



1  
00:00:06,309 --> 00:00:03,110  
hi my name is ken ham i'm commander of

2  
00:00:24,870 --> 00:00:06,319  
the sts-132 space shuttle atlantis crew

3  
00:00:29,669 --> 00:00:27,509  
from launch complex 39 at the kennedy

4  
00:00:32,310 --> 00:00:29,679  
space center in florida this is shuttle

5  
00:00:34,389 --> 00:00:32,320  
launch control at t-minus three hours

6  
00:00:36,870 --> 00:00:34,399  
and holding

7  
00:00:39,030 --> 00:00:36,880  
we are now about to enter the final five

8  
00:00:43,350 --> 00:00:39,040  
hours of the countdown for the launch of

9  
00:00:47,990 --> 00:00:46,549  
this is the 132nd launch of the space

10  
00:00:50,150 --> 00:00:48,000  
shuttle program

11  
00:00:51,750 --> 00:00:50,160  
the 32nd launch of space shuttle

12  
00:00:53,670 --> 00:00:51,760  
atlantis

13  
00:00:56,310 --> 00:00:53,680

and the 34th shuttle flight to the

14

00:00:58,310 --> 00:00:56,320

international space station

15

00:00:59,750 --> 00:00:58,320

this will be a 12-day mission with the

16

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

landing at kennedy space center

17

00:01:05,350 --> 00:01:01,440

currently planned for

18

00:01:06,950 --> 00:01:05,360

may 26th at 8 4 a.m

19

00:01:08,789 --> 00:01:06,960

there are six astronauts who will

20

00:01:10,230 --> 00:01:08,799

shortly be aboard atlantis and route to

21

00:01:11,670 --> 00:01:10,240

a rendezvous with the international

22

00:01:14,550 --> 00:01:11,680

space station

23

00:01:16,630 --> 00:01:14,560

there are three planned evas or

24

00:01:18,870 --> 00:01:16,640

spacewalks during the mission that will

25

00:01:20,149 --> 00:01:18,880

last approximately six hours

26

00:01:22,390 --> 00:01:20,159

during the

27

00:01:23,990 --> 00:01:22,400

one week period that atlantis will be

28

00:01:28,390 --> 00:01:24,000

docked with the international space

29

00:01:32,149 --> 00:01:30,069

we're entering the

30

00:01:33,830 --> 00:01:32,159

suit up room now at the astronaut

31

00:01:36,390 --> 00:01:33,840

quarters in the operation check out

32

00:01:37,990 --> 00:01:36,400

building here's our commander ken ham

33

00:01:40,630 --> 00:01:38,000

who has

34

00:01:42,550 --> 00:01:40,640

spent 13 days in space aboard discovery

35

00:01:43,990 --> 00:01:42,560

on 124.

