43,400 --> 00:15:41,579
considerable mental resource on the part

373
00:15:44,900 --> 00:15:43,410
of our flight control team the relative

374
00:15:47,480 --> 00:15:44,910
absence of that I think has allowed our

375
00:15:50,060 --> 00:15:47,490
team to focus more on executing the the

376
00:15:51,769 --> 00:15:50,070
nominal timeline and so one has to

377
00:15:53,870 --> 00:15:51,779
believe that that's that's helped

378
00:15:57,470 --> 00:15:53,880
contribute to the the efficiency of

379
00:16:00,319 --> 00:15:57,480
today's so far follow up on that here

380
00:16:03,759 --> 00:16:00,329
you are it is one of the cleanest best

381
00:16:07,069 --> 00:16:03,769
flights ever it is also the last one

382
00:16:09,680 --> 00:16:07,079
care that means don't you find it a

383
00:16:11,629 --> 00:16:09,690
little ironic and disturbing that here

384
00:16:16,970 --> 00:16:11,639
you're reaching sort of the pinnacle of

385
00:16:20,990 --> 00:16:16,980
efficiency and and you know just flying

386
00:16:23,449 --> 00:16:21,000
well and and it ends um in a way

387
00:16:25,460 --> 00:16:23,459
wouldn't it be easier if the shuttles

388
00:16:30,670 --> 00:16:25,470

were showing their age at the end then

389
00:16:33,370 --> 00:16:30,680
showing just maturity instead of age

390
00:16:36,790 --> 00:16:33,380
yeah I can certainly appreciate your

391
00:16:40,160 --> 00:16:36,800
observation I personally instead of

392
00:16:43,069 --> 00:16:40,170
focusing on the the irony I tend to look

393
00:16:46,009 --> 00:16:43,079
at the opportunity on this the last

394
00:16:48,439 --> 00:16:46,019
shuttle mission of the program I'm very

395
00:16:51,470 --> 00:16:48,449
grateful that the spacecraft is behaving

396
00:16:55,340 --> 00:16:51,480
as well as it is so that we can finish

397
00:16:58,220 --> 00:16:55,350
strong finish safely as as you all have

398
00:17:01,069 --> 00:16:58,230
heard me say before my team's number one

399
00:17:04,429 --> 00:17:01,079
focus is on ending this mission and

400
00:17:08,090 --> 00:17:04,439
ending the program as safely as we have

401
00:17:10,039 --> 00:17:08,100
flown last missions and so the the great

402
00:17:13,699 --> 00:17:10,049
condition the spacecraft is is really

403
00:17:15,500 --> 00:17:13,709
helping us to to do that so far and I

404
00:17:18,500 --> 00:17:15,510
see that as a tremendous tremendous

405
00:17:20,840 --> 00:17:18,510
opportunity it helps us enjoy the

406
00:17:22,579 --> 00:17:20,850
mission more honestly when we're not as

407
00:17:24,169 --> 00:17:22,589
worried about falling behind the

408
00:17:26,480 --> 00:17:24,179
timeline and of course we still have to

409
00:17:28,399 --> 00:17:26,490
be very vigilant you know this is just

410
00:17:29,390 --> 00:17:28,409
flight day two we've got we've got

411
00:17:31,370 --> 00:17:29,400
plenty more opportunities

412
00:17:35,510 --> 00:17:31,380
to fall behind and experience problems

413
00:17:39,560 --> 00:17:35,520

but we'll do our best to avoid that okay

414
00:17:41,420 --> 00:17:39,570
I think next up is CBS oh yeah watch

415
00:17:43,520 --> 00:17:41,430
this bill Harwood just a real quick when

416
00:17:45,320 --> 00:17:43,530
looking ahead to talking can you talk a

417
00:17:46,850 --> 00:17:45,330
little bit in detail about what the crew

418
00:17:48,800 --> 00:17:46,860
does with four people on board for

419
00:17:50,360 --> 00:17:48,810
docking that makes a little more of a

420
00:17:53,690 --> 00:17:50,370
challenge than when you have safe six or

421
00:17:56,570 --> 00:17:53,700
seven on board Thanks sure thing the big

422
00:17:58,010 --> 00:17:56,580
thing for my team did to be cognizant of

423
00:18:00,110 --> 00:17:58,020
in that and the thing that we have put

424
00:18:03,470 --> 00:18:00,120
some extra emphasis on in training is

425
00:18:06,470 --> 00:18:03,480
the fact that as we get to those closer

426
00:18:08,330 --> 00:18:06,480
terminal phases of the approach and

427
00:18:10,130 --> 00:18:08,340
docking pretty much all of the crew

428
00:18:13,280 --> 00:18:10,140
members all four of them will be on the

429
00:18:16,070 --> 00:18:13,290
flight deck each of them playing a

