1
00:00:38,340 --> 00:00:36,150
at this point in the countdown

2
00:00:40,500 --> 00:00:38,350
everything is going on just the way it

3
00:00:43,380 --> 00:00:40,510
should with no significant problems

4
00:00:45,510 --> 00:00:43,390
being worked by the launch team the

5
00:00:47,340 --> 00:00:45,520
astronauts are awake and will be sitting

6
00:00:51,180 --> 00:00:47,350
down at the breakfast table within the

7
00:00:52,740 --> 00:00:51,190
next several minutes at t-minus 3 hours

8
00:01:06,310 --> 00:00:52,750
and holding this is shuttle launch

9
00:01:11,960 --> 00:01:08,660
this is shuttle launch control at

10
00:01:13,940 --> 00:01:11,970
t-minus three hours and holding see the

11
00:01:15,590 --> 00:01:13,950
astronauts at the breakfast table for

12
00:01:17,900 --> 00:01:15,600
this morning's launch attempt

13
00:01:20,050 --> 00:01:17,910

there's mission specialist Jan Davis and

14
00:01:23,900 --> 00:01:20,060
her husband payload commander Mark Lee

15
00:01:26,750 --> 00:01:23,910
here is a shuttle pilot Curt brown and

16
00:01:31,280 --> 00:01:26,760
this morning's STS 47 commander hoot

17
00:01:36,740 --> 00:01:31,290
Gibson there's a mission specialist and

18
00:01:41,420 --> 00:01:36,750
flight engineer J apt mission specialist

19
00:01:47,630 --> 00:01:41,430
may Jameson and the payload specialist

20
00:01:51,380 --> 00:01:47,640
dr. Mamoru mori of Japan half of the

21
00:01:53,660 --> 00:01:51,390
crew were awakened at about 458 this

22
00:01:56,870 --> 00:01:53,670
morning and the other three were

23
00:01:59,930 --> 00:01:56,880
awakened at 528 and in preparation for

24
00:02:01,820 --> 00:01:59,940
this morning's launch attempt sitting in

25
00:02:05,420 --> 00:02:01,830
the middle of the table is a traditional

26
00:02:14,090 --> 00:02:05,430
cake made for every launch team and it

27
00:02:19,520 --> 00:02:16,970
this is the STS 47 crew patch which was

28
00:02:21,800 --> 00:02:19,530
designed by the astronauts you can see

29
00:02:25,820 --> 00:02:21,810
the oval-shaped logo is surrounded by

30
00:02:28,160 --> 00:02:25,830
the names of the seven astronauts slj on

31
00:02:30,800 --> 00:02:28,170
the left side stands for Space Lab Japan

32
00:02:33,230 --> 00:02:30,810
with the Japanese letters on the right

33
00:02:36,530 --> 00:02:33,240
meaning photo or weightlessness in

34
00:02:39,200 --> 00:02:36,540
Japanese the Shuttle Orbiter is flanked

35
00:02:42,080 --> 00:02:39,210
by the flags of the United States on its

36
00:02:44,120 --> 00:02:42,090
starboard side and the flag of Japan on

37
00:02:47,710 --> 00:02:44,130
the port side and you can see that the

38
00:02:50,810 --> 00:02:47,720

orbiter is flying over the United States

39
00:02:53,810 --> 00:02:50,820
state of Alaska and the country of Japan

40
00:02:56,510 --> 00:02:53,820
and this is indicative of the 57 degree

41
00:03:00,020 --> 00:02:56,520
or high inclination orbit that we'll be

42
00:03:02,510 --> 00:03:00,030
having over the seven-day flight this is

43
00:03:04,820 --> 00:03:02,520
shuttle launch control at t-minus three

44
00:03:07,670 --> 00:03:04,830
hours and holding we're currently

45
00:03:11,030 --> 00:03:07,680
standing by to receive some video of the

46
00:03:12,950 --> 00:03:11,040
astronauts the STS 47 crew as they're

47
00:03:17,120 --> 00:03:12,960
donning their flight pressure suits in

48
00:03:20,240 --> 00:03:17,130
preparation for today's launch as

49
00:03:22,450 --> 00:03:20,250
commander hoot Gibson Gibson is gonna be

50
00:03:24,770 --> 00:03:22,460
making his fourth trip in space today a

51
00:03:36,960 --> 00:03:24,780
veteran of three previous flights most

52
00:03:43,000 --> 00:03:39,490
here's mission specialist and payload

53
00:03:45,520 --> 00:03:43,010
commander Mark Lee they'll be making his

54
00:03:54,970 --> 00:03:45,530
second trip in space today he flipped

55
00:03:57,039 --> 00:03:54,980
previously on STS 34 you see pilot Curt

56
00:03:59,770 --> 00:03:57,049
Brown being assisted with the donning of

57
00:04:06,119 --> 00:03:59,780
his gloves Brown will be making his

58
00:04:11,319 --> 00:04:08,979
these orange day glow outfits are

59
00:04:13,750 --> 00:04:11,329
essentially pressure suits that the

60
00:04:15,430 --> 00:04:13,760
astronauts wear during entry into Earth

61
00:04:21,909 --> 00:04:15,440
orbit and reentry

62
00:04:25,960 --> 00:04:21,919
back here upon landing here's Japanese

63
00:04:27,760 --> 00:04:25,970

payload specialist dr. Mamoru mori dr.

