



1  
00:00:34,470 --> 00:00:10,520  
hi I'm CJ sturckow of the sts-128 crew

2  
00:00:39,759 --> 00:00:37,210  
space shuttle Discovery is poised and

3  
00:00:41,530 --> 00:00:39,769  
ready for action this evening as launch

4  
00:00:43,689 --> 00:00:41,540  
controllers oversee their data here in

5  
00:00:47,139 --> 00:00:43,699  
firing room 4 at Kennedy Space Center's

6  
00:00:50,740 --> 00:00:47,149  
launch control center commander Rick

7  
00:00:53,020 --> 00:00:50,750  
sturckow a veteran of three space

8  
00:00:56,770 --> 00:00:53,030  
flights being suited up and ready for

9  
00:00:59,200 --> 00:00:56,780  
action tonight pilot Kevin Ford is

10  
00:01:00,779 --> 00:00:59,210  
making his first spaceflight giving a

11  
00:01:04,359 --> 00:01:00,789  
thumbs-up

12  
00:01:07,359 --> 00:01:04,369  
here's nicole stott she's a mission

13  
00:01:09,790 --> 00:01:07,369

specialist and is writing discovery for

14

00:01:11,410 --> 00:01:09,800

a long-duration ride aboard the

15

00:01:18,070 --> 00:01:11,420

International Space Station she'll be

16

00:01:21,100 --> 00:01:18,080

changing places with tim kopra mission

17

00:01:25,630 --> 00:01:21,110

specialist 1 patrick forester he's a

18

00:01:28,899 --> 00:01:25,640

veteran of two space flights Danny

19

00:01:31,889 --> 00:01:28,909

Olivas he's flown once before he's our

20

00:01:34,690 --> 00:01:31,899

lead spacewalker on this mission

21

00:01:39,429 --> 00:01:34,700

Christopher Fugelsang our European Space

22

00:01:41,319 --> 00:01:39,439

Agency astronaut and Jose Hernandez

23

00:01:43,060 --> 00:01:41,329

mission specialist number two on the

24

00:01:45,039 --> 00:01:43,070

mission is making his first spaceflight

25

00:01:47,530 --> 00:01:45,049

he also will be the flight engineer on

26  
00:02:07,710 --> 00:01:47,540  
the flight deck assisting the commander

27  
00:02:07,720 --> 00:02:30,240  
here's CJ gettin his helmet put on

28  
00:02:34,340 --> 00:02:33,450  
discovery launch director yes camera go

29  
00:02:37,260 --> 00:02:34,350  
ahead sir

30  
00:02:39,330 --> 00:02:37,270  
okay the vehicles clean and the teams

31  
00:02:41,130 --> 00:02:39,340  
are go and this time mother nature is

32  
00:02:43,350 --> 00:02:41,140  
cooperating so it looks like third time

33  
00:02:44,070 --> 00:02:43,360  
really is the term with you and your

34  
00:02:48,180 --> 00:02:44,080  
team

35  
00:02:49,710 --> 00:02:48,190  
good looking Godspeed they feed on

36  
00:02:57,230 --> 00:02:49,720  
another half of the career discovery

37  
00:02:59,520 --> 00:02:57,240  
thanks to everyone space station

38  
00:03:03,720 --> 00:02:59,530

identity launch director you do have a

39

00:03:09,360 --> 00:03:03,730

go to launch discovery and I copy that

40

00:03:13,710 --> 00:03:09,370

launch director the LSS goes all over

41

00:03:16,140 --> 00:03:13,720

their access arm retract and discovery

42

00:03:18,290 --> 00:03:16,150

OTC good luck getting the mplm LMC and

43

00:03:25,140 --> 00:03:18,300

of course the Colbert safely into orbit

44

00:03:27,479 --> 00:03:25,150

have a great flight discovery Roger do

45

00:03:33,360 --> 00:03:27,489

you - 15 seconds the sound suppression

46

00:03:38,540 --> 00:03:33,370

water system has been activated we have

47

00:03:45,860 --> 00:03:43,040

- one booster ignition and liftoff of

48

00:03:48,770 --> 00:03:45,870

discovery celebrating its 25th birthday

49

00:03:51,800 --> 00:03:48,780

by racking up science and supplies to

50

00:03:53,240 --> 00:03:51,810

the space station Houston now

51  
00:03:54,530 --> 00:03:53,250  
controlling the midnight Ryan of

52  
00:03:56,930 --> 00:03:54,540  
Rickster CO and his crew to the

53  
00:03:58,610 --> 00:03:56,940  
International Space Station discovery

54  
00:03:59,660 --> 00:03:58,620  
rolling on to the proper alignment for

55  
00:04:01,610 --> 00:03:59,670  
its eight-and-a-half minute ride to

56  
00:04:03,260 --> 00:04:01,620  
orbit four-and-a-half million pounds of

57  
00:04:13,030 --> 00:04:03,270  
hardware in humans taking aim on the

58  
00:04:17,920 --> 00:04:15,910  
thirty two seconds into the flight

59  
00:04:19,750 --> 00:04:17,930  
the three liquid fuel main engine soon

60  
00:04:21,310 --> 00:04:19,760  
will throttle back to 72 percent of

61  
00:04:22,810 --> 00:04:21,320  
rated performance down on the bucket

62  
00:04:28,300 --> 00:04:22,820  
reducing the stress on the shuttle as it

63  
00:04:31,120 --> 00:04:28,310

goes transonic discovery three and a

64

00:04:33,930 --> 00:04:31,130

half miles in altitude four miles

65

00:04:40,840 --> 00:04:33,940

downrange from the Kennedy Space Center

66

00:04:42,490 --> 00:04:40,850

the throttle up call acknowledged by

67

00:04:44,350 --> 00:04:42,500

Commander Rick sturckow joined on the

68

00:04:46,090 --> 00:04:44,360

flight deck by pilot Kevin Ford flight

69

00:04:48,280 --> 00:04:46,100

engineer Jose Hernandez and Pat

70

00:04:50,200 --> 00:04:48,290

Forrester seated down on the mid-deck or

71

00:04:52,750 --> 00:04:50,210

Danny Olivas Christer Fuglesang of the

72

00:04:54,370 --> 00:04:52,760

European Space Agency and Nicole Stott

73

00:05:04,950 --> 00:04:54,380

hitching a ride for three months on the

74

00:05:09,670 --> 00:05:07,570

booster officer confirms staging a good

75

00:05:11,440 --> 00:05:09,680

solid rocket booster separation guidance

76  
00:05:12,910 --> 00:05:11,450  
now converging the on-board computers

77  
00:06:02,590 --> 00:05:12,920  
steering the shuttle for its precise

78  
00:06:06,500 --> 00:06:04,700  
all right this is getting ready for the

79  
00:06:08,780 --> 00:06:06,510  
home to burn you can see that a

80  
00:06:11,150 --> 00:06:08,790  
parachute cover there you can see that

81  
00:06:13,670 --> 00:06:11,160  
it accelerates toward the rear towards a

82  
00:06:18,170 --> 00:06:13,680  
and he's batted up toward the front and

83  
00:06:20,090 --> 00:06:18,180  
I was kind of find that a little bit the

84  
00:06:23,870 --> 00:06:20,100  
commander he was the last one out of the

85  
00:06:27,320 --> 00:06:23,880  
seat and there's a good part of our TLP

86  
00:06:30,290 --> 00:06:27,330  
this is Jose Hernandez adjusting to the

87  
00:06:33,110 --> 00:06:30,300  
to the zero-g as Kevin can show you

88  
00:06:36,140 --> 00:06:33,120

there with the pencil that we are really

89

00:06:38,210 --> 00:06:36,150

in a zero-g environment the next thing

90

00:06:41,330 --> 00:06:38,220

is Pat and crystal we're getting ready

91

00:06:43,010 --> 00:06:41,340

to open the payload bay doors and you

92

00:06:44,210 --> 00:06:43,020

can see Kutcher I set up that camera if

93

00:06:46,010 --> 00:06:44,220

you watch very closely

94

00:06:47,870 --> 00:06:46,020

pretty soon you'll see the door move

95

00:06:49,360 --> 00:06:47,880

actually there it goes you can see them

96

00:06:52,040 --> 00:06:49,370

moving out there out the back window

97

00:06:54,530 --> 00:06:52,050

that's pretty good good teamwork by Pat

98

00:06:57,650 --> 00:06:54,540

and courser they did the doors and okay

99

00:07:00,650 --> 00:06:57,660

you've an antenna down on the mid-deck

100

00:07:02,630 --> 00:07:00,660

you can see things are pretty busy a lot

101  
00:07:02,980 --> 00:07:02,640  
of bags and a lot of care that needs to

102  
00:07:06,950 --> 00:07:02,990  
be

103  
00:07:09,260 --> 00:07:06,960  
unstow Therese toad you can see here I'm

104  
00:07:11,800 --> 00:07:09,270  
