



1
00:00:16,279 --> 00:00:13,039
there's nothing like being a member of a

2
00:00:18,620 --> 00:00:16,289
crew to make you realize just how

3
00:00:21,470 --> 00:00:18,630
important teamwork is to pull off a

4
00:00:23,509 --> 00:00:21,480
mission like this it's really our

5
00:00:25,970 --> 00:00:23,519
pleasure to be able to come back at the

6
00:00:28,820 --> 00:00:25,980
completion of the mission and be able to

7
00:00:29,990 --> 00:00:28,830
share some of the things that went on

8
00:00:31,400 --> 00:00:30,000
the things that we were able to

9
00:00:34,310 --> 00:00:31,410
experience the things that we were able

10
00:00:35,569 --> 00:00:34,320
to do with all of you because we

11
00:00:37,549 --> 00:00:35,579
wouldn't have been able to experience

12
00:00:39,979 --> 00:00:37,559
them we wouldn't been able to do them

13
00:00:41,630 --> 00:00:39,989

without all of your help and each and

14

00:00:44,950 --> 00:00:41,640

every person here and everyone that's

15

00:00:48,229 --> 00:00:44,960

listening contributes to the mission and

16

00:00:50,569 --> 00:00:48,239

in some way just as each of us

17

00:00:52,549 --> 00:00:50,579

contributed in some small way to the

18

00:00:56,119 --> 00:00:52,559

success of the mission this mission was

19

00:00:58,670 --> 00:00:56,129

absolutely awesome I can't tell you how

20

00:01:00,590 --> 00:00:58,680

proud I am of all of you for the hard

21

00:01:03,349 --> 00:01:00,600

work that you did echoing mr. Abby's

22

00:01:05,960 --> 00:01:03,359

comments about how you were working

23

00:01:07,840 --> 00:01:05,970

under adverse conditions with the the

24

00:01:10,850 --> 00:01:07,850

threat and the specter of the furlough

25

00:01:13,010 --> 00:01:10,860

hanging over your heads you were able to

26

00:01:15,440 --> 00:01:13,020

pull off just an incredible incredible

27

00:01:17,060 --> 00:01:15,450

mission the things things you're able to

28

00:01:19,100 --> 00:01:17,070

do I don't think you appreciate just how

29

00:01:22,940 --> 00:01:19,110

great they really are I'm also extremely

30

00:01:25,760 --> 00:01:22,950

proud of the crew that I was able to be

31

00:01:28,280 --> 00:01:25,770

a part of to go up and do this each of

32

00:01:31,249 --> 00:01:28,290

these guys was a is a pro from top to

33

00:01:32,929 --> 00:01:31,259

bottom they dedicated the last year of

34

00:01:35,630 --> 00:01:32,939

their lives to making sure that this all

35

00:01:38,510 --> 00:01:35,640

work just as many of you have and I'm

36

00:01:40,190 --> 00:01:38,520

extremely proud of all of them we do

37

00:01:42,200 --> 00:01:40,200

have a couple of things we'd like to

38

00:01:44,260 --> 00:01:42,210

share with you today we we have about a

39

00:01:48,020 --> 00:01:44,270

15 minute video that we put together

40

00:01:49,700 --> 00:01:48,030

that will highlight some of the parts of

41

00:01:51,100 --> 00:01:49,710

the mission will actually tell the story

42

00:01:52,940 --> 00:01:51,110

of the mission from start to finish

43

00:01:54,080 --> 00:01:52,950

catching some of the highlights

44

00:01:56,600 --> 00:01:54,090

unfortunately we can't capture

45

00:02:00,319 --> 00:01:56,610

everything it would take too long we'd

46

00:02:02,330 --> 00:02:00,329

like to follow that up with a few still

47

00:02:04,490 --> 00:02:02,340

shots that we have from different things

48

00:02:06,560 --> 00:02:04,500

that went on inside the cabin and also

49

00:02:07,880 --> 00:02:06,570

for some things that went on outside of

50

00:02:10,550 --> 00:02:07,890

the cabin and would like to share those

51
00:02:13,160 --> 00:02:10,560
with you as well so if we can go ahead

52
00:02:13,400 --> 00:02:13,170
and and get the video rolling we'll go

53
00:02:22,640 --> 00:02:13,410
ahead

54
00:02:24,410 --> 00:02:22,650
get started one of the first things we

55
00:02:25,700 --> 00:02:24,420
did when we come together as a crew to

56
00:02:28,130 --> 00:02:25,710
learn to work together I guess is to

57
00:02:30,380 --> 00:02:28,140
design a patch and we tried to capture

58
00:02:33,760 --> 00:02:30,390
all of the major events that are on the

59
00:02:36,320 --> 00:02:33,770
mission in our patch this was our design

60
00:02:39,170 --> 00:02:36,330
about three days before liftoff we

61
00:02:41,780 --> 00:02:39,180
started out on a crystal clear cold

62
00:02:45,890 --> 00:02:41,790
morning on our trip from Houston to

63
00:02:47,930 --> 00:02:45,900

Florida it was a beautiful day about

64

00:02:50,080 --> 00:02:47,940

six-thirty just wanted to show you what

65

00:02:52,910 --> 00:02:50,090

it was like to roll down a dark runway

66

00:02:55,900 --> 00:02:52,920

feel the excitement as we started a

67

00:02:59,840 --> 00:02:55,910

700-mile leg of what was ultimately a

68

00:03:02,660 --> 00:02:59,850

3.7 million mile trip and I can just

69

00:03:05,870 --> 00:03:02,670

remember the excitement in my heart

70

00:03:08,660 --> 00:03:05,880

there's a thrill to to liftoff of the

71

00:03:13,310 --> 00:03:08,670

dark runway and pop up into the sunlight

72

00:03:15,050 --> 00:03:13,320

sky miss Dan mentioned it was the start

73

00:03:17,960 --> 00:03:15,060

of what was to turn out to be an

74

00:03:19,790 --> 00:03:17,970

incredible journey and three days later

75

00:03:21,680 --> 00:03:19,800

after we'd gotten to the Cape I was time

76

00:03:23,870 --> 00:03:21,690

for us to go to work January 11th

77

00:03:26,510 --> 00:03:23,880

shortly after midnight the crew started

78

00:03:28,460 --> 00:03:26,520

getting ready in the suit-up room now

79

00:03:30,590 --> 00:03:28,470

here you see the pilot on the mission

80

00:03:34,760 --> 00:03:30,600

Brent yet a navy flyer was here getting

81

00:03:37,010 --> 00:03:34,770

ready for his first flight quechee

82

00:03:40,070 --> 00:03:37,020

Wakata whom you've met joins us from

83

00:03:43,960 --> 00:03:40,080

Japan as a mission specialist here he is

84

00:03:46,370 --> 00:03:43,970

preparing for his first mission as well

85

00:03:48,770 --> 00:03:46,380

the other experienced space flier on the

86

00:03:50,420 --> 00:03:48,780

mission dr. Leroy Chiao you can see

87

00:03:54,740 --> 00:03:50,430

Leroy was ready to go he had a lot ahead

88

00:03:56,420 --> 00:03:54,750

of him and he was very anxious Winston

89

00:03:58,310 --> 00:03:56,430

Scott Navy captain who was going to be

90

00:04:00,860 --> 00:03:58,320

the flight engineer on the mission also

91

00:04:02,600 --> 00:04:00,870

a future space Walker along with Leroy

92

00:04:04,580 --> 00:04:02,610

now here he is in his preparation

93

00:04:06,949 --> 00:04:04,590

setting up his microphones on his comp

94

00:04:08,860 --> 00:04:06,959

carrier last and certainly not least dr.