430
00:18:18,890 --> 00:18:16,080
different and critical role in in

431
00:18:20,870 --> 00:18:18,900
actually executing the the safe approach

432
00:18:22,970 --> 00:18:20,880
and docking for instance commander Chris

433
00:18:25,430 --> 00:18:22,980
Ferguson will will be at the stick if

434
00:18:27,440 --> 00:18:25,440
you will controlling the thrusters and

435
00:18:30,110 --> 00:18:27,450
and guiding the spacecraft into the

436
00:18:33,560 --> 00:18:30,120
approaching docking the pilot Doug

437
00:18:35,300 --> 00:18:33,570
Hurley will be assisting with management

438
00:18:37,750 --> 00:18:35,310

of the guidance navigation control

439
00:18:40,040 --> 00:18:37,760
system management of the autopilot

440
00:18:42,110 --> 00:18:40,050
management of the thruster

441
00:18:44,270 --> 00:18:42,120
configurations which have to change a

442
00:18:46,550 --> 00:18:44,280
few times between the various phases of

443
00:18:48,560 --> 00:18:46,560
the approaching docking mission

444
00:18:51,080 --> 00:18:48,570
specialist sandy Magnus and Rex Walheim

445
00:18:54,220 --> 00:18:51,090
will be doing a combination of

446
00:18:56,360 --> 00:18:54,230
communicating with the ground as well as

447
00:18:59,990 --> 00:18:56,370
siting on the International Space

448
00:19:02,570 --> 00:19:00,000
Station with the manual range-finding

449
00:19:04,850 --> 00:19:02,580
devices like the handheld laser and so

450
00:19:07,160 --> 00:19:04,860
when you think about the flow of things

451
00:19:08,720 --> 00:19:07,170
that that have to occur there on the

452
00:19:10,880 --> 00:19:08,730
flight deck for a successful perch and

453
00:19:13,220 --> 00:19:10,890
docking all four of them will really be

454
00:19:17,060 --> 00:19:13,230
engaged especially as we get very close

455
00:19:18,620 --> 00:19:17,070
after we execute the RPM and and start

456
00:19:20,540 --> 00:19:18,630
to maneuver on to the v-bar for the

457
00:19:23,270 --> 00:19:20,550
final approach and so what that means

458
00:19:25,040 --> 00:19:23,280
for us is that if there are sort of any

459
00:19:27,110 --> 00:19:25,050
random things and I don't want to say

460
00:19:29,630 --> 00:19:27,120
necessarily random but but miscellaneous

461
00:19:31,640 --> 00:19:29,640
things is a good term miscellaneous

462
00:19:34,340 --> 00:19:31,650
systems reconfigurations that have to be

463
00:19:36,080 --> 00:19:34,350

done because we're going to be filling

464
00:19:37,760 --> 00:19:36,090
water bags to prepare to transfer to the

465
00:19:39,890 --> 00:19:37,770
ISS which means that we'll have some

466
00:19:42,649 --> 00:19:39,900
switch throws that we have to execute

467
00:19:44,749 --> 00:19:42,659
from time to time to fill the water

468
00:19:47,419 --> 00:19:44,759
to start the phils stop the phils change

469
00:19:49,039 --> 00:19:47,429
bags reconfigure the pressure control

470
00:19:50,749 --> 00:19:49,049
system to manage the pressure in the

471
00:19:53,210 --> 00:19:50,759
cabin various other ancillary things

472
00:19:55,419 --> 00:19:53,220
that are not directly related to

473
00:19:58,999 --> 00:19:55,429
actually physically flying the bird

474
00:20:01,070 --> 00:19:59,009
those things we've got fewer hands and

475
00:20:02,570 --> 00:20:01,080
fewer minds available to really give

476
00:20:05,389 --> 00:20:02,580
attention to those things which means

477
00:20:08,149 --> 00:20:05,399
that for MCC we have to be much more

478
00:20:10,580 --> 00:20:08,159
surgical in how we call up those

479
00:20:12,049 --> 00:20:10,590
instructions and how we manage the

480
00:20:14,119 --> 00:20:12,059
systems because we're used to having

481
00:20:16,159 --> 00:20:14,129
plenty of people around either on the

482
00:20:18,440 --> 00:20:16,169
mid-deck or the flight deck to to

483
00:20:20,389 --> 00:20:18,450
reconfigure the heaters on the cryogenic

484
00:20:24,289 --> 00:20:20,399
oxygen and nitrogen and hydrogen tanks

485
00:20:25,369 --> 00:20:24,299
or to start and stop water backfills we

486
00:20:28,249 --> 00:20:25,379
just have to be a little bit more

487
00:20:30,200 --> 00:20:28,259
judicious about how we how we manage

488
