1
00:00:09,430 --> 00:00:06,389
the international space station

2
00:00:12,549 --> 00:00:09,440
currently flying 250 miles over china

3
00:00:14,470 --> 00:00:12,559
and an orbit inclined 51.6 degrees to

4
00:00:17,269 --> 00:00:14,480
either side of the equator now we have

5
00:00:20,390 --> 00:00:17,279
physical separation we have physical

6
00:00:49,029 --> 00:00:20,400
separation undocking confirmed at

7
00:00:54,069 --> 00:00:50,790
speaking in russian to russian flight

8
00:00:58,069 --> 00:00:54,079
controllers uh relaying parameters and

9
00:01:01,110 --> 00:00:58,079
soyuz systems status

10
00:01:03,590 --> 00:01:01,120
again the soyuz spacecraft undocking

11
00:01:05,350 --> 00:01:03,600
the tma-03m flying free from the

12
00:01:08,469 --> 00:01:05,360
international space station undocking

13
00:01:09,750 --> 00:01:08,479

occurring at 11 47 and 50 seconds p.m

14
00:01:12,149 --> 00:01:09,760
central time

15
00:01:15,990 --> 00:01:12,159
as the soyuz and the international space

16
00:01:17,109 --> 00:01:16,000
station flew 250 miles over china

17
00:01:19,030 --> 00:01:17,119
david

18
00:01:20,789 --> 00:01:19,040
nine

19
00:01:22,230 --> 00:01:20,799
okay

20
00:01:23,030 --> 00:01:22,240
we're gonna get there

21
00:01:30,789 --> 00:01:23,040
yep

22
00:01:35,990 --> 00:01:32,710
is currently activating the digital

23
00:01:39,109 --> 00:01:36,000
autopilot system on this spacecraft

24
00:01:40,710 --> 00:01:39,119
for a test of the systems associated

25
00:01:42,069 --> 00:01:40,720
with that

26
00:01:42,870 --> 00:01:42,079
component

27
00:01:45,030 --> 00:01:42,880
again

28
00:01:47,910 --> 00:01:45,040
this is a test that was pre-planned

29
00:01:49,510 --> 00:01:47,920
designed to test the system in advance

30
00:01:52,149 --> 00:01:49,520
of its use in the future should it

31
00:01:54,789 --> 00:01:52,159
become necessary for a manual docking of

32
00:01:56,310 --> 00:01:54,799
the soyuz to

33
00:01:57,910 --> 00:01:56,320
the international space station's

34
00:02:00,389 --> 00:01:57,920
russian segment

35
00:02:03,350 --> 00:02:00,399
civilization yes

36
00:02:17,910 --> 00:02:03,360
go ahead and activate it

37
00:02:17,920 --> 00:02:28,309
10 meters

38
00:02:33,509 --> 00:02:31,750

um make sure that the target is in the

39
00:02:42,949 --> 00:02:33,519
uh

40
00:03:16,309 --> 00:02:45,430
in the 10 degree range

41
00:03:38,789 --> 00:03:30,789
okay

42
00:03:38,799 --> 00:03:42,470
two and a half squared

43
00:03:46,309 --> 00:03:44,309
you're listening to uh soyuz commander

44
00:03:49,509 --> 00:03:46,319
alex kononenko

45
00:03:52,550 --> 00:03:49,519
relaying data from his digital autopilot

46
00:03:55,670 --> 00:03:52,560
system on the soyuz tma-03m again part

47
00:03:57,990 --> 00:03:55,680
of a test to validate the

48
00:04:00,630 --> 00:03:58,000
capability of this system for manual

49
00:04:02,390 --> 00:04:00,640
dockings in the future soyuz in the

50
00:04:06,149 --> 00:04:02,400
process of executing a pair of

51
00:04:08,710 --> 00:04:06,159
separation burns uh small thruster fire

52
00:04:11,509 --> 00:04:08,720
firings that will ultimately enable the

53
00:04:13,270 --> 00:04:11,519
soyuz to drift to a distance of about 12

54
00:04:17,110 --> 00:04:13,280
