



1
00:00:32,229 --> 00:00:30,390
sts 76 will chalk up another first in

2
00:00:34,069 --> 00:00:32,239
space when rich clifford and linda

3
00:00:36,229 --> 00:00:34,079
godwin become the first americans to

4
00:00:39,110 --> 00:00:36,239
conduct a spacewalk in close proximity

5
00:00:40,709 --> 00:00:39,120
to the russian station

6
00:00:42,630 --> 00:00:40,719
on

7
00:00:43,510 --> 00:00:42,640
we do have live pictures of the flight

8
00:00:46,790 --> 00:00:43,520
crew

9
00:00:48,389 --> 00:00:46,800
got mission specialist linda godwin

10
00:00:53,750 --> 00:00:48,399
she'll be one of the

11
00:00:53,760 --> 00:01:01,830
pilot uh rich richard cyrfoss

12
00:01:07,030 --> 00:01:05,109
and commander kevin chilton

13
00:01:10,469 --> 00:01:07,040

chilton will be guiding the shuttle

14

00:01:16,070 --> 00:01:13,830
mission specialist shannon lucid

15

00:01:17,910 --> 00:01:16,080
getting ready to uh

16

00:01:26,870 --> 00:01:17,920
begin her stay on mir

17

00:01:30,870 --> 00:01:28,789
and mission specialist

18

00:01:32,630 --> 00:01:30,880
rich clifford who's also serving as the

19

00:01:34,149 --> 00:01:32,640
flight engineer for the mission and

20

00:01:40,870 --> 00:01:34,159
we'll be performing

21

00:01:40,880 --> 00:01:47,670
and the crew uh waving uh for the camera

22

00:01:51,109 --> 00:01:49,270
we've got about 30 minutes remaining in

23

00:01:52,389 --> 00:01:51,119
this built-in hold at the t-minus three

24

00:01:54,389 --> 00:01:52,399
hour mark

25

00:01:56,630 --> 00:01:54,399
two minus three hours and holding this

26

00:01:58,870 --> 00:01:56,640

is a planned built-in hold

27

00:02:01,990 --> 00:01:58,880

all continuing to go well

28

00:02:04,630 --> 00:02:02,000

as we count down to the launch of sts-76

29

00:02:27,910 --> 00:02:04,640

with the space shuttle atlantis

30

00:02:31,750 --> 00:02:29,430

this is shuttle launch control at

31

00:02:33,750 --> 00:02:31,760

t-minus three hours holding

32

00:02:36,630 --> 00:02:33,760

we're standing by to get live coverage

33

00:02:37,910 --> 00:02:36,640

of the sts-76 astronauts as they get

34

00:02:40,630 --> 00:02:37,920

into their

35

00:02:42,309 --> 00:02:40,640

launch and entry suits

36

00:02:44,390 --> 00:02:42,319

and we do have coverage we've got

37

00:02:47,030 --> 00:02:44,400

commander kevin chilton

38

00:02:48,710 --> 00:02:47,040

making his third flight today

39

00:02:50,949 --> 00:02:48,720

just completed the weather briefing with

40

00:02:53,589 --> 00:02:50,959

flight directors in houston

41

00:02:55,589 --> 00:02:53,599

and the weather coordinators there

42

00:02:57,030 --> 00:02:55,599

going through the traditional

43

00:03:02,149 --> 00:02:57,040

suit up

44

00:03:02,159 --> 00:03:05,509

chilton will be the third uh

45

00:03:09,750 --> 00:03:06,949

little dock with the russian space

46

00:03:11,830 --> 00:03:09,760

station the third to do that

47

00:03:13,670 --> 00:03:11,840

got pilot uh

48

00:03:15,910 --> 00:03:13,680

richard cyrifos

49

00:03:19,430 --> 00:03:15,920

making his second flight

50

00:03:20,390 --> 00:03:19,440

he's known as the rendezvous expert

51

00:03:22,070 --> 00:03:20,400

and

52

00:03:23,509 --> 00:03:22,080

will be responsible for the undocking of

53

00:03:33,509 --> 00:03:23,519

the mirror station and the subsequent

54

00:03:38,550 --> 00:03:35,589

sierra frost will be assisting uh

55

00:03:47,990 --> 00:03:38,560

chilton at the flight controls

56

00:03:52,949 --> 00:03:50,710

mission specialist ron sega

57

00:03:54,630 --> 00:03:52,959

he's the payload commander

58

00:03:56,630 --> 00:03:54,640

for this mission making his second

59

00:03:58,789 --> 00:03:56,640

flight he's very familiar with the

60

00:04:00,869 --> 00:03:58,799

united states russian cooperative space

61

00:04:02,789 --> 00:04:00,879

effort having spent several months in

62

00:04:03,990 --> 00:04:02,799

russia serving as nasa's operations

63

00:04:06,229 --> 00:04:04,000

director

64

00:04:21,590 --> 00:04:06,239

at the gagarin cosmonaut training center

65

00:04:24,629 --> 00:04:23,030

across the room the rest of the crew

66

00:04:26,230 --> 00:04:24,639

members are getting

67

00:04:27,510 --> 00:04:26,240

assisted

68

00:04:29,030 --> 00:04:27,520

with

69

00:04:32,310 --> 00:04:29,040

equipment they'll be taking aboard

70

00:04:34,469 --> 00:04:32,320

mission specialist shannon lucid

71

00:04:36,310 --> 00:04:34,479

she's got uh

72

00:04:37,670 --> 00:04:36,320

applying for the five the fifth time

73

00:04:39,670 --> 00:04:37,680

today

74

00:04:41,990 --> 00:04:39,680

the first american woman

75

00:04:42,950 --> 00:04:42,000