00:20:33,349 --> 00:20:30,210

those systems so that we can delay those

489
00:20:38,419 --> 00:20:33,359
calls when appropriate and get them in

490
00:20:45,769 --> 00:20:38,429
when we've got the opportunity I think

491
00:20:48,169 --> 00:20:45,779
that's from your bill but we're not

492
00:20:51,969 --> 00:20:48,179
hearing mr. Harwood any further so let's

493
00:20:55,879 --> 00:20:51,979
move on to Targ malik with space com

494
00:20:57,979 --> 00:20:55,889
thank you classy it's a tag nozzle space

495
00:21:03,219 --> 00:20:57,989
out comment i've got i think one in a

496
00:21:07,279 --> 00:21:03,229
follow-up one is a referring to the

497
00:21:09,169 --> 00:21:07,289
surveys today you mentioned near record

498
00:21:10,129 --> 00:21:09,179
breaking or record-setting of with

499
00:21:11,440 --> 00:21:10,139
decreased performance today i was

500
00:21:15,169 --> 00:21:11,450
wondering if you had kind of an exact

501
00:21:16,969 --> 00:21:15,179
number in terms of how long it took or

502
00:21:19,879 --> 00:21:16,979
or if they had a really efficient number

503
00:21:22,219 --> 00:21:19,889
of robotic arm moves if you had any of

504
00:21:24,529 --> 00:21:22,229
those kinds of statistics for the survey

505
00:21:27,529 --> 00:21:24,539
today that would be great I apologize to

506
00:21:30,469 --> 00:21:27,539
our Chi I really don't I'd have to go

507
00:21:33,109 --> 00:21:30,479
back through all of the the previous TPS

508
00:21:37,099 --> 00:21:33,119
surveys that we've done typically the

509
00:21:40,039 --> 00:21:37,109
crews do run they're either able to get

510
00:21:41,960 --> 00:21:40,049
ahead or finish on time by working

511
00:21:44,719 --> 00:21:41,970
through lunch in fact I daresay most of

512
00:21:47,450 --> 00:21:44,729
the crews work through their lunch time

513
00:21:49,810 --> 00:21:47,460

to do the inspections a lot of times

514
00:21:52,310 --> 00:21:49,820
what we will see and what is typical of

515
00:21:54,950 --> 00:21:52,320
the flight day two inspections is that

516
00:21:56,750 --> 00:21:54,960
we we tend to run a bit behind

517
00:21:58,580 --> 00:21:56,760
on executing the first part of the

518
00:22:01,279 --> 00:21:58,590
inspection which is the starboard wing

519
00:22:04,909 --> 00:22:01,289
survey we tend to run behind sometimes

520
00:22:07,700 --> 00:22:04,919
because either communication coverage

521
00:22:09,110 --> 00:22:07,710
for the satellites doesn't line up for

522
00:22:11,630 --> 00:22:09,120
us because we share those satellites

523
00:22:13,340 --> 00:22:11,640
with other users of course and so

524
00:22:16,600 --> 00:22:13,350
sometimes that might delay us in

525
00:22:18,950 --> 00:22:16,610
execution of some of the activities

526
00:22:21,320 --> 00:22:18,960
sometimes the crews are just a little

527
00:22:23,480 --> 00:22:21,330
bit slower because they they just might

528
00:22:25,340 --> 00:22:23,490
not be feeling as well due to space

529
00:22:26,779 --> 00:22:25,350
adaptation and therefore they take a

530
00:22:28,909 --> 00:22:26,789
little bit of extra time to make sure

531
00:22:30,799 --> 00:22:28,919
that they do things right given that

532
00:22:33,139 --> 00:22:30,809
they're not necessarily feeling it

533
00:22:35,690 --> 00:22:33,149
they're at their peak and so what we

534
00:22:38,240 --> 00:22:35,700
usually see i would say tarik more often

535
00:22:41,419 --> 00:22:38,250
than not what we usually see is that for

536
00:22:43,580 --> 00:22:41,429
the first one or two phases of the

537
00:22:46,430 --> 00:22:43,590
inspection we are running a bit behind

538
00:22:48,409 --> 00:22:46,440

and then we sort of make up the deficit

539
00:22:50,450 --> 00:22:48,419
by working through the crews lunch such

540
00:22:52,880 --> 00:22:50,460
that at the end of the day we've sort of

541
00:22:55,340 --> 00:22:52,890
ended on time and so what was very

542
00:22:56,960 --> 00:22:55,350
unusual about today is that we didn't

543
00:22:59,570 --> 00:22:56,970
fall behind it all but we actually ran

544
00:23:01,519 --> 00:22:59,580
ahead and the crews still chose to

545
00:23:03,980 --> 00:23:01,529
contribute their their their lunch