36

00:01:46,310 --> 00:01:44,000

here's our pilot

37

00:01:49,030 --> 00:01:46,320

tony antonelli this is his second trip

38

00:01:50,789 --> 00:01:49,040

into space having flown as a pilot on

39

00:01:52,710 --> 00:01:50,799

119 aboard

40

00:01:55,270 --> 00:01:52,720

discovery which delivered a

41

00:02:01,830 --> 00:01:55,280

space station integrated truss segment

42

00:02:07,830 --> 00:02:04,389

going over now to garrett riesman ms-1

43

00:02:10,550 --> 00:02:07,840

aboard atlantis on sts-132 he'll be

44

00:02:12,710 --> 00:02:10,560

performing spacewalks one and three he

45

00:02:14,790 --> 00:02:12,720

holds a phd in mechanical engineering

46

00:02:31,750 --> 00:02:14,800

and spent three months in space aboard

47

00:02:36,949 --> 00:02:34,710

and here is steve bowen he's the first

48

00:02:38,710 --> 00:02:36,959

ever submarine officer selected by nasa

49

00:02:40,229 --> 00:02:38,720

to be an astronaut he's mission

50

00:02:44,070 --> 00:02:40,239

specialist number three and we'll be

51  
00:02:45,990 --> 00:02:44,080  
doing two spacewalks evas one and two

52  
00:02:47,910 --> 00:02:46,000  
this is his second

53  
00:02:51,030 --> 00:02:47,920  
spay flight having flown previously on

54  
00:02:51,040 --> 00:02:54,070  
piers sellers

55  
00:03:00,790 --> 00:02:57,509  
this is his third space flight

56  
00:03:04,710 --> 00:03:00,800  
having flown on sts-112 on atlantis and

57  
00:03:09,110 --> 00:03:04,720  
121 aboard discovery he's logged 41 eva

58  
00:03:13,750 --> 00:03:11,990  
and michael good making his second trip

59  
00:03:15,190 --> 00:03:13,760  
into space having served as distance

60  
00:03:16,790 --> 00:03:15,200  
specialist

61  
00:03:18,550 --> 00:03:16,800  
number two on this mission he'll be

62  
00:03:21,589 --> 00:03:18,560  
doing spacewalks

63  
00:03:22,550 --> 00:03:21,599

on evas two and three he was previously

64

00:03:48,789 --> 00:03:22,560

on

65

00:03:56,869 --> 00:03:53,750

and here comes our sts-132 atlantis crew

66

00:03:59,509 --> 00:03:56,879

leaving the suit-up room

67

00:04:14,149 --> 00:03:59,519

headed now for the

68

00:04:14,159 --> 00:04:16,710

and

69

00:04:20,629 --> 00:04:18,390

much of the astronaut

70

00:04:21,909 --> 00:04:20,639

support personnel in the unc giving them

71

00:05:40,390 --> 00:04:21,919

a

72

00:05:42,870 --> 00:05:40,400

bind

73

00:05:48,230 --> 00:05:42,880

a nasa security van as is customary

74

00:05:48,240 --> 00:06:09,909

and there they go

75

00:06:13,590 --> 00:06:11,830

the astro man now arriving at the pad

76

00:07:57,350 --> 00:06:13,600

and going up the incline going up the

77

00:08:01,189 --> 00:07:59,110

here are the astronauts now getting off

78

00:08:11,189 --> 00:08:01,199

the elevator

79

00:08:15,749 --> 00:08:14,070

and our commander ken ham

80

00:08:18,070 --> 00:08:15,759

being

81

00:08:21,350 --> 00:08:18,080

assisted with his

82

00:08:22,790 --> 00:08:21,360

launch and entry suit prior to

83

00:08:36,870 --> 00:08:22,800

boarding atlantis to be our first crew

84

00:08:42,149 --> 00:08:39,029

and here we see our

85

00:08:43,909 --> 00:08:42,159

commander being seated in the cockpit

86

00:08:46,550 --> 00:08:43,919

he'll be followed by mission specialist

87

00:09:04,070 --> 00:08:46,560

number three steve bowen

88

00:09:07,670 --> 00:09:06,070

and mission specialist number three

89

00:09:10,230 --> 00:09:07,680

steve bowen

90

00:09:14,389 --> 00:09:10,240

being assisted with his

91

00:09:18,230 --> 00:09:15,750

he will be doing

92

00:09:21,190 --> 00:09:18,240

two space walks on sts

93

00:09:23,430 --> 00:09:21,200

132 eva's one and two

94

00:09:25,470 --> 00:09:23,440

this is his second space flight having

95

00:09:28,550 --> 00:09:25,480

flown previously aboard endeavour on

96

00:09:31,670 --> 00:09:28,560

sts-126 in 2008

97

00:09:40,550 --> 00:09:31,680

where he logged more than 19 hours of

98

00:09:45,350 --> 00:09:42,710

joining us now here in firing room four

99

00:09:47,750 --> 00:09:45,360

is astronaut ricky arnold

100

00:09:49,509 --> 00:09:47,760

he is going to be

101  
00:09:51,829 --> 00:09:49,519  
walking us through some of the

102  
00:09:53,030 --> 00:09:51,839  
activities to put the crew members on

103  
00:09:54,310 --> 00:09:53,040  
board

104  
00:09:56,630 --> 00:09:54,320  
and

105  
00:09:58,070 --> 00:09:56,640  
