



1
00:00:05,829 --> 00:00:03,909
well good day and welcome to the johnson

2
00:00:08,629 --> 00:00:05,839
space center for today's first status

3
00:00:10,070 --> 00:00:08,639
briefing of the sts-132 mission atlantis

4
00:00:11,030 --> 00:00:10,080
flight to the international space

5
00:00:12,950 --> 00:00:11,040
station

6
00:00:14,629 --> 00:00:12,960
almost 24 hours into the mission and

7
00:00:16,630 --> 00:00:14,639
with us today to discuss the day's

8
00:00:18,390 --> 00:00:16,640
events and upcoming activities is the

9
00:00:20,390 --> 00:00:18,400
lead space shuttle flight director mike

10
00:00:22,790 --> 00:00:20,400
serafin

11
00:00:24,710 --> 00:00:22,800
well thank you for tuning in to this

12
00:00:26,230 --> 00:00:24,720
second day of the flight of atlantis to

13
00:00:28,710 --> 00:00:26,240

the international space station during

14

00:00:30,550 --> 00:00:28,720

the sts-132 mission

15

00:00:31,910 --> 00:00:30,560

some days in space flight are easier

16

00:00:34,229 --> 00:00:31,920

than others and today is one of those

17

00:00:35,990 --> 00:00:34,239

days where we've run into a couple of

18

00:00:38,549 --> 00:00:36,000

problems that we're tracking uh

19

00:00:39,750 --> 00:00:38,559

specifically a uh a piece of space

20

00:00:42,630 --> 00:00:39,760

debris that

21

00:00:44,310 --> 00:00:42,640

we're watching that will be in proximity

22

00:00:47,029 --> 00:00:44,320

to the international space station and

23

00:00:49,750 --> 00:00:47,039

the space shuttle after docking tomorrow

24

00:00:51,830 --> 00:00:49,760

as well as some difficulties we ran into

25

00:00:53,830 --> 00:00:51,840

with respect to the inspection of

26

00:00:56,229 --> 00:00:53,840

atlantis heat shield today

27

00:00:59,029 --> 00:00:56,239

overall we're proceeding towards docking

28

00:01:01,270 --> 00:00:59,039

tomorrow we we expect to be able to dock

29

00:01:03,590 --> 00:01:01,280

with the international space station and

30

00:01:05,590 --> 00:01:03,600

i'll talk briefly about the the two

31

00:01:06,469 --> 00:01:05,600

items that i mentioned earlier

32

00:01:10,710 --> 00:01:06,479

uh

33

00:01:12,630 --> 00:01:10,720

first provide a brief video clip of some

34

00:01:14,070 --> 00:01:12,640

items that occurred earlier today during

35

00:01:15,510 --> 00:01:14,080

the timeline if we could queue up the

36

00:01:17,670 --> 00:01:15,520

video i'll show you one of the

37

00:01:19,830 --> 00:01:17,680

rendezvous burns we did earlier today

38

00:01:21,590 --> 00:01:19,840

uh early on uh shortly after crew wake

39

00:01:23,350 --> 00:01:21,600

up we fired up the right orbital

40

00:01:25,109 --> 00:01:23,360

maneuvering system and here you can see

41

00:01:28,310 --> 00:01:25,119

some video the crew took out the back

42

00:01:30,710 --> 00:01:28,320

window we fired the engine

43

00:01:33,190 --> 00:01:30,720

for just a handful of seconds to raise

44

00:01:35,590 --> 00:01:33,200

the altitude of atlantis and then once

45

00:01:37,910 --> 00:01:35,600

that was complete we took the shuttle's

46

00:01:40,310 --> 00:01:37,920

arm and maneuvered it across the payload

47

00:01:42,469 --> 00:01:40,320

bay to grapple the shuttle's orbiter

48

00:01:44,069 --> 00:01:42,479

boom sensor system to begin the heat

49

00:01:45,830 --> 00:01:44,079

shield inspection

50

00:01:48,550 --> 00:01:45,840

while doing that

51
00:01:50,230 --> 00:01:48,560
the checkout of the orbiter boom we ran

52
00:01:51,590 --> 00:01:50,240
into a couple of difficulties that

53
00:01:54,550 --> 00:01:51,600
caused us to

54
00:01:58,230 --> 00:01:54,560
use a backup mode you see the video here

55
00:02:00,469 --> 00:01:58,240
of a digital camera that does not reside

56
00:02:02,389 --> 00:02:00,479
on what we call a pan tilt unit which is

57
00:02:04,149 --> 00:02:02,399
a means of gimbaling

58
00:02:05,350 --> 00:02:04,159
the primary sensor on the end of the

59
00:02:09,029 --> 00:02:05,360
boom

60
00:02:10,630 --> 00:02:09,039
started to inspect the heat shield the

61
00:02:13,589 --> 00:02:10,640
crew noted that they couldn't get to the

62
00:02:15,510 --> 00:02:13,599
desired uh angles on the uh on the pan

63
00:02:17,110 --> 00:02:15,520

and tilt unit or basically gimbal the

64

00:02:19,510 --> 00:02:17,120

the cameras and sensors on the end of

65

00:02:21,510 --> 00:02:19,520

the boom to the desired position

66

00:02:23,110 --> 00:02:21,520

and after some troubleshooting we pulled

67

00:02:25,110 --> 00:02:23,120

the the boom up over the side of the

68

00:02:27,190 --> 00:02:25,120

payload base so that we could observe it

69

00:02:28,229 --> 00:02:27,200

not only from the uh the flight deck

70

00:02:30,790 --> 00:02:28,239

windows

71

00:02:32,710 --> 00:02:30,800

with eyeballs and binoculars and digital

72

00:02:34,630 --> 00:02:32,720

cameras but also with the payload bay

73

00:02:37,030 --> 00:02:34,640

cameras and we determined that we'd

74

00:02:38,470 --> 00:02:37,040

quite literally run into a snag with the

75

00:02:40,309 --> 00:02:38,480

uh with the

76
00:02:42,390 --> 00:02:40,319
gimbal system on the end of the boom uh

77
00:02:44,790 --> 00:02:42,400
one of the cables on the end of the boom

78
00:02:46,309 --> 00:02:44,800
is uh pulling taut and causing us to not

79
00:02:47,589 --> 00:02:46,319
be able to tilt the

80
00:02:51,990 --> 00:02:47,599
the

81
00:02:53,910 --> 00:02:52,000
system fully up which is affecting our

82
00:02:57,270 --> 00:02:53,920
ability to see all of the heat shield on

83
00:02:59,430 --> 00:02:57,280
atlantis so what we've done is we've

84
00:03:01,589 --> 00:02:59,440
gone to a secondary mode

85
00:03:03,509 --> 00:03:01,599
which is a different camera it's a

86
00:03:05,670 --> 00:03:03,519
digital camera that is hard mounted to

87
00:03:08,390 --> 00:03:05,680
the boom it doesn't sit on this pan and

88
00:03:10,470 --> 00:03:08,400

tilt unit and we're proceeding with the

89

00:03:11,910 --> 00:03:10,480

inspection of the starboard wing we

90

00:03:13,990 --> 00:03:11,920

completed that earlier today before i

91

00:03:15,509 --> 00:03:14,000

came over to this press conference

92

00:03:17,270 --> 00:03:15,519

we're currently in the process of

93

00:03:19,190 --> 00:03:17,280

scanning the nose cap

94

00:03:21,750 --> 00:03:19,200

the reinforced carbon carbon on the on

95

00:03:24,070 --> 00:03:21,760

the nose cap and we expect to get the

96

00:03:26,710 --> 00:03:24,080

majority of the port wing

97

00:03:28,229 --> 00:03:26,720

reinforced carbon carbon later the team

98

00:03:30,309 --> 00:03:28,239

is looking at

99

00:03:32,470 --> 00:03:30,319

all of that imagery data they'll review

100

00:03:34,869 --> 00:03:32,480

that via the standard review process

101
00:03:37,670 --> 00:03:34,879
over the next day or so in combination

102
00:03:39,350 --> 00:03:37,680
with all of the launch imagery and the

103
00:03:40,949 --> 00:03:39,360
imagery that will obtain during

104
00:03:42,390 --> 00:03:40,959
tomorrow's approach to the international

105
00:03:43,430 --> 00:03:42,400
space station the rendezvous pitch

106
00:03:45,030 --> 00:03:43,440
maneuver

107
00:03:46,470 --> 00:03:45,040
so once we get all that imagery on the

108
00:03:49,190 --> 00:03:46,480
ground the team will determine if we

109
00:03:51,430 --> 00:03:49,200
need to go get additional information or

110
00:03:53,030 --> 00:03:51,440
views of atlantis before

111
00:03:55,350 --> 00:03:53,040
we're ready to declare the the heat

112
00:03:58,869 --> 00:03:55,360