sure it's deep in his ditch getting

105  
00:07:15,800 --> 00:07:11,810  
helping me out with some of the five

106  
00:07:17,330 --> 00:07:15,810  
very large 5ml leaf bags is where we

107  
00:07:19,570 --> 00:07:17,340  
store a lot of our equipment for station

108  
00:07:21,550 --> 00:07:19,580  
as well for shuttle

109  
00:07:24,610 --> 00:07:21,560  
they're so today doing a great job of

110  
00:07:29,350 --> 00:07:24,620  
setting up the PTSD he got the stuff out

111  
00:07:30,969 --> 00:07:29,360  
of what we call a lightweight more since

112  
00:07:33,610 --> 00:07:30,979  
we have our inspections on flight day

113  
00:07:37,779 --> 00:07:33,620

two we always try and get the arm out of

114

00:07:41,320 --> 00:07:37,789

clay deland checked out for the next day

115

00:07:42,999 --> 00:07:41,330

so i ran through those procedures and

116

00:07:44,439 --> 00:07:43,009

the last thing is that kevin was helping

117

00:07:46,270 --> 00:07:44,449

out making sure we had everything done

118

00:07:48,369 --> 00:07:46,280

in the flight plan and it looked really

119

00:07:52,809 --> 00:07:48,379

good and here it goes they making a

120

00:07:55,330 --> 00:07:52,819

couple of calls on the air-to-ground and

121

00:08:00,969 --> 00:07:55,340

discovery for pat you are go for OB SS

122

00:08:02,649 --> 00:08:00,979

unbirth work as ford Forrester and

123

00:08:04,210 --> 00:08:02,659

Hernandez continued this survey of the

124

00:08:06,399 --> 00:08:04,220

port wing using the orbiter boom sensor

125

00:08:08,050 --> 00:08:06,409

system the rest of the crew is getting

126

00:08:10,450 --> 00:08:08,060

ready for all the mid-deck transfers

127

00:08:11,860 --> 00:08:10,460

that have to be done once Discovery

128

00:08:21,800 --> 00:08:11,870

docks with the International Space

129

00:08:25,400 --> 00:08:23,690

you can see commander Rick sturckow

130

00:08:27,710 --> 00:08:25,410

there inside the hatch of discovery

131

00:08:30,440 --> 00:08:27,720

waving at the orbiter boom sensor system

132

00:08:31,940 --> 00:08:30,450

as that's a 50-foot long attachment on

133

00:08:34,100 --> 00:08:31,950

the end of Discovery's robotic arm

134

00:08:56,240 --> 00:08:34,110

continues of this survey of the left

135

00:08:59,810 --> 00:08:56,250

side discovery here we go ready get

136

00:09:01,730 --> 00:08:59,820

ready for the turn to show what our

137

00:09:04,100 --> 00:09:01,740

dress is like we're going to leave a

138

00:09:20,150 --> 00:09:04,110

timer floating there and you're gonna

139

00:09:27,920 --> 00:09:20,160

come towards me and don't catch and down

140

00:09:29,930 --> 00:09:27,930

again we've got the manual a table and a

141

00:09:34,520 --> 00:09:29,940

lot of fun if you're not having fun

142

00:09:39,980 --> 00:09:34,530

you're doing something wrong we try and

143

00:09:42,170 --> 00:09:39,990

combat the space and you can see here CJ

144

00:09:44,540 --> 00:09:42,180

taking advantage of the work that we did

145

00:09:49,370 --> 00:09:44,550

with your gamma chop on that then here

146

00:09:52,460 --> 00:09:49,380

is working out and then today we spent

147

00:09:54,380 --> 00:09:52,470

quite a bit of time working on Amy

148

00:09:56,030 --> 00:09:54,390

checkout or checking out the spaces for

149

00:09:59,720 --> 00:09:56,040

the three spacewalks that we'll be doing

150

00:10:03,050 --> 00:09:59,730

you can see Dani and Krista here working

151  
00:10:04,910 --> 00:10:03,060  
on their spacesuits and from every

152  
00:10:07,940 --> 00:10:04,920  
window we have a really spectacular view

153  
00:10:10,280 --> 00:10:07,950  
of the earth as well as the what

154  
00:10:10,640 --> 00:10:10,290  
surprised me the real real blackness of

155  
00:10:17,300 --> 00:10:10,650  
space

156  
00:10:22,480 --> 00:10:17,310  
I don't think I've ever seen the window

157  
00:10:27,829 --> 00:10:25,400  
station trust cameras capturing our

158  
00:10:35,990 --> 00:10:27,839  
first view of the shuttle Discovery at a

159  
00:10:38,150 --> 00:10:36,000  
distance of about 38 nautical miles good

160  
00:10:39,740 --> 00:10:38,160  
view from the station trust cameras as

161  
00:10:43,009 --> 00:10:39,750  
you saw the ignition of the orbital

162  
00:10:46,200 --> 00:10:43,019  
maneuvering system engines the NC four

163  
00:11:19,420 --> 00:10:48,960

and discovery station we're ready for

164

00:11:23,829 --> 00:11:21,100

good view of the orbiter docking system

165

00:11:25,930 --> 00:11:23,839

the docking ring extended powered up set

166

00:11:27,400 --> 00:11:25,940

to come into contact with the docking

167

00:11:30,400 --> 00:11:27,410

mechanism on the forward end of the

168

00:11:32,139 --> 00:11:30,410

Harmony connecting node the floodlit

169

00:11:33,760 --> 00:11:32,149

payload Bay of the shuttle discovery

170

00:11:50,850 --> 00:11:33,770

from cameras on the International Space

171

00:11:50,860 --> 00:12:17,049

yes yes why didn't you call arrival

172

00:12:22,359 --> 00:12:19,659

and so after a brief greeting back to

173

00:12:24,309 --> 00:12:22,369

work for the 13 crew members again this

174

00:12:27,669 --> 00:12:24,319

safety briefing coming up will be

175

00:12:29,169 --> 00:12:27,679

followed by the removal and exchange of

176

00:12:31,869 --> 00:12:29,179

the custom-made Soyuz seat liners

177

00:12:33,579 --> 00:12:31,879

between nicole stott and tim kopra to

178

00:12:35,619 --> 00:12:33,589

grapple and unbirth the orbiter boom

179

00:12:37,839 --> 00:12:35,629

sensor system the boom extension and

180

00:12:40,059 --> 00:12:37,849

hand it off to the shuttle robotic arm

181

00:12:42,189 --> 00:12:40,069

that will be controlled by Pat Forrester

182

00:12:43,929 --> 00:12:42,199

and Jose Hernandez who at that point

183

00:13:03,429 --> 00:12:43,939

will be back onto the a flight deck of

184

00:13:16,659 --> 00:13:03,439

discovery new home for the first time

185

00:13:20,079 --> 00:13:16,669

looking to stabilize binoculars for

186

00:13:25,089 --> 00:13:20,089

several months it's a wonderful view the

187

00:13:30,009 --> 00:13:25,099

space station get closer beautiful like

188

00:13:34,929 --> 00:13:30,019

golden shiny and modules and irradiated

189

00:13:37,089 --> 00:13:34,939

shining in silver as we swing through

190

00:13:38,919 --> 00:13:37,099

the cockpit on the flight deck you can

191

00:13:41,049 --> 00:13:38,929

see it's a pretty busy place

192

00:13:44,229 --> 00:13:41,059

all six all seven bodies are up here

193

00:13:46,329 --> 00:13:44,239

with Sam pretty tight and very little

194

00:13:48,489 --> 00:13:46,339

real estate but we find a way to make

195

00:13:50,739 --> 00:13:48,499

everything fit everyone has a role and

196

00:13:54,039 --> 00:13:50,749

responsibilities the station starts off

197

00:13:55,809 --> 00:13:54,049

as a backup and off in the distance and

198

00:13:58,419 --> 00:13:55,819

it's a really impressive to see as it

199

00:14:07,269 --> 00:13:58,429

moves closer and closer as we make our

200

00:14:09,279 --> 00:14:07,279

approach to station okay well we went

201  
00:14:12,909 --> 00:14:09,289  
through the last series of burns coming

202  
00:14:15,459 --> 00:14:12,919  
up to the manual phase the guidance did

203  
00:14:19,029 --> 00:14:15,469  
its job and got the orbiter in a very

204  
00:14:28,100 --> 00:14:19,039  
good situation for the manual Tegeler to

205  
00:14:38,400 --> 00:14:35,999  
