



1
00:00:23,509 --> 00:00:21,109
well the spirit of 76 the uh the kind of

2
00:00:25,509 --> 00:00:23,519
the motto of this crew and and the

3
00:00:26,470 --> 00:00:25,519
spirit behind the flight has been one of

4
00:00:31,269 --> 00:00:26,480
teamwork

5
00:00:32,950 --> 00:00:31,279
amongst the crew members to execute the

6
00:00:34,150 --> 00:00:32,960
difficult portions of this flight be it

7
00:00:36,870 --> 00:00:34,160
the rendezvous

8
00:00:38,470 --> 00:00:36,880
the transfer operations the eva

9
00:00:39,430 --> 00:00:38,480
all the spectacular first that took

10
00:00:41,990 --> 00:00:39,440
place

11
00:00:43,590 --> 00:00:42,000
but the teamwork didn't end with the

12
00:00:45,190 --> 00:00:43,600
crew it certainly in fact had its

13
00:00:47,029 --> 00:00:45,200

beginnings its origins with the folks

14

00:00:49,029 --> 00:00:47,039

sitting in this room and all the people

15

00:00:51,590 --> 00:00:49,039

here at the johnson space center took a

16

00:00:54,790 --> 00:00:51,600

great team a great team effort to pull

17

00:00:56,549 --> 00:00:54,800

off sts 76 and make it look easy i've

18

00:00:57,750 --> 00:00:56,559

had more people come up to me and say

19

00:00:59,189 --> 00:00:57,760

gosh it looks like you're having a lot

20

00:01:02,709 --> 00:00:59,199

of fun up there

21

00:01:04,789 --> 00:01:02,719

the mission was such a great success

22

00:01:05,990 --> 00:01:04,799

those things don't happen by accident

23

00:01:08,149 --> 00:01:06,000

they happen because of a lot of

24

00:01:10,310 --> 00:01:08,159

dedicated hard work that's done by each

25

00:01:11,350 --> 00:01:10,320

and every person in this room and other

26

00:01:12,390 --> 00:01:11,360

folks on this center that were

27

00:01:15,670 --> 00:01:12,400

associated

28

00:01:17,030 --> 00:01:15,680

with making sts-76 a reality so on

29

00:01:19,030 --> 00:01:17,040

behalf of the crew i'd like to begin

30

00:01:19,990 --> 00:01:19,040

today by thanking each and every one of

31

00:01:22,630 --> 00:01:20,000

you here

32

00:01:24,390 --> 00:01:22,640

you're all award winners in my mind and

33

00:01:25,670 --> 00:01:24,400

we really appreciate you coming over

34

00:01:27,270 --> 00:01:25,680

coming over here today and doing the

35

00:01:30,070 --> 00:01:27,280

great work that you do day in and day

36

00:01:31,990 --> 00:01:30,080

out at the johnson space center

37

00:01:34,550 --> 00:01:32,000

well now i'd kind of like to transition

38

00:01:36,789 --> 00:01:34,560

into the home movie side of the uh of

39

00:01:38,230 --> 00:01:36,799

the adventure

40

00:01:40,870 --> 00:01:38,240

i want you to know there's a premiere of

41

00:01:42,870 --> 00:01:40,880

this of this picture we've looked at

42

00:01:44,230 --> 00:01:42,880

edited versions so i'm as excited as you

43

00:01:50,950 --> 00:01:44,240

are to watch what happens here as we

44

00:01:54,630 --> 00:01:53,109

this was the evening before launch

45

00:01:55,990 --> 00:01:54,640

and you can see it we couldn't ask for

46

00:01:58,230 --> 00:01:56,000

better weather once the winds calmed

47

00:02:00,950 --> 00:01:58,240

down on the 21st the 22nd turned out to

48

00:02:03,749 --> 00:02:00,960

be a spectacular night to go fly

49

00:02:06,389 --> 00:02:03,759

with a all bid an ungodly hour to lift

50

00:02:08,630 --> 00:02:06,399

off at at 3 13 in the morning

51
00:02:10,150 --> 00:02:08,640
here we are walking out of the uh

52
00:02:11,910 --> 00:02:10,160
crew quarters and i was surprised you

53
00:02:13,430 --> 00:02:11,920
may have seen me jerk my hand to the

54
00:02:15,030 --> 00:02:13,440
side with surprises i saw a member of

55
00:02:16,390 --> 00:02:15,040
our training team standing there smiling

56
00:02:18,710 --> 00:02:16,400
at us so we had a lot of support from

57
00:02:20,070 --> 00:02:18,720
johnson down there for the launch

58
00:02:22,150 --> 00:02:20,080
i don't care how many times you sit on

59
00:02:24,309 --> 00:02:22,160
top of this thing these few seconds that

60
00:02:25,350 --> 00:02:24,319
you're witnessing here are are something

61
00:02:27,030 --> 00:02:25,360
that

62
00:02:27,990 --> 00:02:27,040
you can never really be fully prepared

63
00:02:29,510 --> 00:02:28,000

for

64

00:02:31,110 --> 00:02:29,520

the power of the space shuttle main

65

00:02:32,869 --> 00:02:31,120

engines as they throttle up on the pad

66

00:02:34,869 --> 00:02:32,879

in those final six seconds

67

00:02:36,070 --> 00:02:34,879

and that feeling in your heart the

68

00:02:37,430 --> 00:02:36,080

bottom of your heart that you know good

69

00:02:39,190 --> 00:02:37,440

and well you're going someplace in a

70

00:02:41,270 --> 00:02:39,200

hurry here momentarily

71

00:02:43,670 --> 00:02:41,280

is uh is one that

72

00:02:45,190 --> 00:02:43,680

will be always part of my memory

73

00:02:46,550 --> 00:02:45,200

i've never experienced the night launch

74

00:02:48,229 --> 00:02:46,560

and as you can see from the lift off

75

00:02:49,910 --> 00:02:48,239

it's incredibly bright

76
00:02:51,190 --> 00:02:49,920