i wonder first of all if you could give

106  
00:09:59,990 --> 00:09:58,080  
us a little bit of

107  
00:10:02,470 --> 00:10:00,000  
your impressions of what it was like to

108  
00:10:03,990 --> 00:10:02,480  
be in that white room and getting on

109  
00:10:06,630 --> 00:10:04,000  
board the shuttle right now what are

110  
00:10:08,069 --> 00:10:06,640  
your sort of your recollections

111  
00:10:09,509 --> 00:10:08,079  
over a year ago and good morning it was

112  
00:10:12,790 --> 00:10:09,519  
just a little over a year ago and it was

113  
00:10:13,990 --> 00:10:12,800

a it was a good afternoon um

114

00:10:15,350 --> 00:10:14,000

it's uh

115

00:10:17,110 --> 00:10:15,360

something was very familiar we actually

116

00:10:19,430 --> 00:10:17,120

come down here a little bit a month

117

00:10:21,430 --> 00:10:19,440

before we launched to kind of do a dress

118

00:10:23,269 --> 00:10:21,440

rehearsal of all the activities so you

119

00:10:25,509 --> 00:10:23,279

know the people the faces and all the

120

00:10:26,710 --> 00:10:25,519

procedures are very familiar the only

121

00:10:32,630 --> 00:10:26,720

the only difference today is it's going

122

00:10:35,269 --> 00:10:34,069

get a pretty good view looking down into

123

00:10:37,110 --> 00:10:35,279

the cockpit there you can see all the

124

00:10:38,790 --> 00:10:37,120

switches the overhead switches uh ken

125

00:10:40,389 --> 00:10:38,800

ham is on the right tony antonella you

126

00:10:42,069 --> 00:10:40,399

can see his american flag on his left

127

00:10:43,590 --> 00:10:42,079

shoulder and chris cassidy the top of

128

00:10:44,790 --> 00:10:43,600

his head he's the astronaut support

129

00:10:46,870 --> 00:10:44,800

personnel

130

00:10:48,310 --> 00:10:46,880

and um getting in there's a little

131

00:10:49,910 --> 00:10:48,320

tricky uh you'll notice when they were

132

00:10:51,829 --> 00:10:49,920

getting them in there early you saw

133

00:10:53,670 --> 00:10:51,839

chris being very careful with uh with

134

00:10:55,030 --> 00:10:53,680

the guy's uh heads and helmets because

135

00:10:57,350 --> 00:10:55,040

it'd be really easy to bump one of those

136

00:11:01,269 --> 00:10:57,360

switches uh right overhead

137

00:11:03,190 --> 00:11:01,279

but i gather if that happens was uh

138

00:11:05,110 --> 00:11:03,200

pretty easy to notice in the firing room

139

00:11:06,710 --> 00:11:05,120

or somewhere isn't it absolutely someone

140

00:11:07,990 --> 00:11:06,720

down here is playing coast attention and

141

00:11:09,990 --> 00:11:08,000

you can see garrett riesman getting

142

00:11:12,230 --> 00:11:10,000

strapped into that uh in the lower

143

00:11:14,710 --> 00:11:12,240

left-hand corner there he's ms-1 on this

144

00:11:16,550 --> 00:11:14,720

mission and um his job really is to keep

145

00:11:19,269 --> 00:11:16,560

an eye on keep an eye on tony back him

146

00:11:21,430 --> 00:11:19,279

up help him out we got a one of the big

147

00:11:23,910 --> 00:11:21,440

milestones prior to launch is the apu

148

00:11:25,509 --> 00:11:23,920

pre-start garrett will be making sure

149

00:11:27,670 --> 00:11:25,519

tony gets all that right although tony

150

00:11:29,990 --> 00:11:27,680

will get it all right and

151

00:11:31,910 --> 00:11:30,000

the next last person is mike good he's

152

00:11:39,269 --> 00:11:31,920

actually ms2 he'll be the last guy

153

00:11:42,389 --> 00:11:40,550

hey good morning piers we're just

154

00:12:07,430 --> 00:11:42,399

enjoying your accent down here how do

155

00:12:13,509 --> 00:12:09,030

hawks trying to get a look at something

156

00:12:14,629 --> 00:12:13,519

uh a couple mirrors going on and

157

00:12:21,910 --> 00:12:14,639

yeah it'd be nice to have a little bit

158

00:12:25,269 --> 00:12:23,430

i guess when you can't turn to your head

159

00:12:27,030 --> 00:12:25,279

can't move around a mirror is not a bad

160

00:12:28,790 --> 00:12:27,040

thing to have yeah there's actually some

161

00:12:30,550 --> 00:12:28,800

panels tony has to get a look at on is

162

00:12:34,150 --> 00:12:30,560

the lower right hand side that uh

163

00:12:39,990 --> 00:12:36,150

ms-1 this is otc i have you loud and

164

00:12:42,870 --> 00:12:41,269

good morning

165

00:12:49,269 --> 00:12:42,880

good to hear you

166

00:12:49,279 --> 00:12:55,670