good closure that certifier okay

206  
00:14:40,800 --> 00:14:38,410  
absolutely looking for freed ran lights

207  
00:14:57,960 --> 00:14:40,810  
every bus the nation's like in Houston

208  
00:15:01,410 --> 00:14:57,970  
from Discovery capture confirmed guitar

209  
00:15:03,300 --> 00:15:01,420  
Paris coming off and then it was time to

210  
00:16:05,790 --> 00:15:03,310  
go ahead and you can see the station

211  
00:16:14,380 --> 00:16:08,020  
is the station of the big will for

212  
00:16:16,450 --> 00:16:14,390  
robotics go ahead Mike let you know we

213  
00:16:20,710 --> 00:16:16,460

are just putting procedure one two one

214

00:16:24,490 --> 00:16:20,720

zero the birthday PLM gruffalo work ok

215

00:16:27,190 --> 00:16:24,500

sounds good Mike the station's robotic

216

00:16:29,380 --> 00:16:27,200

arm the canadarm2 reached over and has

217

00:16:31,570 --> 00:16:29,390

grappled the grapple fixture on the top

218

00:16:40,140 --> 00:16:31,580

of the Leonardo multi-purpose Logistics

219

00:16:45,420 --> 00:16:42,630

they for first full day aboard the space

220

00:16:48,390 --> 00:16:45,430

station and I woke up this morning and

221

00:16:52,110 --> 00:16:48,400

Mike built from the expedition crew join

222

00:18:15,240 --> 00:16:52,120

me for mplm installation took it out of

223

00:18:30,109 --> 00:18:15,250

the payload Bay with the okay then you

224

00:18:34,969 --> 00:18:32,509

view of Danny Olivas at the spent

225

00:18:37,339 --> 00:18:34,979

ammonia tank assembly the spent tank

226

00:18:40,249 --> 00:18:37,349

weighs almost three thirteen hundred

227

00:18:45,439 --> 00:18:40,259

pounds it will be removed and grappled

228

00:18:47,659 --> 00:18:45,449

by the canadarm2 and held in place for

229

00:18:49,639 --> 00:18:47,669

the next day and a half until the new

230

00:18:51,859 --> 00:18:49,649

ammonia tank assembly is installed in

231

00:18:56,409 --> 00:18:51,869

its place during the second spacewalk

232

00:18:59,269 --> 00:18:56,419

Thursday by Olivas and Christa Fugelsang

233

00:19:01,699 --> 00:18:59,279

start moving over to join Danny Olivas

234

00:19:08,749 --> 00:19:01,709

at the worksite for the release of the

235

00:19:12,259 --> 00:19:08,759

ammonia tank assembly the Canada arm to

236

00:19:16,309 --> 00:19:12,269

multi-tasking grappled on to the ammonia

237

00:19:19,909 --> 00:19:16,319

tank assembly and being used to halt

238

00:19:22,759 --> 00:19:19,919

nicole stott and the european technology

239

00:19:30,439 --> 00:19:22,769

experiment facility over to Discovery's

240

00:19:32,149 --> 00:19:30,449

cargo bay where it will be birthed we're

241

00:19:34,579 --> 00:19:32,159

looking at sequential still video now

242

00:19:35,809 --> 00:19:34,589

from inside Discovery's cargo veil you

243

00:19:37,189 --> 00:19:35,819

can see Daniel leave us there on the

244

00:19:38,539 --> 00:19:37,199

left nicole stott there on the right

245

00:19:41,329 --> 00:19:38,549

they are continuing to try to get this

246

00:19:54,529 --> 00:19:41,339

UTF experiment installed at the back end

247

00:19:55,969 --> 00:19:54,539

of the payload Bay sts-128 mission

248

00:19:58,069 --> 00:19:55,979

specialist Danny Olivas making good

249

00:19:59,779 --> 00:19:58,079

progress on this missing experiment he

250

00:20:02,629 --> 00:19:59,789

has so far removed what's called pit

251

00:20:04,969 --> 00:20:02,639

pins which are a little small quick

252

00:20:06,319 --> 00:20:04,979

disconnect pins that were holding these

253

00:20:08,899 --> 00:20:06,329

two you see them on the right in the

254

00:20:11,419 --> 00:20:08,909

left almost suitcase like experiments

255

00:20:28,689 --> 00:20:11,429

open and he has put those pins back and

256

00:20:33,060 --> 00:20:31,249

they're getting ready following protocol

257

00:20:35,310 --> 00:20:33,070

and

258

00:20:40,769 --> 00:20:35,320

are in the math after spending the night

259

00:20:43,039 --> 00:20:40,779

there in camp out you can see the the B

260

00:20:45,810 --> 00:20:43,049

hats are being closed there by tim kopra

261

00:20:47,639 --> 00:20:45,820

we now are your dot from the

262

00:20:49,200 --> 00:20:47,649

International Space Station and the

263

00:20:55,799 --> 00:20:49,210

pressure will be brought down to ten

264

00:20:58,889 --> 00:20:55,809

point two Danny's got inside the heart

265

00:21:00,480 --> 00:20:58,899

upper torso of their spacesuit and you

266

00:21:01,980 --> 00:21:00,490

can see and the crew lock it's full

267

00:21:04,080 --> 00:21:01,990

equipment right now but will empty all

268

00:21:06,269 --> 00:21:04,090

that out and that's where daddy and

269

00:21:08,220 --> 00:21:06,279

Nicole end up going into before we close

270

00:21:10,230 --> 00:21:08,230

the hatch behind them and then we drop

271

00:21:30,960 --> 00:21:10,240

that portion of the airlock down to

272

00:22:02,560 --> 00:21:30,970

vacuum before they go outside nothing

273

00:22:07,959 --> 00:22:04,539

how to play

274

00:22:10,749 --> 00:22:07,969

by then for Danny and Nicole today and

275

00:22:13,449 --> 00:22:10,759

basically what we do is set up shop on

276

00:22:15,489 --> 00:22:13,459

the flight deck and using the

277

00:22:17,199 --> 00:22:15,499

combination of the windows and all the

278

00:22:19,690 --> 00:22:17,209

cameras and monitors that we have we

279

00:22:21,789 --> 00:22:19,700

keep track of where they're at they know

280

00:22:23,859 --> 00:22:21,799

that procedures quite well and yet we

281

00:22:26,349 --> 00:22:23,869

still have them in here to remind them

282

00:22:28,829 --> 00:22:26,359

what steps may be coming that's also

283

00:22:35,560 --> 00:22:28,839

talking to the ground for any

284

00:22:39,489 --> 00:22:35,570

last-minute changes or updates so Ethan

285

00:22:41,049 --> 00:22:39,499

this was flight day six on the sts-128

286

00:22:43,239 --> 00:22:41,059

mission we got the whole crew up John

287

00:22:44,979 --> 00:22:43,249

the flight deck of discovery that's a

288

00:22:47,799 --> 00:22:44,989

little post leap action here with

289

00:22:50,229 --> 00:22:47,809

exercise on the bike and we've got

290

00:22:54,789 --> 00:22:50,239

everybody getting ready to start the day

291

00:22:56,499 --> 00:22:54,799

out there we had a big day of mplm

292

00:22:58,180 --> 00:22:56,509

transfer so it's good to get the

293

00:23:01,810 --> 00:22:58,190

exercise in early so that we can have

294

00:23:03,729 --> 00:23:01,820

uninterrupted time in the mplm there's a

295

00:23:05,799 --> 00:23:03,739

lot of paperwork which Christa is mostly

296

00:23:07,810 --> 00:23:05,809

been tracking for this mission he's are

297

00:23:09,779 --> 00:23:07,820

a loadmaster for the mplm and I've

298

00:23:13,329 --> 00:23:09,789

turned trying to help him out with that

299

00:23:16,269 --> 00:23:13,339

and now you can see there's a very nice

300

00:23:18,039 --> 00:23:16,279

choreography to get the mplm transferred

301

00:23:43,080 --> 00:23:18,049

and here's chris are doing in their rack

302

00:23:43,090 --> 00:24:16,329

I hear

303

00:24:22,339 --> 00:24:19,999

not everything that we transfer over to

304

00:24:23,930 --> 00:24:22,349

the space station came up in the mplm we

305

00:24:25,129 --> 00:24:23,940

do have some things on the mid-deck of

306

00:24:27,979 --> 00:24:25,139

the oil but are one of those is a

307

00:24:30,169 --> 00:24:27,989

freezer that we carry up and when we