shield ready to go and to bring atlantis

113
00:04:02,070 --> 00:03:58,879

home or if we've got all of what we need

114

00:04:04,390 --> 00:04:02,080

on the uh on the uh

115

00:04:07,030 --> 00:04:04,400

side of the uh conjunction the piece of

116

00:04:09,589 --> 00:04:07,040

space debris that we're watching there's

117

00:04:12,070 --> 00:04:09,599

a uh piece of debris from an unknown

118

00:04:14,630 --> 00:04:12,080

origin that has a very uh what we call

119

00:04:16,390 --> 00:04:14,640

elliptical orbit it it ranges from

120

00:04:18,789 --> 00:04:16,400

several thousand miles above the

121

00:04:21,349 --> 00:04:18,799

international space station to uh just

122

00:04:22,629 --> 00:04:21,359

below the international space station in

123

00:04:24,870 --> 00:04:22,639

its orbit

124

00:04:27,110 --> 00:04:24,880

we know what we know that this object is

125

00:04:30,550 --> 00:04:27,120

there but we don't know the source of it

126
00:04:32,469 --> 00:04:30,560
and we know that it's going to come in

127
00:04:34,230 --> 00:04:32,479
relatively close proximity to the

128
00:04:35,990 --> 00:04:34,240
international space station tomorrow

129
00:04:38,469 --> 00:04:36,000
about an hour after the shuttle is

130
00:04:41,430 --> 00:04:38,479
planned to dock with the space station

131
00:04:43,909 --> 00:04:41,440
so what we've done is we've developed a

132
00:04:45,830 --> 00:04:43,919
parallel path we've got a plan to do a

133
00:04:48,790 --> 00:04:45,840
debris avoidance maneuver if it's

134
00:04:50,870 --> 00:04:48,800
necessary and we've got a plan to just

135
00:04:52,790 --> 00:04:50,880
proceed with the rendezvous today and

136
00:04:54,469 --> 00:04:52,800
tomorrow as planned

137
00:04:56,469 --> 00:04:54,479
and the determination and whether or not

138
00:04:58,469 --> 00:04:56,479

we need to lower the altitude of station

139

00:05:00,469 --> 00:04:58,479

to avoid this debris

140

00:05:02,390 --> 00:05:00,479

that will come in close proximity

141

00:05:04,150 --> 00:05:02,400

shortly after docking tomorrow will be

142

00:05:05,670 --> 00:05:04,160

made later today

143

00:05:08,950 --> 00:05:05,680

if the debris avoidance maneuver is

144

00:05:10,629 --> 00:05:08,960

required it will occur uh roughly 807

145

00:05:11,909 --> 00:05:10,639

central time

146

00:05:14,710 --> 00:05:11,919

this evening

147

00:05:17,189 --> 00:05:14,720

and we'll just continue to watch it

148

00:05:19,430 --> 00:05:17,199

we've got some tracking on this

149

00:05:20,950 --> 00:05:19,440

object and right now it's right on the

150

00:05:22,629 --> 00:05:20,960

threshold of whether or not we need to

151

00:05:24,870 --> 00:05:22,639

take any action at all

152

00:05:27,430 --> 00:05:24,880

that threshold is around 10 kilometers

153

00:05:30,150 --> 00:05:27,440

in distance and we're just going to

154

00:05:32,390 --> 00:05:30,160

basically get as much information as we

155

00:05:34,550 --> 00:05:32,400

can before we determine whether or not

156

00:05:36,790 --> 00:05:34,560

we need to maneuver station and then

157

00:05:38,710 --> 00:05:36,800

modify the shuttle's approach to the

158

00:05:41,189 --> 00:05:38,720

international space station tomorrow or

159

00:05:43,029 --> 00:05:41,199

whether we can proceed as planned and go

160

00:05:44,150 --> 00:05:43,039

to station at its current higher

161

00:05:45,270 --> 00:05:44,160

altitude

162

00:05:47,029 --> 00:05:45,280

so

163

00:05:48,469 --> 00:05:47,039

we've worked through those anomalies

164

00:05:49,590 --> 00:05:48,479

today we still have some forward work

165

00:05:51,670 --> 00:05:49,600

ahead of us

166

00:05:53,749 --> 00:05:51,680

in addition to all those activities the

167

00:05:55,510 --> 00:05:53,759

crew checked out three of the space

168

00:05:57,270 --> 00:05:55,520

suits two that are planned for use

169

00:05:58,230 --> 00:05:57,280

during this mission as well as a spare

170

00:06:00,629 --> 00:05:58,240

that we plan to leave on the

171

00:06:03,670 --> 00:06:00,639

international space station as well as

172

00:06:05,830 --> 00:06:03,680

the rescue unit called safer that

173

00:06:08,150 --> 00:06:05,840

is used during the spacewalk all those

174

00:06:09,830 --> 00:06:08,160

items checked out just fine the crew

175

00:06:12,309 --> 00:06:09,840

again is proceeding towards rendezvous

176

00:06:14,469 --> 00:06:12,319

and docking tomorrow as planned and

177

00:06:15,830 --> 00:06:14,479

we've got some open work ahead of us

178

00:06:17,830 --> 00:06:15,840

associated with the heat shield

179

00:06:20,309 --> 00:06:17,840

inspection and with that

180

00:06:22,150 --> 00:06:20,319

i'd be happy to take any questions okay

181

00:06:23,990 --> 00:06:22,160

mike thanks we'll take questions here in

182

00:06:25,670 --> 00:06:24,000

houston then go to a handful of

183

00:06:27,590 --> 00:06:25,680

reporters on our phone bridge and we'll

184

00:06:30,230 --> 00:06:27,600

go here to mark

185

00:06:32,309 --> 00:06:30,240

uh thank you it's mark caro for aviation

186

00:06:33,749 --> 00:06:32,319

week and i have a couple of questions

187

00:06:35,590 --> 00:06:33,759

can you

188

00:06:37,909 --> 00:06:35,600

in broad strokes compare the

189

00:06:39,909 --> 00:06:37,919

effectiveness of the inspection

190

00:06:42,390 --> 00:06:39,919

strategy that you're

191

00:06:44,390 --> 00:06:42,400

executing today as compared to the one

192

00:06:47,189 --> 00:06:44,400

you would normally

193

00:06:49,270 --> 00:06:47,199

uh normally do

194

00:06:53,270 --> 00:06:49,280

yeah that's a good question normally we

195

00:06:55,510 --> 00:06:53,280

use a a laser range imager called or the

196

00:06:57,990 --> 00:06:55,520

acronym is Idri

197

00:06:59,430 --> 00:06:58,000

that sits on this pan tilt unit and it

198

00:07:02,469 --> 00:06:59,440

provides

199

00:07:04,710 --> 00:07:02,479

a little bit more coverage of all of the

200

00:07:07,110 --> 00:07:04,720

thermal blankets and the heat shield on

201
00:07:08,309 --> 00:07:07,120
board atlantis

202
00:07:11,270 --> 00:07:08,319
the uh

203
00:07:11,990 --> 00:07:11,280
intensified digital camera or a

204
00:07:51,589 --> 00:07:12,000
a

205
00:07:54,390 --> 00:07:51,599
didn't get the

206
00:07:56,469 --> 00:07:54,400
t-zero umbilicals that sit on both sides

207
00:07:59,189 --> 00:07:56,479
of the ohms pod and all the ohms pod

208
00:08:01,589 --> 00:07:59,199
imagery today we have an opportunity to

209
00:08:02,950 --> 00:08:01,599
get some of that via the space station

210
00:08:05,589 --> 00:08:02,960
assets either

211
00:08:06,950 --> 00:08:05,599
the rendezvous pitch maneuver

212
00:08:09,029 --> 00:08:06,960
and digital still

213
00:08:10,230 --> 00:08:09,039

images taken by the international space

214

00:08:12,790 --> 00:08:10,240

station crew during the approach

215

00:08:14,629 --> 00:08:12,800

tomorrow we also have the ability to use

216

00:08:17,670 --> 00:08:14,639

any number of external cameras on the

217

00:08:21,189 --> 00:08:17,680

space station as well as robotic assets

218

00:08:22,469 --> 00:08:21,199

either the station arm the japanese arm

219

00:08:23,909 --> 00:08:22,479

or

220

00:08:27,749 --> 00:08:23,919

the

221

00:08:29,909 --> 00:08:27,759

tomorrow and we're just looking at a

222

00:08:32,949 --> 00:08:29,919

combination of all the assets available

223

00:08:35,110 --> 00:08:32,959

to determine what the what gaps we have

224

00:08:37,110 --> 00:08:35,120