garrett reese man getting a comp check

167

00:12:59,590 --> 00:12:56,949

yeah so there's some actually some talk

168

00:13:01,269 --> 00:12:59,600

backs on some switches back behind uh

169

00:13:02,790 --> 00:13:01,279

right over tony's right shoulder that he

170

00:13:04,230 --> 00:13:02,800

can't really turn his head to see with

171

00:13:06,470 --> 00:13:04,240

the helmet on

172

00:13:08,550 --> 00:13:06,480

ms-1 come check

173

00:13:11,269 --> 00:13:08,560

ms-1 this is ntd i've got you loud and

174

00:13:15,110 --> 00:13:11,279

clear good morning garrett

175

00:13:21,190 --> 00:13:16,629

and they'll use these mirrors uh for

176

00:13:26,230 --> 00:13:22,629

hey good morning garrett we got you loud

177

00:13:30,949 --> 00:13:28,069

you're sounding especially handsome this

178

00:13:30,959 --> 00:13:38,870

you scared me dude

179

00:13:43,189 --> 00:13:41,670

coming into view uh in the ms2 seat and

180

00:13:45,509 --> 00:13:43,199

chris cassidy will start working on him

181

00:13:47,670 --> 00:13:45,519

here shortly

182

00:13:49,189 --> 00:13:47,680

so it's not always the same closeout

183

00:13:51,750 --> 00:13:49,199

crew members in the white room from

184

00:13:53,430 --> 00:13:51,760

flight to flight it varies some yeah

185

00:13:55,269 --> 00:13:53,440

they're assigned to a mission exactly

186

00:13:56,710 --> 00:13:55,279

the guys uh the guys who actually the

187

00:13:58,150 --> 00:13:56,720

suit technicians i guess is the word i'm

188

00:13:59,269 --> 00:13:58,160

looking for uh

189

00:14:01,030 --> 00:13:59,279

which is part of the kind of the

190

00:14:02,870 --> 00:14:01,040

closeout crew the suit technicians are

191

00:14:04,150 --> 00:14:02,880

basically assigned to the crew and

192

00:14:06,389 --> 00:14:04,160

they'll be working more than one mission

193

00:14:07,829 --> 00:14:06,399

at a time but they're the guys who are

194

00:14:09,590 --> 00:14:07,839

coming out to training events whenever

195

00:14:11,350 --> 00:14:09,600

we're suited wearing these orange suits

196

00:14:13,269 --> 00:14:11,360

they'll be there supporting and

197

00:14:15,189 --> 00:14:13,279

they really know the equipment they kind

198

00:14:16,949 --> 00:14:15,199

of know what's worked and what hasn't

199

00:14:18,790 --> 00:14:16,959

worked and they do a really outstanding

200

00:14:20,310 --> 00:14:18,800

job getting us ready to fly and making

201  
00:14:22,310 --> 00:14:20,320  
sure we have all the proper equipment we

202  
00:14:24,870 --> 00:14:22,320  
need to get up there safely

203  
00:14:27,110 --> 00:14:24,880  
so it looks like they're all aboard now

204  
00:14:28,829 --> 00:14:27,120  
yeah it sure does uh getting bueno

205  
00:14:31,030 --> 00:14:28,839  
strapped in and

206  
00:14:33,670 --> 00:14:31,040  
uh they're getting some preparations

207  
00:14:41,269 --> 00:14:33,680  
made to the hatch and uh

208  
00:14:44,790 --> 00:14:42,870  
and attention on the net this is the

209  
00:14:46,949 --> 00:14:44,800  
entity performing the launch status

210  
00:14:50,790 --> 00:14:46,959  
checks verify ready to resume count and

211  
00:14:52,310 --> 00:14:50,800  
go for launch otc otc is go tvc tbc is

212  
00:14:56,389 --> 00:14:52,320  
go ptc

213  
00:14:59,670 --> 00:14:56,399

ptc is go lps system houston flight

214

00:15:01,430 --> 00:14:59,680

houston flight is go myla follow scope

215

00:15:04,470 --> 00:15:01,440

stm

216

00:15:09,350 --> 00:15:04,480

safety console site consoles go sde

217

00:15:13,829 --> 00:15:09,360

stu's go lrd lrd is go sro sro is go you

218

00:15:17,829 --> 00:15:15,350

atlanta says go

219

00:15:19,670 --> 00:15:17,839

hi cop y'all and launch director ntd

220

00:15:21,670 --> 00:15:19,680

launch director yes there is this time

221

00:15:23,590 --> 00:15:21,680

the launch team is ready to proceed i

222

00:15:25,670 --> 00:15:23,600

got that jeremy thank you

223

00:15:27,509 --> 00:15:25,680

ksc chief processing engineer verify no

224

00:15:29,590 --> 00:15:27,519

constraints to launch no constraints

225

00:15:30,949 --> 00:15:29,600

thank you steve payload launch manager

226

00:15:33,269 --> 00:15:30,959

mike for our russian partners and the

227

00:15:35,030 --> 00:15:33,279

rest of the iss processing team we'll go

228

00:15:36,949 --> 00:15:35,040

thanks bill casey safety and mission

229

