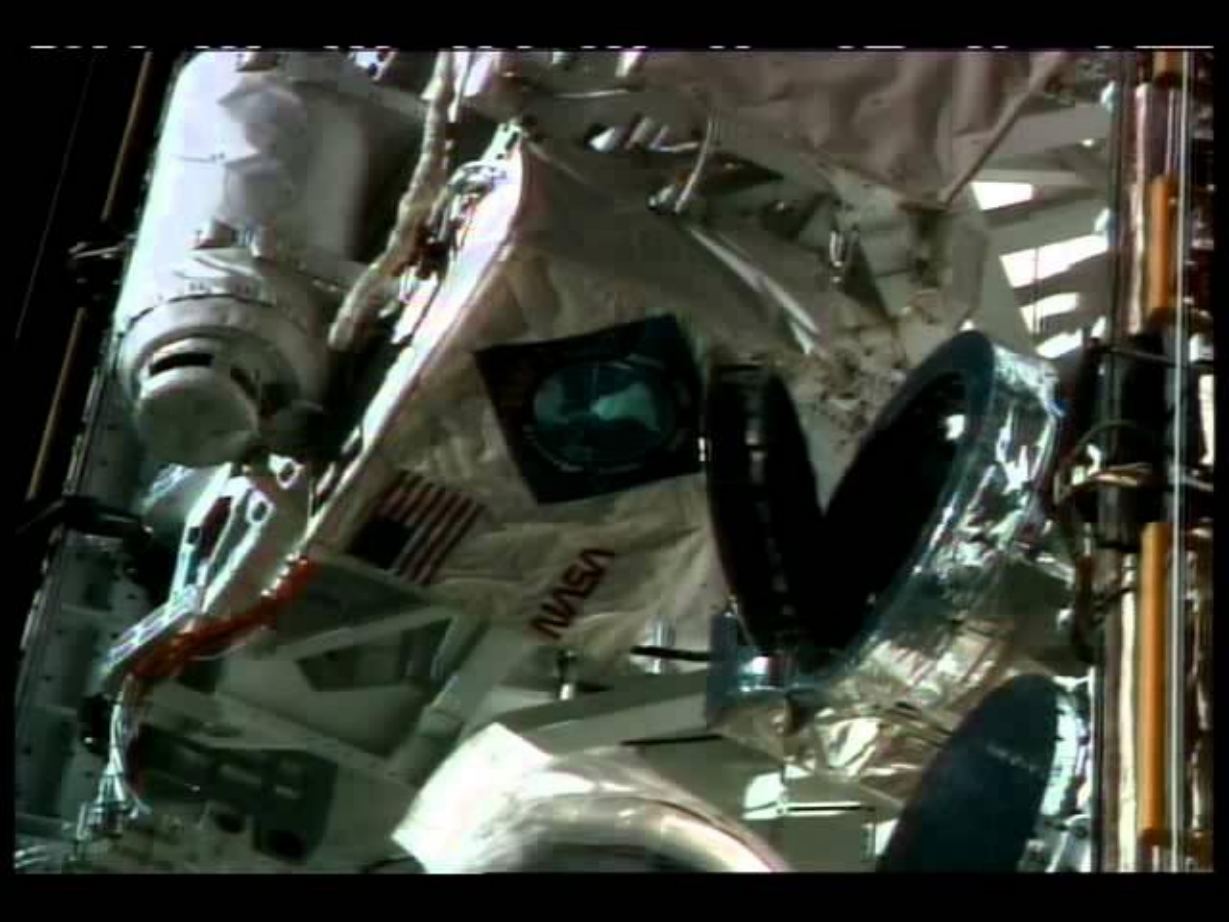
NASA

1
00:00:45,530 --> 00:00:43,160
the countdown for the launch of Columbia

2
00:00:46,880 --> 00:00:45,540
on space shuttle mission STS 62 is

3
00:00:49,550 --> 00:00:46,890
continuing on schedule this morning

4
00:00:51,440 --> 00:00:49,560
we're currently in the standard two-hour

5
00:00:55,280 --> 00:00:51,450
built-in hold at the t-minus three hour

6
00:00:57,470 --> 00:00:55,290
mark launch of Columbia on mission STS

7
00:01:00,710 --> 00:00:57,480
62 remains on time to occur again at

8
00:01:11,899 --> 00:01:00,720
8:50 3:00 a.m. Eastern Time from Kennedy

9
00:01:19,560 --> 00:01:15,420
and we have live video of the crew at

10
00:01:24,179 --> 00:01:19,570
breakfast seated in the center is

11
00:01:33,990 --> 00:01:24,189
commander John Kasper on the end we have

12
00:01:41,250 --> 00:01:36,510
and see the next to him is our pilot

13
00:01:49,010 --> 00:01:41,260

today Andy Allen again commander John

14
00:01:54,120 --> 00:01:52,080
and rounding out the five-member crew is

15
00:01:59,610 --> 00:01:54,130
the lone female on board today mission

16
00:02:01,140 --> 00:01:59,620
specialist Marsha Ivins all five members

17
00:02:02,960 --> 00:02:01,150
of the flight crew were awakened at

18
00:02:05,400 --> 00:02:02,970
about four o'clock this morning

19
00:02:07,620 --> 00:02:05,410
following breakfast they will be given a

20
00:02:09,300 --> 00:02:07,630
briefing of today's launch time weather

21
00:02:17,580 --> 00:02:09,310
and start putting their flight equipment

22
00:02:21,060 --> 00:02:17,590
together this is shuttle launch control

23
00:02:22,350 --> 00:02:21,070
at t-minus three hours and holding the

24
00:02:26,000 --> 00:02:22,360
ice team continues to make their

25
00:02:29,520 --> 00:02:26,010
assessments of any abnormal buildups of

26
00:02:32,100 --> 00:02:29,530
ice or frost on the external tank and

27
00:02:33,420 --> 00:02:32,110
other shuttle components currently they

28
00:02:38,400 --> 00:02:33,430
are standing on the mobile launcher

29
00:02:41,970 --> 00:02:38,410
platform upon which rests the external

30
00:02:50,070 --> 00:02:41,980
tank the solid rocket boosters and of

31
00:02:53,790 --> 00:02:51,930
we have about 20 minutes remaining in

32
00:02:55,770 --> 00:02:53,800
our hold this morning and we're standing

33
00:02:58,320 --> 00:02:55,780
by for live video of the crew donning

34
00:03:01,440 --> 00:02:58,330
their flight suits and we do in fact

35
00:03:03,510 --> 00:03:01,450
have video of the crew and their crew

36
00:03:05,730 --> 00:03:03,520
quarters which is located in the

37
00:03:09,920 --> 00:03:05,740
operations and check-out building at the

38
00:03:16,740 --> 00:03:12,780

commander John Casper preparing to make

39
00:03:27,070 --> 00:03:16,750
his third trip into space today putting

40
00:03:27,080 --> 00:03:32,250
Kasper is from Greenville South Carolina

41
00:03:38,530 --> 00:03:36,130
and he'll be flanked by our pilot today

42
00:03:46,130 --> 00:03:38,540
Andrew Allen who was born in

43
00:03:58,940 --> 00:03:48,380
Andy Allen is making his second trip

44
00:04:13,850 --> 00:04:02,660
and writing a hello to Jessica and

45
00:04:24,530 --> 00:04:16,580
taking a more relaxing pose of course is

46
00:04:26,320 --> 00:04:24,540
another member of the flight crew Marsha

47
00:04:30,410 --> 00:04:26,330
Ivins sees herself in the mirror and

48
00:04:34,310 --> 00:04:30,420
sees herself on NASA select TV and she

49
00:04:36,850 --> 00:04:34,320
looks ready to go she's they've all been

50
00:04:38,990 --> 00:04:36,860
in town since this past Monday afternoon

51
00:04:45,150 --> 00:04:39,000
Marsha is making her third trip into

52
00:04:49,170 --> 00:04:47,250
mission specialist Sam Kumar has just

53
00:04:49,880 --> 00:04:49,180
picked up what might be the sixth crew

54
00:04:54,360 --> 00:04:49,890
member

55
00:04:56,880 --> 00:04:54,370
this is Theodore Tracy and he has given

56
00:04:59,790 --> 00:04:56,890
to the crew by the students of the Gulf

57
00:05:01,460 --> 00:04:59,800
Gate Elementary School in Sarasota

58
00:05:03,660 --> 00:05:01,470
Florida

59
00:05:07,230 --> 00:05:03,670
of course we're checking on the status

60
00:05:10,980 --> 00:05:07,240
of his health stabilization mission

61
00:05:12,900 --> 00:05:10,990
