1
00:01:31,690 --> 00:00:56,730
you

2
00:01:36,560 --> 00:01:34,249
never Houston just like snoopy the

3
00:01:37,850 --> 00:01:36,570
precocious pup that can do anything you

4
00:01:40,160 --> 00:01:37,860
the dog crew have done it all good

5
00:01:49,240 --> 00:01:40,170
morning and congrats to dog face an

6
00:01:54,109 --> 00:01:51,830
showing a little well-deserved rest

7
00:01:56,510 --> 00:01:54,119
particularly them and so they're on

8
00:02:00,199 --> 00:01:56,520
their way to the microphone but I beat

9
00:02:01,760 --> 00:02:00,209
into it just a little bit this is

10
00:02:07,809 --> 00:02:01,770
Mission Control Houston this view is

11
00:02:10,639 --> 00:02:07,819
over northern Australia as i endeavor

12
00:02:14,350 --> 00:02:10,649
continues on a course now taking across

13
00:02:25,250 --> 00:02:14,360

the northern part of the continent just

14
00:02:29,420 --> 00:02:25,260
inland from the north coast again these

15
00:02:36,810 --> 00:02:29,430
views of northern Australia endeavour

16
00:02:41,200 --> 00:02:39,760
of course taking it to just inland of

17
00:02:46,840 --> 00:02:41,210
luck from the northern coast of the

18
00:02:49,300 --> 00:02:46,850
continent inland from the Gulf of

19
00:03:00,180 --> 00:02:49,310
Carpentaria ever fresh oil or getting

20
00:03:06,660 --> 00:03:02,880
that endeavor now moving into the

21
00:03:09,020 --> 00:03:06,670
mountains along the eastern coast of

22
00:03:11,190 --> 00:03:09,030
Australia the Great Dividing range

23
00:03:13,860 --> 00:03:11,200
cogitating on how we might be able to

24
00:03:19,800 --> 00:03:13,870
achieve an opportunity to go chat with

25
00:03:26,550 --> 00:03:19,810
those people and ever I didn't know dogs

26
00:03:36,590 --> 00:03:26,560
could catch it eight we try not to do it

27
00:03:41,840 --> 00:03:38,720
this is Mission Control this view from

28
00:03:43,400 --> 00:03:41,850
payload cameras payload Bay cameras

29
00:03:45,920 --> 00:03:43,410
aboard the shuttle Endeavour showing the

30
00:03:48,160 --> 00:03:45,930
Spartan science satellite sitting on its

31
00:03:50,660 --> 00:03:48,170
trust structure on the cargo bay on the

32
00:03:54,440 --> 00:03:50,670
left side of the screen as the task

33
00:03:56,300 --> 00:03:54,450
board a worksite upon which gym Voss and

34
00:03:58,060 --> 00:03:56,310
Mike gurnard spent several hours

35
00:04:01,220 --> 00:03:58,070
yesterday during their spacewalk

36
00:04:03,380 --> 00:04:01,230
conducting a number of tasks to develop

37
00:04:05,810 --> 00:04:03,390
techniques and to prove out procedures

38
00:04:07,730 --> 00:04:05,820

which are expected to be used in some

39
00:04:13,220 --> 00:04:07,740
assembly sequences for the International

40
00:04:15,140 --> 00:04:13,230
Space Station that clears it is good

41
00:04:17,750 --> 00:04:15,150
moping thank you for joining us

42
00:04:20,540 --> 00:04:17,760
gentlemen commander walk I'll get right

43
00:04:24,080 --> 00:04:20,550
with it with you a word about the

44
00:04:25,550 --> 00:04:24,090
complexity and the busy time line which

45
00:04:27,410 --> 00:04:25,560
you had on this mission I think before

46
00:04:29,570 --> 00:04:27,420
you left you said you'd be happy if you

47
00:04:31,850 --> 00:04:29,580
completed eighty percent of your chores

48
00:04:36,980 --> 00:04:31,860
up in orbit how close did you come to

49
00:04:38,810 --> 00:04:36,990
that figure well to tell you the truth I

50
00:04:40,550 --> 00:04:38,820
haven't kept that close to track we've

51
00:04:42,410 --> 00:04:40,560
been pretty busy I think we've gotten

52
00:04:44,900 --> 00:04:42,420
most of the major objectives done but

53
00:04:47,060 --> 00:04:44,910
the guys on the ground really have the

54
00:04:49,910 --> 00:04:47,070
have the running tally much better than

55
00:04:52,280 --> 00:04:49,920
I do I will say that I'm extremely proud

56
00:04:55,340 --> 00:04:52,290
of the work that they're Mission Control

57
00:04:57,740 --> 00:04:55,350
team has done and helping us stay with

58
00:04:59,540 --> 00:04:57,750
this timeline and as I crew of course