308

00:24:31,609 --> 00:24:30,179

launched it was that about four degrees

309

00:24:33,469 --> 00:24:31,619

Celsius and we carried up some

310

00:24:35,359 --> 00:24:33,479

experiments that are going to be

311

00:24:38,419 --> 00:24:35,369

transferred over to the Japanese module

312

00:24:42,019 --> 00:24:38,429

is nicole and i we open it up for the

313

00:24:46,519 --> 00:24:42,029

first time and then what we're gonna do

314

00:24:48,469 --> 00:24:46,529

is we're gonna carry those over and

315

00:24:56,079 --> 00:24:48,479

they'll be stowed in another freezer

316

00:25:02,239 --> 00:24:59,599

Christer Fuglesang who is continuing to

317

00:25:04,070 --> 00:25:02,249

pre breathe pure oxygen to cleanse the

318

00:25:05,810 --> 00:25:04,080

nitrogen out of his bloodstream as he

319

00:25:08,570 --> 00:25:05,820

and fellow space Walker Danny Olivas

320

00:25:10,789 --> 00:25:08,580

gear up for the second spacewalk of this

321

00:25:13,369 --> 00:25:10,799

flight a six and a half hour excursion

322

00:25:15,799 --> 00:25:13,379

outside of quest with the singular goal

323

00:25:17,419 --> 00:25:15,809

to install a new ammonia tank assembly

324

00:25:19,759 --> 00:25:17,429

on the Portland truss of the

325

00:25:23,359 --> 00:25:19,769

International Space Station you can see

326

00:25:25,909 --> 00:25:23,369

the extended canadarm2 robotic arm

327

00:25:27,709 --> 00:25:25,919

firmly in the grasp of the old ammonia

328

00:25:29,239 --> 00:25:27,719

tank assembly that was removed by Oliva

329

00:25:31,609 --> 00:25:29,249

since taught during the first spacewalk

330

00:25:34,129 --> 00:25:31,619

on Tuesday and then at the rear of

331

00:25:36,289 --> 00:25:34,139

Discovery's cargo bay the boxy object is

332

00:25:38,539 --> 00:25:36,299

the subject of today's work the new

333

00:25:41,539 --> 00:25:38,549

ammonia tank assembly there's a close-up

334

00:25:43,369 --> 00:25:41,549

view on its truss structure its cargo

335

00:25:45,919 --> 00:25:43,379

carrying truss at the rear of the cargo

336

00:25:47,509 --> 00:25:45,929

bay its destination the port one trusts

337

00:25:50,839 --> 00:25:47,519

of the International Space Station later

338

00:25:53,239 --> 00:25:50,849

today Kevin Ford now maneuvering the

339

00:25:55,839 --> 00:25:53,249

canid arm to down to the payload Bay of

340

00:25:57,560 --> 00:25:55,849

discovery to meet Christer Fuglesang

341

00:26:04,040 --> 00:25:57,570

thank you

342

00:26:06,230 --> 00:26:04,050

it's evolved the arm is in firm grasp of

343

00:26:08,270 --> 00:26:06,240

the old ammonia tank assembly and has

344

00:26:09,920 --> 00:26:08,280

been for the past two days since it

345

00:26:15,160 --> 00:26:09,930

since it was removed during the first

346

00:26:21,290 --> 00:26:17,630

wrister Fugelsang at the end of the

347

00:26:24,260 --> 00:26:21,300

canadarm2 robotic arm as he hauls the

348

00:26:26,090 --> 00:26:24,270

new ammonia tank assembly up to the

349

00:26:33,110 --> 00:26:26,100

worksite on the port one truss of the

350

00:26:35,600 --> 00:26:33,120

International Space Station the ammonia

351  
00:26:37,970 --> 00:26:35,610  
tank assembly is now firmly secured in

352  
00:26:42,200 --> 00:26:37,980  
the port one trusts of the International

353  
00:26:45,410 --> 00:26:42,210  
Space Station at 7:24 p.m. Central Time

354  
00:26:47,990 --> 00:26:45,420  
the new tank is in its parking place on

355  
00:26:58,190 --> 00:26:48,000  
the port side of the International Space

356  
00:26:59,900 --> 00:26:58,200  
Station's backbone sts-128 mission

357  
00:27:01,190 --> 00:26:59,910  
specialist Christopher Fugelsang getting

358  
00:27:03,050 --> 00:27:01,200  
quite the view now as he makes his way

359  
00:27:06,140 --> 00:27:03,060  
back toward Discovery's payload Bay with

360  
00:27:08,570 --> 00:27:06,150  
his spent ammonia tank assembly Danny

361  
00:27:10,490 --> 00:27:08,580  
Olivas meanwhile moving hand-over-hand

362  
00:27:29,280 --> 00:27:10,500  
down the station's structure back toward

363  
00:27:32,970 --> 00:27:30,960

this is a shot at Christer Fuglesang

364

00:27:34,770 --> 00:27:32,980

still down inside Discovery's payload

365

00:27:38,970 --> 00:27:34,780

Bay wrapping up the activities on this

366

00:27:41,520 --> 00:27:38,980

old ammonia tank assembly while he is

367

00:27:44,190 --> 00:27:41,530

doing that Danny Olivas is up on the s-1

368

00:27:50,460 --> 00:27:44,200

truss working on an ammonia tank

369

00:27:52,680 --> 00:27:50,470

assembly up there day seven highlights

370

00:27:54,900 --> 00:27:52,690

for SGS 128 it's been a great mission

371

00:27:56,340 --> 00:27:54,910

we're getting close it inside with them

372

00:27:57,840 --> 00:27:56,350

so that we can help them with all

373

00:28:08,970 --> 00:27:57,850

procedures and get them ready to go

374

00:28:11,880 --> 00:28:08,980

outside on ETA to Kevin through Christy

375

00:28:13,860 --> 00:28:11,890

I ran quite a bit on the arm this is

376

00:28:15,240 --> 00:28:13,870

where Kevin and I were setting up all of

377

00:28:17,880 --> 00:28:15,250

the equipment that we need for

378

00:28:21,480 --> 00:28:17,890

supporting the robotic arm operations a

379

00:28:24,660 --> 00:28:21,490

lot of different tools to see what's

380

00:28:31,950 --> 00:28:24,670

going on and make sure that the arm and

381

00:28:34,200 --> 00:28:31,960

Krister stay clear of the station and

382

00:28:37,800 --> 00:28:34,210

here you see cursor heading down the the

383

00:28:59,700 --> 00:28:37,810

payload Bay still on his way to join the

384

00:29:04,440 --> 00:29:02,190

and in zero gravity is that you carry

385

00:29:06,269 --> 00:29:04,450

things with your legs and you get around

386

00:29:07,560 --> 00:29:06,279

you move around with your arms quite the

387

00:29:10,049 --> 00:29:07,570

opposite of what you would do on the

388

00:29:12,299 --> 00:29:10,059

ground and Frank is moving some of the

389

00:29:14,039 --> 00:29:12,309

food containers that way and it's a very

390

00:29:18,990 --> 00:29:14,049

efficient way actually to get things

391

00:29:22,490 --> 00:29:19,000

from point to point and here it's more

392

00:29:25,830 --> 00:29:22,500

from the ETA that's me upside down and

393

00:29:29,220 --> 00:29:25,840

there it is towards the end of the eda l

394

00:29:34,470 --> 00:29:29,230

was carrying and fortress foot support

395

00:29:49,250 --> 00:29:34,480

and bar go to on a special kind of tool

396

00:29:56,150 --> 00:29:52,490

getting them ready to get him out of

397

00:29:57,980 --> 00:29:56,160

there lan you suit and others not the

398

00:30:00,789 --> 00:29:57,990

procedures that we have to follow make

399

00:30:03,770 --> 00:30:00,799

sure that for example that we don't know

400

00:30:05,720 --> 00:30:03,780

pressure depressurize the meta yeah and

401  
00:30:08,419 --> 00:30:05,730  
it starts rate so that we don't hurt

402  
00:30:10,520 --> 00:30:08,429  
their eardrums and and as you can see

403  
00:30:28,810 --> 00:30:10,530  
it's a very detailed process that they

404  
00:30:36,470 --> 00:30:30,590  
great job Kevin

405  
00:30:39,230 --> 00:30:36,480  
hey thanks why it's a great plan today

406  
00:30:41,299 --> 00:30:39,240  
was a special day for us as we had half

407  
00:30:44,060 --> 00:30:41,309  
a day off but nonetheless we still had

408  
00:30:47,000 --> 00:30:44,070  
our daily chores we had to do here you

409  