specialist Sam d'amour again one of five

62
00:05:14,850 --> 00:05:12,910
crew members that will be flying today

63
00:05:27,410 --> 00:05:14,860

Sam's prepared to make his third trip

64
00:05:35,990 --> 00:05:34,280
back to our commander Casper this is

65
00:05:50,710 --> 00:05:36,000
shuttle launch control and we are at

66
00:06:01,230 --> 00:05:54,650
and the fewer exiting the quarters at

67
00:06:07,230 --> 00:06:04,860
commander Casper pilot Andy Allen

68
00:06:23,680 --> 00:06:07,240
with Marsha Ivins here through it Sam

69
00:06:29,650 --> 00:06:26,410
the crew have arrived in the white room

70
00:06:32,860 --> 00:06:29,660
and Commander John Kasper is presently

71
00:06:44,140 --> 00:06:32,870
being suited he will be the first enter

72
00:06:50,170 --> 00:06:46,810
piloting our flight today will be Andrew

73
00:06:52,719 --> 00:06:50,180
Allen he is being assisted right now and

74
00:06:54,969 --> 00:06:52,729
making final preparations to be placed

75
00:06:56,980 --> 00:06:54,979
into the orbiter he was selected as an

76
00:07:09,460 --> 00:06:56,990
astronaut in 1988 and is making his

77
00:07:17,980 --> 00:07:13,610
mission specialists appear through it is

78
00:07:33,050 --> 00:07:17,990
making his third spaceflight today

79
00:07:37,890 --> 00:07:35,280
mission specialist number three Marsha

80
00:08:00,470 --> 00:07:37,900
Ivins is making last-minute checks

81
00:08:05,120 --> 00:08:02,780
Sam d'amour is mission specialist number

82
00:08:07,160 --> 00:08:05,130
two and he will be the last to enter the

83
00:08:53,440 --> 00:08:07,170
vehicle this morning the other is

84
00:08:59,270 --> 00:08:57,410
okay looks great down here hopefully

85
00:09:03,980 --> 00:08:59,280
give you guys and marks they're great

86
00:09:05,960 --> 00:09:03,990
ride here in a few minutes okay well

87
00:09:08,030 --> 00:09:05,970
just want to thank you involved in all

88
00:09:09,860 --> 00:09:08,040

the folks on the world's greatest launch

89
00:09:12,500 --> 00:09:09,870
team for all your hard work that you've

90
00:09:14,570 --> 00:09:12,510
put in to get us ready to go and we're

91
00:09:17,570 --> 00:09:14,580
looking for folks and successful nation

92
00:09:19,970 --> 00:09:17,580
on Columbia well thank you sir it's

93
00:09:33,740 --> 00:09:19,980
always a privilege analyzer and the NPD

94
00:09:35,120 --> 00:09:33,750
go to proceed the orbiter access arm is

95
00:09:37,640 --> 00:09:35,130
now being retracted away from the

96
00:09:40,010 --> 00:09:37,650
vehicle this is the walkway used by the

97
00:09:42,110 --> 00:09:40,020
crew to gain entry into and out of the

98
00:09:57,540 --> 00:09:42,120
vehicle and it can be returned to

99
00:09:57,550 --> 00:10:36,710
t-minus seven minutes and Counting

100
00:10:42,350 --> 00:10:38,809
a final gimbal of the main engine bills

101
00:10:48,559 --> 00:10:42,360
is now underway this is a final check of

102
00:10:51,079 --> 00:10:48,569
the main engines prior to launch yeah

103
00:11:04,950 --> 00:10:51,089
okay clearing memory thereby no

104
00:11:09,880 --> 00:11:07,540
t-minus two minutes 20 seconds saying

105
00:11:11,710 --> 00:11:09,890
counting all is ready to fly today on

106
00:11:16,840 --> 00:11:11,720
NASA's four-and-a-half million pounds

107
00:11:18,430 --> 00:11:16,850
space shuttle vehicle Thank You orbiter

108
00:11:19,570 --> 00:11:18,440
test conductor has requested that Andy

109
00:11:21,310 --> 00:11:19,580
Allen clear the caution and warning

110
00:11:28,180 --> 00:11:21,320
memory system and that has been been

111
00:11:38,110 --> 00:11:28,190
reported complete minus two minutes and

112
00:11:40,540 --> 00:11:38,120
Counting everything continues to look

113
00:11:42,220 --> 00:11:40,550

good for launch this morning in about 90

114
00:11:44,620 --> 00:11:42,230
seconds the space shuttle Columbia will

115
00:11:46,810 --> 00:11:44,630
begin its 14 a day extended duration

116
00:12:16,910 --> 00:11:46,820
orbiter flight one of the longest in

117
00:12:16,920 --> 00:12:24,980
t-minus one minute and Counting

118
00:12:28,790 --> 00:12:26,870
t-minus 50 seconds and we're

119
00:12:31,400 --> 00:12:28,800
transferring to orbital internal power

120
00:12:47,110 --> 00:12:31,410
at this time Columbia is now running off

121
00:12:51,670 --> 00:12:49,540
and we have a go for autosequence start