00:15:39,030 --> 00:15:36,959

assurance kfc safety and mission

230

00:15:42,150 --> 00:15:39,040

insurances go mike thank you mark range

231

00:15:44,150 --> 00:15:42,160

weather weather has no constraints

232

00:15:46,389 --> 00:15:44,160

okay ops manager

233

00:15:48,550 --> 00:15:46,399

mike the mmp is in good shape shuttle

234

00:15:50,790 --> 00:15:48,560

program is going to

235

00:15:52,710 --> 00:15:50,800

let you launch atlanta okay cover that

236

00:15:55,829 --> 00:15:52,720

thank you

237

00:15:57,509 --> 00:15:55,839

atlantis launch director

238

00:15:59,189 --> 00:15:57,519

coach there

239

00:16:01,509 --> 00:15:59,199

okay hawk on behalf of all the

240

00:16:03,030 --> 00:16:01,519

manufacturing processing flight and

241

00:16:06,069 --> 00:16:03,040

launch teams that have worked on atlanta

242

00:16:07,509 --> 00:16:06,079

since march of 1980 i wish you all good

243

00:16:10,389 --> 00:16:07,519

luck godspeed and have a little fun up

244

00:16:13,590 --> 00:16:12,389

thanks mike those are great words and uh

245

00:16:15,509 --> 00:16:13,600

like you said there's a thousand of

246

00:16:17,189 --> 00:16:15,519

folks out there that have taken care of

247

00:16:19,030 --> 00:16:17,199

this bird for a long time

248

00:16:21,430 --> 00:16:19,040

uh right now special thanks to orbiter

249

00:16:23,110 --> 00:16:21,440

for getting us off the pad today

250

00:16:24,629 --> 00:16:23,120

and uh we're going to take her on our 30

251  
00:16:26,389 --> 00:16:24,639  
second flight

252  
00:16:28,069 --> 00:16:26,399  
and if you don't mind we'll take her out

253  
00:16:33,990 --> 00:16:28,079  
of the barn and make a few more laps

254  
00:16:41,110 --> 00:16:37,030  
by yekley

255  
00:16:46,790 --> 00:16:42,629  
and we'll try to get you out of here on

256  
00:16:52,949 --> 00:16:48,629  
and ntd launch director you are clear to

257  
00:16:56,629 --> 00:16:54,710  
the countdown clock will resume on my

258  
00:16:57,829 --> 00:16:56,639  
mark

259  
00:16:58,870 --> 00:16:57,839  
three

260  
00:16:59,749 --> 00:16:58,880  
two

261  
00:17:02,470 --> 00:16:59,759  
one

262  
00:17:05,510 --> 00:17:02,480  
mark t minus nine minutes and counting

263  
00:17:07,750 --> 00:17:05,520

clf auto sequence has been initiated

264

00:17:09,669 --> 00:17:07,760

the ground launch sequencer the

265

00:17:11,590 --> 00:17:09,679

primary computer here in the firing room

266

00:17:14,710 --> 00:17:11,600

is now in control of the countdown we'll

267

00:17:15,909 --> 00:17:14,720

be checking over a thousand parameters

268

00:17:17,990 --> 00:17:15,919

in the

269

00:17:23,669 --> 00:17:18,000

launch sequence for space shuttle

270

00:17:27,429 --> 00:17:25,669

beginning now to retract the crew

271

00:17:30,830 --> 00:17:27,439

orbiter access arm

272

00:17:36,150 --> 00:17:34,390

access crew our team has worked hard and

273

00:17:38,070 --> 00:17:36,160

it's with great pride that we send the

274

00:17:39,830 --> 00:17:38,080

first last crew of atlantis to the

275

00:17:44,630 --> 00:17:39,840

international space station with the

276

00:17:44,640 --> 00:17:48,310

well put

277

00:17:52,230 --> 00:17:50,470

teresa annulus our orbiter test

278

00:17:55,669 --> 00:17:52,240

conductor today from united space

279

00:18:08,710 --> 00:17:58,870

cls is go for orbiter apu spark

280

00:18:14,150 --> 00:18:11,110

preparing now to retract the gaseous

281

00:18:16,950 --> 00:18:14,160

oxygen vent arm the gox beanie cap the

282

00:18:19,190 --> 00:18:16,960

vent hood clt rtc

283

00:18:25,430 --> 00:18:19,200

clear caution warning memory verify no

284

00:18:25,440 --> 00:18:34,549

fuel cells going to internal reactants

285

00:18:40,950 --> 00:18:37,350

copy atlantis close and lock your visors

286

00:18:40,960 --> 00:18:54,870

otc that is in work

287

00:18:58,710 --> 00:18:56,630

firing chain is armed sound suppression

288

00:19:02,310 --> 00:18:58,720

water system activated

289

00:19:03,110 --> 00:19:02,320

t-minus 13 12 11

290

00:19:06,789 --> 00:19:03,120

10

291

00:19:09,510 --> 00:19:06,799

9 8 go for maintenance and start six

292

00:19:10,630 --> 00:19:09,520

five four three

293

00:19:12,310 --> 00:19:10,640

two

294

00:19:13,190 --> 00:19:12,320

one

295

00:19:18,390 --> 00:19:13,200

and

296

00:19:28,390 --> 00:19:18,400

atlantis reaching the rest of its