as we've cleared the tower i watched the

77
00:02:52,869 --> 00:02:51,200
tower go by

78
00:02:55,430 --> 00:02:52,879
it was like daytime looking out the left

79
00:02:57,350 --> 00:02:55,440
window and uh during the later stages of

80
00:02:59,990 --> 00:02:57,360
ascent i got to witness

81
00:03:01,990 --> 00:03:00,000
post solid rocket motor separation here

82
00:03:03,750 --> 00:03:02,000
the experience of seeing out the front

83
00:03:05,830 --> 00:03:03,760
window of the orbiter pulsating lights

84
00:03:07,270 --> 00:03:05,840
from the main engines in the rear so you

85
00:03:09,430 --> 00:03:07,280
are really kind of in a little glow

86
00:03:11,910 --> 00:03:09,440
there a little lighted glow as you

87
00:03:18,710 --> 00:03:11,920
proceed uphill toward main engine cutoff

88
00:03:22,070 --> 00:03:20,550

okay and uh you can see us opening the

89

00:03:23,670 --> 00:03:22,080

payload bay doors here and this is sped

90

00:03:25,430 --> 00:03:23,680

up a bit by the way so it doesn't take

91

00:03:26,949 --> 00:03:25,440

so long in the film but uh that's always

92

00:03:28,869 --> 00:03:26,959

a relief to get on orbit get a go to

93

00:03:30,470 --> 00:03:28,879

stay on orbit and open the doors the

94

00:03:32,550 --> 00:03:30,480

next morning on flight day two after

95

00:03:35,110 --> 00:03:32,560

going through the internal airlock and

96

00:03:37,270 --> 00:03:35,120

down the tunnel uh we got to the uh the

97

00:03:38,949 --> 00:03:37,280

hatch for uh the space hab and here ron

98

00:03:40,710 --> 00:03:38,959

and i are open then opening that on our

99

00:03:42,710 --> 00:03:40,720

second morning first real morning on

100

00:03:44,229 --> 00:03:42,720

orbit our second day to get ready to

101
00:03:46,149 --> 00:03:44,239
open up the hab and activate it and

102
00:03:47,670 --> 00:03:46,159
start start operations back there and

103
00:03:49,750 --> 00:03:47,680
this was a very busy place during the

104
00:03:51,270 --> 00:03:49,760
mission as we flowed into it here you

105
00:03:53,030 --> 00:03:51,280
can see that there was a lot of stowage

106
00:03:54,550 --> 00:03:53,040
back here there's some new soft storage

107
00:03:56,309 --> 00:03:54,560
bags up on the wall first time they've

108
00:03:57,350 --> 00:03:56,319
ever flown those were developed for a

109
00:03:59,110 --> 00:03:57,360
lot of the equipment that we had to

110
00:04:00,949 --> 00:03:59,120
transfer to mirror you just saw the gyro

111
00:04:03,589 --> 00:04:00,959
dying on the right side and

112
00:04:05,030 --> 00:04:03,599
this panning view shows uh the bio rack

113
00:04:07,190 --> 00:04:05,040

and the glove box

114

00:04:09,030 --> 00:04:07,200

so between the bio rack and all the

115

00:04:10,470 --> 00:04:09,040

transfer operations back here that went

116

00:04:11,429 --> 00:04:10,480

on while we were docked it was a busy

117

00:04:13,509 --> 00:04:11,439

place

118

00:04:15,190 --> 00:04:13,519

and back up on the flight deck rick is

119

00:04:16,789 --> 00:04:15,200

uh taking a look at the camera mounted

120

00:04:18,949 --> 00:04:16,799

up there that's our electronic camera

121

00:04:20,390 --> 00:04:18,959

for kid sat we left it the window during

122

00:04:22,790 --> 00:04:20,400

the undock times

123

00:04:24,230 --> 00:04:22,800

it took digitized images of the earth

124

00:04:25,510 --> 00:04:24,240

and made them available to the students

125

00:04:27,189 --> 00:04:25,520

on the ground who were controlling the

126

00:04:29,749 --> 00:04:27,199

camera

127

00:04:31,590 --> 00:04:29,759

uh this is a view of florida from kidsat

128

00:04:33,510 --> 00:04:31,600

and i want to emphasize that we really

129

00:04:35,030 --> 00:04:33,520

began the rendezvous portion of this

130

00:04:38,550 --> 00:04:35,040

mission right from launch as we launched

131

00:04:41,270 --> 00:04:38,560

into a lower catch-up orbit on mir

132

00:04:43,110 --> 00:04:41,280

and as we prepared on flight day two our

133

00:04:45,270 --> 00:04:43,120

particular role in the rendezvous got

134

00:04:46,710 --> 00:04:45,280

closer and closer to mir

135

00:04:48,150 --> 00:04:46,720

but we didn't really get the good video

136

00:04:50,390 --> 00:04:48,160

of course until we got

137

00:04:52,390 --> 00:04:50,400

within a thousand feet or so this is

138

00:04:53,830 --> 00:04:52,400

looking out the ods center line up at

139

00:04:54,870 --> 00:04:53,840

the mirror as we're approaching from

140

00:04:57,270 --> 00:04:54,880

underneath

141

00:04:58,390 --> 00:04:57,280

this is the mirror view what they saw as

142

00:05:01,030 --> 00:04:58,400

they were looking down at the space

143

00:05:02,710 --> 00:05:01,040

shuttle atlantis passing over the earth

144

00:05:04,950 --> 00:05:02,720

we included a couple of views of the

145

00:05:06,550 --> 00:05:04,960

crew activities in the flight deck chile

146

00:05:08,790 --> 00:05:06,560

at the ash station flying the vehicle

147

00:05:10,150 --> 00:05:08,800

rich assisting him and i was bobbing in

148

00:05:12,390 --> 00:05:10,160

and out of the field of view there

149