95

00:04:11,240 --> 00:04:08,870

dan Barry and other future space Walker

96

00:04:17,030 --> 00:04:11,250

and you can tell by the look in his eyes

97

00:04:18,620 --> 00:04:17,040

he is ready to go well we were getting

98

00:04:20,630 --> 00:04:18,630

ready that the vehicle was undergoing

99

00:04:23,300 --> 00:04:20,640

its final preparations and then when we

100

00:04:25,430 --> 00:04:23,310

got to the launch minus 3 our point was

101
00:04:26,550 --> 00:04:25,440
time for us to depart the crew quarters

102
00:04:28,110 --> 00:04:26,560
where we'd been

103
00:04:29,550 --> 00:04:28,120
and walked out we were greeted by many

104
00:04:31,260 --> 00:04:29,560
of our friends some of you are here

105
00:04:33,770 --> 00:04:31,270
today and we appreciate you coming down

106
00:04:37,700 --> 00:04:33,780
to wish us well on our journey we

107
00:04:40,290 --> 00:04:37,710
boarded the crew estroven there for the

108
00:04:42,510 --> 00:04:40,300
20 minute or so ride out to the launch

109
00:04:43,800 --> 00:04:42,520
pad to get ready for the SN and I

110
00:04:58,180 --> 00:04:43,810
believe this pretty much speaks for

111
00:05:31,140 --> 00:05:03,920
excuse the mess controlling program

112
00:05:35,800 --> 00:05:33,970
in contrast to the vibration and noise

113
00:05:38,260 --> 00:05:35,810

during first stage on the solid rocket

114

00:05:40,060 --> 00:05:38,270

boosters the ride during second stage on

115

00:05:44,530 --> 00:05:40,070

the main engines is smooth all the way

116

00:05:46,300 --> 00:05:44,540

to Meco once on orbit we had to

117

00:05:47,950 --> 00:05:46,310

concentrate on our first major objective

118

00:05:50,500 --> 00:05:47,960

of the mission that was the retrieval of

119

00:05:54,310 --> 00:05:50,510

the japanese space flyer unit or sfu

120

00:05:56,350 --> 00:05:54,320

satellite here you see a good shot of

121

00:05:58,870 --> 00:05:56,360

the sfu and it's with its solar arrays

122

00:06:01,060 --> 00:05:58,880

deployed it was critical for the solar

123

00:06:04,930 --> 00:06:01,070

arrays to be retracted and latched prior

124

00:06:07,540 --> 00:06:04,940

to the SF use retrieval as we closed

125

00:06:09,880 --> 00:06:07,550

inside of a half a mile of sfu you can

126

00:06:11,830 --> 00:06:09,890

see brian firing the Jets primary RCS

127

00:06:14,200 --> 00:06:11,840

Jets to slow down endeavours closure

128

00:06:15,880 --> 00:06:14,210

rate on the satellite meanwhile quechee

129

00:06:18,700 --> 00:06:15,890

and Winston are in the front cockpit

130

00:06:20,200 --> 00:06:18,710

part of the cockpit monitoring the solar

131

00:06:23,380 --> 00:06:20,210

array retraction which didn't go very

132

00:06:25,510 --> 00:06:23,390

well due to the fact that we didn't have

133

00:06:28,750 --> 00:06:25,520

Latin indication of the solar array

134

00:06:31,090 --> 00:06:28,760

panels of sfu the sagamihara operation

135

00:06:34,120 --> 00:06:31,100

center located in japan send commands to

136

00:06:39,760 --> 00:06:34,130

jettison the two solar arrays to safely

137

00:06:41,920 --> 00:06:39,770

return the sfu to earth brian maneuver

138

00:06:43,540 --> 00:06:41,930

the orbiter to a distance within the

139

00:06:48,130 --> 00:06:43,550

grapple range of the shuttle's robotic

140

00:06:57,310 --> 00:06:48,140

arm and then I started to maneuver the

141

00:07:03,380 --> 00:07:00,250

this is the moment of the capture of

142

00:07:05,870 --> 00:07:03,390

sfun this was the end of the 10-month

143

00:07:08,000 --> 00:07:05,880

voyage of the space floor unit since it

144

00:07:22,070 --> 00:07:08,010

had been launched by a japanese HD

145

00:07:28,129 --> 00:07:24,619

ce qui Chi concentrating here as he gets

146

00:07:31,159 --> 00:07:28,139

ready to do a birth the satellite after

147

00:07:38,390 --> 00:07:31,169

grandpa the sfu was maneuvered to to be

148

00:07:44,600 --> 00:07:38,400

birthed in the payload Bay like he's

149

00:07:46,610 --> 00:07:44,610

ready to slam dunk that one and then

150

00:07:49,249 --> 00:07:46,620

orbiters electrical power was supplied

151
00:07:57,860 --> 00:07:49,259
to the SF use the heater system through

152
00:07:59,570 --> 00:07:57,870
this electrical umbilical and it was a

153
00:08:02,420 --> 00:07:59,580
great moment excuse me it was great

154
00:08:05,540 --> 00:08:02,430
moment to have accomplished the first of

155
00:08:07,339 --> 00:08:05,550
the many objectives of this mission even

156
00:08:09,499 --> 00:08:07,349
though the space lawyer was our primary

157
00:08:11,330 --> 00:08:09,509
said like to deploy and retrieve a

158
00:08:13,339 --> 00:08:11,340
second set like that oast was equally

159
00:08:14,420 --> 00:08:13,349
exciting all since the office of

160
00:08:16,279 --> 00:08:14,430
aeronautics and space technology

161
00:08:17,959 --> 00:08:16,289
satellite it consisted of four

162
00:08:20,269 --> 00:08:17,969
experiments which were really pretty

163
00:08:22,279 --> 00:08:20,279

much autonomous once we released it and

164

00:08:23,629 --> 00:08:22,289

you can see co Ichi work in the arm here

165

00:08:26,629 --> 00:08:23,639

actually to see the arm of couch is

166

00:08:29,119 --> 00:08:26,639

flagging inside he releases it and it's

167

00:08:31,430 --> 00:08:29,129

going to go into a pirouette maneuver to

168