00:30:49,190 --> 00:30:47,010  
see Danny are doing the law change out

410  
00:30:51,919 --> 00:30:49,200  
these are the characters that scrub our

411  
00:30:54,380 --> 00:30:51,929  
co2 and we have to do daily chores like

412  
00:30:57,710 --> 00:30:54,390  
this and although collect water and

413  
00:30:59,990 --> 00:30:57,720

transportation and the other condensate

414

00:31:01,669 --> 00:31:00,000

and there's a lot of chores that even

415

00:31:09,159 --> 00:31:01,679

though we had half the day off we still

416

00:31:11,360 --> 00:31:09,169

had to do so we've got Kevin he was

417

00:31:13,490 --> 00:31:11,370

getting ready to have lunch that's

418

00:31:15,200 --> 00:31:13,500

peanut butter on a tortilla one of our

419

00:31:19,010 --> 00:31:15,210

favorite things so as he calls it it's

420

00:31:22,039 --> 00:31:19,020

peanut butter popsicle and we do eat

421

00:31:23,930 --> 00:31:22,049

well up here but it's also fun to take

422

00:31:25,430 --> 00:31:23,940

time to play with your food not a

423

00:31:28,190 --> 00:31:25,440

special thing that we get to do on

424

00:31:30,560 --> 00:31:28,200

orbiters have a conference with our

425

00:31:35,630 --> 00:31:30,570

families over a video networking

426

00:31:38,060 --> 00:31:35,640

this was Jose's day this crystal I get

427

00:31:39,169 --> 00:31:38,070

in his exercise the EDA yesterday and

428

00:31:42,710 --> 00:31:39,179

the one he's got planned for tomorrow

429

00:31:44,299 --> 00:31:42,720

probably wasn't enough for him there's a

430

00:31:46,880 --> 00:31:44,309

really busy part so you could see here

431

00:31:50,060 --> 00:31:46,890

this came heading over to the European

432

00:31:53,330 --> 00:31:50,070

facility and Frank heading over to the

433

00:32:20,950 --> 00:31:53,340

gym because making her way over to Saul

434

00:32:30,850 --> 00:32:23,570

gives you an appreciation when you try

435

00:32:35,659 --> 00:32:33,650

everything proceeding on track at this

436

00:32:38,120 --> 00:32:35,669

early hour of the crews workday in

437

00:32:39,980 --> 00:32:38,130

support of the third and final spacewalk

438

00:32:42,470 --> 00:32:39,990

of the mission to be conducted by Danny

439

00:32:44,180 --> 00:32:42,480

Olivas and Christer Fuglesang the

440

00:32:46,280 --> 00:32:44,190

spacewalk of course is the focus of

441

00:32:48,140 --> 00:32:46,290

attention today for most of the activity

442

00:32:51,409 --> 00:32:48,150

involving the joint shuttle station

443

00:32:53,270 --> 00:32:51,419

crews this will be the 133rd spacewalk

444

00:32:55,100 --> 00:32:53,280

in support of space station assembly and

445

00:33:07,240 --> 00:32:55,110

maintenance the third and final

446

00:33:12,049 --> 00:33:09,590

believe us making his way over to the

447

00:33:16,010 --> 00:33:12,059

starboard 3 truss and the work site for

448

00:33:19,100 --> 00:33:16,020

today's first task the deployment of a

449

00:33:21,650 --> 00:33:19,110

cargo attachment platform what this work

450

00:33:24,289 --> 00:33:21,660

amounts to is that leave us in Fugelsang

451  
00:33:27,289 --> 00:33:24,299  
are essentially taking apart some of the

452  
00:33:29,390 --> 00:33:27,299  
structural attachments and braces of the

453  
00:33:32,270 --> 00:33:29,400  
starboard 3 trust they can gain access

454  
00:33:34,280 --> 00:33:32,280  
to the payload attachment system the

455  
00:33:36,080 --> 00:33:34,290  
cargo attachment platform that they'll

456  
00:33:41,000 --> 00:33:36,090  
be rotating down into a locked position

457  
00:33:43,340 --> 00:33:41,010  
a short time from now and a good latch

458  
00:33:45,530 --> 00:33:43,350  
checkout on the newly deployed payload

459  
00:33:50,090 --> 00:33:45,540  
attachment system cargo platform on the

460  
00:33:52,159 --> 00:33:50,100  
starboard 3 truss the view of Christer

461  
00:33:54,500 --> 00:33:52,169  
Fuglesang from Danny Olivas helmet

462  
00:33:58,159 --> 00:33:54,510  
camera as he completes the check out of

463  
00:34:00,350 --> 00:33:58,169

the latches on the newly deployed a

464

00:34:03,350 --> 00:34:00,360

cargo platform to which critical spare

465

00:34:07,919 --> 00:34:03,360

parts will be a fixed on the sts-129

466

00:34:10,859 --> 00:34:07,929

mission in November a good view you

467

00:34:13,559 --> 00:34:10,869

side of the latticework of the s0 trust

468

00:34:15,180 --> 00:34:13,569

from Danny Olivas helmet camera as he

469

00:34:18,569 --> 00:34:15,190

and Krista Fugelsang are in the early

470

00:34:21,599 --> 00:34:18,579

stages of preparing to D mate connectors

471

00:34:31,559 --> 00:34:21,609

electrical connectors from a failed rate

472

00:34:34,200 --> 00:34:31,569

gyro assembly okay 41 retrieved

473

00:34:38,059 --> 00:34:34,210

disappear from the large oru bag install

474

00:34:41,549 --> 00:34:38,069

it on the guide rails you may need help

475

00:34:43,859 --> 00:34:41,559

with Olivas and Fugelsang working to

476

00:34:45,869 --> 00:34:43,869

peak efficiency today the spacewalk

477

00:34:48,359 --> 00:34:45,879

officer and Mission Control reports that

478

00:34:50,700 --> 00:34:48,369

the anticipation is once these two

479

00:34:53,520 --> 00:34:50,710

Global Positioning System antennas are

480

00:34:58,640 --> 00:34:53,530

bolted into place we should be still

481

00:35:17,720 --> 00:35:00,990

all do are use that you've installed

482

00:35:23,579 --> 00:35:20,670

work up here we have a little bit of

483

00:35:26,099 --> 00:35:23,589

time to stay fit so that when we return

484

00:35:27,420 --> 00:35:26,109

we can function during the entry and the

485

00:35:29,760 --> 00:35:27,430

landing at everything and be good to go

486

00:35:33,240 --> 00:35:29,770

after we all get on the ground this is a

487

00:35:35,880 --> 00:35:33,250

red abort station which is a weight

488

00:35:37,620 --> 00:35:35,890

lifting machine that awesome zero-g so

489

00:35:39,510 --> 00:35:37,630

important to get the technique of this

490

00:35:40,770 --> 00:35:39,520

thing because it's some temple involved

491

00:35:47,100 --> 00:35:40,780

to keep it all out there so it's not

492

00:35:53,890 --> 00:35:50,500

the rest of my crew members in 1g I am

493

00:35:55,840 --> 00:35:53,900

no acrobat or gymnast at all that it's

494

00:35:56,170 --> 00:35:55,850

amazing what a little z ogu can do for

495

00:36:21,910 --> 00:35:56,180

you

496

00:36:32,660 --> 00:36:29,300

we had a testament to the team

497

00:36:54,630 --> 00:36:32,670

I'll prepare excluding the little girls

498

00:36:59,400 --> 00:36:57,540

we are getting the nicole taking

499

00:37:00,839 --> 00:36:59,410

pictures of their gloves which will be

500

00:37:02,849 --> 00:37:00,849

sent to the ground to make get well the

501  
00:37:04,530 --> 00:37:02,859  
gloves are still pressurized to make

502  
00:37:07,890 --> 00:37:04,540  
sure that the gloves are usable for a

503  
00:37:10,470 --> 00:37:07,900  
future EVs there's a a very specific

504  
00:37:13,140 --> 00:37:10,480  
sequence which is followed for taking

505  
00:37:14,700 --> 00:37:13,150  
the pictures of the gloves and then the

506  
00:37:18,330 --> 00:37:14,710  
specialists on the ground will look at

507  
00:37:20,609 --> 00:37:18,340  
them very accurately and they have good

508  
00:37:23,280 --> 00:37:20,619  
records from previous PDA so they know

509  
00:37:24,210 --> 00:37:23,290  
which if there was any damage that it

510  