64
00:04:29,740 --> 00:04:27,770
Mori will become the first professional

65
00:04:32,020 --> 00:04:29,750
Japanese astronaut to fly in space today

66
00:04:35,010 --> 00:04:32,030
and he's very pleased to be going and

67
00:04:38,350 --> 00:04:35,020
gives us a thumbs-up

68
00:04:42,600 --> 00:04:38,360
Mori has been training to fly on the soj

69
00:04:49,089 --> 00:04:45,700
mission specialist and FC has 47 flight

70
00:04:51,700 --> 00:04:49,099
engineer J aft aft is checking out his

71
00:04:53,290 --> 00:04:51,710
communications on his helmet and he'll

72
00:04:57,010 --> 00:04:53,300
be making his second trip in space

73
00:04:58,870 --> 00:04:57,020
having flown previously on STS 37 when

74
00:05:02,890 --> 00:04:58,880
the Compton gamma-ray Observatory was

75
00:05:04,990 --> 00:05:02,900
deployed here you see may Jameson hey

76
00:05:07,870 --> 00:05:05,000
Jameson will be making her first trip in

77
00:05:11,589 --> 00:05:07,880
space today and she's also very

78
00:05:17,950 --> 00:05:11,599
enthusiastic and ready to fly Jameson is

79
00:05:20,350 --> 00:05:17,960
a medical doctor from Chicago you see

80
00:05:38,269 --> 00:05:20,360
mission specialist Jan Davis Davis will

81
00:05:43,739 --> 00:05:40,409
this is shuttle launch control at

82
00:05:45,959 --> 00:05:43,749
t-minus two hours 55 minutes and the STS

83
00:05:47,969 --> 00:05:45,969
47 astronauts have just emerged from

84
00:05:48,649 --> 00:05:47,979
their suit-up room and the astronaut

85
00:05:51,749 --> 00:05:48,659
quarters

86
00:05:54,299 --> 00:05:51,759
commander hood Gibson and pilot Curt

87
00:05:56,239 --> 00:05:54,309
brown leading the way and Japanese

88
00:05:58,919 --> 00:05:56,249

payload specialist Mamoru Mori and

89
00:06:15,650 --> 00:05:58,929
mission specialist may Jameson pickin up

90
00:06:19,890 --> 00:06:18,240
here they come from the operation and

91
00:06:23,340 --> 00:06:19,900
check-out building commander hoot Gibson

92
00:06:27,000 --> 00:06:23,350
leading the way followed by Curt brown J

93
00:06:30,510 --> 00:06:27,010
app parsley and its wife Jan Davis May

94
00:06:32,190 --> 00:06:30,520
Jameson and amore amore they trained a

95
00:06:34,680 --> 00:06:32,200
long time for this mission seven years

96
00:06:36,720 --> 00:06:34,690
for dr. mori two or more years to the

97
00:07:25,739 --> 00:06:36,730
rest of the crew and they're ready to

98
00:07:32,099 --> 00:07:28,059
in the foreground is the Japanese

99
00:07:36,489 --> 00:07:32,109
payload specialist dr. Mamoru Mori a

100
00:07:37,479 --> 00:07:36,499
native of Hokkaido Japan dr. mori well

101
00:07:39,579 --> 00:07:37,489
today become the first Japanese

102
00:07:42,429 --> 00:07:39,589
astronaut to fly aboard a United States

103
00:07:44,409 --> 00:07:42,439
space shuttle he has spent the last two

104
00:07:46,779 --> 00:07:44,419
years at Houston's Johnson Space Center

105
00:07:49,389 --> 00:07:46,789
training for the Space Lab J mission and

106
00:07:53,079 --> 00:07:49,399
spent five years before that in Japan

107
00:07:56,069 --> 00:07:53,089
preparing himself for the flight dr.

