1
00:00:13,310 --> 00:00:10,879
oh good afternoon glad to have you folks

2
00:00:15,530 --> 00:00:13,320
here glad to be able to be here to do

3
00:00:18,920 --> 00:00:15,540
something we haven't been able to do at

4
00:00:21,109 --> 00:00:18,930
the center for a little while they due

5
00:00:23,840 --> 00:00:21,119
to the efforts of all the folks and the

6
00:00:26,750 --> 00:00:23,850
whole shuttle team is we got one in the

7
00:00:28,700 --> 00:00:26,760
air so without further ado I'm going to

8
00:00:32,330 --> 00:00:28,710
turn it over to the commander this

9
00:00:38,040 --> 00:00:32,340
mission captain dick Richards Thank You

10
00:00:43,000 --> 00:00:40,330
can you hear me in the back yes okay

11
00:00:44,410 --> 00:00:43,010
well thanks for showing your support and

12
00:00:46,150 --> 00:00:44,420
interest by coming out here this

13
00:00:47,830 --> 00:00:46,160

afternoon we put together about a 20

14
00:00:51,369 --> 00:00:47,840
minute video tape with your highlights

15
00:00:54,369 --> 00:00:51,379
of the things that we all did on sds 41

16
00:00:57,490 --> 00:00:54,379
I'd like to introduce my crewmen I was

17
00:00:59,399 --> 00:00:57,500
very fortunate and to have a great set

18
00:01:01,930 --> 00:00:59,409
of people on this particular flight

19
00:01:04,420 --> 00:01:01,940
we've been asked to comment about what

20
00:01:06,399 --> 00:01:04,430
makes a successful flight and if you put

21
00:01:09,160 --> 00:01:06,409
good people like we have in this room

22
00:01:11,139 --> 00:01:09,170
and at this Center together with a good

23
00:01:14,139 --> 00:01:11,149
hardware it really gets easy and with

24
00:01:16,210 --> 00:01:14,149
it's a it's a great great thing that we

25
00:01:17,950 --> 00:01:16,220
do here we we launched on time we've

26
00:01:19,779 --> 00:01:17,960
done that before in the past I knew we

27
00:01:20,980 --> 00:01:19,789
could do it and we did it and we're

28
00:01:22,359 --> 00:01:20,990
going to continue doing those sort of

29
00:01:25,840 --> 00:01:22,369
things but let me introduce my crew

30
00:01:27,639 --> 00:01:25,850
immediately to my left a one of our

31
00:01:29,620 --> 00:01:27,649
first-time Flyers and my pilot very

32
00:01:36,300 --> 00:01:29,630
fortunate to have in this fight a marine

33
00:01:40,710 --> 00:01:39,090
and they keep changing the order of

34
00:01:43,260 --> 00:01:40,720
sequence here to see if I mess this up

35
00:01:45,960 --> 00:01:43,270
here but in the middle of another

36
00:01:49,920 --> 00:01:45,970
first-time flyer just reported here in

37
00:01:51,899 --> 00:01:49,930
1987 and spent three years here and got

38
00:01:55,279 --> 00:01:51,909

an opportunity to fly in space the first

39
00:02:03,899 --> 00:01:55,289
US Coast Guardsman ever to fly in space

40
00:02:05,340 --> 00:02:03,909
commander Bruce Melnick next to him are

41
00:02:06,870 --> 00:02:05,350
other experienced commissioned

42
00:02:08,460 --> 00:02:06,880
specialist he was the bosun's made on

43
00:02:09,630 --> 00:02:08,470
our flight for those of you are not in

44
00:02:10,979 --> 00:02:09,640
the Navy they don't know what a bosun's

45
00:02:13,979 --> 00:02:10,989
mate is the most amazing the one that

46
00:02:16,140 --> 00:02:13,989
keeps good order in the ship and bill

47
00:02:18,660 --> 00:02:16,150
Shepard did that Navy captain flew on

48
00:02:21,539 --> 00:02:18,670
sts-27 and I can't tell you how

49
00:02:24,390 --> 00:02:21,549
invaluable he was not only to me but to

50
00:02:26,309 --> 00:02:24,400
the other rookies providing us with the

51
00:02:27,990 --> 00:02:26,319
right words at the right time on what to

52
00:02:34,860 --> 00:02:28,000
do and earn those four days captain bill

53
00:02:37,350 --> 00:02:34,870
Shepard and lastly all the way to the

54
00:02:39,660 --> 00:02:37,360
end but certainly not least bill Shepard

55
00:02:41,970 --> 00:02:39,670
referred to him in our welcome home

56
00:02:45,060 --> 00:02:41,980