00:08:34,069 --> 00:08:31,440

check its automatic control system as

169

00:08:35,449 --> 00:08:34,079

active control system now when we were

170

00:08:36,829 --> 00:08:35,459

inside the shuttle of course we were

171

00:08:38,300 --> 00:08:36,839

thinking about how the satellite was

172

00:08:40,159 --> 00:08:38,310

going to perform which is a very

173

00:08:41,449 --> 00:08:40,169

technical thing it was only after I

174

00:08:43,610 --> 00:08:41,459

looked at the film after where the guy

175

00:08:45,829 --> 00:08:43,620

could reflect on really the majesty of

176
00:08:47,540 --> 00:08:45,839
the satellite and watch when the earth

177
00:08:50,240 --> 00:08:47,550
comes into view at the lower left hand

178
00:08:51,620 --> 00:08:50,250
side and as the satellite does its turn

179
00:08:53,540 --> 00:08:51,630
then you going to see the sunlight

180
00:08:55,400 --> 00:08:53,550
hitting again reflecting off of its gold

181
00:08:57,620 --> 00:08:55,410
coating I think it's really something

182
00:08:59,360 --> 00:08:57,630
Brett's flying the orbiter co e cheese

183
00:09:01,220 --> 00:08:59,370
working arm Dan's taking pictures

184
00:09:02,810 --> 00:09:01,230
everybody is pretty busy inside but I

185
00:09:04,880 --> 00:09:02,820
tell you it was really exciting time

186
00:09:07,100 --> 00:09:04,890
we're backing away from this thing and

187
00:09:10,030 --> 00:09:07,110
again you're going to see a nice view of

188
00:09:12,319 --> 00:09:10,040

the earth below incidentally this

189

00:09:14,990 --> 00:09:12,329

picture of this deployment took place

190

00:09:17,569 --> 00:09:15,000

over the Namibian desert and the

191

00:09:19,670 --> 00:09:17,579

southern part of the African continent

192

00:09:21,710 --> 00:09:19,680

and take a look at the clouds take a

193

00:09:23,360 --> 00:09:21,720

look at the synthetic object flying over

194

00:09:25,350 --> 00:09:23,370

the natural objects below I think it was

195

00:09:27,520 --> 00:09:25,360

out of sight

196

00:09:29,920 --> 00:09:27,530

here we are getting ready for the first

197

00:09:32,380 --> 00:09:29,930

of two EV A's Dan very is helping me

198

00:09:34,600 --> 00:09:32,390

getting into my lower torso assembly and

199

00:09:36,220 --> 00:09:34,610

you can see that in zero g even getting

200

00:09:39,550 --> 00:09:36,230

in your EBA pants can be done two legs

201
00:09:41,650 --> 00:09:39,560
at a time here we are about to come out

202
00:09:44,200 --> 00:09:41,660
on the first EV a I'm opening up the

203
00:09:47,170 --> 00:09:44,210
thermal cover and taking my first peek

204
00:09:49,630 --> 00:09:47,180
outside I was prepared for an awesome

205
00:09:52,510 --> 00:09:49,640
view but I didn't expect to really get

206
00:09:54,640 --> 00:09:52,520
what I what I got which was a big 3d

207
00:10:03,900 --> 00:09:54,650
perspective because of all the the

208
00:10:15,210 --> 00:10:07,530
you're dancing hey let me help to his

209
00:10:16,890 --> 00:10:15,220
feet so you here we are putting together

210
00:10:19,020 --> 00:10:16,900
the portable work platform one of the

211
00:10:21,030 --> 00:10:19,030
major objectives of the first EV a that

212
00:10:24,120 --> 00:10:21,040
will be used in future station build

213
00:10:27,210 --> 00:10:24,130

flights and here Dan is past I'm passing

214

00:10:30,290 --> 00:10:27,220

up to Dan the portable foot workstation

215

00:10:32,940 --> 00:10:30,300

stanchion and he'll put that on the arm

216

00:10:34,380 --> 00:10:32,950

here we've deployed the rigid umbilical

217

00:10:36,150 --> 00:10:34,390

which was another big piece of hardware

218

00:10:39,120 --> 00:10:36,160

that we were using and you can see I'm

219

00:10:43,920 --> 00:10:39,130

handling this 250-pound mass pretty much

220

00:10:46,950 --> 00:10:43,930

with with no problems at all i think

221

00:10:49,680 --> 00:10:46,960

that the essence of a successfully VA's

222

00:10:51,150 --> 00:10:49,690

is really the same as as what Brian

223

00:10:55,710 --> 00:10:51,160

mentioned for the rest of spaceflight

224

00:10:59,400 --> 00:10:55,720

and that word is really teamwork both

225

00:11:02,040 --> 00:10:59,410

inside the the bay with Leroy and I and

226

00:11:04,620 --> 00:11:02,050

also with Brent and Koichi as they flew

227

00:11:06,570 --> 00:11:04,630

the arm and also with Houston as we

228

00:11:09,180 --> 00:11:06,580

coordinated all the different difficult

229

00:11:10,920 --> 00:11:09,190

tasks we had to do brenton Quechee were

230

00:11:13,470 --> 00:11:10,930

able to drive the arm to the place that

231

00:11:27,540 --> 00:11:13,480

Leroy and I needed to be at precisely

232

00:11:30,930 --> 00:11:29,280

this was really the high point of the

233

00:11:34,019 --> 00:11:30,940

mission for me both figuratively and

234

00:11:36,690 --> 00:11:34,029

literally as Quechee drove me on the arm

235

00:11:38,360 --> 00:11:36,700

up high above the payload Bay for me to

236

00:11:43,650 --> 00:11:38,370

test some of the work platform

237

00:11:45,269 --> 00:11:43,660

techniques that we had had practiced the

238

00:11:46,829 --> 00:11:45,279

second rendezvous the mission to

239

00:11:50,310 --> 00:11:46,839

retrieve the old satellite went

240

00:11:52,319 --> 00:11:50,320

extremely well as we closed inside a 600

241

00:11:55,160 --> 00:11:52,329