59
00:05:03,860 --> 00:04:59,550
for for hanging in there and keep it up

60
00:05:05,270 --> 00:05:03,870
with it payload commander colonel vossen

61
00:05:07,970 --> 00:05:05,280
let's have you weigh in on this for a

62
00:05:09,470 --> 00:05:07,980
moment did you at any point along this

63
00:05:16,580 --> 00:05:09,480

mission get the sense that you're

64
00:05:18,560 --> 00:05:16,590
attempting to do too much yeah I think

65
00:05:20,690 --> 00:05:18,570
we do that right from the start we've

66
00:05:22,940 --> 00:05:20,700
known all along we had a full plate and

67
00:05:24,500 --> 00:05:22,950
we've been preparing for it knowing that

68
00:05:25,850 --> 00:05:24,510
we were going to be extremely busy

69
00:05:27,530 --> 00:05:25,860
hoping that we could accomplish

70
00:05:29,480 --> 00:05:27,540
everything that we've set out to do plus

71
00:05:31,490 --> 00:05:29,490
even some extra and I think we've done a

72
00:05:33,470 --> 00:05:31,500
pretty good job of that any time that

73
00:05:35,510 --> 00:05:33,480
you have any difficulties or problems in

74
00:05:38,060 --> 00:05:35,520
a flight it slows you down and could

75
00:05:40,100 --> 00:05:38,070
prevent you from accomplishing all of

76
00:05:41,840 --> 00:05:40,110
your objectives but i think that the

77
00:05:43,760 --> 00:05:41,850
ground team and the crew have both gone

78
00:05:45,290 --> 00:05:43,770
to extremes to make sure that we bring

79
00:05:47,159 --> 00:05:45,300
back as much science data as we possibly

80
00:05:49,779 --> 00:05:47,169
can

81
00:05:51,609 --> 00:05:49,789
of course when there's a problem such as

82
00:05:54,249 --> 00:05:51,619
you had with the wake shield facility

83
00:05:57,699 --> 00:05:54,259
when you have a tight time on like you

84
00:06:01,600 --> 00:05:57,709
you've had on this mission it just gives

85
00:06:05,289 --> 00:06:01,610
you less oven you have fewer backstops

86
00:06:07,299 --> 00:06:05,299
fewer options to fall back on how how

87
00:06:08,919 --> 00:06:07,309
much did that make the problem worse

88
00:06:15,039 --> 00:06:08,929

let's say with the way shield facility

89
00:06:17,559 --> 00:06:15,049
having such a tight timeline well every

90
00:06:19,600 --> 00:06:17,569
time we plan a flight we know that we're

91
00:06:21,369 --> 00:06:19,610
using a very valuable national asset and

92
00:06:23,859 --> 00:06:21,379
we want to plan the timeline just as

93
00:06:25,719 --> 00:06:23,869
tightly as we possibly can to be able to

94
00:06:27,459 --> 00:06:25,729
accomplish everything that we can while

95
00:06:29,229 --> 00:06:27,469
we're up here we don't want to waste any

96
00:06:31,539 --> 00:06:29,239
of our time we go into it very

97
00:06:33,009 --> 00:06:31,549
optimistically assuming that everything

98
00:06:34,299 --> 00:06:33,019
is going to work properly when it

99
00:06:36,669 --> 00:06:34,309
doesn't we have a team on the ground

100
00:06:38,350 --> 00:06:36,679
every night and their sole job is to

101
00:06:39,909 --> 00:06:38,360
replan for us during the day and make

102
00:06:41,409 --> 00:06:39,919
sure that we can still get in just as

103
00:06:43,659 --> 00:06:41,419
much of the science objectives as

104
00:06:45,249 --> 00:06:43,669
possible and they send us up a new plan

105
00:06:47,589 --> 00:06:45,259
in the morning and then we start to

106
00:06:50,379 --> 00:06:47,599
execute it and through our training and

107
00:06:52,059 --> 00:06:50,389
their preparation we are well prepared

108
00:06:56,589 --> 00:06:52,069
to do that and that's what we've done on

109
00:06:58,389 --> 00:06:56,599
this flight I'm curious how would you

110
00:07:01,479 --> 00:06:58,399
grade the performance of the wake shield

111
00:07:04,899 --> 00:07:01,489
facility you were able to grow for thin

112
00:07:06,489 --> 00:07:04,909
films you wanted to do seven was that

113
00:07:08,919 --> 00:07:06,499

good enough as far as you're concerned

114
00:07:14,649 --> 00:07:08,929
given the constraints of the mission and

115
00:07:18,009 --> 00:07:14,659
the performance of the platform well