ceremony at ellington as our secret

57
00:02:47,880 --> 00:02:45,070
weapon and that's and I'll second that

58
00:02:49,830 --> 00:02:47,890
Tom Akers real quiet individual but I

59
00:02:52,199 --> 00:02:49,840
signed him the responsibility of getting

60
00:02:54,000 --> 00:02:52,209
ulysses out on time and he did that

61
00:02:57,180 --> 00:02:54,010
those of you who worked with him know

62
00:02:58,740 --> 00:02:57,190
that as tremendous individual and really

63
00:03:01,530 --> 00:02:58,750

was a contributor and was absolutely

64
00:03:04,110 --> 00:03:01,540
essential to making a success of STS 41

65
00:03:09,840 --> 00:03:04,120
happened for us not a bad job for your

66
00:03:15,850 --> 00:03:14,140
and without any further ado here if we

67
00:03:17,590 --> 00:03:15,860
can get the lights down and we'll roll

68
00:03:18,970 --> 00:03:17,600
this videotape will try to narrate you

69
00:03:31,840 --> 00:03:18,980
through some of the highlights for sts

70
00:03:33,940 --> 00:03:31,850
41 well here we are we were pretty happy

71
00:03:35,620 --> 00:03:33,950
at this point because no flight crew had

72
00:03:37,180 --> 00:03:35,630
made it this far at least being able to

73
00:03:38,920 --> 00:03:37,190
walk out of the astro van in about six

74
00:03:42,730 --> 00:03:38,930
months so we felt pretty good i had left

75
00:03:44,470 --> 00:03:42,740
word overnight that if if we had to had

76
00:03:46,390 --> 00:03:44,480
anything to wake me up and i had a nice

77
00:03:47,560 --> 00:03:46,400
sound sleep so i was rough domestic when

78
00:03:50,110 --> 00:03:47,570
we got up particularly when we got off

79
00:03:51,520 --> 00:03:50,120
the launch pad and saw the weather Bob

80
00:03:52,870 --> 00:03:51,530
will describe a little bit about what

81
00:03:55,570 --> 00:03:52,880
it's like to fly in the shuttle for the

82
00:03:57,820 --> 00:03:55,580
first time and have an innocent well as

83
00:04:00,040 --> 00:03:57,830
pretty as a day as we head for everyone

84
00:04:01,420 --> 00:04:00,050
watching yeah and as nice of you as it

85
00:04:03,130 --> 00:04:01,430
was let me tell you it was from a

86
00:04:05,800 --> 00:04:03,140
first-time Flyers point of view was even

87
00:04:08,950 --> 00:04:05,810
more spectacular inside the Cape

88
00:04:10,510 --> 00:04:08,960

provided us with a super vehicle and

89
00:04:13,740 --> 00:04:10,520
discovery and she performed flawlessly

90
00:04:16,210 --> 00:04:13,750
it was a extremely smooth ride uphill

91
00:04:19,600 --> 00:04:16,220
especially once we got off the solid

92
00:04:22,270 --> 00:04:19,610
rocket motors it was just a nice steady

93
00:04:24,070 --> 00:04:22,280
acceleration out Tamiko and really

94
00:04:26,710 --> 00:04:24,080
surprised me how smooth the ride was as

95
00:04:29,920 --> 00:04:26,720
you can see from our our smoke trail

96
00:04:31,690 --> 00:04:29,930
going up hill here there's a very little

97
00:04:35,320 --> 00:04:31,700
wind shear it was just an absolutely

98
00:04:39,040 --> 00:04:35,330
super day in a super day to start an

99
00:04:42,100 --> 00:04:39,050
absolutely great mission during the

100
00:04:43,990 --> 00:04:42,110
launch count it was absolutely and

101
00:04:46,330 --> 00:04:44,000
almost identical to the one I had about

102
00:04:48,850 --> 00:04:46,340
a year ago the everything was nominal

103
00:04:50,440 --> 00:04:48,860
all the calls were as expected and we

104
00:04:51,730 --> 00:04:50,450
had a real clean vehicle the only thing

105
00:04:53,770 --> 00:04:51,740
we were concerned with the last few

106
00:04:56,890 --> 00:04:53,780
minutes was a couple of unplanned holes

107
00:05:00,070 --> 00:04:56,900
that we could tell would probably be

108
00:05:01,780 --> 00:05:00,080
we'd be able to get get past those and

109
00:05:03,400 --> 00:05:01,790
the launch count proceeded then we had

110
00:05:05,290 --> 00:05:03,410
one cloud nearer that held us and I

111
00:05:07,660 --> 00:05:05,300
think we were think we're about five to