00:05:14,710 --> 00:05:12,400

working the computers and assisting in

150

00:05:16,870 --> 00:05:14,720

my particular role

151
00:05:19,670 --> 00:05:16,880
this is a view of the mir space station

152
00:05:21,029 --> 00:05:19,680
as we passed from across the terminator

153
00:05:22,950 --> 00:05:21,039
from sun

154
00:05:25,110 --> 00:05:22,960
sunlit portion of the planet to the back

155
00:05:26,150 --> 00:05:25,120
side and it was very interesting to see

156
00:05:27,990 --> 00:05:26,160
that

157
00:05:29,830 --> 00:05:28,000
with the running lights mir was very

158
00:05:31,830 --> 00:05:29,840
visible and it was quite bright even on

159
00:05:34,150 --> 00:05:31,840
the dark side of the planet

160
00:05:36,629 --> 00:05:34,160
well as we as this process continued of

161
00:05:38,790 --> 00:05:36,639
the rendezvous and approach up the r bar

162
00:05:41,110 --> 00:05:38,800
got closer and closer to mirror and

163
00:05:43,029 --> 00:05:41,120

again this was sped up too and

164

00:05:44,469 --> 00:05:43,039

part of that intent was to make it flow

165

00:05:46,070 --> 00:05:44,479

quicker in the movie but an added side

166

00:05:47,510 --> 00:05:46,080

benefit is it makes the commander look

167

00:05:49,990 --> 00:05:47,520

even better because it looks like it's

168

00:05:51,909 --> 00:05:50,000

really going fast

169

00:05:53,590 --> 00:05:51,919

but childish did a phenomenal job

170

00:05:55,350 --> 00:05:53,600

flying the space shuttle up to the

171

00:05:56,710 --> 00:05:55,360

mirror and you can see this is the end

172

00:05:57,749 --> 00:05:56,720

game here this is where it all comes

173

00:05:59,430 --> 00:05:57,759

together

174

00:06:01,110 --> 00:05:59,440

and hitting those critical docking

175

00:06:02,710 --> 00:06:01,120

parameters

176

00:06:04,950 --> 00:06:02,720

the target of course is shown on the

177

00:06:06,390 --> 00:06:04,960

right on this split screen image

178

00:06:08,710 --> 00:06:06,400

we really did get that

179

00:06:10,950 --> 00:06:08,720

jostle as we made contact and had the

180

00:06:11,990 --> 00:06:10,960

post contact thrusting firing

181

00:06:13,830 --> 00:06:12,000

and then

182

00:06:15,749 --> 00:06:13,840

i must confess to a little bit of relief

183

00:06:18,309 --> 00:06:15,759

in the cockpit once we

184

00:06:20,469 --> 00:06:18,319

reach that milestone their chili's being

185

00:06:22,309 --> 00:06:20,479

congratulated by rich and it's on to

186

00:06:24,070 --> 00:06:22,319

docked activities rich we're given a

187

00:06:25,670 --> 00:06:24,080

panorama of the the mirror complex

188

00:06:27,189 --> 00:06:25,680

starting with the docking module here

189

00:06:29,110 --> 00:06:27,199

and now you're looking through the aft

190

00:06:30,790 --> 00:06:29,120

cockpit i'll refer back to the target

191

00:06:32,629 --> 00:06:30,800

you just saw we confirmed after we

192

00:06:34,870 --> 00:06:32,639

docked that no fly-out was required uh

193

00:06:37,110 --> 00:06:34,880

thank you melis but

194

00:06:38,710 --> 00:06:37,120

it's a beautiful this thing is the smear

195

00:06:40,870 --> 00:06:38,720

complex is really large and i have

196

00:06:42,309 --> 00:06:40,880

memories of standing back in the ods

197

00:06:43,749 --> 00:06:42,319

looking up through the tunnel and

198

00:06:45,830 --> 00:06:43,759

thinking that it was at least 300 feet

199

00:06:47,749 --> 00:06:45,840

up to the mirror complex here's a view

200

00:06:50,790 --> 00:06:47,759

of the initial hatch opening

201
00:06:52,150 --> 00:06:50,800
from the russian side of course

202
00:06:54,870 --> 00:06:52,160
and you're going to see a couple of

203
00:06:57,189 --> 00:06:54,880
happy faces here between yuri anafranko

204
00:06:59,430 --> 00:06:57,199
and kevin chilton

205
00:07:01,110 --> 00:06:59,440
tremendous tremendous relief once you

206
00:07:03,350 --> 00:07:01,120
get there and you

207
00:07:04,790 --> 00:07:03,360
join up and realize that uh that's a

208
00:07:06,629 --> 00:07:04,800
excellent place to be there's some good

209
00:07:12,629 --> 00:07:06,639
work going on up there and felt like

210
00:07:18,070 --> 00:07:16,309
neither one of those guys were happy

211
00:07:19,749 --> 00:07:18,080
and of course shannon she felt at home

212
00:07:21,430 --> 00:07:19,759
the minute she got there and they put

213
00:07:23,270 --> 00:07:21,440

her right to work she uh she was one of

214

00:07:24,390 --> 00:07:23,280

the experts in the transfer activities

215

00:07:25,830 --> 00:07:24,400

and that's

216

00:07:28,469 --> 00:07:25,840

no small part due to the preparation we

217

00:07:31,189 --> 00:07:29,830

and here we're getting ready for the

218

00:07:33,270 --> 00:07:31,199

welcoming ceremony one of the official

219

00:07:34,629 --> 00:07:33,280

pao acts uh due to a small

220

00:07:36,550 --> 00:07:34,639

miscoordination we had the flags in the

221

00:07:38,950 --> 00:07:36,560

wrong location so you're going to see uh

222

00:07:40,790 --> 00:07:38,960

yuri ushev bringing the american flag

223

00:07:42,150 --> 00:07:40,800