108
00:07:58,779 --> 00:07:56,079
mori is married to the former

109
00:08:50,170 --> 00:07:58,789
and has three children

110
00:08:52,449 --> 00:08:50,180
if we could have our children hello I

111
00:08:54,189 --> 00:08:52,459
was in Detroit several months ago and

112
00:08:56,740 --> 00:08:54,199
that was the principal of a Damon

113
00:09:13,030 --> 00:08:56,750

Academy here we're all gonna be watching

114
00:09:17,600 --> 00:09:15,740
thank you very much good luck to all of

115
00:09:33,020 --> 00:09:17,610
you here balanced and he'd like to say

116
00:09:33,030 --> 00:09:38,850
bandit

117
00:09:43,840 --> 00:09:42,370
go ahead for the video Samantha she's on

118
00:09:45,340 --> 00:09:43,850
a different bike opponent they say that

119
00:10:00,850 --> 00:09:45,350
that one's not working right now so

120
00:10:02,500 --> 00:10:00,860
we'll again good luck at t-minus 7

121
00:10:05,290 --> 00:10:02,510
minutes and 30 seconds we're now seeing

122
00:10:06,670 --> 00:10:05,300
the orbiter crew access arm retracting

123
00:10:08,830 --> 00:10:06,680
away from the orbiter Endeavour and

124
00:10:11,650 --> 00:10:08,840
being put in the launch ready

125
00:10:13,600 --> 00:10:11,660
configuration if an emergency were to

126
00:10:30,630 --> 00:10:13,610
occur the arm could be re-expanded back

127
00:10:35,850 --> 00:10:32,790
all systems are go at this point at at

128
00:10:37,680 --> 00:10:35,860
t-minus six minutes 52 seconds weather

129
00:10:40,440 --> 00:10:37,690
is ideal the vehicle is in good shape

130
00:10:48,200 --> 00:10:40,450
and we expect to see endeavour off the

131
00:10:52,560 --> 00:10:50,820
orbiter test conductor Roger Gillett has

132
00:10:54,450 --> 00:10:52,570
just instructed endeavours pilot Curt

133
00:10:58,110 --> 00:10:54,460
Brown to perform the auxiliary power

134
00:11:00,000 --> 00:10:58,120
unit pre start procedure t-minus 3

135
00:11:01,500 --> 00:11:00,010
minutes 55 seconds have tested the

136
00:11:03,870 --> 00:11:01,510
orbiters flight control systems is

137
00:11:05,670 --> 00:11:03,880
starting the Aero surfaces such as the

138
00:11:07,140 --> 00:11:05,680

rudder gsella bonds and speed brakes are

139
00:11:09,540 --> 00:11:07,150
now being moved through a programmed

140
00:11:10,290 --> 00:11:09,550
test pattern to verify they're up and

141
00:11:12,510 --> 00:11:10,300
ready for launch

142
00:11:14,450 --> 00:11:12,520
eros surface checks are complete and

143
00:11:16,770 --> 00:11:14,460
reported to be in launch configuration

144
00:11:19,140 --> 00:11:16,780
also at this time the three main engines

145
00:11:20,760 --> 00:11:19,150
are being gimble meaning that they are

146
00:11:26,240 --> 00:11:20,770
going through a steering check and being

147
00:11:31,200 --> 00:11:29,040
all systems remain go for launching

148
00:11:32,820 --> 00:11:31,210
endeavour on America's 50th space

149
00:11:46,730 --> 00:11:32,830
shuttle flight and just under three

150
00:11:51,350 --> 00:11:48,860
retraction of the gaseous oxygen vent

151
00:11:59,530 --> 00:11:51,360
hood from atop the external tank is no:1

152
00:12:04,970 --> 00:12:03,019
rtcp LT modular e-learning memory is

153
00:12:07,879 --> 00:12:04,980
cleared knowing expand expected messages

154
00:12:10,369 --> 00:12:07,889
i copy in flight crew close and lock

155
00:12:11,900 --> 00:12:10,379
your visors and initiate Oh to blow good

156
00:12:16,429 --> 00:12:11,910
luck on your mission and see you in one

157
00:12:18,470 --> 00:12:16,439
wait will be a test conductor Roger

158
00:12:21,019 --> 00:12:18,480
Gillett and strict include two closer

159
00:12:24,799 --> 00:12:21,029
flight visors and preparation for this

160
00:12:26,720 --> 00:12:24,809
morning's liftoff of Endeavour you - 17