in our coverage because we used only the

225

00:08:38,389 --> 00:08:37,120

uh the hard mounted camera on the boom

226
00:08:41,509 --> 00:08:38,399
today

227
00:08:43,750 --> 00:08:41,519
and what we can fill in uh tomorrow or

228
00:08:46,150 --> 00:08:43,760
in days following on board using the

229
00:08:48,550 --> 00:08:46,160
international space station assets so

230
00:08:50,310 --> 00:08:48,560
it's uh it's kind of a mixed bag we have

231
00:08:51,670 --> 00:08:50,320
a little bit better coverage using the

232
00:08:58,870 --> 00:08:51,680
uh

233
00:09:01,590 --> 00:08:58,880
higher resolution imagery using the the

234
00:09:03,590 --> 00:09:01,600
camera that we use today

235
00:09:05,269 --> 00:09:03,600
thanks and just to follow that if it was

236
00:09:07,350 --> 00:09:05,279
necessary to

237
00:09:09,350 --> 00:09:07,360
to do a focused inspection to sort of

238
00:09:12,070 --> 00:09:09,360

follow follow up

239

00:09:15,110 --> 00:09:12,080

when would that fall in the timeline and

240

00:09:16,949 --> 00:09:15,120

what would be affected at this point

241

00:09:19,430 --> 00:09:16,959

uh it's a good question we have a

242

00:09:21,829 --> 00:09:19,440

reserve time on the fifth day of the

243

00:09:23,910 --> 00:09:21,839

mission so it would be after we install

244

00:09:25,269 --> 00:09:23,920

the rossvet module on the international

245

00:09:27,670 --> 00:09:25,279

space station

246

00:09:29,670 --> 00:09:27,680

late that day on flight day five we have

247

00:09:31,590 --> 00:09:29,680

about an hour and a half of crew time

248

00:09:33,829 --> 00:09:31,600

set aside to to perform a focus

249

00:09:35,430 --> 00:09:33,839

inspection if that's required

250

00:09:37,670 --> 00:09:35,440

again it's too early to tell whether

251
00:09:39,750 --> 00:09:37,680
we'll need to go down that path

252
00:09:41,590 --> 00:09:39,760
because one we haven't reviewed all the

253
00:09:43,990 --> 00:09:41,600
imagery from ascent

254
00:09:45,990 --> 00:09:44,000
as well as the the digital camera

255
00:09:48,230 --> 00:09:46,000
imagery from today and we still have the

256
00:09:50,070 --> 00:09:48,240
rpm imagery ahead of us tomorrow

257
00:09:52,550 --> 00:09:50,080
and then we may be able to obtain other

258
00:09:56,150 --> 00:09:52,560
imagery from station without focus

259
00:09:59,990 --> 00:09:57,910
okay we'll go to the reporters on our

260
00:10:01,670 --> 00:10:00,000
phone bridge and uh if you can hear me

261
00:10:07,509 --> 00:10:01,680
we'll start off with marcia dunn of the

262
00:10:12,710 --> 00:10:10,310
hi can you hear me yeah we can marcia um

263
00:10:14,550 --> 00:10:12,720

a couple of questions um quick question

264

00:10:15,750 --> 00:10:14,560

on the space debris do you have any idea

265

00:10:18,550 --> 00:10:15,760

how big

266

00:10:20,630 --> 00:10:18,560

or small that piece might be i don't

267

00:10:22,550 --> 00:10:20,640

have any of that information marcia we

268

00:10:25,190 --> 00:10:22,560

just know that it's big enough to track

269

00:10:27,590 --> 00:10:25,200

and uh that we have a fairly good idea

270

00:10:29,350 --> 00:10:27,600

of of its orbit relative to the

271

00:10:31,670 --> 00:10:29,360

international space station but i don't

272

00:10:34,550 --> 00:10:31,680

know its size or origin

273

00:10:35,750 --> 00:10:34,560

and um regarding uh today's problem with

274

00:10:38,310 --> 00:10:35,760

the um

275

00:10:39,670 --> 00:10:38,320

the boom i'm wondering um

276

00:10:41,750 --> 00:10:39,680

how you think this snag might have

277

00:10:43,750 --> 00:10:41,760

occurred getting pinched like that would

278

00:10:45,750 --> 00:10:43,760

that have been something that happened

279

00:10:47,430 --> 00:10:45,760

prior to liftoff when everything was

280

00:10:49,829 --> 00:10:47,440

being installed

281

00:10:51,509 --> 00:10:49,839

and if you don't get all of the

282

00:10:53,110 --> 00:10:51,519

port wing done

283

00:10:55,590 --> 00:10:53,120

today

284

00:10:59,030 --> 00:10:55,600

when would you do it or would you just

285

00:11:04,470 --> 00:11:01,509

we will uh get all the imagery for the

286

00:11:07,190 --> 00:11:04,480

port wing uh via some method uh there's

287

00:11:09,990 --> 00:11:07,200

already some discussion of using the uh

288

00:11:11,509 --> 00:11:10,000

the high power uh digital still cameras

289

00:11:13,509 --> 00:11:11,519

from the international space station

290

00:11:14,949 --> 00:11:13,519

during the approach tomorrow

291

00:11:16,630 --> 00:11:14,959

and just having an extra crew member

292

00:11:18,710 --> 00:11:16,640

snap those images

293

00:11:20,790 --> 00:11:18,720

if we don't get what we need there we

294

00:11:22,230 --> 00:11:20,800

have a number of options including focus

295

00:11:23,430 --> 00:11:22,240

inspection but again it's too early to

296

00:11:25,670 --> 00:11:23,440

tell there

297

00:11:27,750 --> 00:11:25,680

how did the snag happen it's really too

298

00:11:30,069 --> 00:11:27,760

early to tell we just know that the

299

00:11:31,590 --> 00:11:30,079

cable is routed in such a manner that

300

00:11:33,430 --> 00:11:31,600

it's pulling on the back side of the

301
00:11:37,110 --> 00:11:33,440
camera and and doesn't allow us to tilt

302
00:11:37,829 --> 00:11:37,120
up we do have a a digital still image of

303
00:11:43,750 --> 00:11:37,839
the

304
00:11:45,110 --> 00:11:43,760
of your screen you can see

305
00:11:47,110 --> 00:11:45,120
canada

306
00:11:48,069 --> 00:11:47,120
i don't know a little bit past 90

307
00:11:50,550 --> 00:11:48,079
degrees

308
00:11:53,750 --> 00:11:51,670
laser

309
00:11:56,310 --> 00:11:53,760
dynamic range imager as well as the

310
00:11:58,629 --> 00:11:56,320
intensified television camera which is a

311
00:12:00,629 --> 00:11:58,639
low light imagery camera on the end of

312
00:12:02,790 --> 00:12:00,639
the pan tilt unit it kind of narrows

313
00:12:04,710 --> 00:12:02,800

down and then towards the left hand side

314

00:12:06,389 --> 00:12:04,720

of your screen is the structure on the

315

00:12:08,389 --> 00:12:06,399

end of the boom

316

00:12:10,710 --> 00:12:08,399

running between the two running between

317

00:12:13,190 --> 00:12:10,720

the structure of the boom and the uh the

318

00:12:15,990 --> 00:12:13,200

pan tilt unit on the camera you can see

319

00:12:18,230 --> 00:12:16,000

some cables routed and for some reason

320

00:12:20,310 --> 00:12:18,240

there's a canon connector a big round

321

00:12:22,310 --> 00:12:20,320

metal connector that sits on the on the

322

00:12:24,470 --> 00:12:22,320

side of the camera on the right hand

323

00:12:26,949 --> 00:12:24,480

side there that

324

00:12:28,629 --> 00:12:26,959

is pulling taut and and not allowing us

325

00:12:32,150 --> 00:12:28,639

to get full range of motion on that

326

00:12:34,470 --> 00:12:32,160

camera um it's too early to tell if uh

327

00:12:36,710 --> 00:12:34,480

it happened prior to launch or whether

328

00:12:40,230 --> 00:12:36,720

just due to the the shake and rattle and

329

00:12:42,389 --> 00:12:40,240

roll of launch that the the cable got

330

00:12:45,110 --> 00:12:42,399

into a position that

331

00:12:46,949 --> 00:12:45,120

wasn't good for the inspection

332

00:12:48,870 --> 00:12:46,959

the crew did try to manipulate the

333

00:12:50,870 --> 00:12:48,880

camera around

334

00:12:52,310 --> 00:12:50,880

so that the the cable would come free

335

00:12:55,110 --> 00:12:52,320

and we didn't have any success in that