112
00:05:09,340 --> 00:05:07,670
ten minutes late from our plan takeoff

113
00:05:13,780 --> 00:05:09,350

time but well before the end of our

114
00:05:17,380 --> 00:05:13,790
launch period about an hour and a half

115
00:05:19,930 --> 00:05:17,390
after launch Bruce opened the payload

116
00:05:22,360 --> 00:05:19,940
bay doors as you see here and he and I

117
00:05:24,640 --> 00:05:22,370
began the check out of the

118
00:05:26,590 --> 00:05:24,650
upper stage booster system that is going

119
00:05:28,960 --> 00:05:26,600
to put Ulysses on its way to Jupiter and

120
00:05:30,820 --> 00:05:28,970
then ultimately the Sun as you can see

121
00:05:32,860 --> 00:05:30,830
in that picture we have an extremely

122
00:05:34,960 --> 00:05:32,870
clean payload bay and that was true also

123
00:05:38,820 --> 00:05:34,970
in the crew compartment the folks down

124
00:05:41,680 --> 00:05:38,830
at KSC did a great job on this vehicle

125
00:05:43,360 --> 00:05:41,690
the checkout comprised the next three or

126
00:05:45,939 --> 00:05:43,370
four hours looking for about a six-hour

127
00:05:47,530 --> 00:05:45,949
deploy of Ulysses and in that time we

128
00:05:51,689 --> 00:05:47,540
checked out the upper stage booster

129
00:05:55,090 --> 00:05:51,699
system the crew interfaces with that

130
00:05:57,070 --> 00:05:55,100
prepared to activate the tilt table that

131
00:06:00,279 --> 00:05:57,080
would raise it to 60 degrees for deploy

132
00:06:02,350 --> 00:06:00,289
Bob our pilot maneuvered the orbiter to

133
00:06:04,090 --> 00:06:02,360
several different attitudes to provide

134
00:06:06,460 --> 00:06:04,100
the ground with the corrections they

135
00:06:09,969 --> 00:06:06,470
needed to give the upper state system of

136
00:06:13,659 --> 00:06:09,979
precise attitude correction here you see

137
00:06:15,279 --> 00:06:13,669
the deploy and as the upper stage and

138
00:06:17,620 --> 00:06:15,289

Ulysses are pushed out of the payload

139
00:06:20,740 --> 00:06:17,630
bay at about four to five inches per

140
00:06:22,379 --> 00:06:20,750
second you'll see in a moment in the

141
00:06:25,300 --> 00:06:22,389
background there things that look like

142
00:06:27,430 --> 00:06:25,310
particles or stars flying back behind

143
00:06:30,370 --> 00:06:27,440
the vehicle and those are just ice

144
00:06:32,050 --> 00:06:30,380
particles that continued to come off of

145
00:06:33,430 --> 00:06:32,060
the orbiter for the first several hours

146
00:06:37,839 --> 00:06:33,440
that first day and was really a

147
00:06:40,779 --> 00:06:37,849
spectacular show at about a minute after

148
00:06:43,060 --> 00:06:40,789
deploy here which again occurred at six

149
00:06:48,100 --> 00:06:43,070
hours in about a minute mission elapse

150
00:06:49,960 --> 00:06:48,110
time after one minute dick did a minus X

151
00:06:53,770 --> 00:06:49,970
or a back-off maneuver where we backed

152
00:06:55,450 --> 00:06:53,780
away from the spacecraft which gave us

153
00:06:59,850 --> 00:06:55,460
about two and a half feet per second

154
00:07:04,679 --> 00:07:02,879
as you can see we deployed in darkness

155
00:07:06,570 --> 00:07:04,689
you'll see in a minute when the

156
00:07:09,659 --> 00:07:06,580
spacecraft comes into the sunlight it

157
00:07:21,029 --> 00:07:09,669
was really a again a very spectacular

158
00:07:22,499 --> 00:07:21,039
show after 15 minutes from deploy we did

159
00:07:25,080 --> 00:07:22,509
a gnome separation maneuver that

160
00:07:27,200 --> 00:07:25,090
ultimately placed us above and behind

161
00:07:32,399 --> 00:07:27,210
the spacecraft at about 40 miles

162
00:07:34,589 --> 00:07:32,409
separation you'll see here in a moment

163
00:07:37,860 --> 00:07:34,599

the curved object you've probably heard

164
00:07:40,379 --> 00:07:37,870
about that appeared in the screen the

165
00:07:41,820 --> 00:07:40,389
first time we had noticed it and they're

166
00:07:44,519 --> 00:07:41,830
still investigating as to what that