161
00:12:40,600 --> 00:12:26,730
seconds we're coming up on a go for main

162
00:12:43,280 --> 00:12:40,610
engine start two one

163
00:12:45,559 --> 00:12:43,290

solid rocket ignition and liftoff

164
00:13:22,910 --> 00:12:45,569
liftoff of Endeavour on America's 50th

165
00:13:27,470 --> 00:13:25,850
and just now throttling down now at 67%

166
00:13:54,450 --> 00:13:27,480
is endeavour prepares to pass through

167
00:14:03,250 --> 00:14:01,870
endeavour Houston go at throttle up one

168
00:14:05,110 --> 00:14:03,260
minute 20 seconds into the flight

169
00:14:08,340 --> 00:14:05,120
endeavour is now seven miles from the

170
00:14:11,410 --> 00:14:08,350
launch site altitude 11 nautical miles

171
00:14:13,300 --> 00:14:11,420
now traveling 2,400 feet per second are

172
00:14:15,670 --> 00:14:13,310
about 1,700 miles per hour

173
00:14:17,440 --> 00:14:15,680
the next event is a burnout of the solid

174
00:14:22,240 --> 00:14:17,450
rocket boosters that occurs at about two

175
00:14:37,619 --> 00:14:22,250
minutes endeavour Houston UHF comm check

176
00:14:41,709 --> 00:14:39,699
two minutes into the flight now

177
00:14:52,680 --> 00:14:41,719
endeavour is 21 miles around away from

178
00:15:02,130 --> 00:14:54,030
solid rocket booster separation

179
00:15:13,639 --> 00:15:03,960
standing by for the first stage

180
00:15:13,649 --> 00:15:21,769
endeavour Houston performance nominal

181
00:15:26,370 --> 00:15:23,970
performance thus far and the mission has

182
00:15:27,900 --> 00:15:26,380
been as expected endeavours now 50 miles

183
00:15:29,610 --> 00:15:27,910
away from the launch site at an altitude

184
00:15:35,449 --> 00:15:29,620
of 38 nautical miles

185
00:15:38,400 --> 00:15:35,459
traveling 4800 feet per second or about

186
00:15:40,170 --> 00:15:38,410
3400 miles per hour all three main

187
00:15:41,670 --> 00:15:40,180
engines are still performing well as are

188
00:15:49,680 --> 00:15:41,680

the hydraulic and electrical systems

189
00:15:57,240 --> 00:15:49,690
aboard the orbiter endeavour Houston to

190
00:16:00,240 --> 00:15:57,250
engine Zaragoza endeavour can now reach

191
00:16:02,160 --> 00:16:00,250
the primary transatlantic abort side of

192
00:16:04,410 --> 00:16:02,170
Zaragoza Spain in the event of a single

193
00:16:07,040 --> 00:16:04,420
engine failure but all three engines are

194
00:16:10,499 --> 00:16:07,050
still performing well at 104 percent

195
00:16:13,590 --> 00:16:10,509
endeavours altitude is now 293 thousand

196
00:16:25,290 --> 00:16:13,600
feet 85 nautical miles downrange from

197
00:16:30,210 --> 00:16:27,180
this is Mission Control these are our

198
00:16:32,550 --> 00:16:30,220
live views of the crew starting to come

199
00:16:34,079 --> 00:16:32,560
into the space lab module and endeavour

200
00:16:46,389 --> 00:16:34,089
Houston were with you now in space

201
00:16:52,869 --> 00:16:49,239
and finally it's great to get back in

202
00:16:55,030 --> 00:16:52,879
here after that this for a long time we

203
00:16:57,429 --> 00:16:55,040
got Memorial probably blind and you a

204
00:17:00,910 --> 00:16:57,439
little bit with the camera but taken a

205
00:17:03,129 --> 00:17:00,920
few pictures with the 16-millimeter yeah

206
00:17:04,779 --> 00:17:03,139
you know the crew of sts-48 would just

207
00:17:05,980 --> 00:17:04,789
you like to thank you that was quite a

208
00:17:34,180 --> 00:17:05,990
show you put on for our one-year

209
00:17:38,600 --> 00:17:36,769
this is Mission Control the first person

210
00:17:40,700 --> 00:17:38,610
to enter the Space Lab module is our

211
00:17:44,060 --> 00:17:40,710
payload commander Mark Lee followed by

212
00:17:46,549 --> 00:17:44,070
our payload specialist dr. Mori and dr.