into the docking module base or not the

224

00:07:43,189 --> 00:07:42,160

docking module but the base block for

225

00:07:50,230 --> 00:07:43,199

the

226

00:07:52,710 --> 00:07:50,240

items that we gave to our russian

227

00:07:54,230 --> 00:07:52,720

crewmates they both have a love for

228

00:07:56,070 --> 00:07:54,240

children and the future of space

229

00:07:57,270 --> 00:07:56,080

exploration so some of the gifts that we

230

00:07:59,990 --> 00:07:57,280

gave them were

231

00:08:03,589 --> 00:08:00,000

space books for their children and

232

00:08:07,430 --> 00:08:05,990

and here you see the gift exchange

233

00:08:20,150 --> 00:08:07,440

some of the books bought right here in

234

00:08:24,830 --> 00:08:22,950

well i think i need to pick up here

235

00:08:26,629 --> 00:08:24,840

right with the transfers that you run i

236

00:08:28,950 --> 00:08:26,639

think honestly

237

00:08:32,070 --> 00:08:28,960

there's a rich and rick taking off a

238

00:08:34,630 --> 00:08:32,080

docking ring from a gyrodyne we

239

00:08:37,350 --> 00:08:34,640

brought up a new one and brought

240

00:08:40,310 --> 00:08:37,360

back a used one we also transferred

241

00:08:43,029 --> 00:08:40,320

nearly 1500 pounds of water this is a

242

00:08:43,829 --> 00:08:43,039

byproduct of the shuttle's power system

243

00:08:45,750 --> 00:08:43,839

so

244

00:08:48,070 --> 00:08:45,760

we removed iodine and

245

00:08:49,509 --> 00:08:48,080

iodine from our system and supplied

246

00:08:52,389 --> 00:08:49,519

minerals and biocide and then

247

00:08:54,310 --> 00:08:52,399

transferred these water bags to the mir

248

00:08:57,030 --> 00:08:54,320

space station

249

00:08:58,550 --> 00:08:57,040

this is going through the shuttle side

250

00:09:00,230 --> 00:08:58,560

there's some empty food containers which

251
00:09:03,110 --> 00:09:00,240
we returned

252
00:09:04,550 --> 00:09:03,120
to earth from the mir station

253
00:09:05,990 --> 00:09:04,560
and finally working our way to the

254
00:09:07,590 --> 00:09:06,000
docking module

255
00:09:09,990 --> 00:09:07,600
there's temporary stowage in the white

256
00:09:12,470 --> 00:09:10,000
mesh bags of food containers

257
00:09:14,310 --> 00:09:12,480
containing many of the supplies that

258
00:09:15,990 --> 00:09:14,320
will help shannon in urine yuri in the

259
00:09:18,389 --> 00:09:16,000
in the coming months

260
00:09:21,190 --> 00:09:18,399
we transferred nearly two tons of

261
00:09:23,509 --> 00:09:21,200
science hardware over and nearly one ton

262
00:09:25,509 --> 00:09:23,519
back this is a cooler system used for

263
00:09:26,949 --> 00:09:25,519

navigation on the approach and docking

264

00:09:29,190 --> 00:09:26,959

for the russian system that will be

265

00:09:31,269 --> 00:09:29,200

brought back and refurbished

266

00:09:32,949 --> 00:09:31,279

we also needed to keep track of the

267

00:09:34,630 --> 00:09:32,959

items that went over

268

00:09:36,949 --> 00:09:34,640

to mir and those that were returning

269

00:09:38,550 --> 00:09:36,959

back to earth so chile and i are making

270

00:09:40,310 --> 00:09:38,560

sure that we have

271

00:09:43,030 --> 00:09:40,320

all of the items in our inventory

272

00:09:44,790 --> 00:09:43,040

management system in order the blue box

273

00:09:46,710 --> 00:09:44,800

on the left hand side is a refrigerator

274

00:09:49,350 --> 00:09:46,720

freezer in which we brought back urine

275

00:09:50,790 --> 00:09:49,360

blood and saliva samples the glove box

276

00:09:51,910 --> 00:09:50,800

in which linda is working is where we

277

00:09:53,750 --> 00:09:51,920

carried on

278

00:09:56,150 --> 00:09:53,760

some of the technology development as

279

00:09:57,990 --> 00:09:56,160

well as fundamental biology

280

00:10:00,070 --> 00:09:58,000

for a joint effort between the u.s and

281

00:10:01,910 --> 00:10:00,080

several european countries

282

00:10:04,710 --> 00:10:01,920

here are lentil seeds and the

283

00:10:07,030 --> 00:10:04,720

investigation here is for statosite

284

00:10:09,829 --> 00:10:07,040

polarity we had several

285

00:10:12,710 --> 00:10:09,839

experiments in in biology the middeck is

286

00:10:15,590 --> 00:10:12,720

where we had lunch with the amir 21 crew

287

00:10:18,150 --> 00:10:15,600

on dock day we went over for dinner in

288

00:10:20,150 --> 00:10:18,160

the base block of mir

289

00:10:22,710 --> 00:10:20,160

to enjoy russian food

290

00:10:24,310 --> 00:10:22,720

each night if we had a chance we sent

291

00:10:26,310 --> 00:10:24,320

mail messages

292

00:10:27,990 --> 00:10:26,320

by way of a laptop computer you see

293

00:10:30,150 --> 00:10:28,000

shannon doing just that

294

00:10:32,550 --> 00:10:30,160

back to her family on three separate

295

00:10:33,990 --> 00:10:32,560

days we saw the comet many of you may

296

00:10:36,310 --> 00:10:34,000

have seen it here

297

00:10:37,990 --> 00:10:36,320

hokitaki in which it was very bright and

298

00:10:40,790 --> 00:10:38,000

rich was the first to notice that and on

299

00:10:43,509 --> 00:10:40,800