116
00:07:19,569 --> 00:07:18,019
with an experimental object like wait

117
00:07:21,339 --> 00:07:19,579
shield and a program that's in its

118
00:07:24,489 --> 00:07:21,349
infancy which we hope is going to result

119
00:07:26,429 --> 00:07:24,499
in the whole lot of greater benefits

120
00:07:28,989 --> 00:07:26,439
later on and I think it's a mistake to

121
00:07:31,149 --> 00:07:28,999
try and grade it too harshly it's kind

122
00:07:33,069 --> 00:07:31,159
of like a brand new kid in the block you

123
00:07:36,669 --> 00:07:33,079
want to give it a few few tries before

124
00:07:38,829 --> 00:07:36,679
you start keeping score i would say that

125
00:07:41,799 --> 00:07:38,839
wakes she'll definitely gets an A for

126
00:07:44,049 --> 00:07:41,809
effort the people involved with it or

127
00:07:45,489 --> 00:07:44,059
tremendously dedicated our mission

128
00:07:48,699 --> 00:07:45,499
control team certainly gets an A for

129
00:07:50,679 --> 00:07:48,709
effort when you don't know exactly what

130
00:07:52,809 --> 00:07:50,689
you're going to get as you often don't

131
00:07:54,579 --> 00:07:52,819
in the science project of this type it's

132
00:07:57,249 --> 00:07:54,589
inappropriate to try and give it a great

133
00:07:58,290 --> 00:07:57,259
on product I believe the fact that the

134
00:08:00,270 --> 00:07:58,300
wake is

135
00:08:02,089 --> 00:08:00,280
been able to be characterized and we've

136
00:08:05,309 --> 00:08:02,099
made this fairly complex manufacturing

137
00:08:08,219 --> 00:08:05,319
facility work that it was controlled

138
00:08:10,260 --> 00:08:08,229

successfully interactively both from the

139
00:08:13,670 --> 00:08:10,270
shuttle end from the ground despite

140
00:08:15,930 --> 00:08:13,680
numerous problems those were overcome I

141
00:08:18,089 --> 00:08:15,940
think that speaks very well for the

142
00:08:21,020 --> 00:08:18,099
future of such facilities both the wake

143
00:08:24,119 --> 00:08:21,030
shield itself and others of that type I

144
00:08:27,749 --> 00:08:24,129
suppose some of the issues here might be

145
00:08:29,700 --> 00:08:27,759
a matter of expectations the fact it or

146
00:08:32,040 --> 00:08:29,710
a half-full half-empty type of thing

147
00:08:33,959 --> 00:08:32,050
given the faster better cheaper approach

148
00:08:35,909 --> 00:08:33,969
which was used in building the wake

149
00:08:37,459 --> 00:08:35,919
shield with fewer redundancies and

150
00:08:40,380 --> 00:08:37,469
perhaps might have been used in the past

151
00:08:48,000 --> 00:08:40,390
was was this what we should have

152
00:08:49,290 --> 00:08:48,010
expected as far as that mission went any

153
00:08:51,990 --> 00:08:49,300
time that you have an experimental

154
00:08:53,220 --> 00:08:52,000
program like this that's making new

155
00:08:55,230 --> 00:08:53,230
steps in areas that we don't fully

156
00:08:57,449 --> 00:08:55,240
understand we have to expect to go

157
00:08:58,980 --> 00:08:57,459
slowly and the Wakefield has done that

158
00:09:00,569 --> 00:08:58,990
their first flight they did a lot of

159
00:09:02,750 --> 00:09:00,579
work on the arm they weren't deployed

160
00:09:05,400 --> 00:09:02,760
this flight we deployed them their

161
00:09:06,540 --> 00:09:05,410
control system work very well they had

162
00:09:08,430 --> 00:09:06,550
some problems but they learn to

163
00:09:09,600 --> 00:09:08,440

tremendous amount next time they fly we

164
00:09:11,880 --> 00:09:09,610
hope that things are going to go even

165
00:09:13,319 --> 00:09:11,890
more smoothly we learn a lot every time

166
00:09:14,910 --> 00:09:13,329
that we fly a space shuttle and the same

167
00:09:16,949 --> 00:09:14,920
thing is applied with the Wakefield

168
00:09:19,139 --> 00:09:16,959
every time they fly they will learn a

169
00:09:21,030 --> 00:09:19,149
lot more don't do a lot better and we

170
00:09:24,860 --> 00:09:21,040
hope that over time they will develop it

171
00:09:27,389 --> 00:09:24,870
into a commercial facility for growing

172
00:09:29,370 --> 00:09:27,399