feet in Deborah was on a nearly perfect

242

00:11:57,389 --> 00:11:55,170

trajectory to achieved in rendezvous

243

00:11:58,500 --> 00:11:57,399

Brian the commander must been feeling

244

00:12:00,930 --> 00:11:58,510

really comfortable about the whole thing

245

00:12:05,160 --> 00:12:00,940

he figures it's safe enough to even let

246

00:12:07,079 --> 00:12:05,170

his PLT fly for a little bit you notice

247

00:12:09,060 --> 00:12:07,089

the expression on my face as I moved to

248

00:12:11,040 --> 00:12:09,070

the a flight deck it was a pretty

249

00:12:13,380 --> 00:12:11,050

exciting time for me to get a chance to

250

00:12:17,220 --> 00:12:13,390

fly the shuttle in close proximity you

251
00:12:19,530 --> 00:12:17,230
know to another spacecraft endeavour

252
00:12:22,019 --> 00:12:19,540
flies extremely well as it sits very

253
00:12:24,960 --> 00:12:22,029
stable it flies even better than the

254
00:12:27,180 --> 00:12:24,970
simulators we have here at JSC and very

255
00:12:30,240 --> 00:12:27,190
soon we were able to maneuver host

256
00:12:34,319 --> 00:12:30,250
within the grapple range of the robotic

257
00:12:36,180 --> 00:12:34,329
arm the next view you're about to see is

258
00:12:38,220 --> 00:12:36,190
from the camera that's on the end of the

259
00:12:40,980 --> 00:12:38,230
robotic arm it's the same view that

260
00:12:43,350 --> 00:12:40,990
coochie is usable used to affect the

261
00:12:45,449 --> 00:12:43,360
capture of the satellite and you'll

262
00:12:47,699 --> 00:12:45,459
watch and once the satellite stabilizes

263
00:12:50,550 --> 00:12:47,709

you'll see quechee aligned the target on

264

00:13:02,489 --> 00:12:50,560

the satellite and then smoothly and

265

00:13:09,089 --> 00:13:06,289

and just like that the man was 242 and

266

00:13:16,529 --> 00:13:09,099

you very quickly had two satellites

267

00:13:19,679 --> 00:13:16,539

tucked safely in the payload Bay now EBA

268

00:13:21,059 --> 00:13:19,689

to like EBA one was six hours and fifty

269

00:13:23,849 --> 00:13:21,069

something minutes worth of hardware

270

00:13:25,289 --> 00:13:23,859

intensive EBA we're evaluating all kinds

271

00:13:26,939 --> 00:13:25,299

of tools and techniques that might be

272

00:13:30,389 --> 00:13:26,949

used in the construction of a space

273

00:13:33,209 --> 00:13:30,399

station now this looks like some kind of

274

00:13:35,639 --> 00:13:33,219

weird space exercise but actually what

275

00:13:38,369 --> 00:13:35,649

I'm doing is imparting loads to the task

276

00:13:40,229 --> 00:13:38,379

plate in which my feet are connected the

277

00:13:41,849 --> 00:13:40,239

sensors in the volume of that plate that

278

00:13:45,749 --> 00:13:41,859

will sense the loads and make recordings

279

00:13:47,669 --> 00:13:45,759

of that loans data as I said it was

280

00:13:50,249 --> 00:13:47,679

hardware intensive we had electronic

281

00:13:52,519 --> 00:13:50,259

checklist power tools rejig umbilicals

282

00:13:54,389 --> 00:13:52,529

electrical fluid line connectors

283

00:13:56,309 --> 00:13:54,399

electrical connectors fluid line

284

00:13:58,259 --> 00:13:56,319

connectors improved helmet lights you

285

00:13:59,789 --> 00:13:58,269

name it we had it we had stuff hanging

286

00:14:03,929 --> 00:13:59,799

off of us everywhere we could set off

287

00:14:06,689 --> 00:14:03,939

metal detectors from orbit now one of

288

00:14:08,579 --> 00:14:06,699

the highlights of this EBA was built to

289

00:14:10,439 --> 00:14:08,589

be a thermal evaluation to test

290

00:14:12,569 --> 00:14:10,449

improvements to the suit but it's time

291

00:14:14,429 --> 00:14:12,579

for the truth to come out the truth is

292

00:14:16,439 --> 00:14:14,439

that I was a bad boy and I was told to

293

00:14:18,239 --> 00:14:16,449

go stand in the corner so I'm stood in

294

00:14:20,309 --> 00:14:18,249

the corner and got cold all morning I

295

00:14:24,960 --> 00:14:20,319

stood in the corner and got cold all

296

00:14:27,329 --> 00:14:24,970

afternoon I guys stood in the corner I

297

00:14:30,929 --> 00:14:27,339

got cold all night and nobody would come

298

00:14:32,879 --> 00:14:30,939

out and play with me no I all

299

00:14:34,739 --> 00:14:32,889

seriousness the thermal evaluation work

300

00:14:35,969 --> 00:14:34,749

extremely well I think we've got a good

301
00:14:38,759 --> 00:14:35,979
suit and we're going to go build the

302
00:14:40,769 --> 00:14:38,769
space station here we are at the end of

303
00:14:42,749 --> 00:14:40,779
the second dva and while i wait for

304
00:14:44,489 --> 00:14:42,759
winston to a button up his slide wire

305
00:14:46,049 --> 00:14:44,499
I've kind of climbed up the bulkhead and

306
00:14:48,389 --> 00:14:46,059
taking a peek inside to see what the

307
00:14:50,789 --> 00:14:48,399
guys inside are doing and here we are

308
00:14:53,069 --> 00:14:50,799
coming in and closing up the thermal

309
00:14:55,580 --> 00:14:53,079
cover and getting ready for the repress

310
00:15:04,260 --> 00:14:55,590
for the last time

311
00:15:04,270 --> 00:15:11,989
you need to give that thing good slam

312
00:15:18,329 --> 00:15:15,809
after two rendezvous a deploy to

313
00:15:20,999 --> 00:15:18,339

successful EVs on flight 28 we had some

314

00:15:23,550 --> 00:15:21,009