297

00:19:33,190 --> 00:19:31,350

houston is now controlling

298

00:19:35,110 --> 00:19:33,200

the roll maneuver is complete atlantis

299

00:19:39,830 --> 00:19:35,120

is in a heads-down position on course

300

00:19:49,669 --> 00:19:39,840

for a 51.6 degree 136 by 36 statute mile

301  
00:19:53,430 --> 00:19:51,510  
and the three main engines on atlantis

302  
00:19:55,909 --> 00:19:53,440  
have now been throttled down to 72

303  
00:19:57,909 --> 00:19:55,919  
percent of rated thrust as the orbiter

304  
00:19:59,909 --> 00:19:57,919  
prepares to pass through the area of

305  
00:20:08,710 --> 00:19:59,919  
maximum dynamic pressure on the vehicle

306  
00:20:12,149 --> 00:20:10,390  
the engine's now beginning to throttle

307  
00:20:28,870 --> 00:20:12,159  
back up

308  
00:20:33,510 --> 00:20:30,950  
all three engines looking really good

309  
00:20:35,270 --> 00:20:33,520  
back at full throttle now at liftoff the

310  
00:20:36,549 --> 00:20:35,280  
fully fueled shuttle boosters and

311  
00:20:38,870 --> 00:20:36,559  
external tank

312  
00:20:41,270 --> 00:20:38,880  
weighed four and a half million pounds

313  
00:20:44,230 --> 00:20:41,280

it now has burned half of that liftoff

314

00:20:46,070 --> 00:20:44,240

weight and propellant

315

00:20:47,909 --> 00:20:46,080

one minute 30 seconds into the flight

316

00:20:50,230 --> 00:20:47,919

all three auxiliary power units that

317

00:20:52,310 --> 00:20:50,240

provide hydraulic power to the orbiter's

318

00:20:55,110 --> 00:20:52,320

systems in good shape as are the fuel

319

00:20:57,350 --> 00:20:55,120

cells providing electricity to all of

320

00:21:00,149 --> 00:20:57,360

the systems on board atlantis is already

321

00:21:02,630 --> 00:21:00,159

19 miles in altitude downrange from the

322

00:21:07,990 --> 00:21:02,640

kennedy space center 20 miles traveling

323

00:21:12,470 --> 00:21:10,230

coming up on staging the point at which

324

00:21:26,470 --> 00:21:12,480

the twin solid rocket boosters burn out

325

00:21:31,350 --> 00:21:28,830

booster separation

326  
00:21:32,950 --> 00:21:31,360  
confirmed the onboard guidance system

327  
00:21:35,029 --> 00:21:32,960  
has done its job of

328  
00:21:36,710 --> 00:21:35,039  
settling out any of the dispersions that

329  
00:21:38,390 --> 00:21:36,720  
have been introduced at the booster

330  
00:21:41,350 --> 00:21:38,400  
separation

331  
00:21:44,470 --> 00:21:41,360  
atlantis performance thus far is

332  
00:21:45,830 --> 00:21:44,480  
exactly as planned as atlantis heads

333  
00:21:47,990 --> 00:21:45,840  
into orbit

334  
00:21:51,430 --> 00:21:48,000  
flying heads down wings level into a

335  
00:21:54,149 --> 00:21:51,440  
historic sunset on its 32nd mission

336  
00:21:59,510 --> 00:21:54,159  
two engine tau

337  
00:22:04,950 --> 00:22:02,630  
atlantis can now reach zaragoza in spain

338  
00:22:06,870 --> 00:22:04,960

in the event of a single engine failure

339

00:22:09,430 --> 00:22:06,880

however all three main engines are still

340

00:22:12,630 --> 00:22:09,440

operating at full throttle 104 percent

341

00:22:14,470 --> 00:22:12,640

of rated thrust

342

00:22:16,549 --> 00:22:14,480

the auxiliary power unit still in great

343

00:22:19,590 --> 00:22:16,559

shape as are the fuel cells atlantis is

344

00:22:22,549 --> 00:22:19,600

traveling 3 700 miles per hour at an

345

00:22:47,029 --> 00:22:22,559

altitude of 47 miles downrange from the

346

00:22:50,789 --> 00:22:49,190

atlantis is getting a boost from the

347

00:22:53,350 --> 00:22:50,799

orbital maneuvering system engines on

348

00:22:55,110 --> 00:22:53,360

the tail of the vehicle those

349

00:23:12,549 --> 00:22:55,120

have been burning now for about one and

350

00:23:19,350 --> 00:23:16,070

atlantis your negative return

351

00:23:21,270 --> 00:23:19,360

copy scores negative return

352

00:23:23,029 --> 00:23:21,280

negative return means atlantis can no

353

00:23:24,950 --> 00:23:23,039

longer return to the kennedy space

354

00:23:27,510 --> 00:23:24,960

center in the event of an engine failure

355

00:23:30,070 --> 00:23:27,520

it's already traveling too far too high

356

00:23:42,710 --> 00:23:30,080

and too fast to return to the launch

357

00:23:49,590 --> 00:23:45,350

atlantis you are press to mikko and

358

00:23:51,430 --> 00:23:49,600

single engine zaragoza 104.

