



1
00:00:19,830 --> 00:00:18,710
modes are showing fly around

2
00:00:21,750 --> 00:00:19,840
and

3
00:00:23,429 --> 00:00:21,760
lock on

4
00:00:25,670 --> 00:00:23,439
beautiful view there of the soyuz

5
00:00:27,429 --> 00:00:25,680
spacecraft as you've heard about 200

6
00:00:29,910 --> 00:00:27,439
meters out from the international space

7
00:00:33,350 --> 00:00:29,920
station and the coors automated docking

8
00:00:34,870 --> 00:00:33,360
system uh performing well that is uh

9
00:00:36,950 --> 00:00:34,880
going to be used for the approach to the

10
00:00:38,229 --> 00:00:36,960
international space station if necessary

11
00:00:40,229 --> 00:00:38,239
that crews on board the international

12
00:00:42,830 --> 00:00:40,239
space station are monitoring and ready

13
00:00:45,430 --> 00:00:42,840

to jump in with manual docking system if

14

00:00:46,869 --> 00:00:45,440

necessary although based on what we see

15

00:00:48,470 --> 00:00:46,879

visually

16

00:00:50,549 --> 00:00:48,480

we are getting close to the end of the

17

00:00:52,069 --> 00:00:50,559

fly around

18

00:00:55,910 --> 00:00:52,079

and uh

19

00:01:00,310 --> 00:00:57,910

yeah i understand but i'm just checking

20

00:01:09,670 --> 00:01:00,320

with you to see if you'd like us to

21

00:01:14,789 --> 00:01:12,870

range rate is zero decimal zero seven

22

00:01:21,590 --> 00:01:14,799

so almost continuously

23

00:01:25,429 --> 00:01:23,670

zero and we are in station keeping

24

00:01:27,749 --> 00:01:25,439

station keeping enabled and station

25

00:01:30,950 --> 00:01:27,759

keeping we're starting to

26

00:01:35,030 --> 00:01:30,960

kind of maneuver a tiny bit

27

00:01:38,149 --> 00:01:35,040

and a 360 degree scan

28

00:01:40,390 --> 00:01:38,159

essence has been formed

29

00:01:42,789 --> 00:01:40,400

which is what we always see when we

30

00:01:44,550 --> 00:01:42,799

approach from nader

31

00:01:51,030 --> 00:01:44,560

because we're working with a different

32

00:01:53,830 --> 00:01:52,630

as you've heard there the crew reporting

33

00:01:56,230 --> 00:01:53,840

they are now in

34

00:01:57,830 --> 00:01:56,240

station keeping taking a brief pause

35

00:01:59,510 --> 00:01:57,840

before they'll make their final approach

36

00:02:01,830 --> 00:01:59,520

to the international space station we're

37

00:02:04,469 --> 00:02:01,840

about 16 minutes from the plan docking

38

00:02:06,550 --> 00:02:04,479

time all the activities going well the

39

00:02:08,869 --> 00:02:06,560

vehicle is performing well

40

00:02:10,389 --> 00:02:08,879

on the station basically we're

41

00:02:12,070 --> 00:02:10,399

stabilizing

42

00:02:13,750 --> 00:02:12,080

motion now

43

00:02:16,070 --> 00:02:13,760

as expected

44

00:02:17,589 --> 00:02:16,080

antenna switching have

45

00:02:20,229 --> 00:02:17,599

been completed

46

00:02:24,630 --> 00:02:20,239

station keeping final approach

47

00:02:28,390 --> 00:02:27,030

we haven't really gained much

48

00:02:30,470 --> 00:02:28,400

rate

49

00:02:32,550 --> 00:02:30,480

range is 188

50

00:02:33,430 --> 00:02:32,560

range rates

51

00:02:46,730 --> 00:02:33,440

dead

52

00:02:50,710 --> 00:02:48,710

[Music]

53

00:02:53,430 --> 00:02:50,720

you want us to do that on time you're

54

00:02:58,550 --> 00:02:53,440

going to enable final approach now from

55

00:03:03,830 --> 00:03:00,790

okay so you're going now

56

00:03:06,390 --> 00:03:03,840

yes your goal now to enable

57

00:03:08,710 --> 00:03:06,400

from the run that would display

58

00:03:11,670 --> 00:03:08,720

previously okay which two run do we

59

00:03:11,680 --> 00:03:15,030

13 16

60

00:03:33,830 --> 00:03:16,229

45.