to be launched aboard the the mir

76

00:04:44,550 --> 00:04:42,960

station

77

00:04:47,350 --> 00:04:44,560

she'll be staying aboard the the mirror

78

00:04:48,710 --> 00:04:47,360

for four and a half months

79

00:04:50,550 --> 00:04:48,720

as soon as she arrives on the mirror

80

00:04:52,870 --> 00:04:50,560

station she will become part of that

81

00:04:54,150 --> 00:04:52,880

team

82

00:04:56,390 --> 00:04:54,160

she'll be staying on mirror for about

83

00:05:00,310 --> 00:04:56,400

143 days until august

84

00:05:02,950 --> 00:05:00,320

conducting long duration space research

85

00:05:05,189 --> 00:05:02,960

mission specialist rich clifford

86

00:05:07,029 --> 00:05:05,199

he's also serving as flight engineer and

87

00:05:11,430 --> 00:05:07,039

will be one of the crew members to make

88

00:05:11,440 --> 00:05:16,469

space walk will occur on flight day six

89

00:05:20,870 --> 00:05:18,629

he's also uh going to be responsible for

90

00:05:23,189 --> 00:05:20,880

the space vision system and will be

91

00:05:25,510 --> 00:05:23,199

helping transfer supplies and equipment

92

00:05:27,110 --> 00:05:25,520

over to the mir station

93

00:05:29,270 --> 00:05:27,120

also he'll be assisting the commander

94

00:05:30,390 --> 00:05:29,280

and pilot with ascent and reentry

95

00:05:32,150 --> 00:05:30,400

checklists

96

00:05:35,029 --> 00:05:32,160

and in monitoring vehicle systems as the

97

00:05:39,430 --> 00:05:37,670

mission specialist linda godwin

98

00:05:41,670 --> 00:05:39,440

she's making her third flight today

99

00:05:43,749 --> 00:05:41,680

she's uh

100

00:05:46,310 --> 00:05:43,759

going to join rich clifford in the space

101
00:05:48,070 --> 00:05:46,320
walk on flight day six where they'll be

102
00:05:54,950 --> 00:05:48,080
attaching four experiments to the

103
00:05:59,590 --> 00:05:57,270
she'll also be involved in the unique

104
00:06:02,550 --> 00:05:59,600
kid sat payload

105
00:06:03,670 --> 00:06:02,560
and the tsar x experiment flying again

106
00:06:05,670 --> 00:06:03,680
with him

107
00:06:07,909 --> 00:06:05,680
involving the amateur radio

108
00:06:09,189 --> 00:06:07,919
operation from the shuttle and also

109
00:06:20,950 --> 00:06:09,199
she'll be involved with the biorack

110
00:06:24,710 --> 00:06:23,110
commander kevin chilton ready to go this

111
00:06:39,029 --> 00:06:24,720
morning

112
00:06:39,039 --> 00:07:11,990
thank you

113
00:07:15,350 --> 00:07:13,749

a profile test of the orbiter air

114

00:07:17,270 --> 00:07:15,360

services has started

115

00:07:19,270 --> 00:07:17,280

and flight control surfaces are being

116

00:07:23,270 --> 00:07:19,280

moved through a pre-programmed pattern

117

00:07:51,670 --> 00:07:25,029

next the main engines will be gambled

118

00:07:51,680 --> 00:08:04,469

verify no unexpected errors

119

00:08:07,909 --> 00:08:06,309

the gaseous oxygen vent hood is being

120

00:08:19,110 --> 00:08:07,919

retracted away from the top of the

121

00:08:19,120 --> 00:08:22,070

coming up on

122

00:08:22,080 --> 00:08:24,830

all right

123

00:08:28,710 --> 00:08:27,189

uh it's called the morning number clears

124

00:08:30,950 --> 00:08:28,720

unexpected areas

125

00:08:33,430 --> 00:08:30,960

after that man flight crew otc close and

126

00:08:35,110 --> 00:08:33,440

lock your visors and initiate O2 flow

127

00:08:51,030 --> 00:08:35,120

and it's just about time for the spirit

128

00:08:55,430 --> 00:08:52,790

six member crew is about to embark on

129

00:08:57,590 --> 00:08:55,440

the first day of the nine-day flight

130

00:08:59,269 --> 00:08:57,600

beginning of shannon lucid's four and a

131

00:09:02,230 --> 00:08:59,279

half month stay

132

00:09:05,030 --> 00:09:02,240

aboard the mir space station

133

00:09:07,269 --> 00:09:05,040

got a six-hour spacewalk

134

00:09:12,550 --> 00:09:07,279

this marks the third flight

135

00:09:16,550 --> 00:09:14,710

from now through 1998 there will be an

136

00:09:24,710 --> 00:09:16,560

american astronaut aboard the mere space

137

00:09:32,790 --> 00:09:27,190

one minute

138

00:09:37,269 --> 00:09:34,470

atlantis will be launched on a northerly

139

00:09:44,710 --> 00:09:37,279

trajectory and climb 51.6 degrees to the

140

00:09:49,829 --> 00:09:47,350

t-minus 40 seconds

141

00:09:58,230 --> 00:09:49,839

this marks the 13th night launch in the

142

00:10:04,630 --> 00:10:00,550

atlantis onboard computers have control

143

00:10:04,640 --> 00:10:09,030

t-minus 20 seconds

144

00:10:12,389 --> 00:10:10,550

thousands of gallons of water will be

145

00:10:14,150 --> 00:10:12,399

dumped on the launch platform to help

146

00:10:15,990 --> 00:10:14,160