semiconductors like this you can't do it

173
00:09:30,510 --> 00:09:29,380
overnight and until they've done it a

174
00:09:32,400 --> 00:09:30,520
few times they don't know all the

175
00:09:34,110 --> 00:09:32,410
problems they have to overcome I believe

176
00:09:36,180 --> 00:09:34,120
that they'll continue to progress right

177
00:09:39,079 --> 00:09:36,190
along and like any experimental program

178
00:09:41,550 --> 00:09:39,089
they'll get better as they do it more

179
00:09:45,079 --> 00:09:41,560
with respect to better faster and

180
00:09:47,610 --> 00:09:45,089
cheaper your point miles I think is is

181
00:09:49,680 --> 00:09:47,620
is it worth it well if you're going to

182
00:09:51,269 --> 00:09:49,690
go better faster and cheaper you do buy

183
00:09:54,629 --> 00:09:51,279
into some risk

184
00:09:56,400 --> 00:09:54,639
you do not have the same redundancies

185
00:09:58,139 --> 00:09:56,410
and backups that you often have and

186
00:10:00,210 --> 00:09:58,149
things occasionally will go wrong and

187
00:10:02,400 --> 00:10:00,220
can be expected to go wrong more often

188
00:10:04,230 --> 00:10:02,410

than they will if you've got the kind of

189
00:10:07,290 --> 00:10:04,240
program where we put all the bells and

190
00:10:10,410 --> 00:10:07,300
whistles into it but you can't have it

191
00:10:12,059 --> 00:10:10,420
both ways if you believe as we believe

192
00:10:14,249 --> 00:10:12,069
that you've got to conserve resources

193
00:10:16,829 --> 00:10:14,259
and take a little risk to mission

194
00:10:18,480 --> 00:10:16,839
success then you have to accept the

195
00:10:20,369 --> 00:10:18,490
consequences of occasionally having some

196
00:10:23,369 --> 00:10:20,379
things go wrong and that goes with the

197
00:10:25,350 --> 00:10:23,379
this kind of appropriate would you call

198
00:10:31,460 --> 00:10:25,360
it at significant steps down the road

199
00:10:36,360 --> 00:10:34,530
think I would remembering that

200
00:10:39,600 --> 00:10:36,370
commercialization of space comes in all

201
00:10:42,059 --> 00:10:39,610
different flavors if if wakes she'll

202
00:10:43,739 --> 00:10:42,069
were able to produce eventually or

203
00:10:46,679 --> 00:10:43,749
facilities similar to wake she'll were

204
00:10:49,309 --> 00:10:46,689
able to produce eventually the kind of

205
00:10:51,689 --> 00:10:49,319
semiconductor materials that were

206
00:10:53,639 --> 00:10:51,699
impossible to produce on earth or

207
00:10:56,429 --> 00:10:53,649
impractical to produce at any sort of

208
00:10:59,670 --> 00:10:56,439
reasonable cost then I think you'd find

209
00:11:01,619 --> 00:10:59,680
people singing its praises to find that

210
00:11:02,939 --> 00:11:01,629
out you've got to go ahead and take the

211
00:11:04,410 --> 00:11:02,949
first steps and I think that's what

212
00:11:07,559 --> 00:11:04,420
we've done and in that sense I think

213
00:11:11,579 --> 00:11:07,569

it's very significant Colonel boss a few

214
00:11:13,199 --> 00:11:11,589
words about the EBA yesterday by all

215
00:11:16,019 --> 00:11:13,209
accounts it appeared to be quite a

216
00:11:18,449 --> 00:11:16,029
success what were you able to prove

217
00:11:21,569 --> 00:11:18,459
about the possibilities and the

218
00:11:28,019 --> 00:11:21,579
viability of actually doing construction

219
00:11:29,939 --> 00:11:28,029
work in space we've done quite a few

220
00:11:31,769 --> 00:11:29,949
edas before that have demonstrated that

221
00:11:34,650 --> 00:11:31,779
we can work in space we were doing some

222
00:11:36,360 --> 00:11:34,660
very specific task on re VA related to

223
00:11:38,610 --> 00:11:36,370
the construction of space station some

224
00:11:40,829 --> 00:11:38,620
maintenance task and construction task

225
00:11:42,329 --> 00:11:40,839
we had various tools boxes that we've

226
00:11:44,490 --> 00:11:42,339
changed out and we use different methods

227
00:11:46,619 --> 00:11:44,500
for changing them out I think that we

228
00:11:49,470 --> 00:11:46,629
showed that some of the methods that we

229