546
00:23:05,330 --> 00:23:03,990
period to to work through the

547
00:23:07,279 --> 00:23:05,340
inspections and therefore we ended up

548
00:23:08,720 --> 00:23:07,289
getting very far ahead so I'm sorry I

549
00:23:09,649 --> 00:23:08,730
don't have an exact figure for you but

550
00:23:13,820 --> 00:23:09,659
that's probably the best way I could

551
00:23:17,210 --> 00:23:13,830
describe what's happened today thank you

552
00:23:19,100 --> 00:23:17,220
I think just a real quick ones that I'm

553
00:23:22,490 --> 00:23:19,110
just wondering with the only being for

554
00:23:24,310 --> 00:23:22,500
folks on the on the shuttle if they kind

555
00:23:27,649 --> 00:23:24,320
of mentioned at all to Mission Control

556
00:23:29,899 --> 00:23:27,659
evenly even in passing if it does feel a

557
00:23:32,389 --> 00:23:29,909
bit more roomier if it's a little bit

558
00:23:35,539 --> 00:23:32,399
more comfortable if they pull GA in like

559
00:23:39,620 --> 00:23:35,549
that okay the the crew has not mentioned

560
00:23:41,630 --> 00:23:39,630
anything about that to us however as a

561
00:23:43,909 --> 00:23:41,640
flight director I've gone through much

562
00:23:46,430 --> 00:23:43,919
of the training that the crews gone

563
00:23:48,799 --> 00:23:46,440

through at least a lot of the the

564
00:23:50,120 --> 00:23:48,809
mock-up training in classroom training

565
00:23:52,399 --> 00:23:50,130
that they that they've gone through as

566
00:23:56,149 --> 00:23:52,409
part of my own certification and my

567
00:24:00,049 --> 00:23:56,159
Capcom who's a flown astronaut dr. Steve

568
00:24:03,379 --> 00:24:00,059
Robinson who's a veteran space flyer he

569
00:24:06,789 --> 00:24:03,389
very much helps calibrate us on what the

570
00:24:08,450 --> 00:24:06,799
cruise conditions might be in we

571
00:24:11,390 --> 00:24:08,460
understand

572
00:24:13,100 --> 00:24:11,400
sort of what they're doing from minute

573
00:24:16,100 --> 00:24:13,110
to minute and from activity to activity

574
00:24:18,260 --> 00:24:16,110
and we know for a fact that that the

575
00:24:21,980 --> 00:24:18,270
shuttle definitely feels roomier to them

576
00:24:23,870 --> 00:24:21,990
in fact it's probably usually much more

577
00:24:25,790 --> 00:24:23,880
cramped with six or seven people on

578
00:24:27,440 --> 00:24:25,800
board then then we usually hear because

579
00:24:30,860 --> 00:24:27,450
astronauts really don't don't don't like

580
00:24:32,630 --> 00:24:30,870
to complain at all so we know that that

581
00:24:35,090 --> 00:24:32,640
is creating some great conditions for

582
00:24:37,490 --> 00:24:35,100
them it's probably helping the

583
00:24:40,430 --> 00:24:37,500
environment as far as the the air

584
00:24:41,840 --> 00:24:40,440
quality and the air temperature feel

585
00:24:43,550 --> 00:24:41,850
much more comfortable to them without

586
00:24:46,130 --> 00:24:43,560
without an additional two or three

587
00:24:47,750 --> 00:24:46,140
bodies throwing heat and co2 into the

588
00:24:50,600 --> 00:24:47,760

atmosphere so all these things I think

589
00:24:55,040 --> 00:24:50,610
they're probably they're probably quite

590
00:24:56,960 --> 00:24:55,050
comfortable right now thank you and just

591
00:24:59,360 --> 00:24:56,970
my last question I know that you started

592
00:25:00,890 --> 00:24:59,370
out o work on the station before

593
00:25:03,740 --> 00:25:00,900
switching the shuttle flight control and

594
00:25:06,830 --> 00:25:03,750
tomorrow will be the last shuttle

595
00:25:09,410 --> 00:25:06,840
docking at the space station and I'm

596
00:25:11,510 --> 00:25:09,420
wondering if what that might mean to you

597
00:25:13,490 --> 00:25:11,520
and your team and if you have any

598
00:25:15,230 --> 00:25:13,500
insights what that might mean to the the

599
00:25:17,030 --> 00:25:15,240
crew because I I know they'll be busy

600
00:25:20,000 --> 00:25:17,040
with the actions as opposed to with the

601
00:25:23,120 --> 00:25:20,010
reflecting on on on the moment in the

602
00:25:25,430 --> 00:25:23,130
morning tomorrow thanks well with each

603
00:25:28,580 --> 00:25:25,440
mission there are several events that

604