absorb the shock of the seven million

147

00:10:17,269 --> 00:10:16,000

pounds of thrust

148

00:10:19,910 --> 00:10:17,279

nine

149

00:10:20,870 --> 00:10:19,920

we have a go for engine start

150

00:10:21,910 --> 00:10:20,880

five

151
00:10:23,030 --> 00:10:21,920
four

152
00:10:24,150 --> 00:10:23,040
three

153
00:10:25,190 --> 00:10:24,160
two

154
00:10:27,910 --> 00:10:25,200
one

155
00:10:29,829 --> 00:10:27,920
booster ignition and liftoff of atlantis

156
00:10:45,430 --> 00:10:29,839
on the third shuttle mirrored docking

157
00:10:45,440 --> 00:10:58,829
pretty good

158
00:11:02,949 --> 00:11:01,590
engine engines are throttling back now

159
00:11:05,110 --> 00:11:02,959
helping to ease the buildup of

160
00:11:07,190 --> 00:11:05,120
aerodynamic loads on the vehicle as

161
00:11:09,110 --> 00:11:07,200
atlantis continues to accelerate rapidly

162
00:11:12,630 --> 00:11:09,120
through the dense lower altitudes

163
00:11:14,710 --> 00:11:12,640

traveling now over 650 miles per hour

164

00:11:18,870 --> 00:11:14,720

time 48 seconds all systems are

165

00:11:36,069 --> 00:11:20,389

atlantis is now easing through the

166

00:11:36,079 --> 00:11:40,389

and the engines are throttling back up

167

00:11:40,399 --> 00:11:45,750

atlantis go at throttling

168

00:11:49,269 --> 00:11:47,269

all engines are now running at full

169

00:11:51,590 --> 00:11:49,279

throttle all systems are performing well

170

00:11:53,509 --> 00:11:51,600

altitude is now 62 thousand feet

171

00:12:02,230 --> 00:11:53,519

atlantis is traveling over 1000 miles

172

00:12:05,350 --> 00:12:03,670

atlantis continues to climb at a

173

00:12:07,030 --> 00:12:05,360

relatively steep angle at this point

174

00:12:08,949 --> 00:12:07,040

relying heavily on the solid rocket

175

00:12:10,790 --> 00:12:08,959

boosters to triple its rate of speed

176

00:12:12,389 --> 00:12:10,800

over the next 60 seconds

177

00:12:14,230 --> 00:12:12,399

delivering a combined six and a half

178

00:12:15,670 --> 00:12:14,240

million pounds of thrust the boosters

179

00:12:17,590 --> 00:12:15,680

will burn out and separate at two

180

00:12:22,150 --> 00:12:17,600

minutes six seconds time now one minute

181

00:12:25,910 --> 00:12:24,069

solid rocket booster chamber pressure is

182

00:12:36,829 --> 00:12:25,920

beginning to tail off signaling the burn

183

00:12:41,110 --> 00:12:39,030

boosters mission control sees a good

184

00:12:43,269 --> 00:12:41,120

separation atlantis is now flying free

185

00:12:45,430 --> 00:12:43,279

powered by its own main engines second

186

00:12:48,550 --> 00:12:45,440

stage guidance is now in effect

187

00:12:51,670 --> 00:12:48,560

altitude now 178 thousand feet downrange

188

00:12:57,269 --> 00:12:51,680

distance 38 miles atlantis performance

189

00:12:57,279 --> 00:13:05,030

atlanta's two engine tail

190

00:13:08,790 --> 00:13:06,790

with three engines burning at 104

191

00:13:10,310 --> 00:13:08,800

percent rated thrusts uh the boosters

192

00:13:12,230 --> 00:13:10,320

have done their job has designed the

193

00:13:13,750 --> 00:13:12,240

main engines as well and atlantis can

194

00:13:15,590 --> 00:13:13,760

now cross the atlantic with only two

195

00:13:17,190 --> 00:13:15,600

engines should one fail

196

00:13:19,829 --> 00:13:17,200

again all engines are performing well

197

00:13:22,069 --> 00:13:19,839

altitude is now 230 000 feet downrange

198

00:13:24,310 --> 00:13:22,079

distance 58 nautical miles

199

00:13:30,069 --> 00:13:24,320

atlantis is traveling over 3200 miles

200

00:13:33,670 --> 00:13:31,990

at three minutes five seconds

201
00:13:35,430 --> 00:13:33,680
atlantis flight path is already

202
00:13:37,350 --> 00:13:35,440
beginning to level out a bit

203
00:13:39,110 --> 00:13:37,360
lightening its load as propellant burns

204
00:13:40,470 --> 00:13:39,120
off and continuing its rapid

205
00:13:42,230 --> 00:13:40,480
acceleration

206
00:13:44,550 --> 00:13:42,240
all systems are continuing to perform

207
00:14:56,310 --> 00:13:44,560
very well time now three minutes 19

208
00:14:56,320 --> 00:15:01,269
okay let's go for auto sequence start

209
00:15:01,279 --> 00:15:06,150
25

210
00:15:06,160 --> 00:15:20,069
20

211
00:15:20,079 --> 00:15:26,870
open

212
00:15:37,269 --> 00:15:30,069
p0 srb ignition

213
00:15:41,749 --> 00:15:38,829

hello

214

00:15:50,389 --> 00:15:41,759
program roger roll atlantis like i

215

00:15:54,550 --> 00:15:52,870
final flight we got cold srbs

216

00:15:55,670 --> 00:15:54,560
that's firm flight but one and a half

217

00:16:03,749 --> 00:15:55,680
sigma

218

00:16:06,870 --> 00:16:05,670
if i left three at 104. angle let's

