



1
00:00:31,599 --> 00:00:37,350
guess who

2
00:00:37,360 --> 00:00:51,990
everybody thinks i'm crazy

3
00:00:52,000 --> 00:01:03,189
crazy

4
00:01:03,199 --> 00:01:09,030
good morning discovery

5
00:01:09,040 --> 00:01:14,310
good morning houston great wake-up music

6
00:01:18,310 --> 00:01:16,950
well just because you're 179 miles up

7
00:01:25,190 --> 00:01:18,320
doesn't mean you can get away from that

8
00:01:28,950 --> 00:01:27,030
we had a feeling we'd hear more about

9
00:02:39,589 --> 00:01:28,960
that

10
00:02:39,599 --> 00:02:43,030
go ahead discovery

11
00:02:46,070 --> 00:02:44,470
so mark just wanted to tell you you

12
00:02:48,070 --> 00:02:46,080
could pass along to jeff stone that

13
00:02:51,910 --> 00:02:48,080

we're very impressed he got us an ifm

14

00:02:56,070 --> 00:02:54,309

okay we'll do that nancy and you'll be

15

00:02:58,550 --> 00:02:56,080

happy to know that the

16

00:03:00,790 --> 00:02:58,560

ontadris the two single axis antenna

17

00:03:02,869 --> 00:03:00,800

reflectors are now deployed so all

18

00:03:04,869 --> 00:03:02,879

appendages have been deployed and the on

19

00:03:09,830 --> 00:03:04,879

on-orbit checkout is continuing

20

00:03:13,509 --> 00:03:11,830

that's terrific news mark everything

21

00:03:16,869 --> 00:03:13,519

went just so smoothly yesterday we were

22

00:03:16,879 --> 00:03:35,509

happy

23

00:03:52,710 --> 00:03:37,430

being panned over in an effort to

24

00:03:57,509 --> 00:03:54,630

in an effort to look at tropical storm

25

00:04:02,949 --> 00:04:00,470

yes don our suggestion is possibly that

26

00:04:04,149 --> 00:04:02,959

you check the jumpers

27

00:04:07,350 --> 00:04:04,159

that were

28

00:04:09,429 --> 00:04:07,360

part of the ifm for that cable

29

00:04:11,910 --> 00:04:09,439

we are asking you to do that in view of

30

00:04:13,350 --> 00:04:11,920

the number of restarts we think that

31

00:04:15,509 --> 00:04:13,360

there might be a possibility of

32

00:04:16,949 --> 00:04:15,519

intermittent contact

33

00:04:18,629 --> 00:04:16,959

and when you're

34

00:04:19,909 --> 00:04:18,639

certain that

35

00:04:21,749 --> 00:04:19,919

the

36

00:04:25,110 --> 00:04:21,759

jumpers are solid

37

00:04:30,230 --> 00:04:25,120

we suggest you restart with step 8 on

38

00:04:34,469 --> 00:04:32,310

okay i'll get the multimeter out and

39

00:04:36,469 --> 00:04:34,479

recheck our connectors and then

40

00:04:38,230 --> 00:04:36,479

our jumper cables and then we'll begin

41

00:04:49,749 --> 00:04:38,240

with step 8 again

42

00:04:53,270 --> 00:04:51,590

again the instrumentation communications

43

00:04:55,590 --> 00:04:53,280

officer here in the new mission control

44

00:04:57,990 --> 00:04:55,600

center is panning the

45

00:05:01,189 --> 00:04:58,000

af port camera discovery to take a look

46

00:05:05,110 --> 00:05:01,199

at tropical storm chantal in the gulf of

47

00:05:05,120 --> 00:05:49,749

as discovery orbits 200 miles above

48

00:05:54,310 --> 00:05:52,150

meanwhile spacecraft communicator mark

49

00:05:56,870 --> 00:05:54,320

garneau talking with mission specialist

50

00:05:58,870 --> 00:05:56,880

don thomas on board discovery about the

51
00:06:00,230 --> 00:05:58,880
in-flight maintenance procedure

52
00:06:02,230 --> 00:06:00,240
designed to get the bioreactor

53
00:06:04,710 --> 00:06:02,240
development system working

54
00:06:07,749 --> 00:06:04,720