time to appreciate the beautiful views

315

00:15:25,319 --> 00:15:23,560

of the earth to take some film to bring

316

00:15:29,129 --> 00:15:25,329

back to show you all the depth of the

317

00:15:31,679 --> 00:15:29,139

colors and the beauty from from our

318

00:15:37,100 --> 00:15:31,689

perspective we also did some carefully

319

00:15:42,600 --> 00:15:39,329

the commander said you better get that

320

00:15:43,889 --> 00:15:42,610

not make a mess of my orbiter the

321

00:15:48,569 --> 00:15:43,899

flattering coffee on the wall was an

322

00:15:49,949 --> 00:15:48,579

automatic airlock depressed Luigi and I

323

00:15:53,819 --> 00:15:49,959

also had an opportunity to play the

324

00:15:56,249 --> 00:15:53,829

ancient oriental game of go and we

325

00:15:58,170 --> 00:15:56,259

brought this this along with us really

326

00:16:00,329 --> 00:15:58,180

to symbolize connections between past

327

00:16:02,639 --> 00:16:00,339

and present and between Japan and the

328

00:16:04,470 --> 00:16:02,649

United States we could also experience

329

00:16:06,929 --> 00:16:04,480

how our body reacts to different kinds

330

00:16:17,210 --> 00:16:06,939

of motions in microgravity as you can

331

00:16:23,280 --> 00:16:19,949

here's the master of karate Winston

332

00:16:25,230 --> 00:16:23,290

Scott look how stable his motions are

333

00:16:31,410 --> 00:16:25,240

even though his feet are not attached to

334

00:16:32,670 --> 00:16:31,420

the floor it's customary in Japan to

335

00:16:34,290 --> 00:16:32,680

mark the beginning and end of a large

336

00:16:36,090 --> 00:16:34,300

project by filling in the eyes of a

337

00:16:37,920 --> 00:16:36,100

Daruma doll we had already filled in the

338

00:16:39,360 --> 00:16:37,930

eye of the Sturm to start the project

339

00:16:42,720 --> 00:16:39,370

and here Tweety and I are getting ready

340

00:16:47,069 --> 00:16:42,730

after the retrieval of the sfu to mark

341

00:16:48,480 --> 00:16:47,079

the completion of the project one of the

342

00:16:49,920 --> 00:16:48,490

hardest things to do is to say goodbye

343

00:16:53,009 --> 00:16:49,930

to a view like this when it's time to

344

00:16:55,379 --> 00:16:53,019

come home we all took our last gazes

345

00:16:57,329 --> 00:16:55,389

close the payload bay doors got in our

346

00:17:00,600 --> 00:16:57,339

suits got ready for the deorbit burn we

347

00:17:03,299 --> 00:17:00,610

burned north of Australia an hour later

348

00:17:06,929 --> 00:17:03,309

we were right here approaching a KSC

349

00:17:08,250 --> 00:17:06,939

runway one-five we touch down about 240

350

00:17:09,990 --> 00:17:08,260

in the morning I imagine we broke a few

351

00:17:12,960 --> 00:17:10,000

folks up there in Florida with the sonic

352

00:17:14,639 --> 00:17:12,970

booms as we came in as soon as the mains

353

00:17:17,610 --> 00:17:14,649

we're down Brent put the drag chute out

354

00:17:18,809 --> 00:17:17,620

and that's our major deceleration device

355

00:17:22,230 --> 00:17:18,819

during

356

00:17:23,669 --> 00:17:22,240

roll out at about 60 knots he jettisoned

357

00:17:25,169 --> 00:17:23,679

it here and if you'll notice it falls

358

00:17:27,950 --> 00:17:25,179

pretty much straight behind the orbiter

359

00:17:30,629 --> 00:17:27,960

so there wasn't much cross when that day

360

00:17:32,999 --> 00:17:30,639

and as we roll down the runway we have

361

00:17:35,399 --> 00:17:33,009

those bright lights behind us you watch

362

00:17:36,840 --> 00:17:35,409

me searching for the center line here as

363

00:17:38,580 --> 00:17:36,850

i watch the nose move left and right

364

00:17:39,779 --> 00:17:38,590

because we were about two miles away

365

00:17:42,180 --> 00:17:39,789

from those lights it was starting to get

366

00:17:43,769 --> 00:17:42,190

dark down there and it's real important

367

00:17:49,730 --> 00:17:43,779

that you stop on the center line most of

368

00:17:55,440 --> 00:17:52,230

but at the end of the end of that

369

00:17:57,149 --> 00:17:55,450

incredible voyage we were able to we're

370

00:17:59,639 --> 00:17:57,159

now able to look back on it with the

371

00:18:01,830 --> 00:17:59,649

feelings of great accomplishment we

372

00:18:04,049 --> 00:18:01,840

obviously owe our thanks to everybody

373

00:18:07,049 --> 00:18:04,059

that helped put the mission together and

374

00:18:09,210 --> 00:18:07,059

help support the mission I was it was an

375

00:18:11,369 --> 00:18:09,220

incredible incredible trip we can't

376

00:18:13,019 --> 00:18:11,379

capture all certainly can't capture our

377

00:18:18,299 --> 00:18:13,029

thanks in words we can't capture all of

378

00:18:20,310 --> 00:18:18,309

the scenes that we saw on film but we do

379

00:18:22,200 --> 00:18:20,320

have a few supplemental film our shots

380

00:18:23,369 --> 00:18:22,210

now we'd like to to use just to show you

381

00:18:31,460 --> 00:18:23,379

some of the other things that went on

382

00:18:35,669 --> 00:18:34,020

even though we had we did have some

383

00:18:36,870 --> 00:18:35,679

pretty good rendezvous footage one of

384

00:18:40,440 --> 00:18:36,880

the things we unfortunately did not

385

00:18:42,000 --> 00:18:40,450

capture on video too well is shown in

386

00:18:43,620 --> 00:18:42,010

the lower left-hand corner of this slide