167
00:07:46,260 --> 00:07:44,529
possibly is they think it's ice of some

168
00:07:48,059 --> 00:07:46,270
sort that came from the rear of the

169
00:07:51,300 --> 00:07:48,069
vehicle and don't think it came from

170
00:07:59,890 --> 00:07:51,310
anything associated with the spacecraft

171
00:08:06,070 --> 00:08:01,960
and there you see that object coming

172
00:08:08,110 --> 00:08:06,080
into view this was essentially my view

173
00:08:11,080 --> 00:08:08,120
looking out through the overhead window

174
00:08:13,029 --> 00:08:11,090
and during the deploy sequence I didn't

175
00:08:15,310 --> 00:08:13,039
even see this subject and it wasn't

176
00:08:18,820 --> 00:08:15,320
until after we replayed the videotape

177
00:08:21,820 --> 00:08:18,830
that we finally picked it up and then

178
00:08:23,830 --> 00:08:21,830
again as I mentioned at about 65 minutes

179
00:08:25,570 --> 00:08:23,840
after deployed we went into a window

180
00:08:27,879 --> 00:08:25,580
protect attitude so we could no longer

181
00:08:31,150 --> 00:08:27,889
see the spacecraft and of course it was

182
00:08:34,449 --> 00:08:31,160
a long ways off by then also and the

183
00:08:38,230 --> 00:08:34,459
first solid rocket burn of the upper

184
00:08:40,029 --> 00:08:38,240
stage occurred and was exactly as they

185
00:08:42,029 --> 00:08:40,039
expected it to be and then the second

186
00:08:45,900 --> 00:08:42,039
stage and then finally the third stage

187
00:08:50,050 --> 00:08:45,910
the AMS solid rocket motor burned and

188
00:08:52,140 --> 00:08:50,060

after about 16 or 17 minutes after that

189
00:08:55,650 --> 00:08:52,150
first burn the folks on the ground

190
00:08:58,329 --> 00:08:55,660
started looking for Ulysses data and

191
00:09:00,970 --> 00:08:58,339
founded the Ulysses exactly where they

192
00:09:02,920 --> 00:09:00,980
expected it to be so it was the almost

193
00:09:04,510 --> 00:09:02,930
as precise in fact a little more precise

194
00:09:08,370 --> 00:09:04,520
than anybody on the ground had expected

195
00:09:11,470 --> 00:09:08,380
the three burns to be and as of today

196
00:09:13,510 --> 00:09:11,480
Ulysses is over six and a half million

197
00:09:17,890 --> 00:09:13,520
miles away and doing much better than

198
00:09:22,660 --> 00:09:17,900
expected Tom and I cranked up the remote

199
00:09:26,050 --> 00:09:22,670
arm on the first part of day two and put

200
00:09:28,720 --> 00:09:26,060
it in this Ram position you see here in

201
00:09:30,790 --> 00:09:28,730
part to support the space station but

202
00:09:33,970 --> 00:09:30,800
mainly to provide some data on the Intel

203
00:09:37,420 --> 00:09:33,980
SAT solar array erosion that has been

204
00:09:40,510 --> 00:09:37,430
estimated this is a shot of the

205
00:09:42,550 --> 00:09:40,520
activation of the SSB UV or the shuttle

206
00:09:45,550 --> 00:09:42,560
solar backscatter ultraviolet experiment

207
00:09:48,430 --> 00:09:45,560
it's a major secondary payload that we

208
00:09:50,410 --> 00:09:48,440
carried in the payload bay here it is it

209
00:09:52,690 --> 00:09:50,420
flies in a gas can it get away special

210
00:09:56,199 --> 00:09:52,700
and the SSB UV is going to be used to

211
00:09:58,150 --> 00:09:56,209
calibrate the NASA Nimbus satellites and

212
00:10:00,160 --> 00:09:58,160
the NOAA tyro satellites which are

213
00:10:01,990 --> 00:10:00,170

presently orbiting the Earth measuring

214
00:10:03,699 --> 00:10:02,000
the ozone layer it does this by

215
00:10:06,280 --> 00:10:03,709
comparing the radiation that's emitted

216
00:10:09,310 --> 00:10:06,290
from the Sun with the radiation that's

217
00:10:11,440 --> 00:10:09,320
back scattered from the earth the ozone

218
00:10:13,269 --> 00:10:11,450
absorbs the radiation and therefore they

219
00:10:13,660 --> 00:10:13,279
measure how much of the radiation has

220
00:10:15,610 --> 00:10:13,670
been a

221
00:10:20,320 --> 00:10:15,620
orbed and can get a grasp on how much