336

00:12:57,350 --> 00:12:55,120

today we we spent uh probably about two

337

00:12:58,470 --> 00:12:57,360

orbits worth of time roughly three hours

338

00:13:01,590 --> 00:12:58,480

today

339

00:13:04,150 --> 00:13:01,600

trying to troubleshoot and get this snag

340

00:13:05,750 --> 00:13:04,160

free on that cable and we had no no luck

341

00:13:07,910 --> 00:13:05,760

with that so

342

00:13:10,790 --> 00:13:07,920

we've got lots of time to solve this

343

00:13:13,190 --> 00:13:10,800

problem prior to bringing atlantis home

344

00:13:14,550 --> 00:13:13,200

we've got again a number of assets

345

00:13:16,550 --> 00:13:14,560

available on the international space

346

00:13:18,949 --> 00:13:16,560

station and we'll just see what coverage

347

00:13:21,030 --> 00:13:18,959

we get with the the planned surveys that

348

00:13:23,030 --> 00:13:21,040

we've got and then determine if any

349

00:13:25,030 --> 00:13:23,040

further action is required

350

00:13:27,030 --> 00:13:25,040

thank you and lastly i think ken ham

351
00:13:28,790 --> 00:13:27,040
called down at one point that he thought

352
00:13:30,629 --> 00:13:28,800
that a spacewalker could just sort of

353
00:13:32,389 --> 00:13:30,639
smooth that out

354
00:13:34,470 --> 00:13:32,399
would that always be a

355
00:13:36,150 --> 00:13:34,480
last-ditch alternative if you really

356
00:13:39,430 --> 00:13:36,160
needed a

357
00:13:42,230 --> 00:13:39,440
proper laser image

358
00:13:45,189 --> 00:13:42,240
uh we do need to uh discuss what to do

359
00:13:48,069 --> 00:13:45,199
with respect to late inspection you know

360
00:13:49,590 --> 00:13:48,079
we do have an orbital debris environment

361
00:13:52,310 --> 00:13:49,600
there's a lot of space junk and

362
00:13:54,389 --> 00:13:52,320
micrometeoroids and other items up there

363
00:13:56,150 --> 00:13:54,399

that we need to manage and there's a

364

00:13:59,030 --> 00:13:56,160

number of ways to do that our primary

365

00:14:01,189 --> 00:13:59,040

method of doing that is using the

366

00:14:04,069 --> 00:14:01,199

the sensors and cameras on the end of

367

00:14:06,550 --> 00:14:04,079

that pin tilt unit and that was our plan

368

00:14:08,310 --> 00:14:06,560

going into the flight

369

00:14:10,230 --> 00:14:08,320

now whether the appropriate course of

370

00:14:13,430 --> 00:14:10,240

action is to go out and do a spacewalk

371

00:14:15,110 --> 00:14:13,440

and and just kind of move that cable or

372

00:14:17,590 --> 00:14:15,120

whether it's best to just leave that

373

00:14:19,269 --> 00:14:17,600

alone due to the risks associated with

374

00:14:21,509 --> 00:14:19,279

that is yet to be determined i know

375

00:14:23,910 --> 00:14:21,519

folks are off talking about that and uh

376

00:14:26,389 --> 00:14:23,920

we're investigating all of our options

377

00:14:28,389 --> 00:14:26,399

our first spacewalk is a little over two

378

00:14:30,310 --> 00:14:28,399

days from now and and we probably

379

00:14:33,269 --> 00:14:30,320

wouldn't do anything any earlier than

380

00:14:36,069 --> 00:14:33,279

our second spacewalk on flight day six

381

00:14:39,030 --> 00:14:36,079

if we were to need to manipulate this

382

00:14:40,310 --> 00:14:39,040

this cable but again that's work that's

383

00:14:41,750 --> 00:14:40,320

in front of us and i know a number of

384

00:14:44,949 --> 00:14:41,760

the team members are off looking at that

385

00:14:49,509 --> 00:14:46,949

okay next up is claire moscow with

386

00:14:51,910 --> 00:14:49,519

space.com

387

00:14:53,430 --> 00:14:51,920

hi um i'm wondering if you have an idea

388

00:14:55,189 --> 00:14:53,440

of when you might be able to make the

389

00:14:58,310 --> 00:14:55,199

decision about whether a debris

390

00:15:01,750 --> 00:14:58,320

avoidance maneuver is needed

391

00:15:03,269 --> 00:15:01,760

uh yes we've got a uh a plan in place to

392

00:15:05,030 --> 00:15:03,279

determine whether or not the debris

393

00:15:06,870 --> 00:15:05,040

avoidance maneuver is required the

394

00:15:09,509 --> 00:15:06,880

debris avoidance maneuver again is is

395

00:15:11,189 --> 00:15:09,519

scheduled to occur at about 807 central

396

00:15:13,910 --> 00:15:11,199

in about three hours prior to that

397

00:15:15,509 --> 00:15:13,920

roughly around 5 p.m central uh this

398

00:15:18,230 --> 00:15:15,519

decision will be made as to whether we

399

00:15:20,790 --> 00:15:18,240

actually lower the altitude of the space

400

00:15:23,189 --> 00:15:20,800

station roughly a half a nautical mile

401
00:15:25,750 --> 00:15:23,199
in orbit or whether we leave it in its

402
00:15:27,910 --> 00:15:25,760
planned place so about three hours prior

403
00:15:30,710 --> 00:15:27,920
to the debris avoidance maneuver is uh

404
00:15:32,389 --> 00:15:30,720
is what we're planning we've got uh both

405
00:15:35,189 --> 00:15:32,399
plans out there and we just need to

406
00:15:36,949 --> 00:15:35,199
decide which path to go down based on

407
00:15:38,629 --> 00:15:36,959
all the latest information and we've got

408
00:15:40,230 --> 00:15:38,639
some hours ahead of us to make that

409
00:15:41,910 --> 00:15:40,240
decision

410
00:15:45,990 --> 00:15:41,920
thank you

411
00:15:48,790 --> 00:15:46,000
okay next is bill harwood from cbs news

412
00:15:50,870 --> 00:15:48,800
yeah hi mike uh bill harwood cbs um do

413
00:15:54,150 --> 00:15:50,880

you have a missed distance or where

414

00:15:55,829 --> 00:15:54,160

this debris would be in the box uh

415

00:15:59,350 --> 00:15:55,839

for this maneuver

416

00:16:01,749 --> 00:15:59,360

bill we do the missed distance is right

417

00:16:03,829 --> 00:16:01,759

on the edge of our our criteria to

418

00:16:07,110 --> 00:16:03,839

maneuver out of the way of it's right

419

00:16:09,990 --> 00:16:07,120

around 10 kilometers in this distance

420

00:16:11,590 --> 00:16:10,000

a complicating factor in

421

00:16:14,230 --> 00:16:11,600

determining whether a debris avoidance

422

00:16:15,749 --> 00:16:14,240

maneuver is required is when when the

423

00:16:17,350 --> 00:16:15,759

shuttle docks with the international

424

00:16:18,629 --> 00:16:17,360

space station

425

00:16:21,030 --> 00:16:18,639

it takes

426

00:16:24,069 --> 00:16:21,040

some amount of time to

427

00:16:26,150 --> 00:16:24,079

hard mate the two vehicles we need to

428

00:16:28,150 --> 00:16:26,160

retract the ring and then close some

429

00:16:30,629 --> 00:16:28,160

hooks that provide a good structural

430

00:16:31,829 --> 00:16:30,639

load path and then we do

431

00:16:33,910 --> 00:16:31,839

a

432

00:16:35,509 --> 00:16:33,920

pressure check between the two

433

00:16:38,069 --> 00:16:35,519

the two vehicles to make sure that

434

00:16:40,389 --> 00:16:38,079

they're they're sealed properly

435

00:16:42,710 --> 00:16:40,399

and then we maneuver the whole

436

00:16:44,550 --> 00:16:42,720

stack uh the shuttle and station to

437

00:16:45,990 --> 00:16:44,560

attitude and that takes a finite amount

438

00:16:47,990 --> 00:16:46,000

of time we're talking about a million

439

00:16:49,350 --> 00:16:48,000

pounds of spacecraft that we need to get

440

00:16:51,990 --> 00:16:49,360

into it's

441

00:16:53,749 --> 00:16:52,000

it's what we call uh docked or uh mated

442

00:16:57,670 --> 00:16:53,759

attitude which

443

00:17:00,150 --> 00:16:57,680

ranges uh in in time from 15 minutes to

444

00:17:02,550 --> 00:17:00,160

45 minutes in duration so we're kind of

445