subsequent days we kept track of the

300

00:10:44,630 --> 00:10:43,519

comet now the eva activities think linda

301
00:10:46,470 --> 00:10:44,640
well

302
00:10:48,069 --> 00:10:46,480
ron is helping rich and i get suited up

303
00:10:49,509 --> 00:10:48,079
here in the airlock we're getting pretty

304
00:10:52,069 --> 00:10:49,519
close to getting into our pre-breathe

305
00:10:53,670 --> 00:10:52,079
timeline and following that we uh

306
00:10:54,949 --> 00:10:53,680
we get ready to go out the hatch we had

307
00:10:57,350 --> 00:10:54,959
a lot of room inside because we had an

308
00:10:58,870 --> 00:10:57,360
airlock and a docking adapter and uh

309
00:11:00,949 --> 00:10:58,880
came out of the hatch on the docking

310
00:11:02,870 --> 00:11:00,959
adapter our first job was to install

311
00:11:04,949 --> 00:11:02,880
some clamps on the handrails to deploy

312
00:11:06,790 --> 00:11:04,959
the experiment packages later and then

313
00:11:08,389 --> 00:11:06,800

our task was to move to a camera to

314

00:11:10,710 --> 00:11:08,399

remove it on the docking module and this

315

00:11:12,389 --> 00:11:10,720

was used on sts-74

316

00:11:13,910 --> 00:11:12,399

when they docked with mirror and then

317

00:11:16,310 --> 00:11:13,920

when they left the docking module there

318

00:11:17,670 --> 00:11:16,320

the camera was left there also so one of

319

00:11:19,990 --> 00:11:17,680

our tasks was to remove it and bring it

320

00:11:21,910 --> 00:11:20,000

back to earth

321

00:11:23,350 --> 00:11:21,920

and i took some of the smaller items

322

00:11:25,269 --> 00:11:23,360

back and here you see rich he's

323

00:11:27,350 --> 00:11:25,279

translating with the camera itself which

324

00:11:29,110 --> 00:11:27,360

is is rather large and he was being very

325

00:11:30,870 --> 00:11:29,120

careful of that as he shepherded it back

326

00:11:32,790 --> 00:11:30,880

to the the tunnel adapter where he

327

00:11:35,110 --> 00:11:32,800

stowed it temporarily back inside we

328

00:11:36,630 --> 00:11:35,120

were finished with the eva

329

00:11:38,550 --> 00:11:36,640

here you see uh linda and myself

330

00:11:40,470 --> 00:11:38,560

removing one of the four meat containers

331

00:11:42,470 --> 00:11:40,480

for installation into the onto some

332

00:11:43,750 --> 00:11:42,480

clamps on the docking module

333

00:11:45,670 --> 00:11:43,760

we tested out some new tools and

334

00:11:47,430 --> 00:11:45,680

equipment for use on the ultimate

335

00:11:49,030 --> 00:11:47,440

international space station the ridgid

336

00:11:51,030 --> 00:11:49,040

tether and the multiple use tether which

337

00:11:53,350 --> 00:11:51,040

we use to transport the the meeps to

338

00:11:54,949 --> 00:11:53,360

their work site and install them into

339

00:11:57,190 --> 00:11:54,959

the clamps here you're going to see one

340

00:11:58,389 --> 00:11:57,200

of those activities and then

341

00:12:00,150 --> 00:11:58,399

one of the funnest things that linda and

342

00:12:01,990 --> 00:12:00,160

i had to do were the deployment of the

343

00:12:03,430 --> 00:12:02,000

meeps and you're going to see that here

344

00:12:05,110 --> 00:12:03,440

it's so much easier to do up there you

345

00:12:07,190 --> 00:12:05,120

just give it a little flick and it uh

346

00:12:10,550 --> 00:12:07,200

flies around and i'm sure that this is

347

00:12:11,350 --> 00:12:10,560

real time instead of sped up but

348

00:12:13,190 --> 00:12:11,360

but

349

00:12:15,430 --> 00:12:13,200

tremendously

350

00:12:17,350 --> 00:12:15,440

finely defined the designed hardware

351

00:12:19,269 --> 00:12:17,360

that worked well in flight and we can

352

00:12:20,790 --> 00:12:19,279

learn a lot from the folks at langley

353

00:12:22,389 --> 00:12:20,800

and our own engineering director here

354

00:12:24,870 --> 00:12:22,399

that helped design the hardware for this

355

00:12:27,190 --> 00:12:24,880

particular eva it all worked well and we

356

00:12:28,629 --> 00:12:27,200

deployed this one here is meep number

357

00:12:30,790 --> 00:12:28,639

four i believe

358

00:12:38,550 --> 00:12:30,800

the meep experiments are orbital debris

359

00:12:42,150 --> 00:12:40,629

well this is my cue for my second come

360

00:12:43,750 --> 00:12:42,160

in uh after

361

00:12:45,430 --> 00:12:43,760

really a whirlwind and flurry of

362

00:12:47,829 --> 00:12:45,440

activity over several days we were all

363

00:12:49,430 --> 00:12:47,839

very uh very sad to get ready to to

364

00:12:51,590 --> 00:12:49,440

depart the mere space station this is

365

00:12:53,509 --> 00:12:51,600

the farewell ceremony and i think i can

366

00:12:54,870 --> 00:12:53,519

speak for the rest of the crew

367

00:12:56,870 --> 00:12:54,880

certainly for me it was the most

368

00:12:58,629 --> 00:12:56,880

emotion-filled moment that i'd had in

369

00:12:59,910 --> 00:12:58,639

orbit in two missions

370

00:13:01,509 --> 00:12:59,920

of course saying goodbye to shannon

371

00:13:03,350 --> 00:13:01,519

there's chile giving her a hug and

372

00:13:05,350 --> 00:13:03,360