222
00:10:23,680 --> 00:10:20,330
ozone there is in the atmosphere this is

223
00:10:26,680 --> 00:10:23,690
a shot of us getting ready to activate

224
00:10:27,970 --> 00:10:26,690
the ssce or the solid surface combustion

225
00:10:32,230 --> 00:10:27,980
experiments which you've probably heard

226
00:10:35,950 --> 00:10:32,240
about our fire in space the data from

227
00:10:38,020 --> 00:10:35,960
this fire in this enclosed container was

228
00:10:42,490 --> 00:10:38,030
recorded on that with two cameras a

229
00:10:44,770 --> 00:10:42,500
16-millimeter film and as a backup chef

230
00:10:47,170 --> 00:10:44,780
came up with the neat idea of using our

231
00:10:48,910 --> 00:10:47,180
fiberscope to put down in front of the

232
00:10:52,510 --> 00:10:48,920
one of the windows and recorded on board

233
00:10:55,390 --> 00:10:52,520
are one of our onboard cameras and TV in

234
00:10:58,330 --> 00:10:55,400
the vehicle and this is a recording of

235
00:11:02,830 --> 00:10:58,340
that that we downlinked subsequently of

236
00:11:04,510 --> 00:11:02,840
one of the two views of the flame purse

237
00:11:06,370 --> 00:11:04,520
the intent of the experiment is to

238
00:11:08,920 --> 00:11:06,380

evaluate the characteristics of flame

239
00:11:11,830 --> 00:11:08,930
spread in the absence of buoyant

240
00:11:14,410 --> 00:11:11,840
convection or in microgravity we did

241
00:11:17,230 --> 00:11:14,420
this by in igniting a small piece of

242
00:11:18,880 --> 00:11:17,240
paper in this container and then just

243
00:11:23,470 --> 00:11:18,890
letting it burn and photographing what

244
00:11:26,020 --> 00:11:23,480
happened with those cameras experiments

245
00:11:29,470 --> 00:11:26,030
going to fly seven more times with

246
00:11:31,900 --> 00:11:29,480
varying fuels oxygen concentration and

247
00:11:33,940 --> 00:11:31,910
pressure in the container and of course

248
00:11:36,190 --> 00:11:33,950
the application is going to hopefully

249
00:11:41,440 --> 00:11:36,200
improve our fire safety aspects of

250
00:11:44,170 --> 00:11:41,450
spaceflight this is a shot of activating

251
00:11:51,880 --> 00:11:44,180
the ipmp or the investigations into

252
00:11:53,770 --> 00:11:51,890
polymer membrane processing STS 41 was

253
00:11:55,810 --> 00:11:53,780
although it was a short flight only four

254
00:12:02,230 --> 00:11:55,820
days in length though was the first

255
00:12:05,080 --> 00:12:02,240
flight to start medical tests for future

256
00:12:07,750 --> 00:12:05,090
extended duration orbiter flights when

257
00:12:09,460 --> 00:12:07,760
we when we attempt to fly for in the 15

258
00:12:10,990 --> 00:12:09,470
to 20 day timeframe and even though we

259
00:12:12,220 --> 00:12:11,000
had such a short flight there was of

260
00:12:15,070 --> 00:12:12,230
course they want to anchor their

261
00:12:17,950 --> 00:12:15,080
database with with the low end as well

262
00:12:20,950 --> 00:12:17,960
as the high end this is I'm hanging on

263
00:12:22,390 --> 00:12:20,960

top of the escape hole there and and tom

264
00:12:24,269 --> 00:12:22,400
is wearing me up with a blood pressure

265
00:12:27,629 --> 00:12:24,279
cuff device which we wore tom

266
00:12:31,460 --> 00:12:27,639
war for about 48 hours on the ship and

267
00:12:33,420 --> 00:12:31,470
slept with it as well too and and

268
00:12:37,139 --> 00:12:33,430
hopefully give them some good data about

269
00:12:40,129 --> 00:12:37,149
how the heart adjust to the sudden onset

270
00:12:42,389 --> 00:12:40,139
of zero gravity this is a plug for my

271
00:12:44,249 --> 00:12:42,399
alma mater they simply at the last

272
00:12:46,470 --> 00:12:44,259
minute sent me a sweatshirt which turned

273
00:12:48,480 --> 00:12:46,480
out to work pretty good to contain all

274
00:12:52,799 --> 00:12:48,490
of this extraneous hardware on this

275
00:12:56,069 --> 00:12:52,809
particular medical experiment here Shep

276
00:12:58,650 --> 00:12:56,079