kilometers from the international space

55
00:04:20,150 --> 00:04:17,120
station for its deorbit burn at 2 19 a.m

56
00:04:22,230 --> 00:04:20,160
central time 3 19 a.m eastern time the

57
00:04:25,189 --> 00:04:22,240
start of the trek home for pettit

58
00:04:26,070 --> 00:04:25,199
kononenko and kuipers

59
00:04:29,030 --> 00:04:26,080
chris

60
00:04:31,990 --> 00:04:29,040
are you popping yes

61
00:04:34,230 --> 00:04:32,000
yes we're approaching the range of 1.5

62
00:04:54,070 --> 00:04:34,240
uh squares

63
00:05:00,870 --> 00:04:56,790

okay a hand controller uh away from

64
00:05:03,590 --> 00:05:00,880
myself range is 1.5 squares which is 45

65
00:05:09,510 --> 00:05:03,600
45 meters

66
00:05:14,230 --> 00:05:11,670
the soyuz is currently in a station

67
00:05:16,629 --> 00:05:14,240
keeping maneuver uh for this digital

68
00:05:18,390 --> 00:05:16,639
autopilot test that kononenko is uh

69
00:05:20,070 --> 00:05:18,400
providing uh for the russian flight

70
00:05:22,469 --> 00:05:20,080
control team and the engineers on the

71
00:05:27,590 --> 00:05:22,479
ground at the russian mission control

72
00:05:31,749 --> 00:05:29,510
now you can see uh the roll maneuver

73
00:05:33,990 --> 00:05:31,759
that is being executed by kononenko this

74
00:05:37,749 --> 00:05:34,000
in preparation for a second and final

75
00:05:39,749 --> 00:05:37,759
separation burn that will begin the

76
00:05:43,189 --> 00:05:39,759
ability of the soyuz vehicle to drift

77
00:05:45,110 --> 00:05:43,199
away from the station for the last time

78
00:05:47,990 --> 00:05:45,120
left on board the station

79
00:05:50,390 --> 00:05:48,000
the new expedition 32 commander gennady

80
00:05:53,110 --> 00:05:50,400
padalka expedition 32 now formally

81
00:05:55,430 --> 00:05:53,120
underway at the time of undocking

82
00:05:57,670 --> 00:05:55,440
joined by nasa flight engineer joe acaba

83
00:05:59,909 --> 00:05:57,680
and russian flight engineer sergey revin

84
00:06:02,150 --> 00:05:59,919
who will have the station to themselves

85
00:06:04,870 --> 00:06:02,160
for the next two weeks until new

86
00:06:06,710 --> 00:06:04,880
crewmates arrive in the form of suni

87
00:06:09,670 --> 00:06:06,720
williams yuri malenchenko and aki

88
00:06:09,680 --> 00:06:13,110

to the left

89
00:06:18,469 --> 00:06:15,830
i'm releasing we have the indication

90
00:06:20,550 --> 00:06:18,479
that depot is operating now you can see

91
00:06:22,550 --> 00:06:20,560
uh through the digital autopilot uh a

92
00:06:25,909 --> 00:06:22,560
yaw maneuver that is being executed by

93
00:06:31,749 --> 00:06:28,950
five seconds we have the

94
00:06:35,830 --> 00:06:31,759
operation approaching center route to

95
00:06:38,309 --> 00:06:35,840
the right for five seconds

96
00:06:39,990 --> 00:06:38,319
we have the most sensible

97
00:06:44,710 --> 00:06:40,000
operation

98
00:06:44,720 --> 00:06:52,950
or burned

99
00:06:59,110 --> 00:06:56,550
range is a little bit

100
00:07:14,950 --> 00:06:59,120
more than a little bit greater than 1.5

101
00:07:19,909 --> 00:07:17,110
digital autopilot test by kononenko

102
00:07:22,550 --> 00:07:19,919
continues uh the soyuz maintaining a

103
00:07:24,870 --> 00:07:22,560
station keeping posture

104