on the crew to check that they have gray

55
00:06:09,909 --> 00:06:07,759
taped the appropriate pin connectors

56
00:06:11,830 --> 00:06:09,919
properly and a

57
00:06:13,510 --> 00:06:11,840
new cable that will be used to make the

58
00:06:15,510 --> 00:06:13,520
experiment active

59
00:06:18,710 --> 00:06:15,520
he asked don thomas to check and make

60
00:06:20,070 --> 00:06:18,720
sure that the rotating wall was rotating

61
00:06:40,629 --> 00:06:20,080
which he did which indicates there's

62
00:06:47,110 --> 00:06:44,150
houston discovery with words on bds

63
00:06:51,510 --> 00:06:49,110

mark i took out the multimeter and

64

00:06:53,830 --> 00:06:51,520

checked our connectors they looked good

65

00:06:56,309 --> 00:06:53,840

uh i reconnected them

66

00:06:58,390 --> 00:06:56,319

and started performing step eight and we

67

00:06:59,589 --> 00:06:58,400

got a message ecc detected so it looks

68

00:07:01,350 --> 00:06:59,599

like uh

69

00:07:03,830 --> 00:07:01,360

we're back in business here we got our

70

00:07:05,830 --> 00:07:03,840

experiment timer counting and met clock

71

00:07:27,189 --> 00:07:05,840

is counting

72

00:07:27,199 --> 00:07:32,469

and we're with you on the flight pitch

73

00:07:37,350 --> 00:07:34,870

good morning welcome aboard discovery

74

00:07:40,309 --> 00:07:37,360

we're 160 miles above the earth just

75

00:07:42,790 --> 00:07:40,319

approaching the southern tip of baja

76
00:07:43,670 --> 00:07:42,800
and we like to share a moment with you

77
00:07:46,550 --> 00:07:43,680
to

78
00:07:47,510 --> 00:07:46,560
dedicate the new consolidated control

79
00:07:50,710 --> 00:07:47,520
center

80
00:07:52,790 --> 00:07:50,720
after 30 years of hard work

81
00:07:55,189 --> 00:07:52,800
which included over 100 man space

82
00:07:57,510 --> 00:07:55,199
flights from our old control rooms we're

83
00:08:00,150 --> 00:07:57,520
now entering the next century by opening

84
00:08:03,029 --> 00:08:00,160
the new control center which will lead

85
00:08:05,589 --> 00:08:03,039
our manned space flight program into

86
00:08:08,150 --> 00:08:05,599
future benefits aboard the international

87
00:08:10,309 --> 00:08:08,160
space station and into the next century

88
00:08:13,029 --> 00:08:10,319

continuing our exploration of the solar

89

00:08:15,110 --> 00:08:13,039

system for the benefit of humankind

90

00:08:16,230 --> 00:08:15,120

aboard discovery on this flight we have

91

00:08:18,150 --> 00:08:16,240

a plaque

92

00:08:20,869 --> 00:08:18,160

that commemorates the opening of the new

93

00:08:23,029 --> 00:08:20,879

control center and it says in

94

00:08:25,670 --> 00:08:23,039

recognition of the first flight flown

95

00:08:28,790 --> 00:08:25,680

from this mission control room this

96

00:08:31,270 --> 00:08:28,800

plaque was flown on the flight sts-70 on

97

00:08:33,829 --> 00:08:31,280

board the space shuttle discovery

98

00:08:36,469 --> 00:08:33,839

built by the pirate teamwork empowered

99

00:08:38,389 --> 00:08:36,479

by pirate spirit

100

00:08:40,709 --> 00:08:38,399

and we dedicate it to all the folks who

101
00:08:42,389 --> 00:08:40,719
have worked in the flight control rooms

102
00:08:44,870 --> 00:08:42,399
and who will work in the new control

103
00:08:47,829 --> 00:08:44,880
room and it's our honor

104
00:08:50,550 --> 00:08:47,839
to carry this plaque for those folks

105
00:08:53,350 --> 00:08:50,560
and we do dedicate it to their teamwork

106