61

00:03:39,270 --> 00:03:36,710

and we are accelerating

62

00:03:40,710 --> 00:03:39,280

to close with the station

63

00:03:43,430 --> 00:03:40,720

this is

64

00:03:46,240 --> 00:03:43,440

ready and we have that eliminated

65

00:03:55,670 --> 00:03:46,250

okay so all nominal

66

00:03:57,910 --> 00:03:55,680

[Music]

67

00:03:59,509 --> 00:03:57,920

while we're just starting to do the

68

00:04:02,630 --> 00:03:59,519

final approach can you maximize the

69

00:04:06,470 --> 00:04:02,640

picture so it would be full screen

70

00:04:09,270 --> 00:04:06,480

and on and pull on the left could you

71

00:04:11,509 --> 00:04:09,280

switch agc mode until we

72

00:04:14,070 --> 00:04:11,519

actually get a better picture

73

00:04:16,069 --> 00:04:14,080

but of course in the end it needs to be

74

00:04:26,469 --> 00:04:16,079

as best for you as possible

75

00:04:26,479 --> 00:04:30,280

it will take

76

00:04:30,290 --> 00:04:34,790

[Music]

77

00:04:39,110 --> 00:04:36,950

from the tv display so we'll try to

78

00:04:43,540 --> 00:04:39,120

switch between the hdc mode in the

79

00:04:46,310 --> 00:04:43,550

meantime we have a range of 127 meters

80

00:04:48,469 --> 00:04:46,320

[Music]

81

00:04:50,390 --> 00:04:48,479

and the range rate is zero decimal 68

82

00:04:52,150 --> 00:04:50,400

meters per second okay and uh you've

83

00:04:54,950 --> 00:04:52,160

switched and no

84

00:04:57,350 --> 00:04:54,960

yeah you think no joy yeah no this is

85

00:05:01,270 --> 00:04:57,360

not better

86

00:05:04,480 --> 00:05:01,280

yeah i was talking about the r5 command

87

00:05:04,490 --> 00:05:17,110

[Music]