359

00:23:54,149 --> 00:23:51,440

copy prestamiko single engines there

360

00:23:57,350 --> 00:23:54,159

goes the 104

361

00:24:10,070 --> 00:23:57,360

and scorch i got the roll

362

00:24:14,950 --> 00:24:12,710

atlantis we will have a nominal shutdown

363

00:24:18,310 --> 00:24:14,960

on all three you will be go for the plus

364

00:24:21,110 --> 00:24:18,320

x go for the pitch

365

00:24:24,310 --> 00:24:21,120

atlantis got these nominal shutdowns go

366

00:24:27,669 --> 00:24:24,320

for the plus x go for the pitch

367

00:24:31,830 --> 00:24:29,750

that rolled the heads up provides a good

368

00:24:34,390 --> 00:24:31,840

satellite communications linked with

369

00:24:36,870 --> 00:24:34,400

atlantis continuing its uh

370

00:24:39,110 --> 00:24:36,880

travel into space approaching seven

371

00:24:44,310 --> 00:24:39,120

seven minutes into the flight atlantis

372

00:24:47,510 --> 00:24:45,510

104.

373

00:24:49,510 --> 00:24:47,520

atlantis can reach orbit on one engine

374

00:24:52,789 --> 00:24:49,520

now should two fail however all three

375

00:24:57,669 --> 00:24:55,909

atlantis is now traveling 13 000 miles

376  
00:25:00,070 --> 00:24:57,679  
per hour

377  
00:25:02,789 --> 00:25:00,080  
580 miles away from the kennedy space

378  
00:25:06,310 --> 00:25:02,799  
center at an altitude of 340 000 feet or

379  
00:25:10,950 --> 00:25:07,990  
shortly the three main engines will

380  
00:25:12,950 --> 00:25:10,960  
begin throttling back to maintain the

381  
00:25:14,870 --> 00:25:12,960  
structural limits on the orbiter as it

382  
00:25:29,190 --> 00:25:14,880  
approaches loads near three times

383  
00:25:33,830 --> 00:25:31,269  
all quiet uh here in mission control

384  
00:25:35,590 --> 00:25:33,840  
with all systems in great shape atlantis

385  
00:25:37,830 --> 00:25:35,600  
is traveling 15

386  
00:25:39,269 --> 00:25:37,840  
500 miles per hour

387  
00:25:42,630 --> 00:25:39,279  
approaching eight minutes into the

388  
00:25:44,950 --> 00:25:42,640

flight downrange 740 miles at an

389

00:25:59,269 --> 00:25:44,960

altitude of 64 miles

390

00:26:04,310 --> 00:26:01,430

standing by for main engine cutoff

391

00:26:17,029 --> 00:26:04,320

confirmation as atlantis is in excellent

392

00:26:21,669 --> 00:26:19,110

main engine cutoff confirm standing by

393

00:26:36,870 --> 00:26:21,679

for separation from the external fuel

394

00:26:43,430 --> 00:26:39,190

atlantis now uh flying away from the

395

00:26:48,470 --> 00:26:46,470

plus x uh burn maneuver being performed

396

00:26:50,789 --> 00:26:48,480

by commander ken ham

397

00:26:53,750 --> 00:26:50,799

nominal miko almost one night not

398

00:27:00,470 --> 00:26:53,760

required preliminary ohms to tig will be

399

00:27:04,870 --> 00:27:02,310

we are now getting our first look of the

400

00:27:06,630 --> 00:27:04,880

external tank

401  
00:27:08,470 --> 00:27:06,640  
as it drifted away from space shuttle

402  
00:27:11,110 --> 00:27:08,480  
atlantis soon after the shuttle reached

403  
00:27:13,669 --> 00:27:11,120  
orbit after its eight and a half minute

404  
00:27:15,350 --> 00:27:13,679  
ride into space earlier today

405  
00:27:17,669 --> 00:27:15,360  
as is typical with all space shuttle

406  
00:27:19,029 --> 00:27:17,679  
missions the crew rapidly gets out their

407  
00:27:20,389 --> 00:27:19,039  
handheld camera

408  
00:27:23,190 --> 00:27:20,399  
and take some still

409  
00:27:26,070 --> 00:27:23,200  
and motion video of the external tank as

410  
00:27:28,230 --> 00:27:26,080  
it drifts away from the shuttle

411  
00:27:29,990 --> 00:27:28,240  
this gives the ground teams an idea of

412  
00:27:32,230 --> 00:27:30,000  
exactly how the foam on the external

413  
00:27:35,590 --> 00:27:32,240

tank fared to make sure that all of it

414

00:27:37,830 --> 00:27:35,600

stayed in its proper position

415

00:27:39,269 --> 00:27:37,840