00:25:30,590 --> 00:25:28,590
really are defining moments I believe

605
00:25:32,390 --> 00:25:30,600
several nominal events that are defining

606
00:25:35,660 --> 00:25:32,400
moments in the mission launch of course

607
00:25:38,110 --> 00:25:35,670
is is is is one of the most important

608
00:25:42,050 --> 00:25:38,120
landing is one of the most important

609
00:25:44,450 --> 00:25:42,060
docking and undocking as well as the EV

610
00:25:47,000 --> 00:25:44,460
a's whenever there are EV a's on a

611
00:25:50,270 --> 00:25:47,010
mission those tend to be defining

612
00:25:53,200 --> 00:25:50,280
moments and very unique and well defined

613
00:25:55,910 --> 00:25:53,210

milestones the docking tomorrow

614
00:26:00,110 --> 00:25:55,920
represents one of those milestones to me

615
00:26:02,570 --> 00:26:00,120
that will be a significant hurdle as far

616
00:26:06,710 --> 00:26:02,580
as accomplishing the the mission and

617
00:26:09,140 --> 00:26:06,720
concluding it safely and so you know my

618
00:26:11,410 --> 00:26:09,150
team generally tends to feel a great

619
00:26:14,570 --> 00:26:11,420
sense of relief and accomplishment

620
00:26:15,830 --> 00:26:14,580
whenever we successfully dock the

621
00:26:17,930 --> 00:26:15,840
shuttle to the International Space

622
00:26:20,870 --> 00:26:17,940
Station Space Station team I know feels

623
00:26:22,820 --> 00:26:20,880
the same way because I've been in that

624
00:26:24,410 --> 00:26:22,830
been in that boat and have worked worked

625
00:26:27,610 --> 00:26:24,420
a rendezvous and docking on the station

626
00:26:32,180 --> 00:26:27,620
side as well for me personally I

627
00:26:35,210 --> 00:26:32,190
consider it really a tremendous honor to

628
00:26:39,160 --> 00:26:35,220
use a term I you know that we heard

629
00:26:41,030 --> 00:26:39,170
earlier almost ironic that that I as a

630
00:26:43,430 --> 00:26:41,040
homegrown Space Station flight

631
00:26:44,690 --> 00:26:43,440
controller and somebody that started my

632
00:26:47,120 --> 00:26:44,700
flight director career on the space

633
00:26:49,880 --> 00:26:47,130
station side has the the privilege and

634
00:26:53,390 --> 00:26:49,890
it really is a privilege to be able to

635
00:26:55,340 --> 00:26:53,400
guide the very last space shuttle to its

636
00:26:57,680 --> 00:26:55,350
very last docking with the International

637
00:26:59,690 --> 00:26:57,690
Space Station I still feel a tremendous

638
00:27:02,060 --> 00:26:59,700

sense of responsibility for the space

639
00:27:04,760 --> 00:27:02,070
station even when I'm at the helm of the

640
00:27:06,620 --> 00:27:04,770
shuttle flight control team and I feel a

641
00:27:09,860 --> 00:27:06,630
tremendous responsibility for the space

642
00:27:13,280 --> 00:27:09,870
shuttle obviously and so I just feel a

643
00:27:16,700 --> 00:27:13,290
great sense of gratitude really at being

644
00:27:22,040 --> 00:27:16,710
able to participate in this historic

645
00:27:26,180 --> 00:27:22,050
rendezvous and docking you know okay

646
00:27:28,990 --> 00:27:26,190
we'll move on to Florida today thanks

647
00:27:31,040 --> 00:27:29,000
very much James Dean from Florida today

648
00:27:33,530 --> 00:27:31,050
class we just kind of following up on

649
00:27:37,310 --> 00:27:33,540
that last questions as you're reflecting

650
00:27:39,680 --> 00:27:37,320
on this stuff the the RPM if not a

651
00:27:42,500 --> 00:27:39,690
defining moment certainly among the more

652
00:27:46,580 --> 00:27:42,510
dramatic that we get to see during

653
00:27:47,840 --> 00:27:46,590
flights so just wondering maybe that's

654
00:27:50,770 --> 00:27:47,850
something you have a chance to sort of

655
00:27:53,590 --> 00:27:50,780
take in and enjoy more as opposed to the

656
00:27:55,280 --> 00:27:53,600
intensity of the docking operation and

657
00:27:57,020 --> 00:27:55,290
specifically I was wondering I don't

658
00:28:00,110 --> 00:27:57,030
remember seeing that thousand millimeter

659
00:28:05,690 --> 00:28:00,120
camera do you have extra cameras on this

660
00:28:07,310 --> 00:28:05,700
rpm fur is so for any reason okay on the

661
00:28:10,540 --> 00:28:07,320