00:07:27,029 --> 00:07:24,880
a second separation burn and a final

105
00:07:29,270 --> 00:07:27,039
separation burn from the station

106
00:07:31,110 --> 00:07:29,280
scheduled about three minutes from now

107
00:07:33,990 --> 00:07:31,120
five seconds

108
00:07:36,230 --> 00:07:34,000
ten seconds

109
00:07:39,909 --> 00:07:36,240
with the motion down

110
00:07:39,919 --> 00:07:56,710
please

111
00:07:56,720 --> 00:08:10,710
is

112
00:08:20,390 --> 00:08:13,990
control it down are executing

113
00:08:32,149 --> 00:08:22,469

operation is no longer eliminated we

114
00:08:37,430 --> 00:08:33,670
i'm going to

115
00:08:44,149 --> 00:08:37,440
bring the uh docking assembly into the

116
00:08:49,670 --> 00:08:45,630
um

117
00:08:51,990 --> 00:08:49,680
125 or 1.5 squares

118
00:09:02,150 --> 00:08:52,000
should be your range

119
00:09:07,750 --> 00:09:04,710
this view now coming uh in your upper

120
00:09:10,470 --> 00:09:07,760
left-hand corner from an external camera

121
00:09:12,949 --> 00:09:10,480
on the soyuz vehicle uh looking uh

122
00:09:15,590 --> 00:09:12,959
directly at the rassvet module

123
00:09:17,590 --> 00:09:15,600
that uh the spacecraft separated from

124
00:09:19,430 --> 00:09:17,600
about nine minutes ago

125
00:09:23,190 --> 00:09:19,440
undocking again occurring just a few

126
00:09:25,590 --> 00:09:23,200
seconds before 11 48 pm central time the

127
00:09:29,670 --> 00:09:25,600
undocking occurring over china at an

128
00:09:31,030 --> 00:09:29,680
altitude of 250 statute miles kononenko

129
00:09:34,310 --> 00:09:31,040
fired

130
00:09:37,269 --> 00:09:34,320
the thrusters on the soyuz vehicle

131
00:09:39,910 --> 00:09:37,279
to back away from the station uh to a

132
00:09:42,630 --> 00:09:39,920
distance of about 50 meters for the

133
00:09:45,430 --> 00:09:42,640
checkout of a digital autopilot system

134
00:09:48,310 --> 00:09:45,440
on the soyuz that one day may be used

135
00:09:51,910 --> 00:09:48,320
for manual redocking of a soyuz vehicle

136
00:09:56,389 --> 00:09:53,750
standing by for a second and final

137
00:09:59,350 --> 00:09:56,399
separation burn to maintain an opening

138
00:10:01,110 --> 00:09:59,360

distance for the soyuz to a range of

139
00:10:03,670 --> 00:10:01,120
about 12 kilometers away from the

140
00:10:06,310 --> 00:10:03,680
station where the deorbit burn of the

141
00:10:08,389 --> 00:10:06,320
soyuz will take place about two hours

142
00:10:11,509 --> 00:10:08,399
and 22 minutes from now

143
00:10:12,790 --> 00:10:11,519
china went out of our way a little bit

144
00:10:14,550 --> 00:10:12,800
in the pitch

145
00:10:18,630 --> 00:10:14,560
other than that i think everything was

146
00:10:22,470 --> 00:10:19,670
about

147
00:10:25,590 --> 00:10:22,480
0.8 of a square

148
00:10:31,590 --> 00:10:28,150
backing out

149
00:10:34,790 --> 00:10:31,600
copy meanwhile down in kazakhstan

150
00:10:37,190 --> 00:10:34,800
helicopters are on route part of the

151
00:10:39,110 --> 00:10:37,200
russian search and recovery forces known

152
00:10:41,190 --> 00:10:39,120
as rose aviatsa

153
00:10:43,509 --> 00:10:41,200
they are on route from the staging city

154
00:10:45,030 --> 00:10:43,519
of karaganda down

155
00:10:47,670 --> 00:10:45,040