wishing her well for her

373

00:13:08,150 --> 00:13:05,360

long stay up there until

374

00:13:10,870 --> 00:13:08,160

79 goes back to pick her up

375

00:13:14,150 --> 00:13:10,880

on ndoc day we again were very busy on

376

00:13:15,430 --> 00:13:14,160

that day similarly to the docking day

377

00:13:17,829 --> 00:13:15,440

we prepared

378

00:13:21,030 --> 00:13:17,839

configuration wise this orbiter and

379

00:13:22,389 --> 00:13:21,040

mirror complex to separate and

380

00:13:24,710 --> 00:13:22,399

very shortly here we'll see that

381

00:13:26,710 --> 00:13:24,720

separation sequence and leading into the

382

00:13:29,030 --> 00:13:26,720

fly around

383

00:13:30,710 --> 00:13:29,040

this is chilly waving goodbye to his uh

384

00:13:32,389 --> 00:13:30,720

buddies over there the mir-21 crew

385

00:13:34,949 --> 00:13:32,399

including shannon

386

00:13:37,670 --> 00:13:34,959

the russians were very kind to ship down

387

00:13:40,629 --> 00:13:37,680

this video which then came from soup to

388

00:13:43,110 --> 00:13:40,639

mcc and uh enabled us to put it in our

389

00:13:44,470 --> 00:13:43,120

crew movie in a very timely fashion

390

00:13:45,990 --> 00:13:44,480

separation here

391

00:13:48,310 --> 00:13:46,000

again sped up

392

00:13:50,150 --> 00:13:48,320

we were

393

00:13:52,310 --> 00:13:50,160

as i mentioned before very sad to leave

394

00:13:54,310 --> 00:13:52,320

and wish we could have stayed longer and

395

00:13:56,710 --> 00:13:54,320

been up there with our friends

396

00:13:58,870 --> 00:13:56,720

the separate the initial separation burn

397

00:14:03,110 --> 00:13:58,880

a couple of uh low z

398

00:14:08,790 --> 00:14:03,120

uh pulses out to get going and

399

00:14:12,189 --> 00:14:11,030

and as we continue to fly out we assumed

400

00:14:15,750 --> 00:14:12,199

a range of

401
00:14:18,069 --> 00:14:15,760
450 to 550 feet targeted to conduct this

402
00:14:20,389 --> 00:14:18,079
fly around of the mirror which i was

403
00:14:21,990 --> 00:14:20,399
privileged to fly and it's been for me

404
00:14:23,509 --> 00:14:22,000
one of the most professionally rewarding

405
00:14:25,030 --> 00:14:23,519
things i've ever done but at the same

406
00:14:26,870 --> 00:14:25,040
time

407
00:14:29,670 --> 00:14:26,880
in the background of my mind also a very

408
00:14:31,110 --> 00:14:29,680
emotionally charged event

409
00:14:33,269 --> 00:14:31,120
this video will

410
00:14:35,829 --> 00:14:33,279
share some of what we saw from on orbit

411
00:14:36,710 --> 00:14:35,839
which was just absolutely outstanding

412
00:14:38,710 --> 00:14:36,720
and

413
00:14:41,110 --> 00:14:38,720

flabbergasting really to see this

414

00:14:42,949 --> 00:14:41,120

orbiting complex out our windows and

415

00:14:44,790 --> 00:14:42,959

here in this particular case to see

416

00:14:46,790 --> 00:14:44,800

video shot from the mirror

417

00:14:48,310 --> 00:14:46,800

of america's greatest technology

418

00:14:50,870 --> 00:14:48,320

achievement ever a space shuttle in

419

00:14:53,030 --> 00:14:50,880

orbit doing what it does best

420

00:14:55,590 --> 00:14:53,040

this is a view of the mir space station

421

00:14:56,949 --> 00:14:55,600

over the great barrier reef

422

00:15:00,310 --> 00:14:56,959

right after we

423

00:15:01,590 --> 00:15:00,320

gave the ku antenna to calm to send tv

424

00:15:03,590 --> 00:15:01,600

down this is the first picture that came

425

00:15:05,670 --> 00:15:03,600

down to the ground and this particular

426
00:15:07,590 --> 00:15:05,680
view is as we the mirror passes through

427
00:15:09,509 --> 00:15:07,600
the horizon approaching the terminator

428
00:15:11,030 --> 00:15:09,519
and no it is not a model we saw it with

429
00:15:12,629 --> 00:15:11,040
our own eyes and

430
00:15:16,069 --> 00:15:12,639
that's what it was and it was

431
00:15:17,509 --> 00:15:16,079
outstandingly beautiful with the backlit

432
00:15:24,550 --> 00:15:17,519
view and something that i will always

433
00:15:29,030 --> 00:15:26,629
well it's coming home time now and uh

434
00:15:31,350 --> 00:15:29,040
ron did a bang-up job shooting these

435
00:15:34,150 --> 00:15:31,360
scenes uh that that little uh camcorder

436
00:15:35,990 --> 00:15:34,160
that he holds there's a self shot on the

437
00:15:37,509 --> 00:15:36,000
way down starts weighing zero at the

438
00:15:38,949 --> 00:15:37,519

start of re-entry then it starts feeling

439

00:15:40,389 --> 00:15:38,959

like it weighs a ton on the way down so

440

00:15:42,310 --> 00:15:40,399

he did a great job shooting this this is

441

00:15:43,990 --> 00:15:42,320

out the overhead window as we're coming

442

00:15:45,110 --> 00:15:44,000

in through the re-entry and you can see

443

00:15:47,110 --> 00:15:45,120

the plasma

444

00:15:48,389 --> 00:15:47,120

trail behind the orbiter there pulsates

445

00:15:50,310 --> 00:15:48,399

like that and literally lights the

446

00:15:51,030 --> 00:15:50,320

cockpit up and with flashes as you come

447

00:15:52,550 --> 00:15:51,040

down

448

00:15:55,430 --> 00:15:52,560