last mission as you know we did use the

662
00:28:15,500 --> 00:28:10,550
the camera with the 1000 millimeter lens

663
00:28:18,200 --> 00:28:15,510

to take pictures of endeavours TPS

664
00:28:20,930 --> 00:28:18,210
system endeavours tiles just to give us

665
00:28:24,020 --> 00:28:20,940
some higher resolution pictures the 800

666
00:28:25,730 --> 00:28:24,030
millimeter lens photos and the 400 that

667
00:28:28,030 --> 00:28:25,740
are standard they're more than

668
00:28:31,760 --> 00:28:28,040
sufficient the the 1000 millimeter

669
00:28:33,940 --> 00:28:31,770
photos just gave us even better data we

670
00:28:35,950 --> 00:28:33,950
plan to get one

671
00:28:38,289 --> 00:28:35,960
thousand millimeter photos on this rpm

672
00:28:39,759 --> 00:28:38,299
as well so we do have that called out in

673
00:28:41,740 --> 00:28:39,769
the the crews timeline and they're

674
00:28:43,990 --> 00:28:41,750
prepared to do that unless there are

675
00:28:45,700 --> 00:28:44,000
some problems that arise or some tasking

676
00:28:48,610 --> 00:28:45,710
issues that arise for the station crew

677
00:28:51,549 --> 00:28:48,620
that would preclude that for this RPM

678
00:28:55,659 --> 00:28:51,559
tomorrow I'm very much hoping that we

679
00:28:57,940 --> 00:28:55,669
end up having good good k you ban high

680
00:29:00,250 --> 00:28:57,950
data rate com coverage from the

681
00:29:01,779 --> 00:29:00,260
International Space Station on my last

682
00:29:06,039 --> 00:29:01,789
shuttle flight is lead flight director

683
00:29:07,590 --> 00:29:06,049
that was sts 113 februari of 2010 we

684
00:29:10,240 --> 00:29:07,600
were fortunate because the trajectory

685
00:29:13,450 --> 00:29:10,250
for that for that launch worked out such

686
00:29:16,690 --> 00:29:13,460
that we had good line of sight with the

687
00:29:18,879 --> 00:29:16,700
ISS high rate communication system and

688
00:29:22,659 --> 00:29:18,889

the ISS was able to downlink in

689
00:29:25,149 --> 00:29:22,669
real-time video of the the shuttle and

690
00:29:27,100 --> 00:29:25,159
endeavour for that mission performing

691
00:29:30,250 --> 00:29:27,110
it's our rpm and that was a very very

692
00:29:31,899 --> 00:29:30,260
special moment for my controllers in the

693
00:29:34,870 --> 00:29:31,909
shuttle flight control room who were

694
00:29:36,879 --> 00:29:34,880
were heavily engaged in that rendezvous

695
00:29:38,860 --> 00:29:36,889
and docking I'm hoping that we have

696
00:29:40,990 --> 00:29:38,870
similar luck tomorrow if we don't then

697
00:29:44,080 --> 00:29:41,000
of course we'll do what we normally do

698
00:29:45,940 --> 00:29:44,090
which is again focus intensely on on on

699
00:29:48,850 --> 00:29:45,950
the execution of the activities watch

700
00:29:52,120 --> 00:29:48,860
the data so that we can can help the

701
00:29:53,919 --> 00:29:52,130
crew but hopefully we've got some good

702
00:29:57,820 --> 00:29:53,929
visuals that that we can get in real

703
00:30:01,000 --> 00:29:57,830
time to really commemorate I should say

704
00:30:02,620 --> 00:30:01,010
and help us enjoy these moments one of

705
00:30:04,750 --> 00:30:02,630
the things that I do think about on the

706
00:30:06,669 --> 00:30:04,760
rare occasion that that I'm not thinking

707
00:30:09,070 --> 00:30:06,679
about actual mission execution I think

708
00:30:11,769 --> 00:30:09,080
about something that gene Kranz said and

709
00:30:14,259 --> 00:30:11,779
in one of the specials that was that was

710
00:30:16,990 --> 00:30:14,269
filmed about the Apollo era how when he

711
00:30:20,230 --> 00:30:17,000
looks back on it he he remembers that

712
00:30:23,169 --> 00:30:20,240
that he and his team in his words didn't

713
00:30:25,299 --> 00:30:23,179

didn't really enjoy the moment of

714
00:30:26,500 --> 00:30:25,309
landing on the moon as much as many

715
00:30:28,779 --> 00:30:26,510
other people did because they were so

716
00:30:30,669 --> 00:30:28,789
intensely focused on on the tasks that

717
00:30:32,740 --> 00:30:30,679
they had to perform which were

718
00:30:34,210 --> 00:30:32,750
monitoring the health and performance of

719
00:30:36,039 --> 00:30:34,220