00:17:04,789 --> 00:17:02,560

cutting it close uh as to whether or not

446

00:17:06,150 --> 00:17:04,799

we can dock and then

447

00:17:08,390 --> 00:17:06,160

get structurally mated to the

448

00:17:10,870 --> 00:17:08,400

international state space station and

449

00:17:12,309 --> 00:17:10,880

then into the docked attitude

450

00:17:14,870 --> 00:17:12,319

relative to this debris avoidance

451
00:17:17,270 --> 00:17:14,880
maneuver so folks looked at that

452
00:17:19,189 --> 00:17:17,280
within the last day and determined that

453
00:17:20,549 --> 00:17:19,199
we really can't get confident that if we

454
00:17:23,029 --> 00:17:20,559
need to get out of the way of this piece

455
00:17:24,549 --> 00:17:23,039
of space debris that

456
00:17:26,309 --> 00:17:24,559
we'll be able to do that after the

457
00:17:28,069 --> 00:17:26,319
shuttle docks just due to the timeline

458
00:17:30,310 --> 00:17:28,079
and the amount of time available it's a

459
00:17:32,310 --> 00:17:30,320
very compressed window

460
00:17:34,470 --> 00:17:32,320
so folks just decided that it was

461
00:17:35,909 --> 00:17:34,480
appropriate to maneuver station before

462
00:17:38,070 --> 00:17:35,919
the shuttle ever got there and then we

463
00:17:40,230 --> 00:17:38,080

would modify the shuttle's trajectory uh

464

00:17:41,909 --> 00:17:40,240

and just come in a little bit lower in

465

00:17:43,990 --> 00:17:41,919

in altitude to the international space

466

00:17:46,390 --> 00:17:44,000

station

467

00:17:47,990 --> 00:17:46,400

thanks um but it's 10 kilometers is

468

00:17:49,190 --> 00:17:48,000

where you stand six miles roughly right

469

00:17:50,470 --> 00:17:49,200

now is what you think the missed

470

00:17:52,310 --> 00:17:50,480

distance is

471

00:17:54,710 --> 00:17:52,320

that's correct and uh you know with some

472

00:17:56,549 --> 00:17:54,720

of these objects up there uh they're

473

00:17:58,470 --> 00:17:56,559

moving at such high rates and of course

474

00:18:01,430 --> 00:17:58,480

the the international space station and

475

00:18:04,630 --> 00:18:01,440

the space shuttle are moving at 17 500

476
00:18:06,870 --> 00:18:04,640
miles an hour uh just a a small error in

477
00:18:08,630 --> 00:18:06,880
the amount of time that

478
00:18:10,950 --> 00:18:08,640
we determine where something is could

479
00:18:12,310 --> 00:18:10,960
make a big difference in your total

480
00:18:13,990 --> 00:18:12,320
missed distance

481
00:18:15,909 --> 00:18:14,000
you know a couple of seconds at that

482
00:18:18,549 --> 00:18:15,919
speed could mean you miss by a huge

483
00:18:21,350 --> 00:18:18,559
amount of distance or you miss uh by a

484
00:18:22,870 --> 00:18:21,360
very little distance so uh that's being

485
00:18:24,950 --> 00:18:22,880
factored into the debris avoidance

486
00:18:26,710 --> 00:18:24,960
maneuver plan uh there's an uncertainty

487
00:18:28,630 --> 00:18:26,720
range that we use to determine whether

488
00:18:31,750 --> 00:18:28,640

or not to get out of the way of of

489

00:18:33,990 --> 00:18:31,760

something and folks are using that along

490

00:18:36,710 --> 00:18:34,000

with all of the the tracking information

491

00:18:38,549 --> 00:18:36,720

that we're getting from uh from the

492

00:18:39,750 --> 00:18:38,559

piece of space junk that's out there to

493

00:18:40,950 --> 00:18:39,760

determine whether or not we need to

494

00:18:42,390 --> 00:18:40,960

maneuver

495

00:18:44,310 --> 00:18:42,400

thanks and one last one for me just to

496

00:18:47,350 --> 00:18:44,320

be sure i understood your your

497

00:18:48,950 --> 00:18:47,360

analysis of the flight day 2 inspection

498

00:18:50,070 --> 00:18:48,960

what you're saying is that regardless of

499

00:18:51,110 --> 00:18:50,080

what it takes to fix this you're

500

00:18:53,270 --> 00:18:51,120

confident you're going to get all the

501
00:18:55,190 --> 00:18:53,280
data you need in the end i mean there's

502
00:18:57,110 --> 00:18:55,200
nothing that you're visualizing that

503
00:18:58,230 --> 00:18:57,120
you're not going to get because of this

504
00:19:01,029 --> 00:18:58,240
thanks

505
00:19:03,110 --> 00:19:01,039
yeah the the team obviously is a

506
00:19:05,110 --> 00:19:03,120
world-class team a very talented team

507
00:19:06,870 --> 00:19:05,120
and we've got some of the best engineers

508
00:19:08,230 --> 00:19:06,880
and imagery analysts on the planet to

509
00:19:09,510 --> 00:19:08,240
supporting

510
00:19:11,029 --> 00:19:09,520
atlantis

511
00:19:12,070 --> 00:19:11,039
as well as the international space

512
00:19:14,310 --> 00:19:12,080
station

513
00:19:16,150 --> 00:19:14,320

i'm confident that given a little bit of

514

00:19:17,830 --> 00:19:16,160
time we'll come up with a solution that

515

00:19:19,909 --> 00:19:17,840
will cover the entire heat shield on

516

00:19:21,590 --> 00:19:19,919
atlantis and we'll get there well in

517

00:19:22,789 --> 00:19:21,600
advance of when a decision is required

518

00:19:24,310 --> 00:19:22,799
to bring her home

519

00:19:25,669 --> 00:19:24,320
we just need to give that process a

520

00:19:27,590 --> 00:19:25,679
little bit of time we need to give those

521

00:19:29,270 --> 00:19:27,600
folks a little bit of time the problem

522

00:19:31,590 --> 00:19:29,280
that we're dealing with has only reared

523

00:19:33,830 --> 00:19:31,600
its head in the last eight or ten hours

524

00:19:36,870 --> 00:19:33,840
and i bet you given a day things will

525

00:19:39,350 --> 00:19:36,880
come together very quickly

526

00:19:43,029 --> 00:19:39,360

okay next up todd halverson from florida

527

00:19:49,590 --> 00:19:46,870

um hi todd halverson of florida today um

528

00:19:50,870 --> 00:19:49,600

i i was wondering if mike if you could

529

00:19:53,270 --> 00:19:50,880

um

530

00:19:57,029 --> 00:19:53,280

recall for me the

531

00:19:59,669 --> 00:19:57,039

evolution of the sensors on the um

532

00:20:02,710 --> 00:19:59,679

inspection boom um

533

00:20:05,029 --> 00:20:02,720

if i recall

534

00:20:07,990 --> 00:20:05,039

was this camera that was heart mounted

535

00:20:11,110 --> 00:20:08,000

it was that in an an initial camera that

536

00:20:14,710 --> 00:20:11,120

was used uh during return to flight and

537

00:20:17,350 --> 00:20:14,720

then something better came along or ldri

538

00:20:19,510 --> 00:20:17,360

came along uh on lighter flights i'm

539

00:20:21,510 --> 00:20:19,520

just trying to remember the evolution in

540

00:20:23,830 --> 00:20:21,520

these sensors

541

00:20:25,590 --> 00:20:23,840

yeah that's a good question

542

00:20:29,110 --> 00:20:25,600

when we were in the return to flight

543

00:20:31,110 --> 00:20:29,120

process uh obviously uh time and

544

00:20:33,350 --> 00:20:31,120

schedule and budget were

545

00:20:34,710 --> 00:20:33,360

were of essence and what we did at the

546

00:20:38,310 --> 00:20:34,720

time was

547

00:20:40,390 --> 00:20:38,320

procured a number of imaging systems

548

00:20:42,470 --> 00:20:40,400

there was the intensified camera that

549

00:20:43,750 --> 00:20:42,480

we've used for years in the payload bay

550

00:20:46,470 --> 00:20:43,760

it's a low light

551
00:20:47,270 --> 00:20:46,480
camera that has high resolution in low

552
00:20:49,430 --> 00:20:47,280
light

553
00:20:51,430 --> 00:20:49,440
there's the laser dynamic range imager

554
00:20:53,110 --> 00:20:51,440
which sits on this pan tilt unit that

555
00:20:54,470 --> 00:20:53,120
was a new sensor that came along after