and I are participating India so for 72

277
00:13:00,989 --> 00:12:58,660
and 474 it's retinal photography and

278
00:13:04,369 --> 00:13:00,999
also measuring his inner ocular pressure

279
00:13:07,259 --> 00:13:04,379
we did this three times on orbit to

280
00:13:10,889 --> 00:13:07,269
document fluid shift in the body and see

281
00:13:13,110 --> 00:13:10,899
if there was any correlation to SAS we

282
00:13:15,210 --> 00:13:13,120
all got a chance on board to work with

283
00:13:21,829 --> 00:13:15,220
three different types of laptops and we

284
00:13:27,480 --> 00:13:24,389
and we're looking at various kinds of

285
00:13:29,999 --> 00:13:27,490
displays and also cursor control devices

286
00:13:31,559 --> 00:13:30,009
here's one call of felix that will take

287
00:13:34,439 --> 00:13:31,569
the place of a trackball and may have

288
00:13:37,650 --> 00:13:34,449

some application down the road in space

289
00:13:39,269 --> 00:13:37,660
station that previous sequence there was

290
00:13:41,280 --> 00:13:39,279
the one a lot of us a lot of times we

291
00:13:43,049 --> 00:13:41,290
get accused of doing this in a hangar

292
00:13:44,670 --> 00:13:43,059
someplace in Texas and so that last

293
00:13:47,160 --> 00:13:44,680
sequence whether the disk was our proof

294
00:13:53,009 --> 00:13:47,170
that this was onboard the orbiter and in

295
00:13:55,410 --> 00:13:53,019
a micro g environment no no flight crew

296
00:13:57,449 --> 00:13:55,420
movie can be complete without somebody

297
00:14:00,240 --> 00:13:57,459
being filmed playing with her food and

298
00:14:04,740 --> 00:14:00,250
then in the in this case it was me who

299
00:14:07,319 --> 00:14:04,750
got caught by Chef up there a set of

300
00:14:11,730 --> 00:14:07,329
canned peaches that I had a lot of good

301
00:14:14,850 --> 00:14:11,740
time with Tom mentioned that the K

302
00:14:16,650 --> 00:14:14,860
provided us with a very clean vehicle I

303
00:14:18,179 --> 00:14:16,660
thought Columbia was clean on my

304
00:14:20,389 --> 00:14:18,189
previous flight but this one was even

305
00:14:22,829 --> 00:14:20,399
better we found very few extraneous

306
00:14:24,689 --> 00:14:22,839
objects a total maybe of three that we

307
00:14:29,400 --> 00:14:24,699
put in our things found in discovery bag

308
00:14:31,630 --> 00:14:29,410
and we worked we work very hard to to

309
00:14:33,070 --> 00:14:31,640
try to maintain

310
00:14:35,860 --> 00:14:33,080
maintain the cleanliness of the orbiter

311
00:14:37,660 --> 00:14:35,870
in you see Tom tucking away is a drink

312
00:14:40,840 --> 00:14:37,670
container and also gave him an

313
00:14:43,570 --> 00:14:40,850

opportunity to plug this place in

314
00:14:45,760 --> 00:14:43,580
Missouri and he can talk about that this

315
00:14:48,340 --> 00:14:45,770
is an advertisement for my hometown

316
00:14:56,730 --> 00:14:48,350
eminence Missouri and of course the red

317
00:15:01,660 --> 00:14:59,650
another important aspect of the flight

318
00:15:03,910 --> 00:15:01,670
was the time that we spent observing the

319
00:15:05,860 --> 00:15:03,920
earth beneath us as you know we use a

320
00:15:08,470 --> 00:15:05,870
variety of cameras to document changes

321
00:15:10,270 --> 00:15:08,480
in the Earth's environment we saw a

322
00:15:12,340 --> 00:15:10,280
number of them here we are coming up

323
00:15:15,550 --> 00:15:12,350
over the two besties mountains in

324
00:15:19,990 --> 00:15:15,560
northern chat in Africa this is a an

325
00:15:22,090 --> 00:15:20,000
active volcanic region on the earth we

326
00:15:25,230 --> 00:15:22,100
noticed a lot of fires throughout Africa

327
00:15:28,630 --> 00:15:25,240
and South America and changes in the

328
00:15:40,079 --> 00:15:28,640
levels of lakes and also different

329
00:15:43,259 --> 00:15:41,939
well being in a Coast Guard the only

330
00:15:44,699 --> 00:15:43,269
time they let me take pictures of the

331
00:15:47,819 --> 00:15:44,709