387

00:18:46,470 --> 00:18:43,630

and you can just see the the corner of

388

00:18:49,080 --> 00:18:46,480

the IBM thinkpad computer but running on

389

00:18:50,520 --> 00:18:49,090

that computer is a software program

390

00:18:52,500 --> 00:18:50,530

called the rendezvous and proxy ops

391

00:18:55,260 --> 00:18:52,510

program and a lot of folks here at JSC

392

00:18:58,380 --> 00:18:55,270

worked very hard to develop and perfect

393

00:19:01,460 --> 00:18:58,390

that program it was a tool that we used

394

00:19:04,830 --> 00:19:01,470

as a crew during the Rana boos

395

00:19:06,900 --> 00:19:04,840

essentially to help Brian get a little

396

00:19:08,850 --> 00:19:06,910

bit better graphical picture of what was

397

00:19:10,320 --> 00:19:08,860

going on during the rendezvous and maybe

398

00:19:12,960 --> 00:19:10,330

what the orbiter was going to be doing

399

00:19:15,780 --> 00:19:12,970

in the next couple minutes we use this

400

00:19:18,180 --> 00:19:15,790

tool fairly extensively and it helped

401
00:19:25,080 --> 00:19:18,190
helped on both rendezvous contribute to

402
00:19:28,289 --> 00:19:25,090
our fuel savings we had a number of

403
00:19:31,919 --> 00:19:28,299
medical experiments on board to test

404
00:19:34,470 --> 00:19:31,929
human adaptation to spaceflight and here

405
00:19:35,909 --> 00:19:34,480
you can see I'm wired for sound actually

406
00:19:38,960 --> 00:19:35,919
I'm wired for light that's a laser on

407
00:19:43,380 --> 00:19:38,970
top of my head and we're testing how are

408
00:19:46,289 --> 00:19:43,390
our eyes and our balance systems adapt

409
00:19:50,690 --> 00:19:46,299
and and track as we go through the

410
00:19:57,470 --> 00:19:54,620
I don't know how as the doc on board I

411
00:19:59,030 --> 00:19:57,480
ended up being the one that got stuck by

412
00:20:01,340 --> 00:19:59,040
needles from the pilot and had to pinch

413
00:20:04,760 --> 00:20:01,350

my nose but somehow that was the case

414

00:20:07,700 --> 00:20:04,770

and here we're testing how oxygenation

415

00:20:10,640 --> 00:20:07,710

occurs in the lungs that's different

416

00:20:12,740 --> 00:20:10,650

than on the ground basically there's a

417

00:20:14,600 --> 00:20:12,750

different distribution of blood and air

418

00:20:18,800 --> 00:20:14,610

in the lungs because of the lack of

419

00:20:20,210 --> 00:20:18,810

gravity up there and you can see how

420

00:20:24,110 --> 00:20:20,220

relaxed with him as we go through this

421

00:20:26,240 --> 00:20:24,120

dsl we don't have a shower on board the

422

00:20:29,900 --> 00:20:26,250

orbiters have you know but it really

423

00:20:36,140 --> 00:20:29,910

wasn't that bad he didn't really need to

424

00:20:37,730 --> 00:20:36,150

go all the way to those clips another

425

00:20:39,230 --> 00:20:37,740

one of those secondaries that we had on

426

00:20:40,910 --> 00:20:39,240

board was called a year in monitoring

427

00:20:44,720 --> 00:20:40,920

system and it was a hardware evaluation

428

00:20:46,520 --> 00:20:44,730

of the box that was designed here at the

429

00:20:48,260 --> 00:20:46,530

Johnson Space Center and it's intended

430

00:20:50,180 --> 00:20:48,270

to be used on on future long-duration

431

00:20:53,990 --> 00:20:50,190

Space Shuttle missions and also on the

432

00:20:55,940 --> 00:20:54,000

space station for medical research and

433

00:20:58,700 --> 00:20:55,950

it worked very well here you can see I

434

00:21:01,490 --> 00:20:58,710

had to set up shop to run it there I've

435

00:21:04,490 --> 00:21:01,500

got things surrounding me large syringes

436

00:21:05,870 --> 00:21:04,500

and unfortunately no the rest of the

437

00:21:08,960 --> 00:21:05,880

guys could use the bathroom when I was

438

00:21:13,520 --> 00:21:08,970

when I was doing this so we had to plan

439

00:21:16,640 --> 00:21:13,530

everything ahead of time this is another

440

00:21:18,290 --> 00:21:16,650

medical hardware evaluation I don't know

441

00:21:20,330 --> 00:21:18,300

how I got put in charge of this one as

442

00:21:22,520 --> 00:21:20,340

the pilot but floating next to my just

443

00:21:24,320 --> 00:21:22,530

above my hand is a piece of hardware

444

00:21:27,140 --> 00:21:24,330

called the portable clinical blood

445

00:21:29,450 --> 00:21:27,150

analyzer or PCB a for short a

446

00:21:31,880 --> 00:21:29,460

long-duration spaceflights especially on

447

00:21:33,650 --> 00:21:31,890

station it's a it's a tool that it will

448

00:21:35,750 --> 00:21:33,660

allow a doctor or the crew medical

449

00:21:37,820 --> 00:21:35,760

officer to take a blood sample from

450

00:21:40,490 --> 00:21:37,830

someone who's not feeling well and get a

451

00:21:42,380 --> 00:21:40,500

quick analysis of their blood the two

452

00:21:45,320 --> 00:21:42,390

subjects on the experiment I was the

453

00:21:47,660 --> 00:21:45,330

operator the two subjects were Dan in

454

00:21:49,820 --> 00:21:47,670

quechee and they weren't real happy when

455

00:21:50,840 --> 00:21:49,830

I went to stick their fingers and put

456

00:21:51,950 --> 00:21:50,850

their blood in that machine but it

457

00:21:55,710 --> 00:21:51,960

worked real well in the folks here at

458

00:22:01,810 --> 00:21:59,859

here's a picture of living in space once

459