213
00:17:49,940 --> 00:17:46,559

Mori is using the 16 millimeter film

214
00:18:12,760 --> 00:17:49,950
camera to get some footage inside the

215
00:18:22,870 --> 00:18:14,980
endeavour Houston you have a go for

216
00:18:25,240 --> 00:18:22,880
Space Lab activation Jan Davis is

217
00:18:29,350 --> 00:18:25,250
working with the continuous heating

218
00:18:34,870 --> 00:18:29,360
furnace and working on the aluminum

219
00:18:38,290 --> 00:18:34,880
composite experiment she's involved in

220
00:18:43,870 --> 00:18:38,300
the first sample installation of this

221
00:18:48,940 --> 00:18:43,880
experiment now may Jemison works with

222
00:19:02,600 --> 00:18:48,950
the gas bulb experiment the activation

223
00:19:08,240 --> 00:19:05,690
and especially Huntsville for me we do

224
00:19:21,049 --> 00:19:08,250
have downlink and we do have an image

225
00:19:21,440 --> 00:19:21,059
and we can see the filament and we copy

226
00:19:29,539 --> 00:19:21,450
me

227
00:19:30,169 --> 00:19:29,549
thank you space lab operations in

228
00:19:32,450 --> 00:19:30,179
Huntsville

229
00:19:35,600 --> 00:19:32,460
we're receiving the live video downlink

230
00:19:41,120 --> 00:19:35,610
from the Space Lab module looking at the

231
00:19:43,510 --> 00:19:41,130
gas evaporation facility okay may we

232
00:19:45,950 --> 00:19:43,520
copy and I was just talking to the P I

233
00:19:49,100 --> 00:19:45,960
about the last one there was a little

234
00:19:51,350 --> 00:19:49,110
bit of concern that the cross wasn't

235
00:19:53,380 --> 00:19:51,360
exactly in front of the filament I'm not

236
00:19:55,940 --> 00:19:53,390
sure if you can do anything about that

237
00:20:09,669 --> 00:19:55,950
except just to kind of eyeball that bulb

238
00:20:09,679 --> 00:20:27,720

that's affirmative may we understand

239
00:20:33,240 --> 00:20:29,760
Space Lab operations in Huntsville

240
00:20:38,550 --> 00:20:33,250
getting an excellent view of inbound

241
00:20:47,020 --> 00:20:38,560
link video of the gas bulb with the

242
00:20:47,030 --> 00:21:00,359
you back for rating

243
00:21:09,129 --> 00:21:05,320
and we've got another 250 that has

244
00:21:15,789 --> 00:21:09,139
infrared so minute this little number

245
00:21:20,049 --> 00:21:15,799
here is a 35 millimeter with a 300

246
00:21:22,749 --> 00:21:20,059
millimeter lamps on it so we can get

247
00:21:27,099 --> 00:21:22,759
nice close-ups we just put all this gear

248
00:21:31,109 --> 00:21:27,109
together on this shift and burden film

249
00:21:35,229 --> 00:21:31,119
we had some bounce passes today over

250
00:21:39,159 --> 00:21:35,239
northern Japan over Hokkaido we had a

251
00:21:45,539 --> 00:21:39,169
couple of good passes over the central

252
00:21:56,259 --> 00:21:54,220
that we've got back here yeah mark we

253
00:22:00,729 --> 00:21:56,269
want to increase fish package number two

254
00:22:11,000 --> 00:22:00,739
EEG number two zero point five two two

255
00:22:15,500 --> 00:22:14,060
and in this view we can see mission

256
00:22:24,440 --> 00:22:15,510
specialist Mark Lee at the control

257
00:22:28,730 --> 00:22:24,450
systems making those requested

258
00:22:32,000 --> 00:22:28,740
adjustments to the amplification device

259
00:22:35,750 --> 00:22:32,010
for the brainwave signals that are being

260
00:22:38,180 --> 00:22:35,760
monitored brainwave signals coming from

261
00:22:50,159 --> 00:22:38,190
each of the two carb serving as test

262
00:22:56,430 --> 00:22:53,389
here in the science operations area the

263
00:22:58,259 --> 00:22:56,440

science principal investigator team

264
00:23:02,070 --> 00:22:58,269
members for this experiment are

265
00:23:03,749 --> 00:23:02,080
monitoring the data coming down as Mark

266
00:23:07,259 --> 00:23:03,759
Lee has been adjusting it in the Space

267
00:23:11,629 --> 00:23:07,269
Lab module and this is the recording

268
00:23:14,639 --> 00:23:11,639
system on hook by which the brainwave

269
00:23:17,310 --> 00:23:14,649
information from the test subject fish

270
00:23:18,950 --> 00:23:17,320
will be monitored and recorded here in

271
00:23:22,799 --> 00:23:18,960
the on the ground

272
00:23:27,359 --> 00:23:22,809
dr. Mamoru Mori the test subject in this

273
00:23:31,470 --> 00:23:27,369
experiment in the head restraint device

274
00:23:36,810 --> 00:23:31,480
designed to keep his head stationary

275
00:23:40,229 --> 00:23:36,820
during the experiment so that the only

276
00:23:44,970 --> 00:23:40,239
movement will be of his eyes and that

277
00:23:47,639 --> 00:23:44,980
movement can be recorded on videotape by

278
00:23:49,859 --> 00:23:47,649
means of this camera we can also see a

279
00:23:52,889 --> 00:23:49,869
couple of the electrodes there are

280
00:23:57,960 --> 00:23:52,899
electrodes attached to various parts of

281
00:24:26,760 --> 00:23:57,970
his body to record the electrical

282
00:24:30,720 --> 00:24:28,740
mr. space I have operations in

283
00:24:32,640 --> 00:24:30,730
Huntsville we are now again receiving

284
00:24:34,710 --> 00:24:32,650
video from the liquid drop facility

285
00:24:38,160 --> 00:24:34,720
where dr. Mamoru Mori is in the process

286
00:24:41,190 --> 00:24:38,170
of working with the droplet of mineral

287
00:24:44,070 --> 00:24:41,200
oil and it's still attached to the

288
00:24:46,200 --> 00:24:44,080

injector needle of this facility dr.