00:11:52,110 --> 00:11:49,480
have could be the easier methods such as

230
00:11:53,340 --> 00:11:52,120
free-floating for certain task or some

231
00:11:55,290 --> 00:11:53,350
of the tools that we've been developing

232
00:11:57,540 --> 00:11:55,300
the rigid tether and the body restraint

233
00:11:59,220 --> 00:11:57,550
error which are additional tools to help

234
00:12:01,110 --> 00:11:59,230
to control either devices or our own

235
00:12:02,610 --> 00:12:01,120
bodies while we're out there are things

236
00:12:03,960 --> 00:12:02,620
that will help us to reduce the EV a

237
00:12:05,060 --> 00:12:03,970
time during the space station

238
00:12:07,280 --> 00:12:05,070

construction

239
00:12:09,140 --> 00:12:07,290
make it an easier thing for us to do and

240
00:12:11,480 --> 00:12:09,150
make it a lot cheaper for us in the long

241
00:12:14,150 --> 00:12:11,490
run so I think that we did prove that a

242
00:12:18,830 --> 00:12:14,160
lot of the objectives that we were

243
00:12:20,330 --> 00:12:18,840
looking at were feasible and they will

244
00:12:22,930 --> 00:12:20,340
make it viable for us to do the

245
00:12:26,000 --> 00:12:22,940
construction of the space station and

246
00:12:27,890 --> 00:12:26,010
just as a word of comfort were you oh it

247
00:12:30,260 --> 00:12:27,900
sounded like you're pretty warm with the

248
00:12:34,370 --> 00:12:30,270
the thermal improvement were you warm

249
00:12:36,530 --> 00:12:34,380
enough yes they were Mike Bernardo

250
00:12:39,170 --> 00:12:36,540
myself we're cold any time during our

251
00:12:41,960 --> 00:12:39,180
ETA one time I was when I deliberately

252
00:12:43,430 --> 00:12:41,970
turn my cooling to max cooling just to

253
00:12:45,620 --> 00:12:43,440
make sure that it would kumi and in fact

254
00:12:47,390 --> 00:12:45,630
it did and then I turned it back to warm

255
00:12:48,620 --> 00:12:47,400
again and it wore me right up we had

256
00:12:50,480 --> 00:12:48,630
several things that we're done to the

257
00:12:52,880 --> 00:12:50,490
streets this time we have a device that

258
00:12:54,410 --> 00:12:52,890
bypasses are cooling completely so we

259
00:12:56,000 --> 00:12:54,420
have less doing than ever before in the

260
00:12:57,710 --> 00:12:56,010
suits we had some new thermal

261
00:12:59,210 --> 00:12:57,720
undergarments we had some new glove

262
00:13:01,460 --> 00:12:59,220
heaters that were intended to heat our

263
00:13:03,680 --> 00:13:01,470

hands up on previous flights people had

264
00:13:06,410 --> 00:13:03,690
reported their hands getting very cold

265
00:13:08,210 --> 00:13:06,420
when they handled metal objects and all

266
00:13:09,890 --> 00:13:08,220
of those work extremely well even in the

267
00:13:12,470 --> 00:13:09,900
coldest attitude that we could have in

268
00:13:14,960 --> 00:13:12,480
the dark we were both very comfortable

269
00:13:16,550 --> 00:13:14,970
and had no problems at all and when we

270
00:13:18,200 --> 00:13:16,560
brought the equipment back inside even

271
00:13:19,760 --> 00:13:18,210
up to an hour after we had been back

272
00:13:21,770 --> 00:13:19,770
inside some of the metal objects we

273
00:13:23,630 --> 00:13:21,780
touched we're still extremely cold to

274
00:13:25,160 --> 00:13:23,640
the hand so the suit is doing a

275
00:13:26,630 --> 00:13:25,170
wonderful job and Glenn let's and all

276
00:13:28,220 --> 00:13:26,640
these folks there at the Johnson Space

277
00:13:30,890 --> 00:13:28,230
Center have done a wonderful job and

278
00:13:33,680 --> 00:13:30,900
improving them you must have been

279
00:13:36,020 --> 00:13:33,690
pleased to have such a successful cap to

280
00:13:40,840 --> 00:13:36,030
the mission both of you gentlemen were

281
00:13:45,710 --> 00:13:43,130
well speaking into the commander I

282
00:13:49,400 --> 00:13:45,720
certainly was you da is an important

283
00:13:51,110 --> 00:13:49,410
tool and we need the opportunity to

284
00:13:52,850 --> 00:13:51,120
utilize it and practices as much as

285
00:13:55,250 --> 00:13:52,860
possible to be ready to build station