the spacecraft making sure everything

720
00:30:38,049 --> 00:30:36,049
went well making sure that that nobody

721
00:30:39,950 --> 00:30:38,059
got hurt killed as they as they

722
00:30:41,750 --> 00:30:39,960
attempted to land on the moon and

723
00:30:44,590 --> 00:30:41,760
and as the astronauts stepped out on the

724
00:30:46,790 --> 00:30:44,600
moon obviously our priority is

725
00:30:48,760 --> 00:30:46,800
monitoring the spacecraft making sure

726
00:30:52,460 --> 00:30:48,770
that everything is executed flawlessly

727
00:30:54,200 --> 00:30:52,470
but being able to see pictures in real

728
00:30:57,050 --> 00:30:54,210
time whenever we are fortunate enough to

729
00:30:59,540 --> 00:30:57,060
be able to get that without without

730
00:31:01,700 --> 00:30:59,550
having to downlink it later those are

731
00:31:04,730 --> 00:31:01,710
just bonuses that make the moment

732
00:31:06,830 --> 00:31:04,740
special so that these people with whom I

733
00:31:08,660 --> 00:31:06,840
have the privilege of sharing this

734
00:31:11,000 --> 00:31:08,670
mission you know we can look each other

735
00:31:13,370 --> 00:31:11,010
in the eye and you know today and and

736
00:31:15,440 --> 00:31:13,380
tomorrow and maybe a year or so from now

737
00:31:19,730 --> 00:31:15,450
and say wow do you remember when we we

738
00:31:21,230 --> 00:31:19,740

saw Atlantis doing a backflip underneath

739
00:31:24,850 --> 00:31:21,240
the space station for the very last time

740
00:31:27,680 --> 00:31:24,860
while wasn't that special so we'll see

741
00:31:31,400 --> 00:31:27,690
Thanks i also know that you've mentioned

742
00:31:33,980 --> 00:31:31,410
space adaptation a couple times can you

743
00:31:37,640 --> 00:31:33,990
speak a little bit too you know what's

744
00:31:41,390 --> 00:31:37,650
typical for you know any given crew or

745
00:31:42,980 --> 00:31:41,400
crew member to experience and I mean I

746
00:31:45,050 --> 00:31:42,990
know it varies every individual

747
00:31:48,770 --> 00:31:45,060
individual is different but is it

748
00:31:51,770 --> 00:31:48,780
something that having flown before you

749
00:31:53,300 --> 00:31:51,780
know automatically makes less likely or

750
00:31:56,720 --> 00:31:53,310
their start there's things these guys

751
00:31:58,790 --> 00:31:56,730
would learn to do to mitigate it or is

752
00:32:00,980 --> 00:31:58,800
it just kind of random or lucky whether

753
00:32:03,710 --> 00:32:00,990
you whether you feel it or not you know

754
00:32:05,000 --> 00:32:03,720
it's a it's a very complex subject one

755
00:32:08,690 --> 00:32:05,010
of the things that's fortunate is we

756
00:32:11,330 --> 00:32:08,700
have a tremendous amount of data from

757
00:32:12,560 --> 00:32:11,340
human subjects on space adaptation one

758
00:32:16,070 --> 00:32:12,570
of the things that we've seen from the

759
00:32:18,650 --> 00:32:16,080
data is that there is considerable

760
00:32:21,350 --> 00:32:18,660
variability based on on crew members

761
00:32:23,480 --> 00:32:21,360
there are some crew members who have

762
00:32:26,630 --> 00:32:23,490
flown in space for the very first time

763
00:32:29,120 --> 00:32:26,640

and barely get sick or barely have any

764
00:32:33,020 --> 00:32:29,130
issues there are some crew members who

765
00:32:36,440 --> 00:32:33,030
are veteran flyers and they you know

766
00:32:38,900 --> 00:32:36,450
have have have some discomfort like

767
00:32:41,390 --> 00:32:38,910
clockwork one of the things that we do

768
00:32:43,220 --> 00:32:41,400
know is that there are some some

769
00:32:44,900 --> 00:32:43,230
countermeasures there's some medical

770
00:32:47,090 --> 00:32:44,910
there's some pharmacological

771
00:32:50,210 --> 00:32:47,100
countermeasures they're just some good

772
00:32:52,270 --> 00:32:50,220
practice sort of things that that help

773
00:32:55,290 --> 00:32:52,280
with adaptation

774
00:32:57,820 --> 00:32:55,300
and and although there is not a direct

775
00:32:59,350 --> 00:32:57,830
physiological correlation between the

776
00:33:02,790 --> 00:32:59,360
number of times persons flown in space

777
00:33:05,080 --> 00:33:02,800