219

00:16:16,150 --> 00:16:06,880
follow

220

00:16:19,829 --> 00:16:17,350
light guidance

221

00:16:21,749 --> 00:16:19,839
go ahead single engine press 104 atlanta

222

00:16:23,269 --> 00:16:21,759
single engine press

223

00:16:25,749 --> 00:16:23,279
about a minute and a half to mikko at

224

00:16:27,670 --> 00:16:25,759
833

225

00:17:31,830 --> 00:16:27,680
navas go

226
00:17:31,840 --> 00:18:25,270
you

227
00:18:25,280 --> 00:18:40,150
cliches

228
00:19:23,830 --> 00:18:48,470
foreign

229
00:19:23,840 --> 00:19:57,750
you

230
00:20:02,950 --> 00:19:59,669
eight feet closing 0.08

231
00:20:04,950 --> 00:20:02,960
okay i show 0.08 also

232
00:20:06,950 --> 00:20:04,960
did i show eight feet also

233
00:20:09,110 --> 00:20:06,960
good good comparison

234
00:20:11,590 --> 00:20:09,120
go for contact conditions for point one

235
00:20:16,549 --> 00:20:11,600
shelly we're a little on the slow side

236
00:20:16,559 --> 00:20:22,870
eight seconds early

237
00:20:28,070 --> 00:20:26,310
was that a beat up in chile no okay

238
00:20:35,830 --> 00:20:28,080

i show you 0.08

239

00:20:35,840 --> 00:20:41,190

three seconds early

240

00:20:48,710 --> 00:20:42,950

five feet away

241

00:20:52,789 --> 00:20:51,270

i show .07 now chilly

242

00:20:54,230 --> 00:20:52,799

okay beat up here

243

00:21:00,789 --> 00:20:54,240

raw date has picked it up showing point

244

00:21:09,750 --> 00:21:03,190

three feet point one

245

00:21:09,760 --> 00:21:17,190

point one 0 on the right two feet one

246

00:21:21,590 --> 00:21:19,350

okay hold what you got it's sweet point

247

00:21:27,350 --> 00:21:21,600

10.10 i agree

248

00:21:27,360 --> 00:21:41,830

got six inches

249

00:21:41,840 --> 00:21:48,310

disarm flight controller power off

250

00:21:54,789 --> 00:21:49,990

okay you're in free drift and we have

251
00:22:03,669 --> 00:21:56,549
beautiful

252
00:22:03,679 --> 00:22:25,830
pedal position bass

253
00:24:24,870 --> 00:24:21,909
it

254
00:24:26,390 --> 00:24:24,880
like they'll get into station keeping in

255
00:24:38,230 --> 00:24:26,400
about six minutes so that'll give them

256
00:24:40,630 --> 00:24:39,350
thank you

257
00:24:43,029 --> 00:24:40,640
all right you see

258
00:24:44,470 --> 00:24:43,039
go ahead okay we went to manual key here

259
00:24:48,149 --> 00:24:44,480
so they should be able to talk we'll

260
00:24:48,159 --> 00:24:51,669
real flight

261
00:24:57,350 --> 00:24:54,070
yes why we're manually keying we'd like

262
00:24:58,710 --> 00:24:57,360
uh moscow to try uh okay come here okay

263
00:25:01,029 --> 00:24:58,720

stand by

264

00:25:03,430 --> 00:25:01,039

hey rio let's go uh mr lovely off is

265

00:25:05,110 --> 00:25:03,440

ready for the for the docking conference

266

00:25:07,590 --> 00:25:05,120

okay and he's right there and he just

267

00:25:11,750 --> 00:25:07,600

gave you a go so you might respond

268

00:25:15,669 --> 00:25:13,990

my chain cpct is disarmed and flight

269

00:25:19,029 --> 00:25:15,679

controller powers

270

00:25:23,430 --> 00:25:19,039

copy copy content capture and we confirm

271

00:26:01,909 --> 00:25:24,549

copy that

272

00:26:06,310 --> 00:26:04,470

atlantis houston your go for shuttle ods

273

00:26:10,390 --> 00:26:06,320

hatch opening

274

00:26:10,400 --> 00:26:18,870

okay we're opening the hatch

275

00:26:18,880 --> 00:26:47,830

and we have a good image of you chilly

276

00:26:47,840 --> 00:27:18,470

the two of you look great

277

00:27:18,480 --> 00:28:21,190

looks like they're welcoming you aboard

278

00:28:24,789 --> 00:28:23,269

this is the view coming down

279

00:28:27,909 --> 00:28:24,799

out of the

280

00:28:30,070 --> 00:28:27,919

airlock and taking a turn at the ods and

281

00:28:31,750 --> 00:28:30,080

now we're entering the docking adapter

282

00:28:32,710 --> 00:28:31,760

and heading over to the beer space

283

00:28:34,950 --> 00:28:32,720

station

284

00:28:36,149 --> 00:28:34,960

as you can see throughout this entire

285

00:28:37,269 --> 00:28:36,159

tour

286

00:28:39,350 --> 00:28:37,279

it gets pretty crowded in the

287

00:28:41,350 --> 00:28:39,360

passageways there most of these bags are

288

00:28:42,710 --> 00:28:41,360

filled with transfer items going one way

289

00:28:45,590 --> 00:28:42,720

or the other

290

00:28:54,310 --> 00:28:45,600

here rod and yuri usage have are working

291

00:28:58,230 --> 00:28:55,909

and i couldn't resist the urge and a few

292

00:29:00,710 --> 00:28:58,240

spots in here to do a few aileron rolls

293

00:29:02,230 --> 00:29:00,720

on the way

294

00:29:04,950 --> 00:29:02,240

you always do them in the airplane you

295