286
00:13:56,930 --> 00:13:55,260
property but I felt kind of like a

287
00:13:59,360 --> 00:13:56,940
mother watching her kid go off to school

288
00:14:01,550 --> 00:13:59,370

I couldn't walk them to the school to

289
00:14:03,050 --> 00:14:01,560
the school or to the bus stop but I had

290
00:14:05,540 --> 00:14:03,060
to worry about him till he came back in

291
00:14:08,810 --> 00:14:05,550
so I was very happy to get those guys

292
00:14:10,720 --> 00:14:08,820
back inside Colonel Vasa was your uh oh

293
00:14:13,900 --> 00:14:10,730
I'm sorry go ahead

294
00:14:15,400 --> 00:14:13,910
I was just going to add to that that of

295
00:14:17,290 --> 00:14:15,410
course it was a wonderful experience for

296
00:14:20,079 --> 00:14:17,300
us both Mike and myself it was our first

297
00:14:21,970 --> 00:14:20,089
time out in this all we're trying to

298
00:14:23,650 --> 00:14:21,980
gain experience for more crew members

299
00:14:25,689 --> 00:14:23,660
also so that we'll have an experience

300
00:14:28,090 --> 00:14:25,699
Kadri when we start building the space

301
00:14:30,550 --> 00:14:28,100
station and we certainly got that we

302
00:14:32,530 --> 00:14:30,560
finished up the EBA EBA a lot better

303
00:14:34,150 --> 00:14:32,540
than when we started it and so we now

304
00:14:37,060 --> 00:14:34,160
two more people who are ready to go and

305
00:14:38,860 --> 00:14:37,070
help to build space station you had a

306
00:14:40,569 --> 00:14:38,870
few words about the view out there is it

307
00:14:47,350 --> 00:14:40,579
hard to concentrate on your work when

308
00:14:49,329 --> 00:14:47,360
you're in those surroundings well re da

309
00:14:51,280 --> 00:14:49,339
was very special with this the thermal

310
00:14:53,710 --> 00:14:51,290
evaluations that we had normally people

311
00:14:56,560 --> 00:14:53,720
go outside and like all our timelines

312
00:14:57,879 --> 00:14:56,570
they're very compact and you stay so

313
00:14:59,680 --> 00:14:57,889

busy and you're focused on your work

314
00:15:01,300 --> 00:14:59,690
because you must be careful work slowly

315
00:15:03,160 --> 00:15:01,310
and really pay attention to what you're

316
00:15:04,960 --> 00:15:03,170
doing out there a lot of times you don't

317
00:15:07,269 --> 00:15:04,970
have a chance to sit back and just enjoy

318
00:15:10,000 --> 00:15:07,279
the view but because we were up on the

319
00:15:12,759 --> 00:15:10,010
arm for 45 minutes and an attitude where

320
00:15:14,050 --> 00:15:12,769
we were very cold outside and we were

321
00:15:15,790 --> 00:15:14,060
not supposed to be active we were

322
00:15:18,250 --> 00:15:15,800
supposed to have a very low metabolism

323
00:15:21,040 --> 00:15:18,260
we had the opportunity to just sit up

324
00:15:23,230 --> 00:15:21,050
there and watch the world go by I i

325
00:15:25,120 --> 00:15:23,240
called it eda heaven because it gave you

326
00:15:27,550 --> 00:15:25,130
the opportunity to the outside have the

327
00:15:29,680 --> 00:15:27,560
most unobstructed view possible and to

328
00:15:31,030 --> 00:15:29,690
see the world go by and I don't know if

329
00:15:32,920 --> 00:15:31,040
you heard but at one point I noticed

330
00:15:35,290 --> 00:15:32,930
that as I looked around I could turn

331
00:15:36,730 --> 00:15:35,300
around and see 360 degrees all the way

332
00:15:38,620 --> 00:15:36,740
around me and all I could see was

333
00:15:41,019 --> 00:15:38,630
watering clouds everywhere and was just

334
00:15:42,699 --> 00:15:41,029
amazing to to note that most of our

335
00:15:46,360 --> 00:15:42,709
world really is water and I could see it

336
00:15:47,800 --> 00:15:46,370
all at the same time Colonel Voss one

337
00:15:50,100 --> 00:15:47,810
more question for you and this is an

338
00:15:53,110 --> 00:15:50,110

entirely different subject but you were

339
00:15:55,180 --> 00:15:53,120
locked into orbit on some SRBs which

340
00:15:56,889 --> 00:15:55,190
were modified because of concerns about

341
00:15:59,220 --> 00:15:56,899
the gas pads and I know you were