00:22:03,190 --> 00:22:01,820

you get up into space the ceiling and

460

00:22:05,379 --> 00:22:03,200

the floor quickly lose their meaning and

461

00:22:07,269 --> 00:22:05,389

you learn to use whatever space is

462

00:22:09,759 --> 00:22:07,279

available Dan and Brian here are getting

463

00:22:11,289 --> 00:22:09,769

ready to prepare a meal and you can see

464

00:22:13,659 --> 00:22:11,299

the things stuck out on the on the

465

00:22:20,139 --> 00:22:13,669

velcro patches along the walls and the

466

00:22:22,359 --> 00:22:20,149

other surfaces here's another picture of

467

00:22:23,950 --> 00:22:22,369

living in space one of the questions we

468

00:22:26,080 --> 00:22:23,960

most frequently gigas how do people

469

00:22:28,539 --> 00:22:26,090

sleep in space well this is one option

470

00:22:30,549 --> 00:22:28,549

you can see Dan and the foreground there

471

00:22:32,440 --> 00:22:30,559

in the sleeping bag the purpose of the

472

00:22:34,330 --> 00:22:32,450

sleeping bag of course is only to keep

473

00:22:37,570 --> 00:22:34,340

your body from floating all over the

474

00:22:39,909 --> 00:22:37,580

cabin because it really doesn't provide

475

00:22:41,830 --> 00:22:39,919

support as there's a traditional bed and

476

00:22:44,139 --> 00:22:41,840

you can see how his arms photo it's

477

00:22:46,539 --> 00:22:44,149

really weird but if you totally relax

478

00:22:48,519 --> 00:22:46,549

your body in space your arms will float

479

00:22:55,509 --> 00:22:48,529

up in front of you in the manner that

480

00:22:57,460 --> 00:22:55,519

you see here on the screen in every

481

00:22:59,619 --> 00:22:57,470

morning one of the first things that we

482

00:23:02,049 --> 00:22:59,629

did after we woke up is to look through

483

00:23:05,139 --> 00:23:02,059

the fax note sent from the Mission

484

00:23:07,119 --> 00:23:05,149

Control Center in Houston and MCC always

485

00:23:09,609 --> 00:23:07,129

kept us informed of the updated schedule

486

00:23:16,500 --> 00:23:09,619

and status of the orbiter and payload

487

00:23:22,120 --> 00:23:19,140

mentioned earlier that we really enjoyed

488

00:23:25,120 --> 00:23:22,130

stealing glimpses of beautiful parts of

489

00:23:27,280 --> 00:23:25,130

the earth when we had a chance because

490

00:23:30,700 --> 00:23:27,290

of our launch time and our launch

491

00:23:33,250 --> 00:23:30,710

inclination we seem to get Australia

492

00:23:36,190 --> 00:23:33,260

about every Rev in the daylight and we

493

00:23:40,240 --> 00:23:36,200

actually we clobbered it with the film

494

00:23:42,430 --> 00:23:40,250

we took a lot of shots of the entire

495

00:23:43,750 --> 00:23:42,440

continent it's extremely beautiful this

496

00:23:46,330 --> 00:23:43,760

particular shot here is in the

497

00:23:50,260 --> 00:23:46,340

northeastern coast and it's the city of

498

00:23:51,850 --> 00:23:50,270

Brisbane and in the towards the left

499

00:23:55,510 --> 00:23:51,860

center you can see the brisbane river

500

00:23:57,790 --> 00:23:55,520

running down through the city into the

501
00:24:00,070 --> 00:23:57,800
bay the bay was just an incredible

502
00:24:01,450 --> 00:24:00,080
assortment of beautiful blues different

503
00:24:05,380 --> 00:24:01,460
colors you can see some of the barrier

504
00:24:07,330 --> 00:24:05,390
islands there and looking at australia

505
00:24:09,220 --> 00:24:07,340
from the this barren simpson desert to

506
00:24:13,090 --> 00:24:09,230
the beautiful coastline was one great

507
00:24:14,980 --> 00:24:13,100
experience for us this was something

508
00:24:16,810 --> 00:24:14,990
that I wanted to show you because it was

509
00:24:20,290 --> 00:24:16,820
a real surprise to meet it to see this

510
00:24:23,530 --> 00:24:20,300
it if you look up in a Texas summer sky

511
00:24:25,510 --> 00:24:23,540
at sunset you'll often see the the Sun

512
00:24:27,880 --> 00:24:25,520
as it sets hitting the tops of the

513
00:24:30,760 --> 00:24:27,890

clouds the top of the cloud is is bright

514

00:24:32,890 --> 00:24:30,770

white but from orbit you get a different

515

00:24:35,230 --> 00:24:32,900

perspective when that happens as is

516

00:24:36,700 --> 00:24:35,240

shown here with the Sun setting and the

517

00:24:39,370 --> 00:24:36,710

Sun hits the top of the clouds they

518

00:24:42,790 --> 00:24:39,380

leave a shadow that stretches across the

519

00:24:44,650 --> 00:24:42,800

earth for hundreds of miles and this was

520

00:24:49,820 --> 00:24:44,660

a perspective I've never seen before and

521

00:24:54,780 --> 00:24:52,440

we had the pleasure of participating in

522

00:24:57,240 --> 00:24:54,790

a question-and-answer session from orbit

523

00:24:58,470 --> 00:24:57,250

with students from South Africa and one

524

00:25:01,560 --> 00:24:58,480

of the things that captured my attention

525

00:25:04,200 --> 00:25:01,570

was the beauty of the African continent

526
00:25:07,020 --> 00:25:04,210
we young a picture of the orange river

527
00:25:09,450 --> 00:25:07,030
that is actually the boundary between

528
00:25:13,020 --> 00:25:09,460
the media to the north and south africa

529
00:25:14,700 --> 00:25:13,030
to the south and again the thing that

530
00:25:17,460 --> 00:25:14,710
really caught my attention at first was

531
00:25:20,580 --> 00:25:17,470