289
00:24:50,160 --> 00:24:46,210
mori manipulating the needle slightly

290
00:24:54,230 --> 00:24:50,170
and the drop of mineral oil still

291
00:24:58,919 --> 00:24:54,240
attached to the tip one of the

292
00:25:01,530 --> 00:24:58,929
loudspeakers the circular array of holes

293
00:25:04,200 --> 00:25:01,540
in the background behind the drop being

294
00:25:11,570 --> 00:25:04,210
the openings for sound energy from the

295
00:25:16,890 --> 00:25:14,580
dr. mori now manipulating the injector

296
00:25:22,530 --> 00:25:16,900
needle to try to detach the drop of

297
00:25:35,520 --> 00:25:22,540
mineral oil and now has detached it to

298
00:26:14,730 --> 00:25:37,920
principal investigator team members here

299
00:26:16,050 --> 00:26:14,740
at that deployment of a straight through

300
00:26:28,430 --> 00:26:16,060
the filter without really going through

301
00:26:39,270 --> 00:26:32,010
it goes into the filter material and if

302
00:26:43,740 --> 00:26:39,280
you notice the exit down here going

303
00:26:45,060 --> 00:26:43,750
through the material to get a big slug

304
00:26:47,190 --> 00:26:45,070
of water and everyone surround wall

305
00:26:49,650 --> 00:26:47,200
coming out a chiller you get a big slug

306
00:26:51,720 --> 00:26:49,660
learner and that way it will kind of

307
00:26:53,550 --> 00:26:51,730
flow straight through because it doesn't

308
00:26:59,630 --> 00:26:53,560
have a time to be a sword by the filter

309
00:26:59,640 --> 00:27:58,330
okay I stand by mark

310
00:28:03,610 --> 00:28:00,470
they probably thought there is a

311
00:28:06,650 --> 00:28:03,620
tremendous amount of debris inside there

312
00:28:10,070 --> 00:28:06,660
the containers of each or inside each

313
00:28:12,740 --> 00:28:10,080

module and a lot have been sticking to

314
00:28:15,770 --> 00:28:12,750
the module plate to place a class that

315
00:28:17,570 --> 00:28:15,780
you cannot see inside and what it must

316
00:28:19,910 --> 00:28:17,580
left is floating around it there's also

317
00:28:21,890 --> 00:28:19,920
a lot of debris that have that has

318
00:28:27,370 --> 00:28:21,900
exited the chambers to the small holes

319
00:28:31,370 --> 00:28:27,380
the inside beyond the overall I there

320
00:28:32,480 --> 00:28:31,380
container and there's also excuse over

321
00:28:33,650 --> 00:28:32,490
the views as you can see with the

322
00:28:37,880 --> 00:28:33,660
camcorder it looks a little bit better

323
00:28:40,670 --> 00:28:37,890
person but not much the other thing is

324
00:28:43,280 --> 00:28:40,680
the the bottom containers have a lot of

325
00:28:46,940 --> 00:28:43,290
condensate on the faceplate the external

326
00:28:48,740 --> 00:28:46,950
plate that covers the that actually part

327
00:28:50,900 --> 00:28:48,750
of the locker itself that has a lot of

328
00:28:52,580 --> 00:28:50,910
condensate so the bottom is even tougher

329
00:28:57,980 --> 00:28:52,590
to see it to the top but you'll look at

330
00:29:09,350 --> 00:28:57,990
at the top obviously John Davis at this

331
00:29:44,180 --> 00:29:09,360
time preparing to enter the El BNP suit

332
00:29:52,040 --> 00:29:47,630
even in a microgravity Atmos environment

333
00:29:54,760 --> 00:29:52,050
it's not an easy fit to to squeeze into

334
00:30:43,710 --> 00:29:54,770
divine device especially with all of the

335
00:30:43,720 --> 00:31:01,790
okay Marco we have a great video now

336
00:31:08,240 --> 00:31:04,780
okay you can see this was number 121

337
00:31:10,790 --> 00:31:08,250
very healthy again 118 was just the same

338
00:31:12,980 --> 00:31:10,800

there's no obvious size of the stress

339
00:31:16,940 --> 00:31:12,990
they're looking they look sicker than

340
00:31:19,370 --> 00:31:16,950
just funny ones we we've had the only

341
00:31:23,690 --> 00:31:19,380
comment I have is that they're kind of a

342
00:31:27,410 --> 00:31:23,700
little bit dry and I was curious whether

343
00:31:28,550 --> 00:31:27,420
or not I should put a whole syringe I'm

344
00:31:50,830 --> 00:31:28,560
gonna go ahead and show you the other

345
00:31:55,269 --> 00:31:52,330
and mark you can go ahead and put a

346
00:32:15,650 --> 00:31:55,279
Paris Range in each chamber if you want

347
00:32:15,660 --> 00:32:33,870
okay this is number 23 also

348
00:32:37,350 --> 00:32:35,640
mr. specialist Barclays working in the

349
00:32:40,110 --> 00:32:37,360
general-purpose workstation the glovebox

350
00:32:42,570 --> 00:32:40,120
facility so that the keep the frogs

351
00:32:47,930 --> 00:32:42,580
contained so that they don't get out in

352
00:32:51,539 --> 00:32:47,940
the general space lab module area and

353
00:32:59,640 --> 00:32:51,549
he's removing the frogs one by one from

354
00:33:05,010 --> 00:32:59,650
the adult frog box there are there are

355
00:33:36,450 --> 00:33:05,020
four of these frogs and they're an

356
00:33:38,220 --> 00:33:36,460
African yeah Ken and his guys really

357
00:33:45,779 --> 00:33:38,230
appreciated they're glad they're doing

358
00:33:47,640 --> 00:33:45,789
so great this is Space Lab operation son

359
00:33:49,710 --> 00:33:47,650
spill doctor Mamoru Mori the payload

360
00:33:53,330 --> 00:33:49,720