you can see some

416

00:27:42,230 --> 00:27:39,279

some of the cryogenics from inside that

417

00:27:44,630 --> 00:27:42,240

tank still venting as the tank separated

418

00:27:46,950 --> 00:27:44,640

from space shuttle atlantis

419

00:27:48,789 --> 00:27:46,960

that tank also has

420

00:27:51,110 --> 00:27:48,799

what are known as tumble jets installed

421

00:27:52,789 --> 00:27:51,120

on it that

422

00:27:54,149 --> 00:27:52,799

enable the tank to basically flip end

423

00:27:56,310 --> 00:27:54,159

over in to ensure that it actually

424

00:27:57,510 --> 00:27:56,320

breaks up as expected as it goes back

425

00:28:03,909 --> 00:27:57,520

down into the earth's atmosphere it

426

00:28:07,430 --> 00:28:05,750

in this view inside atlanta's payload

427

00:28:08,710 --> 00:28:07,440

bay you can see the orbital boom sensor

428

00:28:10,149 --> 00:28:08,720

system

429

00:28:11,830 --> 00:28:10,159

attachment there at the very center of

430

00:28:12,870 --> 00:28:11,840

your screen that's a piece of the

431

00:28:15,110 --> 00:28:12,880

equipment that looks like a small

432

00:28:16,630 --> 00:28:15,120

antenna sticking out is actually the

433

00:28:18,389 --> 00:28:16,640

part that the shuttle's robotic arm

434

00:28:20,070 --> 00:28:18,399

grabs onto you can also see the

435

00:28:21,909 --> 00:28:20,080

integrated cargo carrier there at the

436

00:28:23,990 --> 00:28:21,919

middle of your screen that's the large

437

00:28:26,070 --> 00:28:24,000

cargo pallet that has a bunch of these

438

00:28:28,149 --> 00:28:26,080

spare parts that atlantis is bringing up

439

00:28:30,389 --> 00:28:28,159  
to the station on the front side of

440

00:28:31,909 --> 00:28:30,399  
there you can see the spare space to

441

00:28:34,070 --> 00:28:31,919  
ground antenna looks like a small

442

00:28:35,830 --> 00:28:34,080  
satellite dish on the back side which is

443

00:28:37,909 --> 00:28:35,840  
not in this view but you can see the

444

00:28:40,230 --> 00:28:37,919  
batteries that are bound for the port

445

00:28:41,990 --> 00:28:40,240  
truss those will be installed

446

00:28:43,269 --> 00:28:42,000  
on some of the spacewalks planned for

447

00:28:44,470 --> 00:28:43,279  
this flight

448

00:28:47,110 --> 00:28:44,480  
there's some old batteries that will be

449

00:28:48,950 --> 00:28:47,120  
retrieved and put back onto this

450

00:28:51,430 --> 00:28:48,960  
cargo pallet and brought back in

451  
00:28:53,430 --> 00:28:51,440  
atlantis payload bay but that entire

452  
00:28:54,310 --> 00:28:53,440  
pallet with all the spare parts located

453  
00:28:57,830 --> 00:28:54,320  
on it

454  
00:29:00,870 --> 00:28:57,840  
currently weighs 8 330 pounds it'll come

455  
00:29:03,029 --> 00:29:00,880  
back weighing right at 6 000 pounds

456  
00:29:05,110 --> 00:29:03,039  
a little bit less but still

457  
00:29:07,029 --> 00:29:05,120  
fairly heavy nonetheless but all of the

458  
00:29:09,029 --> 00:29:07,039  
spare parts that is coming up on this

459  
00:29:10,789 --> 00:29:09,039  
cargo pallet will ultimately be

460  
00:29:13,029 --> 00:29:10,799  
installed on what is known as external

461  
00:29:14,630 --> 00:29:13,039  
stowage platform number three

462  
00:29:16,070 --> 00:29:14,640  
this is exactly what it sounds like a

463  
00:29:18,789 --> 00:29:16,080

large stowage

464

00:29:20,470 --> 00:29:18,799

uh platform and a pallet that is out on

465

00:29:22,789 --> 00:29:20,480

the station's truss

466

00:29:25,029 --> 00:29:22,799

this particular one esp3 is out on the

467

00:29:26,630 --> 00:29:25,039

left hand side the port truss

468

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

there is quite a number of spare parts

469

00:29:30,149 --> 00:29:29,039

out on the ends of the station's truss

470

00:29:32,149 --> 00:29:30,159

structure

471

00:29:33,830 --> 00:29:32,159

so that if those are to ever be needed