556
00:20:56,149 --> 00:20:54,480
return to flight

557
00:20:58,470 --> 00:20:56,159
there's this digital camera that we use

558
00:21:00,310 --> 00:20:58,480
today and then there's a laser camera

559
00:21:01,270 --> 00:21:00,320
system that came along

560
00:21:03,669 --> 00:21:01,280
we

561
00:21:05,669 --> 00:21:03,679
basically used all of those during the

562
00:21:07,750 --> 00:21:05,679
return to flight missions just to kind

563
00:21:10,070 --> 00:21:07,760

of test out the systems and make sure

564

00:21:12,230 --> 00:21:10,080

that we understood uh which ones

565

00:21:14,390 --> 00:21:12,240

operated best during day and night time

566

00:21:16,870 --> 00:21:14,400

and which one we could use to most

567

00:21:19,430 --> 00:21:16,880

efficiently uh perform the heat shield

568

00:21:20,390 --> 00:21:19,440

inspection uh following the columbia

569

00:21:22,630 --> 00:21:20,400

accident

570

00:21:26,070 --> 00:21:22,640

and uh what it turned out to be was that

571

00:21:27,350 --> 00:21:26,080

the uh the Idri imager the laser dynamic

572

00:21:30,230 --> 00:21:27,360

range imager

573

00:21:31,110 --> 00:21:30,240

has its own illumination source

574

00:21:33,669 --> 00:21:31,120

which

575

00:21:36,870 --> 00:21:33,679

it basically illuminates its target and

576
00:21:39,669 --> 00:21:36,880
we decided that that was the best to get

577
00:21:42,870 --> 00:21:39,679
the entire heat shield inspected within

578
00:21:45,590 --> 00:21:42,880
the time available or most efficiently

579
00:21:47,990 --> 00:21:45,600
inspect the heat shield

580
00:21:49,190 --> 00:21:48,000
without impacting the cruise day and the

581
00:21:50,789 --> 00:21:49,200
reason that we determined that was

582
00:21:51,990 --> 00:21:50,799
because you could use that guy during

583
00:21:53,590 --> 00:21:52,000
day or night

584
00:21:56,070 --> 00:21:53,600
because it had its own illumination

585
00:21:57,830 --> 00:21:56,080
source the the digital camera that we

586
00:22:00,230 --> 00:21:57,840
used today to do the heat shield

587
00:22:01,909 --> 00:22:00,240
inspection is only usable while it has

588
00:22:04,789 --> 00:22:01,919

an illumination source either from the

589

00:22:06,549 --> 00:22:04,799

Idri which we tried to position

590

00:22:08,310 --> 00:22:06,559

to illuminate

591

00:22:10,070 --> 00:22:08,320

or provide an illumination source for

592

00:22:12,070 --> 00:22:10,080

the digital camera but we just

593

00:22:14,789 --> 00:22:12,080

physically couldn't position it because

594

00:22:17,029 --> 00:22:14,799

of this pan tilt problem and it didn't

595

00:22:18,710 --> 00:22:17,039

allow us to gimble the illumination

596

00:22:21,190 --> 00:22:18,720

source towards the

597

00:22:23,590 --> 00:22:21,200

towards what the camera was seeing

598

00:22:26,710 --> 00:22:23,600

so we ended up

599

00:22:28,950 --> 00:22:26,720

going to just taking images using the

600

00:22:31,029 --> 00:22:28,960

the digital camera during the day pass

601
00:22:33,110 --> 00:22:31,039
so roughly half of your orbit is when

602
00:22:37,190 --> 00:22:33,120
you're allowed to gather imagery so now

603
00:22:40,230 --> 00:22:37,200
if you're going through 16 orbits a day

604
00:22:42,390 --> 00:22:40,240
and seeing 16 sunrises and sunsets half

605
00:22:45,350 --> 00:22:42,400
your day is no longer available to you

606
00:22:47,590 --> 00:22:45,360
if you use the digital camera to inspect

607
00:22:49,590 --> 00:22:47,600
the heat shield so there were a number

608
00:22:51,110 --> 00:22:49,600
of considerations

609
00:22:53,590 --> 00:22:51,120
resolution was also another

610
00:22:55,430 --> 00:22:53,600
consideration because we have to have

611
00:22:58,710 --> 00:22:55,440
real high

612
00:23:00,950 --> 00:22:58,720
detail imagery of in particular the

613
00:23:03,669 --> 00:23:00,960

reinforced carbon carbon

614

00:23:04,789 --> 00:23:03,679

when we looked at that the again the

615

00:23:07,110 --> 00:23:04,799

ldri

616

00:23:09,190 --> 00:23:07,120

came out at the top in terms of giving

617

00:23:11,510 --> 00:23:09,200

us the resolution that we wanted and

618

00:23:13,190 --> 00:23:11,520

then uh determining whether or not we

619

00:23:15,510 --> 00:23:13,200

needed to go inspect it further we could

620

00:23:17,909 --> 00:23:15,520

go use some of the other assets uh the

621

00:23:21,270 --> 00:23:17,919

intensified television camera the laser

622

00:23:24,310 --> 00:23:21,280

camera system and go gather imagery with

623

00:23:26,630 --> 00:23:24,320

that and then the last consideration was

624

00:23:29,029 --> 00:23:26,640

how fast could we maneuver the arm while

625

00:23:30,950 --> 00:23:29,039

gathering the imagery because the ldri

626
00:23:33,110 --> 00:23:30,960
uses a streaming video

627
00:23:35,110 --> 00:23:33,120
that allowed us to send that down in

628
00:23:37,270 --> 00:23:35,120
real time as opposed to the

629
00:23:40,390 --> 00:23:37,280
laser camera system that takes a

630
00:23:43,110 --> 00:23:40,400
snapshot and you have to basically

631
00:23:44,710 --> 00:23:43,120
maneuver the arm only so fast so that

632
00:23:47,909 --> 00:23:44,720
the snapshots occur so you don't have

633
00:23:50,630 --> 00:23:47,919
gaps in your coverage uh the the digital

634
00:23:53,269 --> 00:23:50,640
camera also has a similar uh

635
00:23:55,029 --> 00:23:53,279
limitation where it takes snapshots and

636
00:23:57,029 --> 00:23:55,039
you need to maneuver the arm such that

637
00:23:58,789 --> 00:23:57,039
there is overlap in the imagery so there

638
00:23:59,750 --> 00:23:58,799

were a whole bunch of considerations and

639

00:24:01,430 --> 00:23:59,760

folks

640

00:24:04,390 --> 00:24:01,440

tested all those out during return to

641

00:24:07,190 --> 00:24:04,400

flight sts-114 and sts-121

642

00:24:09,430 --> 00:24:07,200

and that led us to use an Idri

643

00:24:12,149 --> 00:24:09,440

for the the remainder of the shuttle

644

00:24:15,350 --> 00:24:13,990

thanks very much and i just have a

645

00:24:17,750 --> 00:24:15,360

couple more

646

00:24:19,669 --> 00:24:17,760

the first one is did you see anything at

647

00:24:22,310 --> 00:24:19,679

all during your uh

648

00:24:25,190 --> 00:24:22,320

surveys today that um

649

00:24:27,269 --> 00:24:25,200

uh jumped out at you or are looked as if

650

00:24:29,350 --> 00:24:27,279

it might be damaged that uh might

651
00:24:30,830 --> 00:24:29,360
require extra um

652
00:24:34,310 --> 00:24:30,840
an extra

653
00:24:35,830 --> 00:24:34,320
look uh yeah regarding the

654
00:24:38,070 --> 00:24:35,840
information we gathered today the

655
00:24:40,789 --> 00:24:38,080
imagery we gathered today

656
00:24:43,350 --> 00:24:40,799
we saw only a limited subset of that

657
00:24:45,590 --> 00:24:43,360
information on the ground

658
00:24:48,390 --> 00:24:45,600
most of that will be sent to the ground

659
00:24:49,430 --> 00:24:48,400
via the laptop computer system later

660
00:24:51,190 --> 00:24:49,440
today

661
00:24:52,549 --> 00:24:51,200
of the imagery that i saw i didn't see

662
00:24:55,269 --> 00:24:52,559
anything that was obvious that would

663
00:24:57,830 --> 00:24:55,279

give me concern regarding the health of

664

00:25:00,470 --> 00:24:57,840

atlantis or its heat shield

665

00:25:03,190 --> 00:25:00,480

again we'll let the imagery analyst uh

666

00:25:04,870 --> 00:25:03,200

review all that data there's a there's

667

00:25:06,710 --> 00:25:04,880

uh probably more data than they know

668

00:25:08,230 --> 00:25:06,720