00:29:08,310 --> 00:29:04,960

might as well do them here

296

00:29:20,230 --> 00:29:10,710

a few less g's than we uh fly in that

297

00:29:25,669 --> 00:29:22,630

our transit route today on this tour

298

00:29:28,230 --> 00:29:25,679

starts with the docking adapter and then

299

00:29:34,070 --> 00:29:28,240

on our way to the node we are transiting

300

00:29:38,630 --> 00:29:36,470

he does the ducting always air ducting

301
00:29:40,230 --> 00:29:38,640
for

302
00:29:41,830 --> 00:29:40,240
the uh

303
00:29:43,430 --> 00:29:41,840
requirements

304
00:29:45,269 --> 00:29:43,440
the big cable that we're going to see

305
00:29:49,029 --> 00:29:45,279
all the way into the base block

306
00:29:52,710 --> 00:29:49,039
is uh for the bits new that sends audio

307
00:29:52,720 --> 00:29:59,590
we have a camera hooked up in there

308
00:30:06,389 --> 00:30:01,269
very shortly here we're going to get to

309
00:30:13,110 --> 00:30:08,389
and i believe i went into spectre next

310
00:30:19,029 --> 00:30:15,510
finally space uh vehicles are big enough

311
00:30:22,549 --> 00:30:20,870
yeah that's for sure

312
00:30:23,909 --> 00:30:22,559
we'll see that graphically illustrated

313
00:30:27,190 --> 00:30:23,919

here in a little bit when we come back

314

00:30:31,830 --> 00:30:29,269

inside the spectre module which will be

315

00:30:34,149 --> 00:30:31,840

basically shannon's home for the next

316

00:30:36,549 --> 00:30:34,159

several months she'll be conducting her

317

00:30:38,470 --> 00:30:36,559

experiments in here and

318

00:30:40,950 --> 00:30:38,480

this is actually quite a roomy module

319

00:30:43,909 --> 00:30:40,960

and it's uh perhaps because it's

320

00:30:45,430 --> 00:30:43,919

not as full of the transfer items and

321

00:30:46,789 --> 00:30:45,440

other equipment as some of the other

322

00:30:52,149 --> 00:30:46,799

modules are

323

00:30:56,149 --> 00:30:53,830

how to do you turned out to be in here

324

00:30:58,389 --> 00:30:56,159

because there's no connection back it's

325

00:31:00,470 --> 00:30:58,399

everything as you know is plugged in

326

00:31:01,669 --> 00:31:00,480

to the central node you have the spectre

327

00:31:03,830 --> 00:31:01,679

module the

328

00:31:17,669 --> 00:31:03,840

crystal module leading into it and then

329

00:31:22,470 --> 00:31:19,430

this side uh transit back out of the

330

00:31:24,870 --> 00:31:22,480

spectre into the uh node and from here

331

00:31:26,950 --> 00:31:24,880

it should be going into the mod 2 module

332

00:31:28,789 --> 00:31:26,960

after that quick aileron roll

333

00:31:37,110 --> 00:31:28,799

it's about a t-38 rolling right there i

334

00:31:40,470 --> 00:31:38,870

yeah this is the command 2 module right

335

00:31:42,870 --> 00:31:40,480

at the in the center of the field of

336

00:31:44,389 --> 00:31:42,880

view is one of the gyrodynes we

337

00:31:47,029 --> 00:31:44,399

transferred one of those yesterday as

338

00:31:48,950 --> 00:31:47,039

one of our first transfer items a new

339

00:31:51,350 --> 00:31:48,960

refurbished gyrodrive to the beer and

340

00:31:53,509 --> 00:31:51,360

then we're taking back

341

00:31:55,669 --> 00:31:53,519

an old one for uh refurbishment and then

342

00:31:56,470 --> 00:31:55,679

subsequent resupply it points out a

343

00:31:58,230 --> 00:31:56,480

great

344

00:32:00,710 --> 00:31:58,240

capability that our shuttle has in

345

00:32:02,950 --> 00:32:00,720

taking uh mass from earth orbit back

346

00:32:05,830 --> 00:32:02,960

down to the earth

347

00:32:07,110 --> 00:32:05,840

in applications such as a space station

348

00:32:21,190 --> 00:32:07,120

or

349

00:32:28,789 --> 00:32:24,389

i'm getting just about to the end of

350

00:32:33,269 --> 00:32:30,710

and the metal containers are russian

351
00:32:35,830 --> 00:32:33,279
water containers and the white bags are

352
00:32:37,350 --> 00:32:35,840
our cwc bags that

353
00:32:38,310 --> 00:32:37,360
we've been transferring over filling

354
00:32:40,549 --> 00:32:38,320
them up

355
00:32:43,029 --> 00:32:40,559
out of the shuttle's

356
00:32:46,630 --> 00:32:43,039
fuel cell water that's produced and

357
00:32:49,750 --> 00:32:48,070
i think uh

358
00:32:52,230 --> 00:32:49,760
correct we're about half through with

359
00:32:59,110 --> 00:32:52,240
that water transfer fill operations

360
00:33:04,070 --> 00:33:01,750
uh into basically the

361
00:33:06,310 --> 00:33:04,080
cosmonauts living quarters next as we go

362
00:33:11,750 --> 00:33:06,320
into the base block the headquarters if

363
00:33:17,110 --> 00:33:15,350

and this little uh spinning is uh

364

00:33:19,190 --> 00:33:17,120