122
00:12:53,080 --> 00:12:51,680
Columbia's onboard computers have

123
00:13:04,990 --> 00:12:53,090
primary control of all the vehicles

124
00:13:09,970 --> 00:13:05,000
critical functions t-minus 2015 eleven

125
00:13:15,900 --> 00:13:09,980
ten nine eight seven we have a go for

126
00:13:18,220 --> 00:13:15,910
main engine start four three two one and

127
00:13:20,680 --> 00:13:18,230
liftoff liftoff of the space shuttle

128
00:13:23,880 --> 00:13:20,690
Columbia as NASA continues on the

129
00:13:32,660 --> 00:13:23,890
cutting-edge of microgravity research

130
00:13:36,630 --> 00:13:34,680
Mission Control sees a good roll

131
00:13:38,730 --> 00:13:36,640
maneuver placing Columbia on the proper

132
00:13:54,030 --> 00:13:38,740
heading pretty good engines at a 104

133
00:13:55,530 --> 00:13:54,040
percent three engines are throttling

134
00:13:57,660 --> 00:13:55,540
back now easing the build-up of

135
00:13:59,820 --> 00:13:57,670
aerodynamic loads as Columbia continues

136
00:14:04,190 --> 00:13:59,830
to accelerate rapidly through the dense

137
00:14:06,900 --> 00:14:04,200
lower altitudes three engines now at 67%

138
00:14:08,880 --> 00:14:06,910

Columbia is traveling over 500 miles an

139
00:14:25,790 --> 00:14:08,890
hour at 52 seconds

140
00:14:35,100 --> 00:14:33,150
let me go at throttle up all three

141
00:14:37,830 --> 00:14:35,110
engines are now running at full throttle

142
00:14:39,360 --> 00:14:37,840
all systems are performing well altitude

143
00:14:41,280 --> 00:14:39,370
is now fifty nine thousand feet

144
00:14:43,230 --> 00:14:41,290
downrange distance seven nautical miles

145
00:14:48,320 --> 00:14:43,240
Columbia's traveling over one thousand

146
00:14:52,140 --> 00:14:50,370
Columbia continues to climb in a

147
00:14:53,700 --> 00:14:52,150
relatively steep angle at this point

148
00:14:55,500 --> 00:14:53,710
relying heavily on the solid rocket

149
00:14:58,110 --> 00:14:55,510
boosters to triple its rate of speed

150
00:14:59,820 --> 00:14:58,120
over the next 60 seconds delivering a

151
00:15:01,590 --> 00:14:59,830
combined six and a half million pounds

152
00:15:03,480 --> 00:15:01,600
of thrust the boosters will burn out and

153
00:15:05,850 --> 00:15:03,490
separate at two minutes six seconds time

154
00:15:09,450 --> 00:15:05,860
now one minute 48 seconds all systems

155
00:15:11,280 --> 00:15:09,460
are performing well altitude 100 16,000

156
00:15:30,930 --> 00:15:11,290
feet downrange distance 18 nautical

157
00:15:35,070 --> 00:15:33,000
Mission Control sees a good booster

158
00:15:37,290 --> 00:15:35,080
separation Columbia is now flying free

159
00:15:38,750 --> 00:15:37,300
powered by its own main engines second

160
00:15:40,620 --> 00:15:38,760
stage guidance is now in control

161
00:15:42,900 --> 00:15:40,630
altitude one hundred eighty four

162
00:15:49,110 --> 00:15:42,910
thousand feet Columbia performance

163
00:15:50,730 --> 00:15:49,120

nominal that's an indication that the

164
00:15:52,500 --> 00:15:50,740
boosters have done their job is designed

165
00:15:53,880 --> 00:15:52,510
in the main engines as well altitude is

166
00:15:55,440 --> 00:15:53,890
now one hundred ninety eight thousand

167
00:15:57,720 --> 00:15:55,450
feet downrange distance forty four

168
00:16:03,630 --> 00:15:57,730
nautical miles Columbia is now traveling

169
00:16:05,190 --> 00:16:03,640
over three thousand miles per hour this

170
00:16:06,570 --> 00:16:05,200
is Mission Control Houston we're taking

171
00:16:08,280 --> 00:16:06,580
live television through the Goldstone

172
00:16:11,280 --> 00:16:08,290
tracking and television station in

173
00:16:13,410 --> 00:16:11,290
California as Columbia completes its

174
00:16:15,270 --> 00:16:13,420
first orbit of the earth on this 14-day

175
00:16:18,120 --> 00:16:15,280
mission currently the crews in the

176
00:16:19,380 --> 00:16:18,130
process of opening the the latches of

177
00:16:22,890 --> 00:16:19,390
the payload bay door along the

178
00:16:24,510 --> 00:16:22,900
centerline once the center line latches

179
00:16:27,330 --> 00:16:24,520
are all confirmed open the bulkhead

180
00:16:29,820 --> 00:16:27,340
latches both the forward and aft will be

181
00:16:32,610 --> 00:16:29,830
opened and once they've been unlatched

182
00:16:36,780 --> 00:16:32,620