00:08:55,110 --> 00:08:53,360
and effort and it's not the rooms that

107
00:08:56,550 --> 00:08:55,120
make the difference it's the people that

108
00:08:59,350 --> 00:08:56,560
man those rooms

109
00:09:01,990 --> 00:08:59,360
and we trust our lives and our nation's

110
00:09:04,230 --> 00:09:02,000
man space program to those folks

111
00:09:11,750 --> 00:09:04,240
and we are proud to be a part of your

112
00:09:15,829 --> 00:09:13,829
as one of the members of the crew as

113
00:09:17,829 --> 00:09:15,839

well as don thomas that did work as a

114

00:09:19,590 --> 00:09:17,839

capcom for at least a year in the

115

00:09:22,870 --> 00:09:19,600

mission control center i'd just like to

116

00:09:24,230 --> 00:09:22,880

pass on my word of thanks to those folks

117

00:09:26,389 --> 00:09:24,240

it's one of the most professional

118

00:09:28,870 --> 00:09:26,399

organizations i've ever seen

119

00:09:32,310 --> 00:09:28,880

it's so well run people give their heart

120

00:09:34,870 --> 00:09:32,320

and soul on every day of every mission

121

00:09:39,750 --> 00:09:34,880

to support each and every one of us and

122

00:09:44,550 --> 00:09:42,150

again congratulations to the mission

123

00:09:46,630 --> 00:09:44,560

operations directorate and john moratore

124

00:09:48,550 --> 00:09:46,640

and his folks that put so many long

125

00:09:51,550 --> 00:09:48,560

hours into preparing the room to be

126

00:09:53,430 --> 00:09:51,560

prepared for sts-70

127

00:09:56,070 --> 00:09:53,440

congratulations and we're looking

128

00:09:59,350 --> 00:09:56,080

forward to this flight and many more in

129

00:10:03,030 --> 00:10:01,350

well thank you very much tom

130

00:10:04,550 --> 00:10:03,040

in the orbit one

131

00:10:07,030 --> 00:10:04,560

shift we're certainly proud to be

132

00:10:09,269 --> 00:10:07,040

working in the new facility we also

133

00:10:10,230 --> 00:10:09,279

think it's great you'll be glad to know

134

00:10:11,829 --> 00:10:10,240

that

135

00:10:14,230 --> 00:10:11,839

since you're the first mission to fly

136

00:10:16,310 --> 00:10:14,240

out of this new flight control room we

137

00:10:17,269 --> 00:10:16,320

have a very nice plaque of your mission

138

00:10:19,670 --> 00:10:17,279

patch

139

00:10:22,710 --> 00:10:19,680

as well as your crew photo hanging in

140

00:10:26,389 --> 00:10:24,790

well that's quite an honor for us and

141

00:10:28,470 --> 00:10:26,399

we're going to try and downlink you a

142

00:10:29,910 --> 00:10:28,480

closer picture of the

143

00:10:33,269 --> 00:10:29,920

plaque

144

00:10:35,030 --> 00:10:33,279

and we hope that many more patches adorn

145

00:10:36,710 --> 00:10:35,040

a new control center

146

00:10:38,870 --> 00:10:36,720

and the

147

00:10:41,509 --> 00:10:38,880

historical missions that were flown from

148

00:10:43,350 --> 00:10:41,519

the old i'm sure will be followed by

149

00:10:45,829 --> 00:10:43,360

future historic missions

150

00:10:47,430 --> 00:10:45,839

from this new control center and again

151
00:10:49,350 --> 00:10:47,440
we'll try and show you a good picture of

152
00:10:51,590 --> 00:10:49,360
the plaque

153
00:11:02,230 --> 00:10:51,600
thanks tom and kevin that looks good we

154
00:11:09,750 --> 00:11:04,870
sts-70 commander tom hendricks we're now

155
00:11:13,910 --> 00:11:11,750
stf70 commander don

156
00:11:16,069 --> 00:11:13,920
tom henrichs flanked on the left by

157
00:11:20,310 --> 00:11:16,079