00:37:27,150 --> 00:37:24,220  
might have been on this staff that

511  
00:37:28,710 --> 00:37:27,160  
spacewalk he do I do this final part of

512  
00:37:30,349 --> 00:37:28,720  
the defeating in parallel just to get

513  
00:37:32,700 --> 00:37:30,359

the crew out of their suits quicker

514

00:37:35,430 --> 00:37:32,710

they've that how really long data and

515

00:37:46,010 --> 00:37:35,440

that - so long long time more than 8

516

00:37:50,790 --> 00:37:48,660

seriously I quit there are getting all

517

00:37:54,690 --> 00:37:50,800

the equipment ready after the EVs and

518

00:37:57,089 --> 00:37:54,700

you see me okay in RGA which is one of

519

00:37:59,640 --> 00:37:57,099

the pieces of our use that got replaced

520

00:38:02,270 --> 00:37:59,650

from my Eevee eight number three and

521

00:38:05,280 --> 00:38:02,280

we're taking it to the mplm for storage

522

00:38:09,359 --> 00:38:05,290

and bringing it back hopefully for

523

00:38:15,390 --> 00:38:09,369

repair back on the ground as you can see

524

00:38:17,880 --> 00:38:15,400

the NPRM is now nicely in better order

525

00:38:22,490 --> 00:38:17,890

because now we're putting our stuff away

526  
00:38:29,520 --> 00:38:26,839  
for the e is over the team simply added

527  
00:38:31,380 --> 00:38:29,530  
instructions to reconfigure the seats

528  
00:38:34,740 --> 00:38:31,390  
for literally parts of the seats on

529  
00:38:36,660 --> 00:38:34,750  
orbit and then bringing our chairs out

530  
00:38:37,890 --> 00:38:36,670  
of service bring them back home with us

531  
00:38:39,750 --> 00:38:37,900  
the future large

532  
00:38:42,540 --> 00:38:39,760  
design so they can be disassembled

533  
00:38:45,330 --> 00:38:42,550  
fairly easily but here you see myself in

534  
00:38:48,750 --> 00:38:45,340  
picture taking arms and legs off

535  
00:38:53,730 --> 00:38:48,760  
abilities and performing the falafels

536  
00:38:56,310 --> 00:38:53,740  
departments very part there's the crew

537  
00:38:59,280 --> 00:38:56,320  
gathered in node one for final dinner

538  
00:39:01,650 --> 00:38:59,290

together it's a very special time we had

539

00:39:04,910 --> 00:39:01,660

foods there from all the represented

540

00:39:08,790 --> 00:39:04,920

countries of course United States Russia

541

00:39:09,630 --> 00:39:08,800

Belgium crystal Watson Swedish food up

542

00:39:12,450 --> 00:39:09,640

here with him

543

00:39:14,610 --> 00:39:12,460

we had some Canadian food and some

544

00:39:16,230 --> 00:39:14,620

Japanese suit even left over from Co

545

00:39:19,350 --> 00:39:16,240

Ichi so there's that so is a very

546

00:39:22,140 --> 00:39:19,360

well-rounded smorgasbord as they say in

547

00:39:24,030 --> 00:39:22,150

Sweden and we had all that stuff's are

548

00:39:26,850 --> 00:39:24,040

ready to go there's a little tight

549

00:39:28,290 --> 00:39:26,860

quarters it's nice in zero gravity that

550

00:39:30,840 --> 00:39:28,300

some of the crew members can float up

551  
00:39:31,620 --> 00:39:30,850  
high and kind of use their space so most

552  
00:39:33,300 --> 00:39:31,630  
efficiently

553  
00:39:34,710 --> 00:39:33,310  
of course it only takes after nights a

554  
00:39:38,910 --> 00:39:34,720  
few minutes before they start playing

555  
00:39:40,820 --> 00:39:38,920  
with their food and space is that thing

556  
00:39:45,830 --> 00:39:40,830  
to win ISA after night just

557  
00:39:57,360 --> 00:39:52,200  
like that the shrimp is a very popular

558  
00:39:58,920 --> 00:39:57,370  
item on most men use it to add some

559  
00:40:02,960 --> 00:39:58,930  
horseradish in there really clear out

560  
00:40:10,290 --> 00:40:06,150  
here's a toast to everybody drinking the

561  
00:40:19,290 --> 00:40:10,300  
recycled urine and I was a very happy

562  
00:40:22,860 --> 00:40:19,300  
moment there's a some tradition our lead

563  
00:40:25,620 --> 00:40:22,870

spacewalker eg1 Danny Olivas is putting

564

00:40:28,290 --> 00:40:25,630

the sticker in the u.s. airlock on a

565

00:40:35,640 --> 00:40:28,300

space station and then each crew member

566

00:40:38,310 --> 00:40:35,650

signs around the sticker there we also

567

00:40:41,250 --> 00:40:38,320

installed that crew sticker on the this

568

00:40:44,790 --> 00:40:41,260

is in node1 it's a tradition dates back

569

00:40:47,940 --> 00:40:44,800

all the way to sts-88 2i the first

570

00:40:51,390 --> 00:40:47,950

assembly mission and each crew is I put

571

00:40:57,630 --> 00:40:51,400

the patch on this panel and node1 so we

572

00:41:00,390 --> 00:40:57,640

have put a patch on there sts-128 pilot

573

00:41:02,280 --> 00:41:00,400

Kevin Ford and mission specialist Jose

574

00:41:05,370 --> 00:41:02,290

Hernandez working on moving the Leonardo

575

00:41:07,050 --> 00:41:05,380

multi-purpose Logistics Module from the

576  
00:41:09,420 --> 00:41:07,060  
Harmony node back into Discovery's

577  
00:41:11,250 --> 00:41:09,430  
payload Bay it's very slow and

578  
00:41:13,470 --> 00:41:11,260  
methodical process once it is put back

579  
00:41:15,650 --> 00:41:13,480  
into Discovery's payload Bay there will

580  
00:41:18,150 --> 00:41:15,660  
be four latches that will be secured to

581  
00:41:20,820 --> 00:41:18,160  
hold Leonardo in place for the return

582  
00:41:22,200 --> 00:41:20,830  
trip back home all of this activity is

583  
00:41:23,910 --> 00:41:22,210  
going on the rest of the crew is

584  
00:41:26,250 --> 00:41:23,920  
finishing up some transfer activities

585  
00:41:27,690 --> 00:41:26,260  
between shuttle Discovery and the

586  
00:41:30,120 --> 00:41:27,700  
International Space Station making sure

587  
00:41:33,800 --> 00:41:30,130  
that everything is on board Discovery's

588  
00:41:51,990 --> 00:41:49,920

discovery yes

589

00:41:55,200 --> 00:41:52,000

1:28 crew now saying farewell to their

590

00:41:56,700 --> 00:41:55,210

expedition 20 counterparts who have

591

00:42:09,230 --> 00:41:56,710

hosted them aboard the International

592

00:42:15,960 --> 00:42:12,780

European seaman waters say Frankton and

593

00:42:23,599 --> 00:42:15,970

myself closing the hatch - they're in

594

00:42:26,990 --> 00:42:23,609

for him here we do the closing of the

595

00:42:32,299 --> 00:42:27,000

station side of the hatches that is the

596

00:42:34,890 --> 00:42:32,309

node 2 nadir hatch being so smart right

597

00:42:37,049 --> 00:42:34,900

here we're at the robotics workstation

598

00:42:41,880 --> 00:42:37,059

for at the International Space Station

599

00:42:45,540 --> 00:42:41,890

using the big arm for unboxing the mplm

600

00:42:48,000 --> 00:42:45,550

and today it was all it was our

601  
00:42:51,450 --> 00:42:48,010  
opportunity to unburden and put it back

602  
00:42:54,329 --> 00:42:51,460  
into the up payload Bay store into the

603  
00:42:57,390 --> 00:42:54,339  
payload Bay and we have great support

604  
00:42:59,570 --> 00:42:57,400  
from Pat who provided us shuttle camera

605  
00:43:04,160 --> 00:42:59,580  
abuse and

606  
00:43:06,680 --> 00:43:04,170  
and also Kevin I help me by the view

607  
00:43:09,710 --> 00:43:06,690  
halfway through Kevin and I try to

608  
00:43:12,470 --> 00:43:09,720  
places and he actually brought it to the

609  
00:43:15,950 --> 00:43:12,480  
payload thing and it was a great

610  
00:43:17,930 --> 00:43:15,960  
experience operating the the

611  
00:43:19,850 --> 00:43:17,940  
International Space Station arm as

612  