the motor drives will be commanded to

183
00:16:39,090 --> 00:16:36,790
begin driving the doors open as at this

184
00:17:19,140 --> 00:16:39,100
point the starboard payload bay door is

185
00:17:26,910 --> 00:17:21,880
and that we've good downlink and that's

186
00:17:32,050 --> 00:17:30,280
external fuel tank later re-enters the

187
00:17:38,800 --> 00:17:32,060
atmosphere over the Pacific Ocean and

188
00:17:41,980 --> 00:17:38,810

burns up before reaching the surface so

189
00:17:43,810 --> 00:17:41,990
up here you're an EP photo down like I

190
00:17:49,480 --> 00:17:43,820
said everybody just captivated down here

191
00:17:57,220 --> 00:17:49,490
it is just absolutely awesome up until

192
00:17:58,810 --> 00:17:57,230
that point that call from the

193
00:18:01,240 --> 00:17:58,820
communicate said they're now starting to

194
00:18:03,790 --> 00:18:01,250
power up Columbia's mechanical arm seen

195
00:18:15,830 --> 00:18:03,800
here in a live television from the

196
00:18:19,759 --> 00:18:17,479
it's Mission Control Houston that

197
00:18:21,859 --> 00:18:19,769
television view from Colombia's lower

198
00:18:23,539 --> 00:18:21,869
deck showed mission specialist Sam gar

199
00:18:25,729 --> 00:18:23,549
game are working with the advanced

200
00:18:29,659 --> 00:18:25,739
protein crystal growth experiment or APC

201
00:19:58,360 --> 00:18:29,669
G and activating the thermal enclosure

202
00:20:04,810 --> 00:20:01,690
what are overly has on its the control

203
00:20:07,090 --> 00:20:04,820
page that it has to three circles that

204
00:20:08,710 --> 00:20:07,100
basically to zones that are horizontal

205
00:20:12,880 --> 00:20:08,720
vertical and what we try to do is

206
00:20:15,850 --> 00:20:12,890
maintain the cross Center on our monitor

207
00:20:17,950 --> 00:20:15,860
or the red reflector at the middle which

208
00:20:20,440 --> 00:20:17,960
is actually the image of the camera is

209
00:20:22,060 --> 00:20:20,450
the mirror then we try to keep the

210
00:20:24,580 --> 00:20:22,070
crosshair centered between the two

211
00:20:26,789 --> 00:20:24,590
reflectors on the left and right as well

212
00:20:29,320 --> 00:20:26,799
as they weren't on the top of bottom

213
00:20:31,180 --> 00:20:29,330

while keeping the Cross center on the

214
00:20:32,470 --> 00:20:31,190
image of the camera if we do that during

215
00:20:34,659 --> 00:20:32,480
this cast as we've accomplished

216
00:20:36,220 --> 00:20:34,669
objective so what we're trying to do is

217
00:20:38,919 --> 00:20:36,230
see how the player can do that we use

218
00:20:41,049 --> 00:20:38,929
the ads or zones on the overlay to

219
00:21:48,200 --> 00:20:41,059
determine these these tolerance that we

220
00:21:54,350 --> 00:21:50,799
ampère we're real happy with the view

221
00:21:56,629 --> 00:21:54,360
the e is G folks are going to send some

222
00:22:10,000 --> 00:21:56,639
commands shortly and we should see some

223
00:22:10,010 --> 00:22:17,370
there's something slip and we saw that

224
00:22:21,460 --> 00:22:20,139
big close-up about monitors you're

225
00:22:22,990 --> 00:22:21,470
saying he was saying but a lot of times

226
00:22:55,490 --> 00:22:23,000
the same stuff we were saying from uh

227
00:22:59,720 --> 00:22:58,070
I kind of find in the crosshairs because

228
00:23:01,970 --> 00:22:59,730
the with the mirror and the Sun this

229
00:23:03,440 --> 00:23:01,980
play was really washed out since it's

230
00:23:06,230 --> 00:23:03,450
quite a while to find the crotch area we

231
00:23:06,769 --> 00:23:06,240
found me the camera reflection through

232
00:23:09,169 --> 00:23:06,779
it right away

233
00:23:10,669 --> 00:23:09,179
stand aside at standpoint yeah hard time

234
00:23:18,769 --> 00:23:10,679
finding the crosshairs neither us could

235
00:23:21,499 --> 00:23:18,779
see it for quite a while it will be

236
00:23:23,330 --> 00:23:21,509
rotated to allow the flat panel portion

237
00:23:28,340 --> 00:23:23,340
and be inserted into the slot at the top

238
00:23:30,799 --> 00:23:28,350

of the carrier and a the insertion of

239
00:23:33,710 --> 00:23:30,809
that flat panel portion will be aligned

240
00:23:36,200 --> 00:23:33,720
using a camera that's on the side of the

241
00:24:29,190 --> 00:23:36,210
magnetic end effector at the end of the

242