mission specialist nancy curry and on

158
00:11:25,350 --> 00:11:21,990
presenting a

159
00:11:27,110 --> 00:11:25,360
commemoration of the first flight of

160
00:12:18,949 --> 00:11:27,120
the new mission control center here in

161
00:12:22,710 --> 00:12:20,949
once again receiving down

162
00:12:24,470 --> 00:12:22,720
down like television from the payload

163
00:12:26,150 --> 00:12:24,480

bay cameras of the shuttle discovery as

164

00:12:28,069 --> 00:12:26,160

it passes

165

00:13:03,590 --> 00:12:28,079

about 200 miles

166

00:13:06,710 --> 00:13:04,870

camera is now

167

00:13:08,949 --> 00:13:06,720

zooming in on the florida peninsula and

168

00:13:30,150 --> 00:13:08,959

the

169

00:13:33,269 --> 00:13:30,160

downlinked a good view of tropical storm

170

00:13:35,430 --> 00:13:33,279

chantal which is

171

00:13:37,430 --> 00:13:35,440

in the atlantic ocean just outside the

172

00:13:38,710 --> 00:13:37,440

gulf off the coast of cuba

173

00:13:41,190 --> 00:13:38,720

there's a good chance we'll get another

174

00:13:43,350 --> 00:13:41,200

view of that on this orbital pass which

175

00:15:06,150 --> 00:13:43,360

is very close to the same track as the

176
00:15:06,160 --> 00:15:09,509
we're now looking at

177
00:15:12,550 --> 00:15:10,949
oil droplets

178
00:15:14,949 --> 00:15:12,560
that are

179
00:15:24,949 --> 00:15:14,959
part of the embryo being looked at in

180
00:15:28,230 --> 00:15:26,629
on this image the oil droplets can be

181
00:15:29,670 --> 00:15:28,240
seen in the upper right portion of your

182
00:15:31,509 --> 00:15:29,680
screen while the

183
00:15:54,389 --> 00:15:31,519
embryo is farther down in toward the

184
00:16:09,990 --> 00:15:56,550
these embryos are very young and in the

185
00:16:13,990 --> 00:16:12,790
again this information is very important

186
00:16:16,870 --> 00:16:14,000
to understand the effects of

187
00:16:25,030 --> 00:16:16,880
long-duration space flight

188
00:16:31,749 --> 00:16:26,150

this video

189

00:16:34,550 --> 00:16:31,759
viewed and recorded real time

190

00:16:36,629 --> 00:16:34,560
at the kennedy space center

191

00:16:39,189 --> 00:16:36,639
where scientists in the life sciences

192

00:16:41,670 --> 00:16:39,199
support center are comparing

193

00:17:06,789 --> 00:16:41,680
these embryos with a control group on

194

00:17:11,110 --> 00:17:09,189
houston discovery for stl if you'd like

195

00:17:12,630 --> 00:17:11,120
me to uh

196

00:17:14,230 --> 00:17:12,640
do something different with the picture

197

00:17:16,949 --> 00:17:14,240
or stay on it for a little longer just

198

00:17:40,630 --> 00:17:19,029
okay nancy uh we'll we'll talk about

199

00:17:45,430 --> 00:17:42,630
discover houston that's an excellent

200

00:17:46,630 --> 00:17:45,440
view it gives us a real perspective on

201

00:17:50,230 --> 00:17:46,640

what this storm looks like on a

202

00:17:50,240 --> 00:17:54,070

yeah nancy's proud of that one

203

00:17:54,080 --> 00:18:00,310

get that 40 millimeter hasselblad on it

204

00:18:00,320 --> 00:18:05,830

kevin's cranking away

205

00:18:09,190 --> 00:18:07,830

tell me if you can imagine the biggest

206

00:18:10,950 --> 00:18:09,200

problem i was having controlling the

207

00:18:12,549 --> 00:18:10,960

cameras was that i'm on the floor with

208

00:18:14,710 --> 00:18:12,559

five people on top of me looking out the

209

00:18:17,110 --> 00:18:14,720

window

210

00:18:18,789 --> 00:18:17,120