specialist in the Space Lab module

361
00:33:58,980 --> 00:33:53,340
continuing with some configuration of

362
00:34:01,950 --> 00:33:58,990
television systems so that he can

363
00:34:04,230 --> 00:34:01,960

provide a view of the experiment

364
00:34:08,639 --> 00:34:04,240
operations inside the image furnace

365
00:34:35,110 --> 00:34:08,649
which he has activated with a sample we

366
00:34:42,280 --> 00:34:37,780
in addition to the attention being given

367
00:34:45,040 --> 00:34:42,290
to actual operations going on at the

368
00:34:49,390 --> 00:34:45,050
moment there'll also be some work

369
00:34:52,180 --> 00:34:49,400
looking down the road aways now that we

370
00:34:56,350 --> 00:34:52,190
have the official word of an eighth day

371
00:35:01,780 --> 00:34:56,360
a one day extension to the mission they

372
00:35:03,820 --> 00:35:01,790
there will be planning going on to take

373
00:35:10,210 --> 00:35:03,830
advantage of that additional 24 hours

374
00:35:20,820 --> 00:35:10,220
and work in valuable science get a good

375
00:35:37,840 --> 00:35:23,500
and you see no glittering particles or

376
00:35:41,650 --> 00:35:40,030
and just for your information on the in

377
00:35:43,690 --> 00:35:41,660
the ground control experiment they are

378
00:35:48,040 --> 00:35:43,700
seeing a lot of crystals about 1

379
00:35:50,530 --> 00:35:48,050
millimeter in size mission specialist

380
00:35:54,250 --> 00:35:50,540
Marc Lee also removed a glass sample

381
00:35:57,610 --> 00:35:54,260
from the image furnace today this video

382
00:36:01,720 --> 00:35:57,620
recorded earlier of the sample that was

383
00:36:04,330 --> 00:36:01,730
removed from that furnace the glass

384
00:36:08,070 --> 00:36:04,340
sample is laced with gold particles and

385
00:36:10,450 --> 00:36:08,080
the experimenters will be looking at the

386
00:36:12,400 --> 00:36:10,460
movement of the gold particles and

387
00:36:14,430 --> 00:36:12,410
determined the flow that occurred within

388
00:36:23,920 --> 00:36:14,440

the sample during the heating process in

389
00:36:25,390 --> 00:36:23,930
the image furnace this is space lab

390
00:36:27,540 --> 00:36:25,400
operations Huntsville we're now

391
00:36:30,670 --> 00:36:27,550
receiving live video downlink of

392
00:36:38,410 --> 00:36:30,680
tadpoles part of the frog embryology

393
00:36:45,430 --> 00:36:38,420
experiment that's affirmative mark we're

394
00:36:48,490 --> 00:36:45,440
watching these particular tadpoles were

395
00:36:52,450 --> 00:36:48,500
hatched on earth and flown in the

396
00:36:55,900 --> 00:36:52,460
tadpole stage at the beginning of the

397
00:36:57,280 --> 00:36:55,910
mission the science team here in

398
00:37:00,040 --> 00:36:57,290
Huntsville watching the swimming

399
00:37:10,500 --> 00:37:00,050
behavior of the tadpoles in the two-part

400
00:37:15,060 --> 00:37:12,780
members of the science team for the Frog

401
00:37:16,980 --> 00:37:15,070
embryology experiment monitoring the

402
00:37:18,870 --> 00:37:16,990
video of the tadpoles and their swimming

403
00:37:21,390 --> 00:37:18,880
behavior as we receive this downlink

404
00:37:23,190 --> 00:37:21,400
video the tadpole seemed to be looping

405
00:37:30,540 --> 00:37:23,200
in the opposite direction that they had

406
00:37:35,220 --> 00:37:30,550
been in the kc-135 and dr. Maury working

407
00:37:39,859 --> 00:37:35,230
with the injectors the bubble injectors

408
00:37:45,090 --> 00:37:39,869
or air injectors which are used to

409
00:37:50,420 --> 00:37:45,100
introduce air into the liquid chamber of

410
00:37:58,050 --> 00:37:50,430
this facility liquid chamber contains

411
00:38:04,470 --> 00:37:58,060
oil silicone oil and a pair of syringes

412
00:38:11,849 --> 00:38:04,480
are used plungers used to introduce air

413
00:38:14,820 --> 00:38:11,859

form bubbles within the chamber and the

414
00:38:16,470 --> 00:38:14,830
operation calls for then shaking once a

415
00:38:20,040 --> 00:38:16,480
large bubble has been introduced into

416
00:38:22,800 --> 00:38:20,050
the chamber shaking it to break the

417
00:38:25,080 --> 00:38:22,810
large bubble up into a number of small

418
00:38:34,230 --> 00:38:25,090
bubbles which will be studied in terms

419
00:38:42,460 --> 00:38:36,910
and Space Lab Huntsville we're live in

420
00:38:45,880 --> 00:38:42,470
the module we've got the BBC two on now

421
00:38:54,270 --> 00:38:45,890
we've got the TV c1 and we see May at

422
00:38:57,520 --> 00:38:56,230
yeah May we're looking right over your

423
00:39:11,480 --> 00:38:57,530
shoulder and we have a good view of the

424
00:39:17,000 --> 00:39:14,480
and may gary requested if you've got

425
00:40:03,680 --> 00:39:17,010
time to get a 35-millimeter shot of that

426
00:40:03,690 --> 00:40:20,030
can you rotate that filter force please

427
00:40:20,040 --> 00:40:41,420
okay and that looks good Jim

428
00:40:53,220 --> 00:40:44,150
okay next to be bad one which was just

429
00:40:59,760 --> 00:40:57,440
and FTS says that's beautiful

430
00:41:01,500 --> 00:40:59,770
we're receiving some live shots from the

431
00:41:04,589 --> 00:41:01,510
science operations area with the fluid