00:24:33,660 --> 00:24:31,530
this is Mission Control Houston this

243
00:24:37,890 --> 00:24:33,670
live television from Columbia's payload

244
00:24:40,890 --> 00:24:37,900
Bay shows the taskbar for the dexterous

245
00:24:42,930 --> 00:24:40,900
in defector and currently in work an

246
00:24:45,210 --> 00:24:42,940
insertion of it into the slot at the top

247
00:24:48,570 --> 00:24:45,220
of the carrier for the end effector

248
00:24:51,690 --> 00:24:48,580
equipment the test bar is being held by

249
00:24:54,960 --> 00:24:51,700
a magnetic in defector at the end of

250
00:24:57,510 --> 00:24:54,970
Colombia's mechanical arm once it's

251
00:24:59,370 --> 00:24:57,520
inserted into the slot simulating a task

252
00:25:01,020 --> 00:24:59,380
that might be used in the future for

253
00:25:05,360 --> 00:25:01,030
space station construction with a

254
00:25:55,070 --> 00:25:05,370
radiator the panel will be rotated to

255
00:25:57,750 --> 00:25:55,080
both furnace is large cylindrical

256
00:26:00,690 --> 00:25:57,760
looking experiment and I was doing a

257
00:26:04,200 --> 00:26:00,700
flood of bottles and here we're looking

258
00:26:06,930 --> 00:26:04,210
at how mental solidified with the

259
00:26:15,990 --> 00:26:06,940
potential benefit there being of making

260
00:26:18,930 --> 00:26:16,000
stronger lighter this is Mission Control

261
00:26:20,580 --> 00:26:18,940
Houston the lid is now opening for the

262
00:26:24,390 --> 00:26:20,590
limited duration candidate materials

263
00:26:27,800 --> 00:26:24,400

exposure experiment in the cargo bay the

264
00:26:30,630 --> 00:26:27,810
LDC ii experiment holds a total of about

265
00:26:33,150 --> 00:26:30,640
250 samples of various materials that

266
00:26:36,780 --> 00:26:33,160
are under study for use in space craft

267
00:26:38,610 --> 00:26:36,790
in building future spacecraft and I will

268
00:26:41,070 --> 00:26:38,620
study the where experienced by them and

269
00:27:24,390 --> 00:26:41,080
how well they hold up in the low Earth

270
00:27:39,290 --> 00:27:26,650
we got the picture John and we see the

271
00:27:43,040 --> 00:27:41,060
this is Mission Control Houston once

272
00:27:46,040 --> 00:27:43,050
again we're receiving some videotape

273
00:27:48,770 --> 00:27:46,050
replays provided by the crew of Columbia

274
00:27:52,280 --> 00:27:48,780
orbiting 140 nautical miles above the

275
00:27:53,930 --> 00:27:52,290
earth now looking at the opening of the

276
00:28:17,120 --> 00:27:53,940
instrument door for the Space Shuttle

277
00:28:18,950 --> 00:28:17,130
backscatter ultraviolet experiment that

278
00:28:23,240 --> 00:28:18,960
we're looking at right here as it cools

279
00:28:25,100 --> 00:28:23,250
down this gas free on this experiment is

280
00:28:30,049 --> 00:28:25,110
going to go ahead reaches critical point

281
00:28:33,440 --> 00:28:30,059
and the temperature will come to this

282
00:28:40,640 --> 00:28:33,450
point the properties of what we're

283
00:28:42,230 --> 00:28:40,650
looking at will take us a couple minutes

284
00:29:16,370 --> 00:28:42,240
and I'll fast-forward through a little

285
00:29:16,380 --> 00:29:21,140
you

286
00:29:25,520 --> 00:29:24,020
the temperature continues to cool the

287
00:29:28,670 --> 00:29:25,530
little bit and the gas will go ahead

288
00:29:42,500 --> 00:29:28,680

separate again and we'll go ahead so

289
00:29:44,000 --> 00:29:42,510
back to the point that we can still

290
00:29:54,170 --> 00:29:44,010
there but it's kind of so it's

291
00:29:56,120 --> 00:29:54,180
translucency but this is Mission Control

292
00:29:57,890 --> 00:29:56,130
Houston right now we're taking some live

293
00:30:00,200 --> 00:29:57,900
down like television pictures from

294
00:30:03,200 --> 00:30:00,210
camera D in the payload Bay that's one

295
00:30:07,160 --> 00:30:03,210
of the low-light cameras in the Arsenal

296
00:30:11,060 --> 00:30:07,170
cameras onboard the flashes that you see

297
00:30:13,670 --> 00:30:11,070
and the glow our thruster firings as

298
00:30:15,230 --> 00:30:13,680
Columbia maneuvers into a new attitude

299
00:30:27,300 --> 00:30:15,240
with its belly facing in the direction

300
00:30:31,530 --> 00:30:29,160
in the foreground there there's a

301
00:30:37,670 --> 00:30:31,540
diagonal plate running at about a 45

302