the contrast in colors you've got the

532
00:25:22,470 --> 00:25:20,590
darker colors at the top that represents

533
00:25:24,120 --> 00:25:22,480
a higher cultivated ground and then you

534
00:25:26,370 --> 00:25:24,130
can see the results of erosion at the

535
00:25:29,550 --> 00:25:26,380
bottom where the brighter more orange

536
00:25:30,930 --> 00:25:29,560
looking clay has been on earth again I

537
00:25:36,480 --> 00:25:30,940
just thought it was a very very pretty

538
00:25:39,090 --> 00:25:36,490

picture I guess this technically isn't

539

00:25:40,410 --> 00:25:39,100

an Earth observation picture but it's

540

00:25:42,210 --> 00:25:40,420

probably the favorite picture my

541

00:25:45,960 --> 00:25:42,220

favorite picture of all the ones we took

542

00:25:48,210 --> 00:25:45,970

on orbit this was taken during EV a1 and

543

00:25:50,190 --> 00:25:48,220

you can see Leroy down in the forward

544

00:25:53,460 --> 00:25:50,200

part of the bay on the starboard still

545

00:25:55,530 --> 00:25:53,470

working in the background you can see

546

00:25:59,580 --> 00:25:55,540

sharks Bay Australia which is on the

547

00:26:01,410 --> 00:25:59,590

west coast of Australia it's really it's

548

00:26:03,150 --> 00:26:01,420

pretty interesting I guess if I was I

549

00:26:05,280 --> 00:26:03,160

happen to take this picture and I guess

550

00:26:07,770 --> 00:26:05,290

if I was talking to my photo instructor

551

00:26:09,660 --> 00:26:07,780

Don about this I would try to tell him

552

00:26:12,000 --> 00:26:09,670

that I use the spot need ur 2 meter the

553

00:26:13,890 --> 00:26:12,010

light in the payload Bay and meet or the

554

00:26:15,270 --> 00:26:13,900

earth and get the exposure just right so

555

00:26:18,030 --> 00:26:15,280

that both the payload Bay and the earth

556

00:26:19,320 --> 00:26:18,040

were proper exposure and I think Don

557

00:26:20,790 --> 00:26:19,330

knows me too well he'd probably say

558

00:26:25,860 --> 00:26:20,800

something about applying squirrel in a

559

00:26:30,650 --> 00:26:25,870

nut but it turned out to be a real nice

560

00:26:36,660 --> 00:26:33,360

this is a real neat picture this was

561

00:26:38,910 --> 00:26:36,670

shot in Brazil about 120 miles northeast

562

00:26:41,010 --> 00:26:38,920

of Rio de Janeiro and it's interesting

563

00:26:42,570 --> 00:26:41,020

for several reasons you can see the the

564

00:26:44,790 --> 00:26:42,580

mud from the rain runoff that has gone

565

00:26:47,640 --> 00:26:44,800

into the river that is pouring into the

566

00:26:50,310 --> 00:26:47,650

ocean there and you can also see the the

567

00:26:51,840 --> 00:26:50,320

scallop so the ancient shorelines as the

568

00:26:58,519 --> 00:26:51,850

shoreline evolve from centuries ago to

569

00:27:04,019 --> 00:27:01,320

we could not see Mount Fuji because we

570

00:27:06,029 --> 00:27:04,029

launched the night from northern

571

00:27:09,629 --> 00:27:06,039

hemisphere and this is a spectacular

572

00:27:11,999 --> 00:27:09,639

view of Mount Kilimanjaro and you can

573

00:27:20,779 --> 00:27:12,009

see the vegetation area around Mount

574

00:27:25,289 --> 00:27:23,430

have to agree with Winston that about

575

00:27:27,440 --> 00:27:25,299

the African continent being so beautiful

576

00:27:29,970 --> 00:27:27,450

and I really love it every time I see it

577

00:27:31,440 --> 00:27:29,980

in particular I love looking at the

578

00:27:34,529 --> 00:27:31,450

deserts because you can see the dunes

579

00:27:36,810 --> 00:27:34,539

which actually you can see they're

580

00:27:39,509 --> 00:27:36,820

actually moving on the surface of the

581

00:27:41,430 --> 00:27:39,519

earth in this particular picture here

582

00:27:43,919 --> 00:27:41,440

you can see a couple things one is the

583

00:27:47,340 --> 00:27:43,929

sum of the hard rock the lava left over

584

00:27:49,289 --> 00:27:47,350

from days gone by and if you look in the

585

00:27:51,029 --> 00:27:49,299

towards the lower right center there you

586

00:27:53,820 --> 00:27:51,039

can see there's an old crater there but

587

00:27:57,509 --> 00:27:53,830

the deserts are reclaiming that land as

588

00:27:59,940 --> 00:27:57,519

the wind erosion has punched a hole in

589

00:28:01,889 --> 00:27:59,950

the rim of the crater and you can see

590

00:28:03,090 --> 00:28:01,899

the dunes and thus and filling in there

591

00:28:11,990 --> 00:28:03,100

and it's probably just a matter of time

592

00:28:18,870 --> 00:28:16,350

that pretty much sums up our mission has

593

00:28:20,490 --> 00:28:18,880

the the major events we've been able to

594

00:28:23,730 --> 00:28:20,500

share with you some of the other things

595

00:28:26,060 --> 00:28:23,740

that we did on board again we'd like to

596

00:28:29,940 --> 00:28:26,070

thank thank you for all that you did and

597

00:28:36,660 --> 00:28:29,950

have to tell you that that you make you

598

00:28:38,340 --> 00:28:36,670

make incredible things happen and we

599

00:28:40,380 --> 00:28:38,350

certainly certainly appreciate speaking

600

00:28:41,850 --> 00:28:40,390

on behalf of the crew I haven't had the

601

00:28:43,260 --> 00:28:41,860

opportunity to work with all of you we

602

00:28:46,290 --> 00:28:43,270

thank you for all you did in support of