00:43:24,560 --> 00:43:19,860  
opposed to the shuttle arm so that was

613  
00:43:26,720 --> 00:43:24,570

they are aid so you need experience here

614

00:43:30,260 --> 00:43:26,730

you see the are the no to hatch where

615

00:43:33,560 --> 00:43:30,270

the NPRM was connected and as it's being

616

00:43:36,830 --> 00:43:33,570

removed and put into the bay of the

617

00:43:38,570 --> 00:43:36,840

shuttle and mentioned earlier pad

618

00:43:44,420 --> 00:43:38,580

working the cameras on the federal side

619

00:43:47,660 --> 00:43:44,430

to make sure hope usually needed to and

620

00:43:56,600 --> 00:43:47,670

we can go in for sorting it inside the

621

00:43:59,810 --> 00:43:56,610

big thing the call putting on the the

622

00:44:02,270 --> 00:43:59,820

docking mechanism alignment edge that is

623

00:44:07,250 --> 00:44:02,280

when we use to earth and under from

624

00:44:10,130 --> 00:44:07,260

space station if they cross form which

625

00:44:13,070 --> 00:44:10,140

is uh have a standoff on it and you see

626  
00:44:16,960 --> 00:44:13,080  
we align it to the over wire right there

627  
00:44:26,289 --> 00:44:16,970  
and this is a final hatch closure for

628  
00:44:32,829 --> 00:44:29,650  
every stand on that big loop you are go

629  
00:44:42,260 --> 00:44:32,839  
for unboxing copy Houston go for

630  
00:44:57,470 --> 00:44:44,450  
damn station from discovery physical

631  
00:45:02,070 --> 00:45:00,120  
this view of the International Space

632  
00:45:03,750 --> 00:45:02,080  
Station from Discovery through the

633  
00:45:06,030 --> 00:45:03,760  
s-band communication system the

634  
00:45:09,690 --> 00:45:06,040  
sequential still video that refreshes

635  
00:45:11,310 --> 00:45:09,700  
itself every few seconds showing the

636  
00:45:13,609 --> 00:45:11,320  
view from a centreline camera in the

637  
00:45:32,400 --> 00:45:13,619  
orbiter docking system with Discovery

638  
00:45:39,440 --> 00:45:35,160

with a palette of puffy clouds providing

639

00:45:42,210 --> 00:45:39,450

a backdrop shuttle Discovery 652 feet

640

00:45:44,910 --> 00:45:42,220

below the International Space Station as

641

00:45:49,220 --> 00:45:44,920

the two crafts approached the west coast

642

00:45:55,050 --> 00:45:51,870

you can see a good view here of the

643

00:45:56,910 --> 00:45:55,060

orbiter boom sensor system the 50-foot

644

00:45:59,940 --> 00:45:56,920

long boom extension mated to the

645

00:46:03,060 --> 00:45:59,950

shuttles robotic arm that will come into

646

00:46:06,020 --> 00:46:03,070

play a few hours from now when Kevin

647

00:46:09,000 --> 00:46:06,030

Ford Pat Forrester and Jose Hernandez

648

00:46:10,980 --> 00:46:09,010

work the procedures for the so called

649

00:46:12,870 --> 00:46:10,990

late inspection of the reinforced

650

00:46:22,890 --> 00:46:12,880

carbon-carbon on the leading edges of

651  
00:46:28,200 --> 00:46:25,920  
okay Houston discovery welcome to our

652  
00:46:30,390 --> 00:46:28,210  
playdate well I like funny a mid-deck

653  
00:46:33,770 --> 00:46:30,400  
this morning we had a specialty of our

654  
00:46:37,050 --> 00:46:33,780  
crew as these breakfast burritos made by

655  
00:46:38,760 --> 00:46:37,060  
Danny Olivas and Jose Hernandez you can

656  
00:46:42,510 --> 00:46:38,770  
see it's a little tricky in zero-g

657  
00:46:43,890 --> 00:46:42,520  
wasn't all the ingredients into the 30s

658  
00:46:45,720 --> 00:46:43,900  
but so long

659  
00:46:47,610 --> 00:46:45,730  
well that is a smiley face I see that

660  
00:46:51,060 --> 00:46:47,620  
one now Danny made a smiley face anyway

661  
00:46:54,680 --> 00:46:51,070  
then we put the eggs on there at iam you

662  
00:46:58,200 --> 00:46:54,690  
can see carefully are placing the eggs

663  
00:47:06,080 --> 00:46:58,210

inside the burrito to any is an expert

664

00:47:08,640 --> 00:47:06,090

in in bilgey burrito making and that Tim

665

00:47:10,800 --> 00:47:08,650

corporatist decided to taste the very

666

00:47:13,470 --> 00:47:10,810

first one and he gave us his honest

667

00:47:18,130 --> 00:47:13,480

opinion and obviously it looks like he

668

00:47:25,430 --> 00:47:23,390

and in time for undocking prepared the

669

00:47:28,070 --> 00:47:25,440

system is set up and it's basically only

670

00:47:30,710 --> 00:47:28,080

to count down to the undocking moment

671

00:47:34,160 --> 00:47:30,720

when it has been copied exactly to the

672

00:47:42,560 --> 00:47:34,170

second when it should happen excitement

673

00:47:47,060 --> 00:47:42,570

is giving up and English and look lights

674

00:47:51,980 --> 00:47:47,070

went off true starts to turn and look

675

00:47:58,030 --> 00:47:51,990

and about two minutes later we are off

676

00:48:03,470 --> 00:48:01,130

many many hours of practice at home with

677

00:48:04,970 --> 00:48:03,480

our instructors really paid off today we

678

00:48:07,880 --> 00:48:04,980

were really happy with the way the fly

679

00:48:11,329 --> 00:48:07,890

around went and nice state separation

680

00:48:13,310 --> 00:48:11,339

and hopefully we got some good images to

681

00:48:14,810 --> 00:48:13,320

send home to everybody see what this

682

00:48:19,640 --> 00:48:14,820

International Space Station is all about

683

00:48:22,430 --> 00:48:19,650

it's really spectacular Kevin mentioned

684

00:48:24,380 --> 00:48:22,440

he had a lot of company up on the flight

685

00:48:27,170 --> 00:48:24,390

deck today but believe it or not most

686

00:48:29,990 --> 00:48:27,180

everyone up there has a purpose we do

687

00:48:31,690 --> 00:48:30,000

photo documentation of the station most

688

00:48:37,539 --> 00:48:31,700

of it required and those photos will be

689

00:48:40,989 --> 00:48:39,909

it's just pictures don't capture what

690

00:48:43,719 --> 00:48:40,999

it's like when you look out the window

691

00:48:49,829 --> 00:48:43,729

we do our best but so those things that

692

00:48:57,539 --> 00:48:54,309

we step on up away from the space

693

00:49:00,789 --> 00:48:57,549

station we begin to get ready for

694

00:49:03,249 --> 00:49:00,799

inspection ladies section basically we

695

00:49:04,809 --> 00:49:03,259

pull out the robotic arm and the the

696

00:49:06,989 --> 00:49:04,819

boom system with the sensor packets on

697

00:49:09,429 --> 00:49:06,999

the end and to do a final inspection

698

00:49:14,679 --> 00:49:09,439

make sure that the ship is ready to come

699

00:49:16,929 --> 00:49:14,689

to the atmosphere and come home we ended

700

00:49:19,959 --> 00:49:16,939

the day a little bit of levity and fun

701

00:49:21,909 --> 00:49:19,969

playing with with the water and just

702

00:49:25,259 --> 00:49:21,919

demonstrating what you can do and

703

00:49:27,909 --> 00:49:25,269

gravity here you see Danny Olivas

704

00:49:31,870 --> 00:49:27,919

squirting out some water from a drink

705

00:49:42,160 --> 00:49:31,880

bag and a lifesaver in the center we're

706

00:49:48,320 --> 00:49:46,160

turned out pretty well and you know it's

707

00:49:49,790 --> 00:49:48,330

it's one of the skills that all our

708

00:49:55,410 --> 00:49:49,800

songs have to be able to play with water

709

00:50:08,410 --> 00:50:05,140

go into the kill at Edwards Air Force

710

00:50:12,039 --> 00:50:08,420

Base California the convoy begins to

711

00:50:13,509 --> 00:50:12,049

head to the edge of the dry lakebed you

712

00:50:16,630 --> 00:50:13,519

can see the vehicle in the back of that