00:30:41,390 --> 00:30:39,750
experimental investigation of spacecraft

303
00:30:43,800 --> 00:30:41,400
glow which is looking at their

304
00:30:48,360 --> 00:30:43,810
interaction of spacecraft surfaces and

305
00:30:52,740 --> 00:30:48,370
atomic oxygen in orbit Columbia is now

306
00:30:55,320 --> 00:30:52,750
approaching the Midwest and will cross

307
00:30:56,150 --> 00:30:55,330
off the northern East Coast the United

308
00:31:09,220 --> 00:30:56,160
States

309
00:31:16,210 --> 00:31:13,120
thank you this is CG we're going

310
00:31:17,560 --> 00:31:16,220
crystals when we hit it see the very

311
00:31:18,670 --> 00:31:17,570
bottom rocker and I record the

312
00:31:21,400 --> 00:31:18,680
temperature right now

313
00:31:28,270 --> 00:31:21,410

so what we're doing is every day we take

314
00:31:30,130 --> 00:31:28,280
video of each of the top tray it's not

315
00:31:32,080 --> 00:31:30,140
only at welcome baby we're trying to do

316
00:31:34,450 --> 00:31:32,090
is trying to characterize how they grow

317
00:31:35,980 --> 00:31:34,460
into patients to really understand how

318
00:31:38,470 --> 00:31:35,990
they grow this particular day was the

319
00:31:40,030 --> 00:31:38,480
day where we did all three trays and we

320
00:31:43,600 --> 00:31:40,040
also did thirty five-millimeter supply

321
00:31:45,250 --> 00:31:43,610
to be of all three trays one thing I can

322
00:31:46,120 --> 00:31:45,260
add about 3d CG is it's really a

323
00:31:49,600 --> 00:31:46,130
two-person job

324
00:31:52,360 --> 00:31:49,610
Marta very carefully aligns the light

325
00:31:54,930 --> 00:31:52,370
and pulls the trays out I have to get

326
00:31:57,880 --> 00:31:54,940
the camera off set up focus if the

327
00:31:59,830 --> 00:31:57,890
Alliant the polarizing filter they just

328
00:32:03,820 --> 00:31:59,840
get off take the picture it's a really

329
00:32:06,820 --> 00:32:03,830
taken to accomplish the test I just

330
00:32:09,310 --> 00:32:06,830
picked a select bunch of these some of

331
00:32:10,960 --> 00:32:09,320
them move very dramatic like this one

332
00:32:12,490 --> 00:32:10,970
summer that's a dramatic but I want the

333
00:32:14,470 --> 00:32:12,500
investigators to have an idea with

334
00:32:54,870 --> 00:32:14,480
wallop ligers you know in the

335
00:33:00,030 --> 00:32:58,230
the big lamken tears are called the gaps

336
00:33:02,730 --> 00:33:00,040
and those little things they are where

337
00:33:06,120 --> 00:33:02,740
they call the FDA just serving you in

338
00:33:07,620 --> 00:33:06,130

college a checklist acronyms was what

339
00:33:11,010 --> 00:33:07,630
the real pieces of hardware look like

340
00:33:14,130 --> 00:33:11,020
and Sam scorn in closing here now to see

341
00:33:18,510 --> 00:33:14,140
some of these were growing really fun

342
00:33:21,030 --> 00:33:18,520
and filaments this is the set that we

343
00:33:28,160 --> 00:33:21,040
terminated yesterday by mistake so I

344
00:33:36,300 --> 00:33:33,990
okay we have a great picture if it'll

345
00:33:37,620 --> 00:33:36,310
look like really fine ribbon tied off at

346
00:33:41,220 --> 00:33:37,630
the top at the bottom there here's a

347
00:33:43,170 --> 00:33:41,230
sprout and sprouts grown to the end of

348
00:33:49,970 --> 00:33:43,180
the tube now since the first time we

349
00:34:01,590 --> 00:33:52,380
sort of fuzz growing on it it's the only

350
00:34:04,650 --> 00:34:01,600
one I've seen like that can't be ok this

351
00:34:06,360 --> 00:34:04,660
was from the CCB a photo step three and

352
00:34:07,950 --> 00:34:06,370
I tell you this because that's the only

353
00:34:10,980 --> 00:34:07,960
food and behavior you see a little guy

354
00:34:12,570 --> 00:34:10,990
was swimming around in circles there's

355
00:34:17,490 --> 00:34:12,580
another couple guys swimming around in

356
00:34:24,990 --> 00:34:17,500
this one too and we got a good image of

357
00:34:28,230 --> 00:34:25,000
that Marsha Lemmy Houston we see looking

358
00:34:30,900 --> 00:34:28,240
at speck 22 just for your info the I am

359
00:35:43,780 --> 00:34:30,910
user in such good shape that no align is

360
00:35:47,470 --> 00:35:45,670
Mission Control Houston we're now

361
00:35:50,260 --> 00:35:47,480
receiving downlink from the space

362
00:35:52,210 --> 00:35:50,270
shuttle Columbia where the STS 62 crew