342
00:16:03,400 --> 00:15:59,230
involved in the Challenger accident

343
00:16:05,559 --> 00:16:03,410
investigation I'm curious how pleased

344
00:16:08,769 --> 00:16:05,569
you are I'm assuming you are with the

345
00:16:11,319 --> 00:16:08,779
way the process went this time around

346
00:16:16,620 --> 00:16:11,329
and what lessons has NASA learned

347
00:16:21,400 --> 00:16:18,880
well I think we learned our lessons well

348
00:16:22,290 --> 00:16:21,410
from the Challenger accident everyone

349
00:16:24,840 --> 00:16:22,300
listens when there

350
00:16:26,040 --> 00:16:24,850
problems and we go and fix them the

351
00:16:27,960 --> 00:16:26,050
management listen when there were

352
00:16:30,090 --> 00:16:27,970
problems we did not allow the shuttle

353
00:16:31,980 --> 00:16:30,100
launch until we fix the SRBs this time

354
00:16:33,600 --> 00:16:31,990
and I have the utmost confidence in our

355
00:16:35,400 --> 00:16:33,610
management team as well as the workers

356
00:16:36,780 --> 00:16:35,410
who prepare our vehicles some of my

357
00:16:39,720 --> 00:16:36,790
commander and good friend Dave Walker

358
00:16:41,700 --> 00:16:39,730
has said that really struck home to me

359
00:16:43,430 --> 00:16:41,710
is that we live by the skills and

360
00:16:45,720 --> 00:16:43,440
talents of the people who work at the

361
00:16:48,210 --> 00:16:45,730
Kennedy Space Center and the other

362
00:16:50,370 --> 00:16:48,220
places that prepare hardware for flight

363
00:16:51,990 --> 00:16:50,380

and that's the truth and we all have

364
00:16:54,810 --> 00:16:52,000
complete confidence in their abilities

365
00:16:56,100 --> 00:16:54,820
to do that I'm sure that the solid

366
00:16:58,920 --> 00:16:56,110
rocket boosters that we rode with the

367
00:17:00,960 --> 00:16:58,930
absolute best possible safest ones that

368
00:17:02,220 --> 00:17:00,970
could be produced by human beings and I

369
00:17:04,680 --> 00:17:02,230
thought that way when I got on them and

370
00:17:07,860 --> 00:17:04,690
it proved to be the case they were safe

371
00:17:09,120 --> 00:17:07,870
and they did a good job for us all right

372
00:17:11,340 --> 00:17:09,130
gentlemen we're just about out of time

373
00:17:14,580 --> 00:17:11,350
here thanks for taking time out of your

374
00:17:17,400 --> 00:17:14,590
dog on busy schedule and I know dogs

375
00:17:18,570 --> 00:17:17,410
always like to come home my dogs like to

376
00:17:41,400 --> 00:17:18,580
stick their heads out the window I

377
00:17:46,740 --> 00:17:44,160
this is Mission Control Houston this

378
00:17:48,720 --> 00:17:46,750
view from payload Bay cameras aboard

379
00:17:52,950 --> 00:17:48,730
endeavour shows astronaut jim newman

380
00:17:54,570 --> 00:17:52,960
moving the shuttles mechanical arm he is

381
00:17:56,700 --> 00:17:54,580
maneuvering it to the position where he

382
00:17:58,320 --> 00:17:56,710
will wind up cradling the arm to put it

383
00:18:01,020 --> 00:17:58,330
to bed for the rest of this mission with

384
00:18:03,090 --> 00:18:01,030
its job done for the flight this all

385
00:18:04,950 --> 00:18:03,100
taking place as endeavour attracts from

386
00:18:24,950 --> 00:18:04,960
Northwest to Southeast over the Atlantic

387
00:18:31,310 --> 00:18:27,350
the robot arm was used extensively

388
00:18:33,080 --> 00:18:31,320

during this mission to grapple deploy

389
00:18:34,519 --> 00:18:33,090
and retrieve the Spartan science

390
00:18:36,019 --> 00:18:34,529
satellite which is coming into your

391
00:18:38,659 --> 00:18:36,029
field of view on the left the gold

392
00:18:40,850 --> 00:18:38,669
foiled satellite which studied the solar

393
00:18:45,320 --> 00:18:40,860
corona and the solar wind for two days

394
00:18:46,970 --> 00:18:45,330
on its own the robot arm also grappled

395
00:18:49,070 --> 00:18:46,980
deployed and ultimately retrieved the

396
00:18:52,399 --> 00:18:49,080
wake shield facility we grappled the

397
00:18:55,360 --> 00:18:52,409
wake shield on Friday to conduct a

398
00:18:57,830 --> 00:18:55,370