to either

156
00:10:49,910 --> 00:10:47,680
jes khazgan a town to the southwest of

157
00:10:52,389 --> 00:10:49,920
carraganda at a distance of about 460

158
00:10:55,269 --> 00:10:52,399
kilometers where the helicopters will be

159
00:10:57,670 --> 00:10:55,279
refueled several of the helicopters

160
00:11:00,069 --> 00:10:57,680
will be airborne within the next 20

161
00:11:02,230 --> 00:11:00,079
minutes or so from karaganda directly to

162
00:11:05,030 --> 00:11:02,240
the prime landing site they'll all

163
00:11:08,630 --> 00:11:05,040

converge at the time that the soyuz

164
00:11:12,069 --> 00:11:08,640
vehicle arrives under its main parachute

165
00:11:15,590 --> 00:11:12,079
for touchdown that is scheduled at 3 14

166
00:11:17,750 --> 00:11:15,600
in 34 seconds am central time and right

167
00:11:19,110 --> 00:11:17,760
now the second separation burn has now

168
00:11:20,550 --> 00:11:19,120
been executed by

169
00:11:24,150 --> 00:11:20,560
kononenko

170
00:11:25,670 --> 00:11:24,160
the soyuz tma-03m now drifting to a safe

171
00:11:28,069 --> 00:11:25,680
distance away from the international

172
00:11:31,350 --> 00:11:28,079
space station for the deorbit burn that

173
00:11:33,509 --> 00:11:31,360
is scheduled at 2 19 and 14 seconds am

174
00:11:35,509 --> 00:11:33,519
central time it now will be a four

175
00:11:37,750 --> 00:11:35,519
minute 15 second

176
00:11:38,430 --> 00:11:37,760
breaking maneuver to slow the soyuz down

177
00:11:41,590 --> 00:11:38,440
by

178
00:11:43,670 --> 00:11:41,600
115.2 meters per second enabling it to

179
00:11:45,350 --> 00:11:43,680
drop out of orbit for its descent back

180
00:11:48,870 --> 00:11:45,360
into the earth's atmosphere and a

181
00:11:52,230 --> 00:11:48,880
touchdown on the south eastern step of

182
00:11:54,870 --> 00:11:52,240
kazakhstan completing 193 days in space

183
00:11:57,590 --> 00:11:54,880
for alec kononenko don pettit and andre

184
00:11:59,590 --> 00:11:57,600
kuipers 191 days onboard the

185
00:12:01,910 --> 00:11:59,600
international space station

186
00:12:03,910 --> 00:12:01,920
expedition 32 now officially underway on

187
00:12:05,590 --> 00:12:03,920
the complex under the command of the

188
00:12:07,509 --> 00:12:05,600

first three-time commander of the

189
00:12:11,670 --> 00:12:07,519
international space station gennady

190
00:12:13,030 --> 00:12:11,680
padalka a square and a half of 13 this

191
00:12:15,910 --> 00:12:13,040
one

192
00:12:17,910 --> 00:12:15,920
three no not illuminated accelerometer

193
00:12:21,990 --> 00:12:17,920
not eliminated

194
00:12:40,230 --> 00:12:24,069
program and

195
00:12:48,230 --> 00:12:43,509
e1 go ahead and send that face and work

196
00:13:00,629 --> 00:12:49,829
e6

197
00:13:15,829 --> 00:13:02,550
l2

198
00:13:20,310 --> 00:13:18,870
we're passing by atv andre by the way so

199
00:13:22,310 --> 00:13:20,320
we're v18

200
00:13:24,949 --> 00:13:22,320
still needs to be sent

201
00:13:27,750 --> 00:13:24,959
switch over and work

202
00:13:29,750 --> 00:13:27,760
andre kononenko reminding his board

203
00:13:32,710 --> 00:13:29,760
engineer andre kuipers who is strapped

204
00:13:35,829 --> 00:13:32,720
into the seat to kononenko's left in the

205
00:13:39,670 --> 00:13:35,839