363
00:35:54,730 --> 00:35:52,220

is getting started on its workday

364
00:35:56,530 --> 00:35:54,740
Sam gamer is getting prepared for his

365
00:35:58,840 --> 00:35:56,540
ramp test and the lower body negative

366
00:36:00,280 --> 00:35:58,850
pressure unit that's a 45-minute test

367
00:36:02,920 --> 00:36:00,290
within the lower body negative pressure

368
00:36:04,900 --> 00:36:02,930
unit and the same procedure will be

369
00:36:44,330 --> 00:36:04,910
repeated a little bit later today by a

370
00:36:47,930 --> 00:36:46,190
thank God just so y'all see what we're

371
00:36:51,170 --> 00:36:47,940
doing up here with eight this is our

372
00:36:54,740 --> 00:36:51,180
configuration we've got the Nikon F for

373
00:36:57,710 --> 00:36:54,750
a image intensifier than a 50 millimeter

374
00:37:00,080 --> 00:36:57,720
lens said it grading another 50

375
00:37:02,390 --> 00:37:00,090
millimeter the last squit and then

376
00:37:05,150 --> 00:37:02,400
another lens and all that looking out so

377
00:37:15,690 --> 00:37:05,160
Taylor's day what a good start to try to

378
00:37:19,650 --> 00:37:17,670
forgot we gotta started here we were

379
00:37:23,240 --> 00:37:19,660
sitting up by I think for the last pass

380
00:37:25,650 --> 00:37:23,250
well we've got this huge camera in there

381
00:37:27,330 --> 00:37:25,660
pushes my assistant you see she's got a

382
00:37:28,920 --> 00:37:27,340
red light a little light attached to

383
00:37:30,510 --> 00:37:28,930
your forehead cos when we do these

384
00:37:32,490 --> 00:37:30,520
things we put out on the light so this

385
00:37:34,890 --> 00:37:32,500
is why we were preparing for the actual

386
00:37:38,190 --> 00:37:34,900
pass I've got my light I'm holding it in

387
00:37:39,720 --> 00:37:38,200
my mouth but we get this device almost

388
00:37:42,660 --> 00:37:39,730

up with a big bracket the overhead

389
00:37:43,920 --> 00:37:42,670
window and we have a a black bag it's

390
00:37:45,720 --> 00:37:43,930
attached to the very in front of the

391
00:37:47,430 --> 00:37:45,730
camera that we put around the widow to

392
00:37:50,790 --> 00:37:47,440
keep any light from inside the cabinet

393
00:37:52,830 --> 00:37:50,800
from getting after the lens and then

394
00:37:55,260 --> 00:37:52,840
once it gets real done we close our

395
00:37:57,690 --> 00:37:55,270
lights off in the cabin and turn a

396
00:38:00,570 --> 00:37:57,700
little red lights on and then for the

397
00:38:03,840 --> 00:38:00,580
image intensifier on this particular

398
00:38:05,370 --> 00:38:03,850
path we were shooting at Orbiter global

399
00:38:08,220 --> 00:38:05,380
phenomena that we see when the atomic

400
00:38:21,490 --> 00:38:08,230
oxygen impacts the orbiter and using the

401
00:38:21,500 --> 00:40:20,130
yes it's because your kids got some

402
00:40:25,059 --> 00:40:22,299
this is Mission Control Houston

403
00:40:27,849 --> 00:40:25,069
Commander John Casper's in the middle of

404
00:40:28,599 --> 00:40:27,859
his exercise session with the bicycle

405
00:40:31,420 --> 00:40:28,609
ergometer

406
00:40:35,470 --> 00:40:31,430
you can see in this picture how much the

407
00:40:40,210 --> 00:40:35,480
ERG ometer sways and moves as a crew

408
00:40:44,079 --> 00:40:40,220
member as a crewmember exercises if this

409
00:40:47,049 --> 00:40:44,089
exercise device were hard mounted on the

410
00:40:48,970 --> 00:40:47,059
shuttle floor these vibrations would be

411
00:40:51,309 --> 00:40:48,980
sent into the orbiter structure and

412
00:40:53,259 --> 00:40:51,319
could very possibly disturb the

413
00:40:55,120 --> 00:40:53,269

microgravity environment in which the

414
00:40:57,430 --> 00:40:55,130
protein crystals and the other

415
00:41:16,230 --> 00:40:57,440
experiments need to conduct their

416
00:41:24,510 --> 00:41:21,780
put your counter folks bring justice

417
00:41:56,940 --> 00:41:24,520
Springs every brought up work Yandy and

418
00:41:56,950 --> 00:42:28,400
no we're like test

419
00:42:33,830 --> 00:42:31,940
I do that it certainly looks like you're

420
00:42:42,800 --> 00:42:33,840
making maximum effective use of all the

421
00:42:46,580 --> 00:42:42,810
space you have there that and we have a

422
00:43:00,599 --> 00:42:46,590
good view of flight deck and a pilot

423
00:43:05,049 --> 00:43:02,980