woody's up there too

211

00:19:33,750 --> 00:18:18,799

okay don't get any boot prints on your

212

00:19:39,190 --> 00:19:35,270

discovery this is houston are you ready

213

00:19:39,200 --> 00:19:42,549

discovery's ready

214

00:19:46,710 --> 00:19:44,470

new york times this is houston please

215

00:19:48,549 --> 00:19:46,720

call discovery for a voice check

216

00:19:53,270 --> 00:19:48,559

discovery this is new york times how do

217

00:19:58,390 --> 00:19:56,710

aboard discovery we're 160 miles above

218

00:19:59,669 --> 00:19:58,400

the earth and we're just now crossing

219

00:20:01,510 --> 00:19:59,679

the philippines

220

00:20:03,909 --> 00:20:01,520

it's dark outside

221

00:20:07,190 --> 00:20:03,919

and this afternoon you've got uh mary

222

00:20:09,990 --> 00:20:07,200

ellen weber just now coming into view

223

00:20:11,990 --> 00:20:10,000

and kevin kriegel and myself tom hendrix

224

00:20:14,630 --> 00:20:12,000

and we're ready to take your questions

225

00:20:16,070 --> 00:20:14,640

that sounds terrific the the uh

226

00:20:18,630 --> 00:20:16,080

we're thrilled to have you with us the

227

00:20:20,390 --> 00:20:18,640

the only things we'll ask is uh that you

228

00:20:21,990 --> 00:20:20,400

speak in a moderate taste because we're

229

00:20:24,549 --> 00:20:22,000

we're typing and transcribing your

230

00:20:26,630 --> 00:20:24,559

answers as we go and uh the questions

231

00:20:28,390 --> 00:20:26,640

are are mostly for both of you so if you

232

00:20:31,830 --> 00:20:28,400

could identify yourselves before you

233

00:20:33,029 --> 00:20:31,840

answer that would be terrific

234

00:20:35,110 --> 00:20:33,039

okay we're gonna we're gonna we

235

00:20:36,470 --> 00:20:35,120

understand with our with our first

236

00:20:41,110 --> 00:20:36,480

question

237

00:20:43,190 --> 00:20:41,120

arkansas and uh she wants to be an

238

00:20:44,789 --> 00:20:43,200

astronaut and a lot and she and a lot of

239

00:20:46,870 --> 00:20:44,799

other people in our audience want to

240

00:20:48,549 --> 00:20:46,880

hear about the biological experiments

241

00:20:50,230 --> 00:20:48,559

you're conducting up there and the

242

00:20:55,430 --> 00:20:50,240

communication satellite that you've

243

00:20:59,990 --> 00:20:56,950

well we'll start with the satellite

244

00:21:02,230 --> 00:21:00,000

first it was released yesterday and it

245

00:21:03,590 --> 00:21:02,240

was the last of a series of satellites

246

00:21:06,710 --> 00:21:03,600

to join a

247

00:21:08,310 --> 00:21:06,720

system that transmits data from

248

00:21:09,190 --> 00:21:08,320

satellites

249

00:21:16,390 --> 00:21:09,200

or

250

00:21:18,789 --> 00:21:16,400

international space station

251
00:21:20,549 --> 00:21:18,799
to earth and it acts as a relay system

252
00:21:22,070 --> 00:21:20,559
so it takes the transmissions from

253
00:21:25,029 --> 00:21:22,080
things in space

254
00:21:27,590 --> 00:21:25,039
and passes them on to the earth and it

255
00:21:29,029 --> 00:21:27,600
can do that at an extremely high rate

256
00:21:30,950 --> 00:21:29,039
and can

257
00:21:32,950 --> 00:21:30,960
maintain that system for many years and

258
00:21:35,110 --> 00:21:32,960
this satellite is again the last to join

259
00:21:37,510 --> 00:21:35,120
that system and i'll let

260
00:21:39,590 --> 00:21:37,520
mary ellen weber answer the question

261
00:21:41,909 --> 00:21:39,600