just to graphically illustrate the point

365

00:33:20,470 --> 00:33:19,200

that uh you can get lost in this uh

366

00:33:22,149 --> 00:33:20,480

space station and you have to keep

367

00:33:24,549 --> 00:33:22,159

yourself oriented when you get to the

368

00:33:26,950 --> 00:33:24,559

node stop and take a second figure out

369

00:33:28,470 --> 00:33:26,960

which way you're really going

370

00:33:30,470 --> 00:33:28,480

now you get used to it though after one

371

00:33:31,669 --> 00:33:30,480

or two transits and it really isn't too

372

00:33:33,509 --> 00:33:31,679

bad to do

373

00:33:36,149 --> 00:33:33,519

here at

374

00:33:37,509 --> 00:33:36,159

jury artificio and chile and shannon are

375

00:33:40,310 --> 00:33:37,519

discussing some of the transfer

376

00:33:41,509 --> 00:33:40,320

operations uh so it has tilly and yuri

377

00:33:43,269 --> 00:33:41,519

are holding the

378

00:33:47,029 --> 00:33:43,279

one of the joint documents that we use

379

00:33:51,669 --> 00:33:48,310

your usage

380

00:33:53,990 --> 00:33:51,679

in the background by the table is

381

00:33:56,310 --> 00:33:54,000

doing some prep for some transfer

382

00:34:01,350 --> 00:33:56,320

items back from the mirror to the

383

00:34:05,750 --> 00:34:02,870

from here we're going to proceed into

384

00:34:07,909 --> 00:34:05,760

the command one

385

00:34:09,750 --> 00:34:07,919

and at the end of that is the soyuz and

386

00:34:11,829 --> 00:34:09,760

we'll get all the way down to the end

387

00:34:13,750 --> 00:34:11,839

picture here and uh i poked the camera

388

00:34:16,389 --> 00:34:13,760

in boyd board

389

00:34:18,069 --> 00:34:16,399

on the soyuz capsule and we'll see that

390

00:34:19,349 --> 00:34:18,079

shortly

391

00:34:22,950 --> 00:34:19,359

rick it looks like you have a little

392

00:34:25,349 --> 00:34:22,960

pulley system to move along with

393

00:34:27,669 --> 00:34:25,359

yeah that's that's true dude they've got

394

00:34:30,550 --> 00:34:27,679

the russians use lots of bungees both

395

00:34:32,230 --> 00:34:30,560

for hold downs and for uh for pulling

396

00:34:33,589 --> 00:34:32,240

yourself along and they're quite handy

397

00:34:35,270 --> 00:34:33,599

for translating

398

00:34:36,710 --> 00:34:35,280

as you can see uh

399

00:34:38,790 --> 00:34:36,720

i remarked to one of the other crew

400

00:34:40,550 --> 00:34:38,800

members earlier today that moving around

401
00:34:42,310 --> 00:34:40,560
beer is kind of like being a spelunker

402
00:34:46,149 --> 00:34:42,320
exploring caves a lot of

403
00:34:47,270 --> 00:34:46,159
long narrow passageways for transit

404
00:34:50,310 --> 00:34:47,280
here are the

405
00:34:51,430 --> 00:34:50,320
russian suits uh inside the soyuz and uh

406
00:34:52,629 --> 00:34:51,440
not only

407
00:34:54,389 --> 00:34:52,639
all three of course are russian

408
00:34:56,149 --> 00:34:54,399
equipment but uh shannon's suit is in

409
00:34:57,030 --> 00:34:56,159
there it was checked out yesterday and

410
00:34:58,470 --> 00:34:57,040
she's

411
00:35:03,670 --> 00:34:58,480
fully and officially a member of the

412
00:35:06,710 --> 00:35:05,589
quick turnaround out of uh sawyers and

413
00:35:08,630 --> 00:35:06,720

rushing back at this point i was

414

00:35:10,790 --> 00:35:08,640

beginning to worry about the battery on

415

00:35:16,630 --> 00:35:10,800

my compact portable light so i kind of

416

00:35:20,710 --> 00:35:18,790

we certainly hope not to use those

417

00:35:27,910 --> 00:35:20,720

soyuz modules but it's nice to know

418

00:35:33,430 --> 00:35:30,150

this uh we just went by uh one of the

419

00:35:34,870 --> 00:35:33,440

little living spaces um both yuri all

420

00:35:37,270 --> 00:35:34,880

theories have their own individual

421

00:35:38,310 --> 00:35:37,280

compartments for sleep and it's a very

422

00:35:39,750 --> 00:35:38,320

nice

423

00:35:41,430 --> 00:35:39,760

opportunity for them to have some

424

00:35:52,390 --> 00:35:41,440

privacy uh during the course of their

425

00:35:55,270 --> 00:35:54,230

so we're approaching the node here

426
00:35:56,150 --> 00:35:55,280
shortly

427
00:35:57,589 --> 00:35:56,160
and

428
00:36:06,950 --> 00:35:57,599
then we'll be taking

429
00:36:33,670 --> 00:36:08,790
there we go we found the right one and

430
00:36:37,190 --> 00:36:35,349
here we're just about ready to enter the

431
00:36:39,829 --> 00:36:37,200
docking module

432
00:36:42,230 --> 00:36:39,839
and if you notice uh the lower center

433
00:36:44,390 --> 00:36:42,240
part of the field of view you see a

434
00:36:47,030 --> 00:36:44,400
target similar to the well it is the

435
00:36:49,750 --> 00:36:47,040