one of the things that should come to

424
00:43:07,480 --> 00:43:05,059
mind for the controllers particularly as

425
00:43:10,089 --> 00:43:07,490
they see us get ready and configure to

426
00:43:11,859 --> 00:43:10,099
sleep up here you notice that all five

427
00:43:15,220 --> 00:43:11,869
crew members are sleeping at the same

428
00:43:18,670 --> 00:43:15,230
time you know while this vehicle is

429
00:43:20,620 --> 00:43:18,680
hurling through space at 17,500 miles an

430
00:43:22,450 --> 00:43:20,630
hour we're basically traveled five miles

431
00:43:25,359 --> 00:43:22,460
every second across the surface of the

432
00:43:27,490 --> 00:43:25,369
earth and it just goes to show you what

433
00:43:29,730 --> 00:43:27,500
trust and confidence about this team up

434
00:43:33,069 --> 00:43:29,740
here has on the team on the ground

435
00:43:35,099 --> 00:43:33,079
because we know that you guys are doing

436
00:43:38,589 --> 00:43:35,109
your job down there and do it well

437
00:43:42,520 --> 00:43:38,599
watching over every aspect of our safety

438
00:43:43,960 --> 00:43:42,530

and performance of this orbiter and it

439
00:43:46,440 --> 00:43:43,970
makes me proud to be a part of this team

440
00:43:49,870 --> 00:43:46,450
and I worked on the control center for

441
00:43:52,030 --> 00:43:49,880
12 flights myself and I was very proud

442
00:43:53,980 --> 00:43:52,040
of controlling them and and again when

443
00:43:55,270 --> 00:43:53,990
you come up here on orbit and you put

444
00:43:57,069 --> 00:43:55,280
that kind of trust and faith in those

445
00:44:41,660 --> 00:43:57,079
people I'd say if you don't make it very

446
00:44:46,140 --> 00:44:43,920
and yeah I know we were a bit redundant

447
00:44:47,580 --> 00:44:46,150
because we played the service medley a

448
00:44:49,770 --> 00:44:47,590
few days ago but I think you'll

449
00:44:52,650 --> 00:44:49,780
appreciate the the song for this morning

450
00:44:57,780 --> 00:44:52,660
I think when you get your mail you'll

451
00:44:59,250 --> 00:44:57,790
find out why we got this morning in our

452
00:45:01,380 --> 00:44:59,260
morning mail this is a momentous

453
00:45:10,070 --> 00:45:01,390
occasion and I would have a little

454
00:45:15,780 --> 00:45:12,090
attention to orders mission elapsed

455
00:45:17,790 --> 00:45:15,790
times 5 days 19 hours 25 minutes aboard

456
00:45:19,650 --> 00:45:17,800
the space shuttle Columbia and orbit is

457
00:45:20,880 --> 00:45:19,660
in recognition of 17 years of

458
00:45:23,040 --> 00:45:20,890
distinguished service to the United

459
00:45:24,450 --> 00:45:23,050
States as a Marine officer and

460
00:45:26,910 --> 00:45:24,460
demonstrated potential for future

461
00:45:28,860 --> 00:45:26,920
leadership and responsibility the United

462
00:45:30,810 --> 00:45:28,870
States Marine Corps has selected Andrew

463
00:45:32,910 --> 00:45:30,820

M Allen for promotion to the rank of

464
00:45:34,680 --> 00:45:32,920
lieutenant colonel by the authority

465
00:45:36,690 --> 00:45:34,690
vested in me as commander of the space

466
00:45:38,280 --> 00:45:36,700
shuttle Columbia I hereby promote major

467
00:45:39,720 --> 00:45:38,290
Allen effective immediately

468
00:45:41,730 --> 00:45:39,730
to the rank of Lieutenant Colonel

469
00:45:47,700 --> 00:45:41,740
consideration of this baseline sign

470
00:46:13,720 --> 00:45:47,710
Johnny Caspar commander STS 62 ok major

471
00:46:13,730 --> 00:47:28,480
congratulations colonel

472
00:47:28,490 --> 00:47:39,380
yeah

473
00:47:39,390 --> 00:47:49,420
okay then we have the mark 1

474
00:48:02,130 --> 00:47:52,510
there we go this is a double frankfurter

475
00:48:02,140 --> 00:48:19,330
Hey

476
00:48:19,340 --> 00:49:34,820
all right

477
00:49:51,210 --> 00:49:38,100
goodbye let me I used to in good morning

478
00:49:57,420 --> 00:49:51,220
we like the tans forget the ice crystals

479
00:50:12,010 --> 00:49:57,430
just at the right angle there there's a

480
00:50:20,390 --> 00:50:16,820
lady I it's hard to judge this up here

481
00:50:27,470 --> 00:50:20,400
but I'd say it's slightly the part about

482
00:52:04,520 --> 00:50:27,480
the car says you about here any second

483
00:52:04,530 --> 00:52:29,520
true

484
00:52:29,530 --> 00:52:33,130
Oh

485
00:52:33,140 --> 00:52:42,790
this is milder