descent module of the soyuz spacecraft

206
00:13:41,990 --> 00:13:39,680
to take a look one final look at the

207
00:13:43,750 --> 00:13:42,000
johannes kepler automated transfer

208
00:13:47,590 --> 00:13:43,760
vehicle that has made it to the aft end

209
00:13:52,949 --> 00:13:50,790
the uh soyuz is phasing directly below

210
00:13:55,350 --> 00:13:52,959
and uh behind the international space

211
00:13:57,430 --> 00:13:55,360
station ultimately to a distance of 12

212
00:13:59,590 --> 00:13:57,440
kilometers for the deorbit burn that

213
00:14:11,509 --> 00:13:59,600

will be coming up about two hours and 18

214
00:14:11,519 --> 00:14:32,389
166 167 pressure

215
00:14:36,310 --> 00:14:33,350
please

216
00:14:38,870 --> 00:14:36,320
be prepared to start

217
00:14:40,389 --> 00:14:38,880
descent and re-entry up

218
00:14:44,470 --> 00:14:40,399
we will be ready

219
00:14:46,230 --> 00:14:44,480
for the soyuz commander alex kononenko

220
00:14:48,750 --> 00:14:46,240
at the time of landing here in the next

221
00:14:52,310 --> 00:14:48,760
few hours will have wrapped up

222
00:14:54,949 --> 00:14:52,320
392 days in space on his two flights

223
00:14:56,470 --> 00:14:54,959
he flew as part of expedition 17 four

224
00:14:59,269 --> 00:14:56,480
years ago

225
00:15:02,949 --> 00:14:59,279
kononenko will wind up in 14th place on

226
00:15:05,430 --> 00:15:02,959
the all-time list for space endurance

227
00:15:07,750 --> 00:15:05,440
don pettit uh with the completion of

228
00:15:10,550 --> 00:15:07,760
this mission will rank fourth on the

229
00:15:13,350 --> 00:15:10,560
all-time list for most time in space by

230
00:15:17,110 --> 00:15:13,360
an american astronaut

231
00:15:19,670 --> 00:15:17,120
his 370 days in space puts him behind

232
00:15:22,230 --> 00:15:19,680
mike fink peggy whitson and mike foale

233
00:15:24,150 --> 00:15:22,240
on the all-time us space endurance list

234
00:15:27,509 --> 00:15:24,160
andre kuipers of the european space

235
00:15:30,710 --> 00:15:27,519
agency completing 204 days in space on

236
00:15:33,670 --> 00:15:30,720
his two flights having flown

237
00:15:36,150 --> 00:15:33,680
up and down on a soyuz flight

238
00:15:38,829 --> 00:15:36,160

for the european space agency 11 days on

239
00:15:41,350 --> 00:15:38,839
his initial mission back in

240
00:15:43,189 --> 00:15:41,360
2004 make sure you know

241
00:15:45,910 --> 00:15:43,199
what to expect

242
00:15:47,670 --> 00:15:45,920
and sasha did you uh watch telemetry

243
00:15:49,509 --> 00:15:47,680
during the test

244
00:15:53,990 --> 00:15:49,519
yes we did

245
00:15:58,710 --> 00:15:56,150
right now we're analyzing telemetry that

246
00:16:00,949 --> 00:16:00,069
uh we

247
00:16:02,150 --> 00:16:00,959
think

248
00:16:04,069 --> 00:16:02,160
uh

249
00:16:05,670 --> 00:16:04,079
from what we saw through the tv cameras

250
00:16:07,350 --> 00:16:05,680
during the separation of the vehicle

251
00:16:08,629 --> 00:16:07,360
everything looks good

252
00:16:10,230 --> 00:16:08,639
and

253
00:16:13,189 --> 00:16:10,240
preliminary

254
00:16:16,629 --> 00:16:13,199
parameters look good for the test

255
00:16:18,470 --> 00:16:16,639
okay and was it recorded

256
00:16:26,470 --> 00:16:18,480
it was recorded