ocean was when we're over shallow water

332
00:15:49,650 --> 00:15:47,829
and here we are over the arabian sea

333
00:15:50,850 --> 00:15:49,660
just off somalia and if you look at the

334
00:15:52,650 --> 00:15:50,860
clothes in the middle you'll see a

335
00:15:54,299 --> 00:15:52,660
ship's wake in the Sun Glenn we also

336
00:15:55,920 --> 00:15:54,309
observed several other oceanographic

337
00:15:59,309 --> 00:15:55,930
phenomena that are really only visible

338
00:16:01,829 --> 00:15:59,319

from Earth orbit such as the Sioux loi's

339
00:16:03,869 --> 00:16:01,839
that the ocean waves and also some

340
00:16:05,100 --> 00:16:03,879
spiral Eddie's and we got to get a good

341
00:16:07,499 --> 00:16:05,110
look at some of those things while we're

342
00:16:11,730 --> 00:16:07,509
up there looking at the ocean in the Sun

343
00:16:14,069 --> 00:16:11,740
glint also took some other earth observe

344
00:16:16,739 --> 00:16:14,079
and masses we crossed Central America

345
00:16:18,689 --> 00:16:16,749
and South America quite often up there

346
00:16:21,210 --> 00:16:18,699
and a lot during our awake cycle and

347
00:16:23,400 --> 00:16:21,220
also we covered Australia quite a few

348
00:16:25,559 --> 00:16:23,410
times here's a view going over Shark Bay

349
00:16:28,530 --> 00:16:25,569
and looking in the shark bay on Western

350
00:16:31,319 --> 00:16:28,540
Australia and then we jump to a scene in

351
00:16:34,199 --> 00:16:31,329
this central area of Australia in the

352
00:16:36,119 --> 00:16:34,209
lake eyre area the lake eyre is very

353
00:16:38,100 --> 00:16:36,129
important to observe from space because

354
00:16:40,259 --> 00:16:38,110
of the different amounts of rainfall it

355
00:16:41,879 --> 00:16:40,269
gets really determines how much water

356
00:16:43,980 --> 00:16:41,889
there are in a different watershed areas

357
00:16:46,230 --> 00:16:43,990
as we've already talked about we have

358
00:16:48,360 --> 00:16:46,240
very many cameras that did we use in the

359
00:16:50,429 --> 00:16:48,370
orbiter and the next clip coming up is a

360
00:16:52,559 --> 00:16:50,439
demonstration of how we might be able to

361
00:16:54,869 --> 00:16:52,569
more automate how we use the cameras on

362
00:16:58,379 --> 00:16:54,879
the space shuttle in specific the TV

363
00:17:00,480 --> 00:16:58,389

cameras the last several days in space

364
00:17:02,309 --> 00:17:00,490
and we thought you'd like to see how

365
00:17:03,689 --> 00:17:02,319
it's been working for us George Salazar

366
00:17:05,880 --> 00:17:03,699
and his crew down there at this Johnson

367
00:17:07,590 --> 00:17:05,890
Space Center put together a system that

368
00:17:09,329 --> 00:17:07,600
allows us to control the cameras without

369
00:17:11,100 --> 00:17:09,339
using our hands we can just use voice

370
00:17:12,809 --> 00:17:11,110
commands to talk to the cameras so

371
00:17:26,189 --> 00:17:12,819
here's a quick demonstration on how they

372
00:17:59,139 --> 00:17:41,480
action right stop tilt up left stop

373
00:18:26,130 --> 00:18:11,549
stop change rate tilt down stop right

374
00:18:32,550 --> 00:18:28,290
as you can see it's a great system and

375
00:18:34,470 --> 00:18:32,560
we really like at the end on day four

376
00:18:37,500 --> 00:18:34,480
one of the one of the things you have to

377
00:18:39,870 --> 00:18:37,510
do is get ready to come home and we Bob

378
00:18:43,050 --> 00:18:39,880
and I started off the process by doing

379
00:18:45,990 --> 00:18:43,060
the FCS check out a flight control

380
00:18:48,210 --> 00:18:46,000
system the orbiter ap Bob cranked up one

381
00:18:50,370 --> 00:18:48,220
of our three auxiliary power units to

382
00:18:52,500 --> 00:18:50,380
provide hydraulic pressure out to our

383
00:18:54,840 --> 00:18:52,510
control surfaces and just like any

384
00:18:56,790 --> 00:18:54,850
airplane do to have out at ellington or

385
00:18:58,530 --> 00:18:56,800
hobby one thing's the pilots do before

386