and how quickly they adapt some of those

778
00:33:07,570 --> 00:33:05,090
procedural countermeasures those things

779
00:33:09,460 --> 00:33:07,580
that that tend to help crewmembers adapt

780
00:33:11,910 --> 00:33:09,470
if you have flown before they tend to

781
00:33:14,170 --> 00:33:11,920
know those things they tend to be very

782
00:33:16,120 --> 00:33:14,180
well-versed in what has worked for them

783
00:33:18,010 --> 00:33:16,130
in the past and what doesn't work and so

784
00:33:20,110 --> 00:33:18,020
that might provide a bit of an advantage

785
00:33:24,010 --> 00:33:20,120
and of course each of these crew members

786
00:33:26,110 --> 00:33:24,020
is a lone crewmember so again that's

787
00:33:27,520 --> 00:33:26,120
that's not a precise answer but but then

788
00:33:29,830 --> 00:33:27,530

again we know with it when we're talking

789
00:33:31,930 --> 00:33:29,840
about human physiology there are

790
00:33:35,230 --> 00:33:31,940
relatively few precise answers because

791
00:33:36,880 --> 00:33:35,240
people are different just last real

792
00:33:38,980 --> 00:33:36,890
quick foam is a basically nausea we're

793
00:33:45,370 --> 00:33:38,990
talking about or is it like dizziness or

794
00:33:47,440 --> 00:33:45,380
anything else all debuff okay we'll

795
00:33:50,860 --> 00:33:47,450
bring the questions back here to Johnson

796
00:33:53,350 --> 00:33:50,870
Space Center nope so let's lost with

797
00:33:55,450 --> 00:33:53,360
NASA Space Flight calm again book hate a

798
00:33:58,960 --> 00:33:55,460
bookkeeping question on your craw

799
00:34:01,510 --> 00:33:58,970
margins do you need to get 24 hours

800
00:34:04,900 --> 00:34:01,520
above above your 12 plus zero or is it

801
00:34:08,560 --> 00:34:04,910
more than that okay great question for

802
00:34:11,440 --> 00:34:08,570
us to to really in in good conscience

803
00:34:14,680 --> 00:34:11,450
commit to an extra energy dependent day

804
00:34:16,899 --> 00:34:14,690
we like to see at least some positive

805
00:34:19,210 --> 00:34:16,909
margin above the additional day so for

806
00:34:22,600 --> 00:34:19,220
instance our baseline mission duration

807
00:34:25,899 --> 00:34:22,610
for this flight is 12 plus 0 plus 2 at

808
00:34:28,180 --> 00:34:25,909
launch we were able to show about 23

809
00:34:32,050 --> 00:34:28,190
hours so for us to commit to the extra

810
00:34:33,970 --> 00:34:32,060
day we want to see well over 24 hours it

811
00:34:36,760 --> 00:34:33,980
doesn't have to be 24 and a half per se

812
00:34:40,570 --> 00:34:36,770
but but if we are showing a stable

813
00:34:42,520 --> 00:34:40,580

amount of margin that's that's over 24

814
00:34:44,740 --> 00:34:42,530
so that we know we've got that extra

815
00:34:46,899 --> 00:34:44,750
days sort of in the bank that's pretty

816
00:34:49,240 --> 00:34:46,909
much that's pretty much what would would

817
00:34:54,550 --> 00:34:49,250
give us a lot of confidence that we can

818
00:34:58,510 --> 00:34:54,560
we can count on that extra day anything

819
00:35:00,700 --> 00:34:58,520
else here all right with that will wrap

820
00:35:02,230 --> 00:35:00,710
up this briefing just a look ahead on

821
00:35:04,000 --> 00:35:02,240
the television schedule will have

822
00:35:04,690 --> 00:35:04,010
today's mission management team briefing

823
00:35:07,450 --> 00:35:04,700
at

824
00:35:09,339 --> 00:35:07,460
p.m. central for Eastern and then

825
00:35:13,240 --> 00:35:09,349
Atlantis's crew is scheduled to go to

826
00:35:15,190 --> 00:35:13,250
sleep at 629 p.m. central 729 Eastern

827
00:35:18,520 --> 00:35:15,200
remember that all the latest information

828
00:35:22,359 --> 00:35:18,530
on the sts-135 mission is available on

829
00:35:33,220 --> 00:35:22,369
the internet at www a COV thanks for

830
00:35:37,370 --> 00:35:35,120
you

831
00:35:39,410 --> 00:35:37,380
hi I'm James O'Connor I'm Christina

832
00:35:41,359 --> 00:35:39,420
Gosling I'm Kevin Metro cabbage I'm

833
00:35:43,279 --> 00:35:41,369
moose Kimball i'm jonathan hoffman and

834
00:35:45,140 --> 00:35:43,289
I'm pooja Joshi we are the attitude

835
00:35:46,970 --> 00:35:45,150
determination control officer team on