713

00:50:19,809 --> 00:50:16,640

people mover is the crew transport

714

00:50:21,130 --> 00:50:19,819

vehicle entry flight director richard

715

00:50:22,509 --> 00:50:21,140

jones and the entry team of flight

716

00:50:24,719 --> 00:50:22,519

controllers have been on console since

717

00:50:27,640 --> 00:50:24,729

10 o'clock this morning

718

00:50:29,170 --> 00:50:27,650

it was a very clear-cut decision earlier

719

00:50:30,819 --> 00:50:29,180

in the day to waive off both of the

720

00:50:32,199 --> 00:50:30,829

landing opportunities to the Kennedy

721

00:50:34,299 --> 00:50:32,209

Space Center because of stormy

722

00:50:36,189 --> 00:50:34,309

conditions very unstable tropical light

723

00:50:40,209 --> 00:50:36,199

conditions bringing in showers and

724

00:50:41,949 --> 00:50:40,219

thundershowers to encroach the 30

725

00:50:43,569 --> 00:50:41,959

nautical mile radial circle of the

726

00:50:46,539 --> 00:50:43,579

landing strip at the Kennedy Space

727

00:50:48,609 --> 00:50:46,549

Center today so it was clearly not a

728

00:50:51,249 --> 00:50:48,619

good day to land in Florida and the

729

00:50:52,809 --> 00:50:51,259

shuttle landing then was diverted 3,000

730

00:50:55,029 --> 00:50:52,819

miles to the west to the test flight

731

00:50:57,359 --> 00:50:55,039

center at the Dryden Flight Research

732

00:50:59,769 --> 00:50:57,369

Center at Edwards Air Force Base

733

00:51:01,569 --> 00:50:59,779

discovery launched two weeks ago tonight

734

00:51:03,160 --> 00:51:01,579

from the Kennedy Space Center to begin

735

00:51:07,900 --> 00:51:03,170

its mission to the International Space

736

00:51:10,449 --> 00:51:07,910

Station delivering new hardware 14 tons

737

00:51:12,130 --> 00:51:10,459

of equipment and nicole stott well into

738

00:51:15,729 --> 00:51:12,140

her three-month increment as a flight

739

00:51:17,650 --> 00:51:15,739

engineer with the expedition 20 crew the

740

00:51:20,650 --> 00:51:17,660

propulsion officer reports that the

741

00:51:23,890 --> 00:51:20,660

deorbit burn is underway to good engines

742

00:51:26,019 --> 00:51:23,900

good control of the orbiter this braking

743

00:51:29,380 --> 00:51:26,029

maneuver will last two minutes 35

744

00:51:33,699 --> 00:51:29,390

seconds slowing discovery down by 267

745

00:51:37,660 --> 00:51:33,709

feet per second enabling it to enter the

746

00:51:39,519 --> 00:51:37,670

Earth's atmosphere nose-first all of the

747

00:51:42,459 --> 00:51:39,529

systems in excellent shape to support

748

00:51:45,539 --> 00:51:42,469

the next hour long descent back to the

749

00:51:48,279 --> 00:51:45,549

landing site at Edwards Air Force Base

750

00:51:50,999 --> 00:51:48,289

discovery beginning the trip home to

751  
00:51:54,609 --> 00:51:51,009  
Edwards Air Force Base California

752  
00:51:56,789 --> 00:51:54,619  
discovery Houston on energy approaching

753  
00:51:59,709 --> 00:51:56,799  
the hack no changes to winds or weather

754  
00:52:07,560 --> 00:51:59,719  
for the class wind etc will be late

755  
00:52:18,820 --> 00:52:14,170  
gabi kevin ford in control of the stick

756  
00:52:20,970 --> 00:52:18,830  
at this moment treatment discovery now

757  
00:52:23,170 --> 00:52:20,980  
going subsonic the fleet leading shuttle

758  
00:52:27,880 --> 00:52:23,180  
announcing its arrival at the landing

759  
00:52:29,740 --> 00:52:27,890  
site with a pair of sonic booms the late

760  
00:52:35,110 --> 00:52:29,750  
afternoon sunshine gleaming off its

761  
00:52:38,080 --> 00:52:35,120  
thermal protection heat shield three

762  
00:52:40,420 --> 00:52:38,090  
minutes until touchdown Rick sturckow is

763  
00:52:42,340 --> 00:52:40,430

taken back the stick from Kevin Ford the

764

00:52:45,190 --> 00:52:42,350

vortices off the wings very obvious

765

00:52:47,260 --> 00:52:45,200

discovery continuing its turnaround the

766

00:52:48,790 --> 00:52:47,270

heading alignment circle aligning with

767

00:53:01,280 --> 00:52:48,800

the runway two two at Edwards Air Force

768

00:53:01,290 --> 00:53:24,800

discovery on at the 180

769

00:53:29,210 --> 00:53:27,170

the slow gentle turn around the heading

770

00:53:31,790 --> 00:53:29,220

alignment circle commander Rick sturckow

771

00:53:35,770 --> 00:53:31,800

will soon a line discovery with runway 2

772

00:54:08,480 --> 00:53:35,780

- time to touch down two minutes

773

00:54:18,540 --> 00:54:15,500

discovery we copy this view from the

774

00:54:20,640 --> 00:54:18,550

heads-up display camera the same view

775

00:54:22,200 --> 00:54:20,650

that Rick sturckow and Kevin Ford are

776

00:54:26,790 --> 00:54:22,210

seeing now that we're aligned with

777

00:54:30,030 --> 00:54:26,800

runway 2 - discovery right on the

778

00:54:30,420 --> 00:54:30,040

centerline moments from now Rick

779

00:54:33,270 --> 00:54:30,430

sturckow

780

00:54:57,080 --> 00:54:33,280

will flare up Discovery's nose pilot

781

00:54:57,090 --> 00:55:13,279

the pre-flare maneuver conducted

782

00:55:13,289 --> 00:55:21,329

landing gear down and locked

783

00:55:31,360 --> 00:55:26,319

main gear touchdown Kevin Ford now

784

00:55:40,540 --> 00:55:38,770

nose gear touchdown discovery rolling

785

00:55:42,850 --> 00:55:40,550

out on runway 2 - at Edwards Air Force

786

00:55:45,310 --> 00:55:42,860

Base California wrapping up a 5.7

787

00:55:47,130 --> 00:55:45,320

million mile mission to resupply and

788

00:56:29,670 --> 00:55:47,140

fortify the International Space Station

789

00:56:36,250 --> 00:56:34,090

discovery wheel stop copy we're stopped

790

00:56:38,260 --> 00:56:36,260

welcome home discovery congratulations

791

00:56:40,450 --> 00:56:38,270

on an extremely successful mission

792

00:57:33,490 --> 00:56:40,460

stepping up science to a new level on

793

00:57:41,020 --> 00:57:37,930

oh wow with the crew of a sts-128 the

794

00:57:44,320 --> 00:57:41,030

space shuttle Discovery we're very happy

795

00:57:46,240 --> 00:57:44,330

to be back on land here in California we

796

00:57:49,360 --> 00:57:46,250

wish we could have gone to Florida today

797

00:57:51,370 --> 00:57:49,370

got to see our families down there but

798

00:57:54,430 --> 00:57:51,380

it just didn't work out with the weather

799

00:57:57,070 --> 00:57:54,440

the crews doing great you could see them

800

00:57:58,750 --> 00:57:57,080

there behind me tim kopra unfortunately

801  
00:58:01,330 --> 00:57:58,760  
could not join us on this walk around

802  
00:58:03,910 --> 00:58:01,340  
he's doing some medical science

803  
00:58:07,120 --> 00:58:03,920  
experiments so he's participating in

804  
00:58:09,010 --> 00:58:07,130  
those right at this time discovery was a

805  
00:58:11,260 --> 00:58:09,020  
really great vehicle on this mission it

806  
00:58:13,300 --> 00:58:11,270  
performed flawlessly thanks to all the

807  
00:58:16,120 --> 00:58:13,310  
folks at the Kennedy Space Center who

808  
00:58:18,040 --> 00:58:16,130  
prepared that vehicle also thanks to all

809  
00:58:20,710 --> 00:58:18,050  
of our instructors in Houston who

810  
00:58:22,270 --> 00:58:20,720  
trained us to do this mission and to all

811  
00:58:23,380 --> 00:58:22,280  
the folks working in the Mission Control

812  
00:58:25,780 --> 00:58:23,390  
Center in Houston

813  
00:58:27,460 --> 00:58:25,790

it was a great mission we're looking

814

00:58:29,650 --> 00:58:27,470

forward to getting back to Houston for