what to do with right now but i'm sure

669

00:25:09,510 --> 00:25:08,240

they'll find a way to get through it all

670

00:25:11,830 --> 00:25:09,520

they always do

671

00:25:13,269 --> 00:25:11,840

within the next day day and a half and

672

00:25:15,190 --> 00:25:13,279

once they do that we'll make a final

673

00:25:17,190 --> 00:25:15,200

determination as to whether there's any

674

00:25:19,190 --> 00:25:17,200

further work that we need to do to clear

675

00:25:20,710 --> 00:25:19,200

atlantis before we turn either via focus

676

00:25:22,710 --> 00:25:20,720

inspection or

677

00:25:26,310 --> 00:25:22,720

other action

678

00:25:29,110 --> 00:25:26,320

thanks and the last one for me is

679

00:25:31,350 --> 00:25:29,120

if you uh make the

680

00:25:33,029 --> 00:25:31,360

if the station guys make a debris

681

00:25:34,710 --> 00:25:33,039

avoidance maneuver

682

00:25:38,149 --> 00:25:34,720

or if they don't

683

00:25:40,149 --> 00:25:38,159

um what impact

684

00:25:43,750 --> 00:25:40,159

would there be on the crew and

685

00:25:46,470 --> 00:25:43,760

rendezvous procedures i mean would the

686

00:25:49,190 --> 00:25:46,480

timing of burns be different i'm just

687

00:25:52,470 --> 00:25:49,200

trying to get an idea of uh how this

688

00:25:54,789 --> 00:25:52,480

will impact their rendezvous day

689

00:25:57,830 --> 00:25:54,799

yeah that's a good question uh with

690

00:25:59,269 --> 00:25:57,840

respect to uh changing the orbit of

691

00:26:00,390 --> 00:25:59,279

station you know

692

00:26:02,070 --> 00:26:00,400

essentially what we're going to do is

693

00:26:03,990 --> 00:26:02,080

we're going to change where station is

694

00:26:05,430 --> 00:26:04,000

in the sky and

695

00:26:06,710 --> 00:26:05,440

that's something that we don't normally

696

00:26:08,870 --> 00:26:06,720

do

697

00:26:10,390 --> 00:26:08,880

for a space shuttle mission from the

698

00:26:12,950 --> 00:26:10,400

time that we launch until the time that

699

00:26:14,630 --> 00:26:12,960

the shuttle arrives the space station is

700

00:26:17,430 --> 00:26:14,640

normally always in the same position and

701
00:26:19,029 --> 00:26:17,440
we don't change its altitude or

702
00:26:21,350 --> 00:26:19,039
we tried to minimize the amount the

703
00:26:23,350 --> 00:26:21,360
number of propulsive events propulsive

704
00:26:24,470 --> 00:26:23,360
events that can change its position in

705
00:26:26,549 --> 00:26:24,480
the sky

706
00:26:27,430 --> 00:26:26,559
so this case is a little bit unique in

707
00:26:30,070 --> 00:26:27,440
that

708
00:26:32,230 --> 00:26:30,080
we may actually change the altitude of

709
00:26:33,909 --> 00:26:32,240
the international space station so the

710
00:26:35,830 --> 00:26:33,919
impact to the rendezvous tomorrow is

711
00:26:39,110 --> 00:26:35,840
that we'll use the standard procedures

712
00:26:40,549 --> 00:26:39,120
and standard process to track the

713
00:26:43,029 --> 00:26:40,559

position of the international space

714

00:26:45,269 --> 00:26:43,039

station and then tell the crew where

715

00:26:47,830 --> 00:26:45,279

station is relative to

716

00:26:49,269 --> 00:26:47,840

the altitude changes that atlantis needs

717

00:26:52,149 --> 00:26:49,279

to perform

718

00:26:53,990 --> 00:26:52,159

the only difference is that the timing

719

00:26:55,990 --> 00:26:54,000

of the burn will change by a couple of

720

00:26:57,669 --> 00:26:56,000

minutes and the actual magnitude of the

721

00:26:58,870 --> 00:26:57,679

burn will will actually decrease

722

00:26:59,990 --> 00:26:58,880

slightly

723

00:27:01,430 --> 00:27:00,000

because the altitude of the

724

00:27:04,390 --> 00:27:01,440

international space station will be

725

00:27:11,590 --> 00:27:07,990

thanks very much okay and finally on the

726
00:27:16,710 --> 00:27:14,630
hi can you hear me yeah sure can robert

727
00:27:17,909 --> 00:27:16,720
great um

728
00:27:19,990 --> 00:27:17,919
mike rob perlman with uh

729
00:27:23,110 --> 00:27:20,000
collectspace.com

730
00:27:25,590 --> 00:27:23,120
with regards to the pinch uh cable are

731
00:27:28,070 --> 00:27:25,600
there any concerns for when uh for

732
00:27:29,269 --> 00:27:28,080
stowing the obss

733
00:27:30,470 --> 00:27:29,279
later today

734
00:27:31,830 --> 00:27:30,480
um

735
00:27:32,630 --> 00:27:31,840
with regards to

736
00:27:35,269 --> 00:27:32,640
not

737
00:27:37,510 --> 00:27:35,279
causing more damage

738
00:27:40,470 --> 00:27:37,520

yeah we'll uh be able to stow the uh the

739

00:27:43,990 --> 00:27:40,480

boom no problem with the this

740

00:27:45,990 --> 00:27:44,000

uh snag and the uh limitation on the

741

00:27:47,110 --> 00:27:46,000

panning and tilting of the sensor on the

742

00:27:49,430 --> 00:27:47,120

end of it

743

00:27:51,750 --> 00:27:49,440

stowing the boom we've got uh

744

00:27:54,070 --> 00:27:51,760

three uh positions that we structurally

745

00:27:55,990 --> 00:27:54,080

attach it to the uh to the shuttle and

746

00:27:57,830 --> 00:27:56,000

the edge of the payload bay the sill on

747

00:28:00,230 --> 00:27:57,840

the starboard side of the payload bay

748

00:28:02,470 --> 00:28:00,240

and uh those have nothing to do with

749

00:28:03,909 --> 00:28:02,480

this pan tilt unit or the cameras that

750

00:28:07,269 --> 00:28:03,919

sit on the end of it

751

00:28:09,990 --> 00:28:07,279

the cameras will be positioned

752

00:28:11,510 --> 00:28:10,000

once we get the boom stowed or prior to

753

00:28:14,230 --> 00:28:11,520

stowing the boom

754

00:28:16,070 --> 00:28:14,240

but we'll be able to to stow that no

755

00:28:18,630 --> 00:28:16,080

problem

756

00:28:21,029 --> 00:28:18,640

okay and uh with regards to tomorrow's

757

00:28:23,269 --> 00:28:21,039

rpm um and the imagery that the station

758

00:28:24,710 --> 00:28:23,279

will take i know you said that you want

759

00:28:26,710 --> 00:28:24,720

you'll be gathering data from that

760

00:28:28,310 --> 00:28:26,720

usually the photographs are mostly

761

00:28:30,070 --> 00:28:28,320

focused on

762

00:28:31,830 --> 00:28:30,080

the underneath of the orbiter so will

763

00:28:35,590 --> 00:28:31,840

the station crew be

764

00:28:37,350 --> 00:28:35,600

told to uh to also uh target areas that

765

00:28:38,870 --> 00:28:37,360

weren't covered by this

766

00:28:41,350 --> 00:28:38,880

late inspection

767

00:28:43,669 --> 00:28:41,360

set of procedures such as the crew cabin

768

00:28:46,549 --> 00:28:43,679

services

769

00:28:49,750 --> 00:28:46,559

yeah uh we're talking about adding a

770

00:28:51,909 --> 00:28:49,760

third crew member uh to the

771

00:28:54,149 --> 00:28:51,919

digital still images that we take of

772

00:28:57,029 --> 00:28:54,159

atlantis during the backflip maneuver

773

00:28:59,190 --> 00:28:57,039

which is the rendezvous pitch maneuver

774

00:29:01,350 --> 00:28:59,200

the normal scan pattern that we perform

775

00:29:04,149 --> 00:29:01,360

where we have the crew perform of the

776

00:29:06,870 --> 00:29:04,159

heat shield includes uh

777

00:29:09,669 --> 00:29:06,880

nose on images of the heat shield as

778

00:29:12,389 --> 00:29:09,679

well as top side images of

779

00:29:14,310 --> 00:29:12,399

atlantis or any any other approaching

780

00:29:16,950 --> 00:29:14,320

shuttle and then we actually gather some

781

00:29:18,630 --> 00:29:16,960

images of the tail end of the of the

782

00:29:22,549 --> 00:29:18,640