00:19:00,000 --> 00:18:58,540
they go flying is wipe out the flight

387
00:19:02,580 --> 00:19:00,010
control system and move the control

388
00:19:05,340 --> 00:19:02,590

surfaces around and we do that just by

389
00:19:08,550 --> 00:19:05,350
letting the computers do that everything

390
00:19:14,180 --> 00:19:08,560
was extremely nominal and told us that

391
00:19:19,080 --> 00:19:16,680
know the evening before we do orbited

392
00:19:21,090 --> 00:19:19,090
Tom Bruce and I stood the arm after

393
00:19:22,760 --> 00:19:21,100
having the Intelsat array out in the

394
00:19:29,150 --> 00:19:22,770
flow frugal over a day and a half and

395
00:19:34,260 --> 00:19:31,530
we couldn't resist putting at least 1

396
00:19:41,130 --> 00:19:34,270
orbiter sunset that we saw the 60 or so

397
00:19:48,780 --> 00:19:43,020
here we are with one of our long-range

398
00:19:50,280 --> 00:19:48,790
tracking cameras coming in we had a calm

399
00:19:53,250 --> 00:19:50,290
beautiful day out there at Edwards just

400
00:19:55,140 --> 00:19:53,260
like we expected and for myself the

401
00:19:57,990 --> 00:19:55,150
first time I've ever flown this vehicle

402
00:19:59,880 --> 00:19:58,000
for real it matched very closely with

403
00:20:02,190 --> 00:19:59,890
our shuttle training airplanes that we

404
00:20:03,780 --> 00:20:02,200
have out here at ellington Field and the

405
00:20:05,610 --> 00:20:03,790
fact that I had done this about a

406
00:20:07,260 --> 00:20:05,620
thousand times prior and our shuttle

407
00:20:09,960 --> 00:20:07,270
turning airplane it felt very at ease

408
00:20:11,460 --> 00:20:09,970
with the orbiter coming into Edwards Air

409
00:20:17,580 --> 00:20:11,470
Force Base landing on the concrete

410
00:20:19,980 --> 00:20:17,590
runway out there runway 22 this test we

411
00:20:22,170 --> 00:20:19,990
did have a test of the carbon brake

412
00:20:24,180 --> 00:20:22,180
system on this particular flight for

413
00:20:27,030 --> 00:20:24,190

those most some of you may know we've

414
00:20:28,380 --> 00:20:27,040
got a new braking system here and this

415
00:20:30,780 --> 00:20:28,390
was the second flight of it and our

416
00:20:33,600 --> 00:20:30,790
objective was to put a moderate amount

417
00:20:36,510 --> 00:20:33,610
of energy into the brakes and this is a

418
00:20:38,250 --> 00:20:36,520
series of three flight tests of which

419
00:20:40,590 --> 00:20:38,260
after the third one the carbon brake

420
00:20:42,660 --> 00:20:40,600
system will be cleared for na Molina

421
00:20:44,340 --> 00:20:42,670
mission usage and appropriately having

422
00:20:45,780 --> 00:20:44,350
the Sun go through with the Ulysses

423
00:20:46,980 --> 00:20:45,790
project their landing world up we

424
00:20:49,110 --> 00:20:46,990
thought that was an appropriate thing to

425
00:20:51,150 --> 00:20:49,120
conclude also the braking system very

426
00:20:53,610 --> 00:20:51,160
very smooth to me and the orbiter II

427
00:20:58,980 --> 00:20:53,620
responded just like it did in flight to

428
00:21:00,990 --> 00:20:58,990
exactly to my expectations and was a

429
00:21:02,910 --> 00:21:01,000
rule fifteen thousand foot runway and we

430
00:21:04,440 --> 00:21:02,920
landed about 2,300 feet down the runway

431
00:21:09,090 --> 00:21:04,450
with about a nine thousand foot rolled

432
00:21:10,440 --> 00:21:09,100
up and as I turned to my crew just

433
00:21:12,210 --> 00:21:10,450
before we walked out the white room they

434
00:21:13,650 --> 00:21:12,220
performed perfectly in my opinion for

435
00:21:15,390 --> 00:21:13,660
four days and I said this is the last

436
00:21:19,140 --> 00:21:15,400
time you guys can mess up and fall down

437
00:21:21,330 --> 00:21:19,150
the stairs and as you can see they did

438
00:21:23,040 --> 00:21:21,340

did that just as equally well as they

439
00:21:25,020 --> 00:21:23,050
did everything else for the previous

440
00:21:27,300 --> 00:21:25,030
four days in the previous nine months