432
00:41:07,349 --> 00:41:04,599
therapy system team which is up and

433
00:41:10,050 --> 00:41:07,359
running with their experiment being

434
00:41:20,550 --> 00:41:10,060
front and center space have activities

435
00:41:23,569 --> 00:41:20,560
right now you know closing the heating

436
00:41:27,359 --> 00:41:23,579
chamber portion of the image furnace

437
00:41:33,660 --> 00:41:27,369
this is the furnace that has a pair of

438
00:41:36,240 --> 00:41:33,670

halogen lamps to provide heat focusing

439
00:41:39,690 --> 00:41:36,250
the energy of those lamps by means of a

440
00:41:44,390 --> 00:41:39,700
pair of mirrors especially shaped

441
00:41:53,630 --> 00:41:44,400
mirrors that have the figure or form of

442
00:41:57,060 --> 00:41:53,640
portion of an ellipse and those mirrors

443
00:41:59,180 --> 00:41:57,070
concentrate the light and heat from the

444
00:42:02,640 --> 00:41:59,190
two halogen lamps into a very intense

445
00:42:06,089 --> 00:42:02,650
area very intensely into a local very

446
00:42:09,870 --> 00:42:06,099
small area somewhat the same manner that

447
00:42:12,240 --> 00:42:09,880
a magnifying glass will concentrate the

448
00:42:17,849 --> 00:42:12,250
sun's energy if it's focused on a piece

449
00:42:22,380 --> 00:42:17,859
of paper or a leaf with a look inside

450
00:42:27,089 --> 00:42:22,390
the image furnace we're heating up

451
00:42:28,710 --> 00:42:27,099
process is underway for the experiment

452
00:45:10,120 --> 00:42:28,720
that mission specialist Mark Lee has

453
00:45:10,130 --> 00:50:04,970
yes

454
00:50:04,980 --> 00:50:32,770
that's a great shot

455
00:50:43,820 --> 00:50:41,540
dedicated a check out took a little

456
00:51:24,960 --> 00:50:43,830
video to the NPS check out tears goes

457
00:51:24,970 --> 00:51:30,590
go okay

458
00:51:30,600 --> 00:51:47,069
job

459
00:51:47,079 --> 00:51:57,960
are you gonna rep the half of G

460
00:51:57,970 --> 00:52:11,400
about twenty three point two forty miles

461
00:52:19,059 --> 00:52:14,079
endeavor now banking back to the left it

462
00:52:22,509 --> 00:52:19,069
wings angled 20 degrees continuing to

463
00:52:26,910 --> 00:52:22,519

slow down speed now 1,400 miles an hour

464
00:52:44,950 --> 00:52:26,920
or about two times the speed of sound

465
00:52:59,030 --> 00:52:53,420
altitude 74,000 feet current speed 1,300

466
00:53:30,300 --> 00:52:59,040
miles now Deborah swings now leveling

467
00:53:40,460 --> 00:53:36,410
speed now one thousand miles an hour

468
00:53:44,220 --> 00:53:40,470
about 1.3 times the speed of sound

469
00:53:48,060 --> 00:53:44,230
standing by for endeavor to go subsonic

470
00:54:22,790 --> 00:53:48,070
altitude 55,000 feet 30 nautical miles

471
00:54:26,330 --> 00:54:24,770
four minutes to touchdown endeavours

472
00:54:30,320 --> 00:54:26,340
approaching the heading alignment circle

473
00:54:32,240 --> 00:54:30,330
an imaginary circle created by landing

474
00:54:36,650 --> 00:54:32,250
aids around which endeavour will perform

475
00:54:41,870 --> 00:54:36,660
a 258 degree right turn as it aligns

476
00:54:47,300 --> 00:54:41,880
with runway 33 Deborah now subsonic

477
00:54:56,000 --> 00:54:47,310
speed 256 knots altitude 40,000 feet 21

478
00:55:06,109 --> 00:54:58,430
endeavor now beginning its right turn to

479
00:55:13,010 --> 00:55:06,119
align with runway 33 in evolution on

480
00:55:15,830 --> 00:55:13,020
energy at the 270 calling it a knit

481
00:55:18,740 --> 00:55:15,840
endeavor speed is just as planned with

482
00:55:21,010 --> 00:55:18,750
270 degrees left to go to turn in the

483
00:55:26,050 --> 00:55:21,020
line with runway 33

484
00:55:38,560 --> 00:55:26,060
airspeed 267 knots altitude 29,000 feet

485
00:55:38,570 --> 00:55:44,580
and never Houston on energy at the 180

486
00:55:49,750 --> 00:55:47,470
call indicating endeavor is at the

487
00:55:51,900 --> 00:55:49,760
proper speed with 180 degrees left to go

488
00:55:56,200 --> 00:55:51,910

to turn in the line with runway 33

489
00:55:58,150 --> 00:55:56,210
altitude 24,000 feet 14 miles to

490
00:56:00,400 --> 00:55:58,160
touchdown continuing to bank to the

491
00:56:24,180 --> 00:56:00,410
right with wings angled 38 degrees to

492
00:56:31,950 --> 00:56:27,530
ever speed continuing right on target

493
00:56:38,310 --> 00:56:31,960
ten miles to touchdown now stood 16,000

494
00:56:54,130 --> 00:56:38,320
feet speed 290 knots continuing to bank

495
00:56:58,839 --> 00:56:56,650
endeavour Houston looking good on final

496
00:57:06,519 --> 00:56:58,849
you're still go for the drag chute dto

497
00:57:11,410 --> 00:57:06,529
surface winds are calm Devers wings

498
00:57:26,310 --> 00:57:11,420
leveling up to 9,000 feet six miles to

499
00:57:26,320 --> 00:57:47,980
speed 297 knots 6000 feet

500
00:57:47,990 --> 00:58:19,250
3000 feet

501
00:58:34,640 --> 00:58:24,380
landing gear down and locked main gear

502
00:58:34,650 --> 00:58:40,770
drag chute deploy

503
00:58:40,780 --> 00:59:16,510
nose gear touchdown

504
00:59:22,400 --> 00:59:20,210
listen endeavor we have wheelstop roger

505
00:59:24,410 --> 00:59:22,410
wheelstop endeavour congratulations on a