about our biological experiment

262
00:21:43,669 --> 00:21:41,919
can we please move much slower and

263
00:21:45,430 --> 00:21:43,679

identify ourselves at the point when we

264

00:21:47,270 --> 00:21:45,440

start talking

265

00:21:50,310 --> 00:21:47,280

uh houston discovery did you hear that

266

00:21:55,830 --> 00:21:53,909

yes we copied that and we will

267

00:21:57,270 --> 00:21:55,840

this is mary ellen weber and i'm one of

268

00:21:59,190 --> 00:21:57,280

the mission specialists aboard the

269

00:22:01,270 --> 00:21:59,200

flight and i'd like to tell you about

270

00:22:02,470 --> 00:22:01,280

some of the biological experiments that

271

00:22:05,750 --> 00:22:02,480

we're doing

272

00:22:08,149 --> 00:22:05,760

the first experiment is the bioreactor

273

00:22:09,830 --> 00:22:08,159

and this is a system it's a rotating

274

00:22:12,390 --> 00:22:09,840

vessel and it has

275

00:22:16,149 --> 00:22:12,400

nutrients for human cells in this case

276

00:22:19,110 --> 00:22:16,159

human colon cancer cells to grow and

277

00:22:23,029 --> 00:22:19,120

because it rotates it mimics what goes

278

00:22:24,070 --> 00:22:23,039

on in the human body extremely well

279

00:22:27,750 --> 00:22:24,080

and

280

00:22:30,630 --> 00:22:27,760

because of that we can figure out how

281

00:22:33,590 --> 00:22:30,640

cancer cells actually travel from say

282

00:22:35,270 --> 00:22:33,600

the colon to the liver or the kidneys

283

00:22:36,789 --> 00:22:35,280

and that's the objective of that

284

00:22:43,750 --> 00:22:36,799

experiment

285

00:22:45,270 --> 00:22:43,760

protein protein crystal growth and uh

286

00:22:47,909 --> 00:22:45,280

maybe i can tell you more about that

287

00:22:50,390 --> 00:22:47,919

some other time uh next question

288

00:22:51,750 --> 00:22:50,400

okay slower okay

289

00:22:53,110 --> 00:22:51,760

and if we could just go a little bit

290

00:22:55,350 --> 00:22:53,120

slower please

291

00:22:57,590 --> 00:22:55,360

uh george in connecticut wonder with

292

00:22:58,789 --> 00:22:57,600

that what you can uh wonders what the

293

00:23:01,110 --> 00:22:58,799

difference between the shuttle's

294

00:23:02,789 --> 00:23:01,120

commander and pilot is and could the

295

00:23:06,310 --> 00:23:02,799

commander and the pilot be the same

296

00:23:10,549 --> 00:23:08,470

well the biggest difference uh and this

297

00:23:13,029 --> 00:23:10,559

is kevin kriegel the pilot

298

00:23:17,669 --> 00:23:13,039

and the biggest difference is that the

299

00:23:22,870 --> 00:23:21,350

so but seriously uh both the commander

300

00:23:25,270 --> 00:23:22,880

and the pilot

301
00:23:27,990 --> 00:23:25,280
uh trained to do most of the same duties

302
00:23:30,310 --> 00:23:28,000
the pilot backs up the commander

303
00:23:31,909 --> 00:23:30,320
the commander usually has two flights

304
00:23:33,669 --> 00:23:31,919
under his belt and there's a lot more

305
00:23:34,789 --> 00:23:33,679
experience this is

306
00:23:37,190 --> 00:23:34,799
tom's

307
00:23:38,950 --> 00:23:37,200
third flight in my first flight it's a

308
00:23:41,510 --> 00:23:38,960
lot like on an airliner when you have a

309
00:23:44,070 --> 00:23:41,520
captain and a co-pilot you have the

310
00:23:45,110 --> 00:23:44,080
captain who's highly experienced running

311
00:23:47,350 --> 00:23:45,120
the ship

312
00:23:51,430 --> 00:23:47,360
and the pilot who's learning and backing