series of tests regarding the electrical

399
00:18:59,630 --> 00:18:57,840
fields around the orbiter as a travel

400
00:19:02,510 --> 00:18:59,640
through space and then was used

401
00:19:05,740 --> 00:19:02,520
yesterday with a portable foot restraint

402
00:19:08,269 --> 00:19:05,750
attached to the end of the arm to hoist

403
00:19:10,430 --> 00:19:08,279
astronauts Jim Voss and Mike Bernhardt

404
00:19:14,210 --> 00:19:10,440
about 30 feet above the payload Bay and

405
00:19:17,120 --> 00:19:14,220
to position them towards deep space to

406
00:19:19,370 --> 00:19:17,130
gather data on the thermal effects of

407
00:19:21,639 --> 00:19:19,380
the cold of deep space and the thermal

408
00:19:25,630 --> 00:19:21,649
modifications made to their spacesuits

409
00:19:28,190 --> 00:19:25,640
to keep space walkers in the future

410
00:19:39,070 --> 00:19:28,200
quite warm as they work on the space

411
00:19:43,870 --> 00:19:42,039
the rest of Newman's colleagues are in

412
00:19:46,029 --> 00:19:43,880
the midst of a midday meal the crew was

413
00:19:48,490 --> 00:19:46,039

awakened over 8 hours ago to begin its

414
00:19:50,259 --> 00:19:48,500
11th day on orbit earlier this morning

415
00:19:53,019 --> 00:19:50,269
in the wee hours a commander Dave Walker

416
00:19:55,539 --> 00:19:53,029
and pilot Ken cockerel turned on one of

417
00:19:57,970 --> 00:19:55,549
the shuttles three auxiliary power units

418
00:20:01,120 --> 00:19:57,980
and conducted the flight control system

419
00:20:04,029 --> 00:20:01,130
check out they were able to exercise the

420
00:20:05,740 --> 00:20:04,039
body flap ailerons rudder and speed

421
00:20:08,710 --> 00:20:05,750
brake on the orbiter it all checked out

422
00:20:11,139 --> 00:20:08,720
just fine and then fired many of the

423
00:20:13,990 --> 00:20:11,149
shuttles jet thrusters both primary and

424
00:20:16,210 --> 00:20:14,000
verniers to make sure that all those

425
00:20:17,649 --> 00:20:16,220
systems are available for the entry and

426
00:20:23,049 --> 00:20:17,659
landing of Endeavour tomorrow at the

427
00:20:24,700 --> 00:20:23,059
Kennedy Space Center with that out of

428
00:20:28,440 --> 00:20:24,710
the way the astronauts now have begun

429
00:20:30,669 --> 00:20:28,450
the stowage of their crew cabin the

430
00:20:33,100 --> 00:20:30,679
deactivation of some of the secondary

431
00:20:34,899 --> 00:20:33,110
experiments in the mid deck area they

432
00:20:37,600 --> 00:20:34,909
are essentially packing up their ship

433
00:20:41,019 --> 00:20:37,610
for the return trip the crew will be

434
00:20:43,570 --> 00:20:41,029
going to bed at 209 p.m. central time

435
00:20:46,870 --> 00:20:43,580
this afternoon about eight hours from

436
00:20:49,269 --> 00:20:46,880
now to call it a day and to get up a

437
00:20:51,279 --> 00:20:49,279
late tonight just after 10 p.m. central

438
00:20:53,139 --> 00:20:51,289

time to begin their deorbit preparations

439
00:20:59,159 --> 00:20:53,149
which will lead to their homecoming in

440
00:21:04,210 --> 00:21:01,990
once again this view of the shuttles

441
00:21:06,990 --> 00:21:04,220
robot arm built by spar industries of

442
00:21:09,340 --> 00:21:07,000
toronto canada as astronaut jim newman

443
00:21:13,060 --> 00:21:09,350
maneuvers it into place on its cradle

444
00:21:21,009 --> 00:21:13,070
along the port lon Geron of the cargo

445
00:21:23,740 --> 00:21:21,019
bay the arm was first used on the second

446
00:21:31,200 --> 00:21:23,750
shuttle mission st s to indo vember of

447
00:21:35,799 --> 00:21:34,120
commander joe angle and pilot dick truly

448
00:21:38,769 --> 00:21:35,809
who later went on to become nasa

449
00:21:42,669 --> 00:21:38,779
administrator maneuvered the robot arm

450
00:21:45,549 --> 00:21:42,679
during that mission that flight only

451
00:21:48,399 --> 00:21:45,559
lasted two days but the middle day that

452
00:21:51,399 --> 00:21:48,409
the astronauts were on orbit was devoted

453
00:21:52,450 --> 00:21:51,409
almost exclusively to tests with the

454
00:21:54,190 --> 00:21:52,460
robot arm and its