exact docking target that chile used

436
00:36:52,550 --> 00:36:49,760
to dock yesterday

437
00:36:54,550 --> 00:36:52,560
and we'll play uh ods center line camera

438
00:36:58,870 --> 00:36:54,560

here for just a minute and do our own

439

00:37:04,150 --> 00:37:01,030

copy that rick and uh we have to use

440

00:37:07,589 --> 00:37:04,160

that thing quite a few more times so

441

00:37:12,150 --> 00:37:09,349

you it notice didn't even touch it we

442

00:37:13,270 --> 00:37:12,160

just took the video camera down to it

443

00:37:15,910 --> 00:37:13,280

back uh

444

00:37:20,790 --> 00:37:15,920

into the shuttle ods

445

00:37:23,910 --> 00:37:22,310

and from here we're going to take a turn

446

00:37:27,030 --> 00:37:23,920

after the space app

447

00:37:28,710 --> 00:37:27,040

as ron is taking some transfer items out

448

00:37:35,190 --> 00:37:28,720

of the space half tunnel

449

00:37:39,030 --> 00:37:36,950

and i guess i'd like to begin by saying

450

00:37:41,510 --> 00:37:39,040

this is kind of a bittersweet moment for

451
00:37:42,870 --> 00:37:41,520
us and uh one also filled with a lot of

452
00:37:43,990 --> 00:37:42,880
satisfaction

453
00:37:47,349 --> 00:37:44,000
um

454
00:37:49,030 --> 00:37:47,359
we've had a wonderful time on the the uh

455
00:37:51,109 --> 00:37:49,040
near atlantis complex here and it

456
00:37:54,069 --> 00:37:51,119
started off just fantastic with the

457
00:37:56,630 --> 00:37:54,079
warmest welcome anyone can imagine from

458
00:37:58,310 --> 00:37:56,640
yuria dean and yuri davao

459
00:38:03,030 --> 00:37:58,320
and

460
00:38:05,349 --> 00:38:03,040
with a great working relationship

461
00:38:07,910 --> 00:38:05,359
between the two crews and certainly the

462
00:38:10,069 --> 00:38:07,920
sense of satisfaction uh that we feel

463
00:38:13,589 --> 00:38:10,079

for having got the job done is is

464

00:38:16,710 --> 00:38:13,599

tremendous and uh ron sega who is my

465

00:38:18,950 --> 00:38:16,720

payload commander has been sweating the

466

00:38:22,069 --> 00:38:18,960

transfer both to and from here from the

467

00:38:23,349 --> 00:38:22,079

shuttle perspective and uh yuri and yuri

468

00:38:25,190 --> 00:38:23,359

have been working her real hard on the

469

00:38:27,349 --> 00:38:25,200

mere side and it's been a great team

470

00:38:30,390 --> 00:38:27,359

effort and i think we're there

471

00:38:33,190 --> 00:38:30,400

that's that's the satisfaction part

472

00:38:36,470 --> 00:38:33,200

truly uh the sad part will be to bid

473

00:38:39,030 --> 00:38:36,480

farewell to shannon and yuri and yuri uh

474

00:38:40,150 --> 00:38:39,040

this is a tremendous team uh we're gonna

475

00:38:41,750 --> 00:38:40,160

miss them

476

00:38:43,349 --> 00:38:41,760

um you know

477

00:38:46,630 --> 00:38:43,359

we know we'll see shannon again when she

478

00:38:48,150 --> 00:38:46,640

comes back on staff 79 but uh but

479

00:38:51,910 --> 00:38:48,160

there's a big ocean between russia and

480

00:38:53,910 --> 00:38:51,920

america and uh it and we're not all so

481

00:38:55,670 --> 00:38:53,920

confident they're sure or certain i

482

00:39:05,829 --> 00:38:55,680

should say that we'll ever see our two

483

00:39:05,839 --> 00:39:17,190

one person

484

00:39:22,710 --> 00:39:19,829

and with that houston uh we

485

00:39:24,950 --> 00:39:22,720

did the formal farewell

486

00:39:27,430 --> 00:39:24,960

and i'd like to extend my thanks to soup

487

00:39:34,510 --> 00:39:27,440

in moscow for their great support

488

00:39:51,510 --> 00:39:36,150

is

489

00:41:04,230 --> 00:40:22,710

foreign

490

00:41:21,349 --> 00:41:06,150

atlantis houston no action on the spec

491

00:41:21,359 --> 00:41:26,630

ev1 houston

492

00:41:31,270 --> 00:41:28,470

yeah linda and uh

493

00:41:34,150 --> 00:41:31,280

we see that cable cutter uh at the end

494

00:41:37,109 --> 00:41:34,160

of the tether doing some motion also we

495

00:41:39,109 --> 00:41:37,119

suggest that you take the tether that's

496

00:41:41,430 --> 00:41:39,119

on your wrist the wrist stand and move

497

00:41:42,790 --> 00:41:41,440

that to your mini workstation

498

00:41:55,750 --> 00:41:42,800

particularly before you start

499

00:41:59,910 --> 00:41:57,829

and rich it just looks spectacular out

500

00:42:24,790 --> 00:41:59,920

there doing a space walk on the atlantis

501
00:42:24,800 --> 00:43:35,670
stuff

502
00:43:35,680 --> 00:44:48,870
down here below

503
00:44:48,880 --> 00:45:35,990
are you

504
00:46:48,550 --> 00:45:43,589
okay

505
00:46:48,560 --> 00:46:57,589
on your left wrist

506
00:46:57,599 --> 00:47:49,910
is

507
00:47:49,920 --> 00:48:31,589
me

508