shuttle as it approaches because it goes

783

00:29:24,870 --> 00:29:22,559

through a full 360 360 degree backflip

784

00:29:27,110 --> 00:29:24,880

you're right in that the majority of the

785

00:29:28,870 --> 00:29:27,120

images are focused on the tile on the

786

00:29:30,070 --> 00:29:28,880

lower surface because that's the hottest

787

00:29:32,389 --> 00:29:30,080

surface

788

00:29:34,789 --> 00:29:32,399

and we like to gather overlapping images

789

00:29:37,430 --> 00:29:34,799

all the way across the the wing and then

790

00:29:39,590 --> 00:29:37,440

the mid body and then the nose area

791

00:29:41,750 --> 00:29:39,600

on the on the tile on the lower surface

792

00:29:45,350 --> 00:29:41,760

but we do actually gather a number of

793

00:29:47,269 --> 00:29:45,360

images again nose on top side and

794

00:29:49,110 --> 00:29:47,279

tail end of the shuttle and there's a

795

00:29:50,870 --> 00:29:49,120

number of reasons for that some is to

796

00:29:52,789 --> 00:29:50,880

determine if there's a gap filler

797

00:29:54,470 --> 00:29:52,799

sticking out if you get a nice edge on

798

00:29:55,669 --> 00:29:54,480

view you can see the gap filler poking

799

00:29:57,990 --> 00:29:55,679

out the bottom

800

00:29:58,710 --> 00:29:58,000

as opposed to a gap filler poking out at

801

00:30:01,269 --> 00:29:58,720

you

802

00:30:02,789 --> 00:30:01,279

out the front of the uh

803

00:30:05,350 --> 00:30:02,799

of the heat shield it's a little harder

804

00:30:07,190 --> 00:30:05,360

to determine that so we'll get to good

805

00:30:08,950 --> 00:30:07,200

imagery and

806

00:30:11,830 --> 00:30:08,960

we'll uh wait for the right lighting

807

00:30:13,830 --> 00:30:11,840

tomorrow we always do and uh at the at

808

00:30:15,590 --> 00:30:13,840

the appropriate portion of the approach

809

00:30:17,990 --> 00:30:15,600

to the international space station we'll

810

00:30:20,389 --> 00:30:18,000

gather all the images uh using both the

811

00:30:22,549 --> 00:30:20,399

400 millimeter digital still camera as

812

00:30:24,549 --> 00:30:22,559

well as a 400 millimeter with a a

813

00:30:26,310 --> 00:30:24,559

doubler we call it the 800 millimeter

814

00:30:28,310 --> 00:30:26,320

lens and then we'll probably have an

815

00:30:31,350 --> 00:30:28,320

additional 800 millimeter camera

816

00:30:33,990 --> 00:30:31,360

available uh to focus in

817

00:30:36,470 --> 00:30:34,000

on some of the areas that we didn't get

818

00:30:37,510 --> 00:30:36,480

on the port wing today using the digital

819

00:30:39,269 --> 00:30:37,520

camera

820

00:30:41,110 --> 00:30:39,279

on the on the end of the boom just

821

00:30:43,430 --> 00:30:41,120

because of the amount of coverage that

822

00:30:46,149 --> 00:30:43,440

we had with the planned uh wing scans

823

00:30:47,590 --> 00:30:46,159

and wing surveys

824

00:30:49,430 --> 00:30:47,600

great thank you

825

00:30:50,710 --> 00:30:49,440

okay we're back here in houston follow

826
00:30:53,110 --> 00:30:50,720
up mark

827
00:30:53,909 --> 00:30:53,120
thank you mark caro for aviation week

828
00:30:54,950 --> 00:30:53,919
again

829
00:30:56,710 --> 00:30:54,960
um

830
00:30:58,470 --> 00:30:56,720
if you make maneuver with the station

831
00:31:01,350 --> 00:30:58,480
would the propulsion source be a

832
00:31:02,389 --> 00:31:01,360
progress or some other

833
00:31:05,350 --> 00:31:02,399
some other

834
00:31:08,310 --> 00:31:05,360
thruster source yeah the uh the primary

835
00:31:09,990 --> 00:31:08,320
plan uh right now is to use uh the

836
00:31:12,389 --> 00:31:10,000
russian portion of the international

837
00:31:14,310 --> 00:31:12,399
space station uh specifically progress

838
00:31:17,190 --> 00:31:14,320

and then there's a combination of uh

839

00:31:19,750 --> 00:31:17,200

attitude uh control thrusters and then

840

00:31:21,830 --> 00:31:19,760

orbital rays thrusters that we use and

841

00:31:24,789 --> 00:31:21,840

we've coordinated all that work with our

842

00:31:26,870 --> 00:31:24,799

russian counterparts in moscow and again

843

00:31:28,470 --> 00:31:26,880

we're carrying a parallel path as to

844

00:31:29,350 --> 00:31:28,480

whether or not we actually need to do

845

00:31:30,549 --> 00:31:29,360

that

846

00:31:33,430 --> 00:31:30,559

decision will be made in the next

847

00:31:37,110 --> 00:31:33,440

handful of hours leading up to the

848

00:31:42,470 --> 00:31:39,750

and finally for me do you recall

849

00:31:45,909 --> 00:31:42,480

how how large an object has to be before

850

00:31:49,269 --> 00:31:45,919

you can track it i'm kind of hazy as is

851

00:31:51,990 --> 00:31:49,279

it's five inches or more or less

852

00:31:54,470 --> 00:31:52,000

yeah it's uh

853

00:31:56,070 --> 00:31:54,480

it's smaller than a bread box but uh

854

00:31:58,630 --> 00:31:56,080

bigger than uh

855

00:32:00,630 --> 00:31:58,640

you know bigger than i don't know

856

00:32:02,630 --> 00:32:00,640

there's there is a limitation on what we

857

00:32:05,029 --> 00:32:02,640

can track uh some of that depends on

858

00:32:06,070 --> 00:32:05,039

whether or not the the object is

859

00:32:08,630 --> 00:32:06,080

uh

860

00:32:09,990 --> 00:32:08,640

metallic in nature and the color of the

861

00:32:11,990 --> 00:32:10,000

material um

862

00:32:14,630 --> 00:32:12,000

but uh some of that information i don't

863

00:32:16,149 --> 00:32:14,640

readily have available

864

00:32:18,070 --> 00:32:16,159

okay i think that wraps up all the

865

00:32:20,470 --> 00:32:18,080

questions so before we close a few

866

00:32:22,230 --> 00:32:20,480

programming notes deputy shuttle program

867

00:32:24,470 --> 00:32:22,240

manager leroy kane who is the chairman

868

00:32:27,269 --> 00:32:24,480

of the mission management team will hold

869

00:32:29,590 --> 00:32:27,279

his first briefing of the flight at 3 pm

870

00:32:31,509 --> 00:32:29,600

central time 4 p.m eastern time on nasa

871

00:32:32,789 --> 00:32:31,519

television so you'll want to stay tuned

872

00:32:33,830 --> 00:32:32,799

and tune in for that later this

873

00:32:35,830 --> 00:32:33,840

afternoon

874

00:32:38,950 --> 00:32:35,840

atlantis six crew members begin their

875

00:32:40,710 --> 00:32:38,960

sleep period at 6 20 p.m central time

876

00:32:43,190 --> 00:32:40,720

enabling us to begin the airing of our

877

00:32:45,190 --> 00:32:43,200

flight day highlights at 7 pm central

878

00:32:46,870 --> 00:32:45,200

time those highlights will be replayed

879

00:32:48,870 --> 00:32:46,880

every hour on the hour throughout the

880

00:32:50,789 --> 00:32:48,880

course of the crew sleep period this

881

00:32:53,029 --> 00:32:50,799

evening and the wake-up call for

882

00:32:55,830 --> 00:32:53,039

atlantis crew will come sunday morning

883

00:32:57,669 --> 00:32:55,840

at 2 20 a.m central time as they begin

884

00:32:59,750 --> 00:32:57,679

activities for their arrival at the

885

00:33:01,990 --> 00:32:59,760

international space station a few hours

886

00:33:04,070 --> 00:33:02,000

later you can follow all of the work

887

00:33:06,230 --> 00:33:04,080

being conducted by atlantis astronauts

888

00:33:08,149 --> 00:33:06,240

and the expedition 23 crew on the

889

00:33:11,990 --> 00:33:08,159

international space station on our

890

00:33:13,350 --> 00:33:12,000

website at www.nasa.gov

891

00:33:14,950 --> 00:33:13,360

with that we'll call it a briefing and

892

00:33:17,269 --> 00:33:14,960

go back to mission control for