88

00:05:20,870 --> 00:05:18,469

dramatic view from the international

89

00:05:25,830 --> 00:05:20,880

space station looking back towards the

90

00:05:29,350 --> 00:05:27,430

the two vehicles now moving over the

91

00:05:31,189 --> 00:05:29,360

northern atlantic ocean more detail is

92

00:05:33,110 --> 00:05:31,199

in our commentary maybe you know what

93

00:05:35,590 --> 00:05:33,120

why don't we just turn on the floodlight

94

00:05:37,270 --> 00:05:35,600

and be done with this

95

00:05:39,510 --> 00:05:37,280

okay 92 meters

96

00:05:40,550 --> 00:05:39,520

zero decimal 45 meters per second orange

97

00:05:43,990 --> 00:05:40,560

rate

98

00:05:46,390 --> 00:05:44,000

for me this is a great view

99

00:05:47,510 --> 00:05:46,400

i can't think of a better uh way to see

100

00:05:50,550 --> 00:05:47,520

it

101
00:05:53,510 --> 00:05:50,560

but perhaps for you on the tv

102
00:05:58,550 --> 00:05:53,520

a video image you could see it better

103
00:06:02,950 --> 00:06:00,309

as you heard there the range 83 meters

104
00:06:06,150 --> 00:06:02,960

the two vehicles traveling at about 420

105
00:06:10,230 --> 00:06:06,160

kilometers above the earth or about 260

106
00:06:10,240 --> 00:06:16,790

maybe it's just us

107
00:06:16,800 --> 00:06:26,070

and on the left

108
00:06:31,029 --> 00:06:28,790

once we approach 50 meter mark

109
00:06:33,270 --> 00:06:31,039

we're already set up to go

110
00:06:35,670 --> 00:06:33,280

so we'll keep monitoring the status of

111
00:06:36,550 --> 00:06:35,680

antenna retraction and this is back to

112
00:06:37,510 --> 00:06:36,560

initial

113
00:06:40,070 --> 00:06:37,520

score

114

00:06:43,430 --> 00:06:40,080

zero decimal 32 meters per second range

115

00:06:46,330 --> 00:06:43,440

rate visually confirmed

116

00:06:51,830 --> 00:06:46,340

zero decimal let me see

117

00:06:53,909 --> 00:06:51,840

[Music]

118

00:06:54,950 --> 00:06:53,919

the target is now

119

00:06:58,070 --> 00:06:54,960

getting

120

00:06:59,830 --> 00:06:58,080

to be visible not great but we can

121

00:07:03,510 --> 00:06:59,840

discern it

122

00:07:05,589 --> 00:07:03,520

62 meters range is there a decimal 26

123

00:07:07,510 --> 00:07:05,599

meters per second goes so one two three

124

00:07:08,870 --> 00:07:07,520

four ready

125

00:07:10,950 --> 00:07:08,880

everything's numb as you've heard there

126
00:07:12,950 --> 00:07:10,960
the crew reporting that

127
00:07:14,070 --> 00:07:12,960
closing in at a rate of 0.26 meters per

128
00:07:16,550 --> 00:07:14,080
second

129
00:07:18,230 --> 00:07:16,560
62 meters out from the space station

130
00:07:22,790 --> 00:07:18,240
slowly closing in on the orbiting

131
00:07:28,440 --> 00:07:25,909
55 meters zero decimal 21 meters per

132
00:07:40,230 --> 00:07:28,450
second

133
00:07:47,110 --> 00:07:43,589
everything is nominal range is 52 meters

134
00:07:49,990 --> 00:07:47,120
and standing by four

135
00:07:52,070 --> 00:07:50,000
antenna retraction command to be

136
00:07:53,589 --> 00:07:52,080
executed

137
00:07:56,550 --> 00:07:53,599
okay so

138
00:07:57,660 --> 00:07:56,560

one two three and four are in alaska

139

00:08:06,880 --> 00:07:57,670

sudan

140

00:08:06,890 --> 00:08:10,230

[Music]

141

00:08:14,950 --> 00:08:11,830

as you can see here some live data from

142

00:08:17,110 --> 00:08:14,960

the soyuz spacecraft 47 meters out from

143

00:08:19,029 --> 00:08:17,120

the international space station closing

144

00:08:21,909 --> 00:08:19,039

in at about

145

00:08:23,510 --> 00:08:21,919

a tenth of a meter per second the uh

146

00:08:25,029 --> 00:08:23,520

oyu is taking a slow and deliberate

147

00:08:26,869 --> 00:08:25,039

approach as it makes its way to the

148

00:08:29,430 --> 00:08:26,879

international space station

149

00:08:38,070 --> 00:08:29,440

and yeah if you look at the tv you can

150

00:08:43,990 --> 00:08:42,630

okay so phenomenal range is 48 meters

151

00:08:47,000 --> 00:08:44,000

range rate is

152

00:08:51,350 --> 00:08:47,010

zero decimal 18.

153

00:08:54,710 --> 00:08:53,110

soyuz spacecraft is actually ahead of

154

00:08:56,870 --> 00:08:54,720

the international space station and

155

00:08:59,590 --> 00:08:56,880

slowing to make its docking to the

156

00:09:01,350 --> 00:08:59,600

international space station the two are

157

00:09:03,590 --> 00:09:01,360

just making their way over the northern

158

00:09:06,150 --> 00:09:03,600

atlantic ocean minutes from crossing

159

00:09:08,949 --> 00:09:06,160

over the united kingdom we're about less

160

00:09:11,829 --> 00:09:08,959

than 10 minutes from the plan docking

161

00:09:13,030 --> 00:09:11,839

starts to be very effective uh from this

162

00:09:15,110 --> 00:09:13,040

range

163

00:09:17,829 --> 00:09:15,120

yeah that's right it's like uh

164

00:09:19,030 --> 00:09:17,839

it just started to light up the station

165

00:09:21,590 --> 00:09:19,040

so um

166

00:09:24,870 --> 00:09:21,600

they're a decimal this one 16 meters per

167

00:09:29,509 --> 00:09:24,880

second visual range matches

168

00:09:29,519 --> 00:09:34,389

which i can't see that it is awesome

169

00:09:34,399 --> 00:09:42,930

okay

170

00:10:00,070 --> 00:09:48,670

[Music]