00:48:31,599 --> 00:48:57,349
foreign

509
00:48:57,359 --> 00:49:15,589
uh

510
00:49:15,599 --> 00:49:44,230
foreign

511
00:49:44,240 --> 00:50:12,069
is

512
00:50:12,079 --> 00:51:06,230
oh

513
00:51:09,589 --> 00:51:07,670

now we're inside the space hat that's

514

00:51:12,069 --> 00:51:09,599

the gyro dime that uh we're returning to

515

00:51:13,990 --> 00:51:12,079

earth that was on board beer it's all

516

00:51:16,630 --> 00:51:14,000

stowed and buttoned down ready for uh

517

00:51:21,030 --> 00:51:18,950

and as we come aboard the space head i'm

518

00:51:22,390 --> 00:51:21,040

going to cut to some live tv of ron

519

00:51:24,069 --> 00:51:22,400

who's working there and he's going to

520

00:51:26,470 --> 00:51:24,079

take over the narrative describing some

521

00:51:29,270 --> 00:51:26,480

of his biorack operations

522

00:51:33,990 --> 00:51:29,280

so uh we can take down link to payload

523

00:51:39,109 --> 00:51:36,630

hello lyndon and i are in the space have

524

00:51:40,950 --> 00:51:39,119

which you probably saw from the

525

00:51:42,549 --> 00:51:40,960

view that's past the docking module in

526
00:51:44,549 --> 00:51:42,559
the aft part of the payload bay of the

527
00:51:46,870 --> 00:51:44,559
shuttle connected by a tunnel

528
00:51:58,630 --> 00:51:46,880
and we have two main activities in the

529
00:52:04,470 --> 00:52:01,589
and we also return items from russia in

530
00:52:07,270 --> 00:52:04,480
this case from the russian space station

531
00:52:09,349 --> 00:52:07,280
in this case it's empty food containers

532
00:52:12,790 --> 00:52:09,359
so the the number of items that we have

533
00:52:15,030 --> 00:52:12,800
include food clothing water and science

534
00:52:17,510 --> 00:52:15,040
equipment for shannon to enable her to

535
00:52:19,750 --> 00:52:17,520
do the long-duration studies that will

536
00:52:21,910 --> 00:52:19,760
take place over the next roughly 140

537
00:52:22,630 --> 00:52:21,920
days this is going to be important for

538
00:52:23,990 --> 00:52:22,640

us

539

00:52:25,750 --> 00:52:24,000

in the in working toward the

540

00:52:28,309 --> 00:52:25,760

international space station to get more

541

00:52:30,710 --> 00:52:28,319

experience of long-duration flight and

542

00:52:32,230 --> 00:52:30,720

work as well as technology development

543

00:52:34,470 --> 00:52:32,240

of our equipment that we will eventually

544

00:52:36,870 --> 00:52:34,480

fly on space station as well as

545

00:52:39,589 --> 00:52:36,880

beginning to increase our database in

546

00:52:41,670 --> 00:52:39,599

the long duration studies of science

547

00:52:44,230 --> 00:52:41,680

now we have one example of that here in

548

00:52:45,750 --> 00:52:44,240

the space have it's called biorack it's

549

00:52:48,309 --> 00:52:45,760

behind linden i

550

00:52:52,069 --> 00:52:48,319

and it has flown three times before

551
00:52:53,190 --> 00:52:52,079
it's assad's a mini biology laboratory

552
00:52:55,349 --> 00:52:53,200
built uh

553
00:52:57,670 --> 00:52:55,359
by the european space agency it's

554
00:53:00,549 --> 00:52:57,680
followed three times on the shuttle

555
00:53:03,430 --> 00:53:00,559
uh fts mission 61a the international

556
00:53:06,630 --> 00:53:03,440
microgravity laboratory one and two and

557
00:53:08,950 --> 00:53:06,640
now of course on our flight

558
00:53:11,430 --> 00:53:08,960
yes sir that's affirmative also there

559
00:53:13,349 --> 00:53:11,440
there is uh one little delta to your

560
00:53:15,990 --> 00:53:13,359
message

561
00:53:17,510 --> 00:53:16,000
the actual nbc show is called the

562
00:53:26,870 --> 00:53:17,520
nightside

563
00:53:26,880 --> 00:53:34,790

we copy chili

564

00:53:38,549 --> 00:53:36,309

yes and last we've completed docking

565

00:53:40,309 --> 00:53:38,559

ring extension uh the ring initial

566

00:53:50,790 --> 00:53:40,319

position i came on with pedal position

567

00:53:54,150 --> 00:53:52,710

and thanks rich those numbers all look

568

00:53:57,589 --> 00:53:54,160

good to us and

569

00:54:02,950 --> 00:53:57,599

we think that 72 really reflects a bias

570

00:54:02,960 --> 00:54:10,069

okay that's what we heard thanks a lot

571

00:54:15,030 --> 00:54:11,510

houston atlanta's comp check from the

572

00:54:32,150 --> 00:54:16,870

atlantis houston loud and clear on air

573

00:54:42,870 --> 00:54:34,150

physical separation

574

00:55:48,950 --> 00:54:44,710

executing separation

575

00:58:24,150 --> 00:55:51,270

we have a spectacular view of the mir

576

00:58:27,510 --> 00:58:25,910

soon to reach uh two and a half times

577

00:58:29,430 --> 00:58:27,520

the speed of sound at which point pilot