out the front window you just get a nice

449

00:15:56,870 --> 00:15:55,440

steady pink and orangish glow as you go

450

00:15:58,550 --> 00:15:56,880

through the maximum heating and here we

451
00:16:00,389 --> 00:15:58,560
are in a roll reversal

452
00:16:01,749 --> 00:16:00,399
one of three that we did as we lined up

453
00:16:03,910 --> 00:16:01,759
for our approach at edwards air force

454
00:16:05,670 --> 00:16:03,920
base rather unique long range shot here

455
00:16:08,150 --> 00:16:05,680
where you can actually see the rcs jets

456
00:16:10,310 --> 00:16:08,160
firing in the tail of the shuttle as we

457
00:16:11,990 --> 00:16:10,320
decelerated through around mach 2

458
00:16:13,749 --> 00:16:12,000
approaching edwards to keep help keep

459
00:16:14,870 --> 00:16:13,759
the nose pointed forward

460
00:16:17,910 --> 00:16:14,880
and

461
00:16:21,030 --> 00:16:17,920
because officially the sun hadn't come

462
00:16:25,189 --> 00:16:22,790
but it sure was a pretty time of day to

463
00:16:26,550 --> 00:16:25,199

land it was just uh the xenons were on

464

00:16:28,069 --> 00:16:26,560

but you really didn't need them you

465

00:16:29,670 --> 00:16:28,079

could see the ground just fine and uh

466

00:16:31,509 --> 00:16:29,680

that there wasn't hardly a breath of

467

00:16:32,550 --> 00:16:31,519

wind in the air it was real calm smooth

468

00:16:35,590 --> 00:16:32,560

skies

469

00:16:36,870 --> 00:16:35,600

and uh it and it just you know you you

470

00:16:38,230 --> 00:16:36,880

knew what you were flying the space

471

00:16:41,110 --> 00:16:38,240

shuttle was responding just so

472

00:16:43,990 --> 00:16:41,120

beautifully uh it really uh really flew

473

00:16:45,430 --> 00:16:44,000

uh marvelously and was a joy to bring in

474

00:16:46,870 --> 00:16:45,440

for a landing

475

00:16:48,949 --> 00:16:46,880

rick go ahead and punched out the

476

00:16:51,030 --> 00:16:48,959

landing gear for us on time and then

477

00:16:53,110 --> 00:16:51,040

the drag chute and the timing was just

478

00:16:55,189 --> 00:16:53,120

right on that and cushioned the nose

479

00:16:58,790 --> 00:16:55,199

slapped down as as we came

480

00:17:02,790 --> 00:17:00,470

and i think i'll quote andy allen from

481

00:17:04,710 --> 00:17:02,800

sts75 there's there's no better feeling

482

00:17:06,309 --> 00:17:04,720

than that call wheel stop particularly

483

00:17:07,429 --> 00:17:06,319

when you know you know you've done your

484

00:17:09,429 --> 00:17:07,439

job

485

00:17:11,429 --> 00:17:09,439

you've done the best you can and now

486

00:17:13,029 --> 00:17:11,439

it's it's over and it's time to turn

487

00:17:16,230 --> 00:17:13,039

turn the vehicle over to the folks at

488

00:17:17,990 --> 00:17:16,240

kennedy to get it ready to start

489

00:17:19,829 --> 00:17:18,000

back through the same process all over

490

00:17:21,270 --> 00:17:19,839

again to go up and retrieve shane on

491

00:17:22,789 --> 00:17:21,280

sts-79

492

00:17:24,390 --> 00:17:22,799

if i look a little uh confused here at

493

00:17:27,829 --> 00:17:24,400

the end i was doing a nose count and i

494

00:17:29,430 --> 00:17:27,839

came up one short during the walk around

495

00:17:30,710 --> 00:17:29,440

but but i was assured that that was the

496

00:17:32,470 --> 00:17:30,720

right answer

497

00:17:34,150 --> 00:17:32,480

so

498

00:17:35,350 --> 00:17:34,160

everybody felt terrific after the flight

499

00:17:36,789 --> 00:17:35,360

and it was certainly good to get back

500

00:17:39,750 --> 00:17:36,799

home to family and friends and to you

501
00:17:43,270 --> 00:17:41,350
uh we'll ask rick to go ahead and

502
00:17:44,789 --> 00:17:43,280
narrate them as they come up so please

503
00:17:45,990 --> 00:17:44,799
uh enjoy them

504
00:17:47,909 --> 00:17:46,000
thanks joey

505
00:17:50,789 --> 00:17:47,919
of course our crew patched there and i

506
00:17:53,110 --> 00:17:50,799
might add rich's uh son brandon who's a

507
00:17:54,710 --> 00:17:53,120
seventh grader was largely responsible

508
00:17:56,070 --> 00:17:54,720
for the artwork and the concept for this

509
00:17:57,990 --> 00:17:56,080
patch and we really appreciate his

510
00:17:58,789 --> 00:17:58,000
artistic talents and what he contributed

511
00:18:02,950 --> 00:17:58,799
to

512
00:18:05,190 --> 00:18:02,960
significant or symbolic in the sense

513
00:18:07,190 --> 00:18:05,200

that we not only receive great support

514

00:18:08,630 --> 00:18:07,200

from johnson space center and

515

00:18:09,830 --> 00:18:08,640

every and kennedy space center and

516

00:18:11,430 --> 00:18:09,840

everyone that supports the shuttle

517

00:18:13,430 --> 00:18:11,440

program but from our families as well

518

00:18:14,789 --> 00:18:13,440

and i know speaking for myself i could

519

00:18:16,310 --> 00:18:14,799

not have

520

00:18:18,710 --> 00:18:16,320

done my part in this mission without

521

00:18:23,350 --> 00:18:18,720

this loving support from my home my wife

522

00:18:26,950 --> 00:18:25,110

this is a view as we're

523

00:18:28,789 --> 00:18:26,960