171

00:10:04,470 --> 00:10:01,750

a beautiful view from the international

172

00:10:07,430 --> 00:10:04,480

space station looking ahead the soyuz

173

00:10:09,990 --> 00:10:07,440

spacecraft in view the two vehicles just

174

00:10:11,269 --> 00:10:10,000

moments away from crossing over london

175

00:10:13,750 --> 00:10:11,279

they're traveling at an altitude of

176
00:10:15,509 --> 00:10:13,760
about 418

177
00:10:18,230 --> 00:10:15,519
kilometers above the earth

178
00:10:29,750 --> 00:10:18,240
260 statute miles

179
00:10:33,350 --> 00:10:31,509
less than 50 meters separating the two

180
00:10:34,710 --> 00:10:33,360
vehicles and everything going well

181
00:10:36,949 --> 00:10:34,720
they're using the coors automated

182
00:10:38,790 --> 00:10:36,959
docking system on again onboard the

183
00:10:40,710 --> 00:10:38,800
space station the crew members all

184
00:10:42,310 --> 00:10:40,720
monitoring the activities

185
00:10:47,030 --> 00:10:42,320
ready to use the manual docking

186
00:10:50,710 --> 00:10:48,230
the target

187
00:10:52,470 --> 00:10:50,720
is at the center of the field of view a

188
00:10:55,190 --> 00:10:52,480

half of a degree

189

00:10:58,310 --> 00:10:55,200

upward of the crosshair

190

00:11:01,190 --> 00:10:58,320

orange is at 28. range rate is zero

191

00:11:03,269 --> 00:11:01,200

decimal 13 everything else matches

192

00:11:11,269 --> 00:11:03,279

nominal profile

193

00:11:11,279 --> 00:11:18,500

what your studio

194

00:11:18,510 --> 00:11:23,750

[Music]

195

00:11:29,910 --> 00:11:26,150

let me stow this book somewhere out of

196

00:11:33,509 --> 00:11:31,350

the most part

197

00:11:36,150 --> 00:11:33,519

we might need it i don't know

198

00:11:38,949 --> 00:11:36,160

the compressors are aligned

199

00:11:41,509 --> 00:11:38,959

the roll adjustments done

200

00:11:42,790 --> 00:11:41,519

range is 22 meters we're breaking just a

201
00:11:46,310 --> 00:11:42,800
tiny bit

202
00:11:49,030 --> 00:11:46,320
the range rate is uh zero decimal twelve

203
00:11:50,710 --> 00:11:49,040
let's see here decimal eleven

204
00:11:52,230 --> 00:11:50,720
a little bit of a misalignment on the

205
00:11:56,240 --> 00:11:52,240
crosshairs

206
00:11:56,250 --> 00:12:04,949
[Music]