257
00:16:30,389 --> 00:16:28,470
alec kononenko the soyuz commander

258
00:16:32,230 --> 00:16:30,399
strapped into the center seat of the

259
00:16:34,870 --> 00:16:32,240
descent module the center section of the

260
00:16:37,030 --> 00:16:34,880
soyuz spacecraft

261
00:16:38,389 --> 00:16:37,040
receiving good reports from the russian

262
00:16:41,110 --> 00:16:38,399
flight controllers at the russian

263
00:16:43,509 --> 00:16:41,120

mission control center outside moscow on

264
00:16:47,030 --> 00:16:43,519
the completion of that digital autopilot

265
00:16:49,110 --> 00:16:47,040
test once again verifying a component

266
00:16:51,030 --> 00:16:49,120
an upgraded component in the soyuz

267
00:16:53,110 --> 00:16:51,040
spacecraft that would enable a

268
00:16:55,030 --> 00:16:53,120
re-docking or a manual docking of a

269
00:16:56,150 --> 00:16:55,040
soyuz to the russian segment of the

270
00:16:58,310 --> 00:16:56,160
station

271
00:17:00,870 --> 00:16:58,320
in the unlikely event of the failure of

272
00:17:03,910 --> 00:17:00,880
an automated cores system

273
00:17:06,789 --> 00:17:03,920
on board the complex this would enable a

274
00:17:09,750 --> 00:17:06,799
soyuz commander to manually fly the

275
00:17:12,470 --> 00:17:09,760
soyuz vehicle in for a docking in a much

276
00:17:14,949 --> 00:17:12,480
more facile manner than before without

277
00:17:27,429 --> 00:17:14,959
the station crew having uh to tend to

278
00:17:27,439 --> 00:17:59,190
flight control room

279
00:18:05,110 --> 00:18:03,270
the soyuz tma-03m visible from cameras

280
00:18:06,870 --> 00:18:05,120
on the international space station as

281
00:18:08,950 --> 00:18:06,880
well as the complex

282
00:18:11,990 --> 00:18:08,960
flying over the north pacific at an

283
00:18:14,150 --> 00:18:12,000
altitude of 250 statute miles both

284
00:18:16,070 --> 00:18:14,160
spacecraft beginning a northwest to

285
00:18:17,350 --> 00:18:16,080
southeasterly track

286
00:18:20,070 --> 00:18:17,360
that will carry

287
00:18:27,110 --> 00:18:20,080
the two vehicles into an orbital sunset

288
00:18:27,120 --> 00:19:00,390

a little now

289
00:19:05,350 --> 00:19:03,190
yeah i think so um let me just double

290
00:19:08,470 --> 00:19:05,360
check on that but i think um we're good

291
00:19:11,110 --> 00:19:08,480
with that and you can press on for the

292
00:19:12,870 --> 00:19:11,120
rest of the free flight

293
00:19:13,750 --> 00:19:12,880
with the push to talk button to talk to

294
00:19:16,150 --> 00:19:13,760
us

295
00:19:48,070 --> 00:19:16,160
okay and we're releasing the transmit

296
00:19:53,510 --> 00:19:51,190
the soyuz tma-03m phasing away from the

297
00:19:57,110 --> 00:19:53,520
international space station in the

298
00:19:59,190 --> 00:19:57,120
descent module the center section

299
00:20:01,830 --> 00:19:59,200
ally kononenko the soyuz commander

300
00:20:03,990 --> 00:20:01,840
flying under the call sign of antares

301
00:20:06,470 --> 00:20:04,000
which was also the name of the lunar

302
00:20:09,669 --> 00:20:06,480
module that landed on the moon on apollo

303
00:20:13,590 --> 00:20:09,679
14 in february of 1971 with alan shepard

304
00:20:17,750 --> 00:20:16,070
the top section of the soyuz that bulba