approaching the mir space station again

524

00:18:31,190 --> 00:18:28,799

atlantis and all her orbital glory with

525

00:18:32,150 --> 00:18:31,200

the payload bay doors open there just

526

00:18:33,750 --> 00:18:32,160

uh

527

00:18:35,190 --> 00:18:33,760

this was one of the few times that i

528

00:18:36,710 --> 00:18:35,200

wished i could have stayed on board

529

00:18:39,029 --> 00:18:36,720

mirror for a long duration to see what

530

00:18:40,950 --> 00:18:39,039

the orbiter looked like in its entirety

531

00:18:42,870 --> 00:18:40,960

we were fortunate enough to get some

532

00:18:45,350 --> 00:18:42,880

views this is a view that we could see

533

00:18:47,669 --> 00:18:45,360

out of one of the living quarter

534

00:18:49,190 --> 00:18:47,679

portholes on board the mirror of our

535

00:18:51,270 --> 00:18:49,200

spaceship and it's kind of a strange

536

00:18:53,350 --> 00:18:51,280

feeling to make that translation across

537

00:18:54,870 --> 00:18:53,360

that interface and know that you're in

538

00:18:56,870 --> 00:18:54,880

another orbiting vehicle even though

539

00:18:58,789 --> 00:18:56,880

you're all tied together and look out

540

00:18:59,909 --> 00:18:58,799

the window and see this

541

00:19:03,990 --> 00:18:59,919

incredible

542

00:19:07,990 --> 00:19:06,230

and this is a view of

543

00:19:11,750 --> 00:19:08,000

the soyuz is up in the upper left hand

544

00:19:13,430 --> 00:19:11,760

corner attached to the covant one and

545

00:19:15,270 --> 00:19:13,440

the base block and some i think there's

546

00:19:17,110 --> 00:19:15,280

some solar arrays down there in the

547

00:19:19,110 --> 00:19:17,120

lower left hand corner but we include

548

00:19:21,990 --> 00:19:19,120

this particular view because of that

549

00:19:23,350 --> 00:19:22,000

beautiful effect you get with that rosy

550

00:19:25,350 --> 00:19:23,360

changing to gold and then finally

551
00:19:26,789 --> 00:19:25,360
changing to darkness as you pass from

552
00:19:29,830 --> 00:19:26,799
the day side of the planet into the

553
00:19:33,430 --> 00:19:31,190
another view

554
00:19:35,990 --> 00:19:33,440
for those of you who are geography buffs

555
00:19:37,669 --> 00:19:36,000
you probably realized right away that

556
00:19:40,390 --> 00:19:37,679
in the field of view kind of in the

557
00:19:41,510 --> 00:19:40,400
center right is the sinai peninsula

558
00:19:43,190 --> 00:19:41,520
and one of the things that i found

559
00:19:45,510 --> 00:19:43,200
particularly interesting from a

560
00:19:46,950 --> 00:19:45,520
photographic point of view is

561
00:19:48,710 --> 00:19:46,960
taking pictures of the earth while

562
00:19:50,630 --> 00:19:48,720
framing them up and trying to get a good

563
00:19:52,789 --> 00:19:50,640

composition with the lines and angles of

564

00:19:54,390 --> 00:19:52,799

the solar arrays and the space station

565

00:19:56,950 --> 00:19:54,400

itself it really is

566

00:19:59,029 --> 00:19:56,960

just uh as a space shuttle is a

567

00:20:00,470 --> 00:19:59,039

beautiful beautiful sight on orbit the

568

00:20:02,230 --> 00:20:00,480

mirror is really quite striking and

569

00:20:03,909 --> 00:20:02,240

beautiful on orbit as well the colors

570

00:20:06,710 --> 00:20:03,919

are just incredible once you get up

571

00:20:09,350 --> 00:20:06,720

there in the vacuum and clarity of space

572

00:20:11,510 --> 00:20:09,360

a view on the fly around that's the

573

00:20:13,669 --> 00:20:11,520

northern tip of the south island of new

574

00:20:15,350 --> 00:20:13,679

zealand just to the right of the mir and

575

00:20:20,230 --> 00:20:15,360

of course the deep blue waters of the

576
00:20:27,669 --> 00:20:22,470
again a view of mir at the horizon as we

577
00:20:31,909 --> 00:20:29,590
we wanted to wrap up our last few slides

578
00:20:33,029 --> 00:20:31,919
just to show the two crews the people

579
00:20:35,270 --> 00:20:33,039
that were

580
00:20:37,029 --> 00:20:35,280
very fortunate and blessed to be the

581
00:20:38,230 --> 00:20:37,039
flight crew members of this particular

582
00:20:39,990 --> 00:20:38,240
mission

583
00:20:41,430 --> 00:20:40,000
here's the mere 21 crew and of course

584
00:20:42,549 --> 00:20:41,440
shannon is going to be in both of these

585
00:20:44,549 --> 00:20:42,559
pictures but

586
00:20:46,549 --> 00:20:44,559
we can't say enough good about the

587
00:20:49,029 --> 00:20:46,559
opportunities we've had as

588
00:20:51,270 --> 00:20:49,039

american astronauts to work with our

589

00:20:53,750 --> 00:20:51,280

cosmonaut colleagues in this case

590

00:20:55,510 --> 00:20:53,760

yuriana franco and yuri usachev they're

591

00:20:58,310 --> 00:20:55,520

professionals in every sense of the word

592

00:20:59,669 --> 00:20:58,320

and wonderful guys and uh

593

00:21:01,110 --> 00:20:59,679

just shannon's gonna have a great time

594

00:21:04,230 --> 00:21:01,120

flying with them and working with them

595

00:21:07,430 --> 00:21:04,240

in this cooperative venture

596

00:21:09,110 --> 00:21:07,440

finally this is the sts-76 crew up until