305
00:20:19,750 --> 00:20:17,760
section that's the orbital module and

306
00:20:21,750 --> 00:20:19,760
the lower section the instrumentation

307
00:20:23,909 --> 00:20:21,760
and propulsion module with the solar

308
00:20:26,870 --> 00:20:23,919
arrays those three sections will

309
00:20:30,390 --> 00:20:26,880
separate in a pyrotechnic separation of

310
00:20:32,950 --> 00:20:30,400
the modules at 2 47 am

311
00:20:34,549 --> 00:20:32,960
central time about 28 minutes after the

312
00:20:36,310 --> 00:20:34,559
deorbit burn

313
00:20:37,590 --> 00:20:36,320

the separation of the modules will

314
00:20:40,149 --> 00:20:37,600
enable the

315
00:20:42,549 --> 00:20:40,159
descent module to be reoriented with the

316
00:20:45,190 --> 00:20:42,559
heat shield flying first

317
00:20:48,710 --> 00:20:45,200
into the atmosphere to ablate or bleed

318
00:20:50,710 --> 00:20:48,720
off all of the heat um that will be

319
00:20:52,149 --> 00:20:50,720
generated by the high speed reentry of

320
00:20:54,149 --> 00:20:52,159
the soyuz back into the earth's

321
00:20:56,470 --> 00:20:54,159
atmosphere

322
00:20:58,390 --> 00:20:56,480
atmospheric entry reaching the first

323
00:21:01,430 --> 00:20:58,400
traces of the earth's atmosphere at an

324
00:21:03,029 --> 00:21:01,440
altitude of about 400 000 feet will

325
00:21:07,110 --> 00:21:03,039
occur at

326
00:21:08,789 --> 00:21:07,120
2 50 a.m central time

327
00:21:11,510 --> 00:21:08,799
that will be followed by the command to

328
00:21:14,230 --> 00:21:11,520
uh begin the sequence of parachute

329
00:21:17,909 --> 00:21:14,240
deployments first a drogue chute that

330
00:21:22,390 --> 00:21:17,919
will deploy the drogue chute will

331
00:21:23,190 --> 00:21:22,400
can't the soyuz spacecraft at an angle

332
00:21:24,549 --> 00:21:23,200
the

333
00:21:26,950 --> 00:21:24,559
drogue chute

334
00:21:29,190 --> 00:21:26,960
which measures about 24 square meters

335
00:21:32,470 --> 00:21:29,200
will slow the soyuz down from a descent

336
00:21:34,710 --> 00:21:32,480
rate of 230 meters per second to just 80

337
00:21:37,430 --> 00:21:34,720
meters per second that will be followed

338
00:21:39,510 --> 00:21:37,440

by the release of the main parachute

339
00:21:41,590 --> 00:21:39,520
covering an area of about a thousand

340
00:21:44,549 --> 00:21:41,600
meters it slows the soyuz to a descent

341
00:21:46,390 --> 00:21:44,559
rate of 7.2 meters per second the

342
00:21:48,549 --> 00:21:46,400
harness is first allowing the soyuz to

343
00:21:51,110 --> 00:21:48,559
descend at an angle of 30 degrees to

344
00:21:53,270 --> 00:21:51,120
expel heat and then shifting the soyuz

345
00:21:56,230 --> 00:21:53,280
to a straight vertical descent

346
00:21:58,149 --> 00:21:56,240
just seconds before touchdown of course

347
00:22:00,630 --> 00:21:58,159
you are familiar with the firing of the

348
00:22:01,669 --> 00:22:00,640
soft landing engines one final braking

349
00:22:03,110 --> 00:22:01,679
maneuver

350
00:22:05,990 --> 00:22:03,120
that will

351
00:22:07,750 --> 00:22:06,000
slow the soyuz down and enable it to

352
00:22:10,310 --> 00:22:07,760
touch down on the southeast step of

353
00:22:11,430 --> 00:22:10,320
kazakhstan with the landing site about