207
00:12:10,870 --> 00:12:07,750
we see it on your display yeah this is

208
00:12:17,110 --> 00:12:13,670
i think it will adjust itself and

209
00:12:28,790 --> 00:12:17,120
range now is 17 meters range rate

210
00:12:34,690 --> 00:12:31,509
lighting conditions are excellent the

211
00:12:44,870 --> 00:12:34,700
vehicle is super stable

212
00:12:49,030 --> 00:12:46,550
there is a slight misalignment on the

213
00:12:51,110 --> 00:12:49,040

crosshairs

214

00:12:53,670 --> 00:12:51,120

however but um

215

00:12:55,030 --> 00:12:53,680

it goes back very quickly

216

00:12:57,990 --> 00:12:55,040

so

217

00:13:00,389 --> 00:12:58,000

everything is great

218

00:13:03,350 --> 00:13:00,399

and stable the vehicle is 12 meters out

219

00:13:04,870 --> 00:13:03,360

and traveling at 0.1 meters per second

220

00:13:06,949 --> 00:13:04,880

crosshair is

221

00:13:08,710 --> 00:13:06,959

about a truly impressive view of the

222

00:13:10,629 --> 00:13:08,720

soyuz spacecraft the international space

223

00:13:12,550 --> 00:13:10,639

station uh both

224

00:13:16,150 --> 00:13:12,560

closing in for a docking

225

00:13:18,310 --> 00:13:16,160

about five minutes from now as soon as a

226

00:13:21,430 --> 00:13:18,320

little bit of a roll bias occurs so

227

00:13:28,949 --> 00:13:21,440

we're good nine meters

228

00:13:33,990 --> 00:13:31,269

a little bit of a misalignment

229

00:13:35,350 --> 00:13:34,000

on the crosshairs a little bit of uh

230

00:13:38,230 --> 00:13:35,360

y'all bias

231

00:13:45,829 --> 00:13:38,240

seven meters this is phenomenal

232

00:13:50,470 --> 00:13:48,150

as you can see now in view the small

233

00:13:52,310 --> 00:13:50,480

docking target which is right there very

234

00:13:53,910 --> 00:13:52,320

close within the crosshairs on this

235

00:13:55,910 --> 00:13:53,920

graphic display from the soyuz

236

00:13:57,269 --> 00:13:55,920

spacecraft

237

00:13:59,189 --> 00:13:57,279

[Music]

238

00:14:02,870 --> 00:13:59,199

less than four meters

239

00:14:05,189 --> 00:14:02,880

one tenth of a meter per second

240

00:14:07,269 --> 00:14:05,199

about half of a thickness of a crosshair

241

00:14:10,230 --> 00:14:07,279

and misalignment

242

00:14:12,949 --> 00:14:10,240

almost with the videos it so then might

243

00:14:14,389 --> 00:14:12,959

adjust for it but um i think i would say

244

00:14:18,710 --> 00:14:14,399

we're good

245

00:14:23,150 --> 00:14:20,710

accelerations or rotations standing by

246

00:14:25,750 --> 00:14:23,160

for contact

247

00:14:27,410 --> 00:14:25,760

[Music]

248

00:14:36,710 --> 00:14:27,420

contact

249

00:14:40,710 --> 00:14:36,720

docking confirmed for 4 27 am central

250

00:14:43,750 --> 00:14:40,720

time everything's nominal moscow

251
00:14:48,230 --> 00:14:45,590
we'll be standing by for the hooks and

252
00:14:50,230 --> 00:14:48,240
latches but again contact now confirmed

253
00:14:51,670 --> 00:14:50,240
between the two vehicles that again

254
00:14:54,629 --> 00:14:51,680
occurring a little ahead of schedule at

255
00:14:56,790 --> 00:14:54,639
4 27 a.m central time way to go thank

256
00:14:58,389 --> 00:14:56,800
you and thank you

257
00:15:00,710 --> 00:14:58,399
mechanical you're also seeing a live

258
00:15:02,949 --> 00:15:00,720
view there from the augut hall in

259
00:15:04,069 --> 00:15:02,959
baikonur where friends families and vip

260
00:15:06,069 --> 00:15:04,079
members have been watching the

261
00:15:07,430 --> 00:15:06,079
activities everything going smoothly

262
00:15:09,670 --> 00:15:07,440
that a very

263
00:15:11,350 --> 00:15:09,680

impressive view of the soyuz spacecraft

264

00:15:13,110 --> 00:15:11,360

talking to the space station that

265

00:15:15,990 --> 00:15:13,120

occurring as the vehicles were crossing

266

00:15:18,389 --> 00:15:16,000

over germany at uh

267

00:15:21,990 --> 00:15:18,399

again just a few moments ago 4 27 am

268

00:15:25,150 --> 00:15:24,710

6 hours and 14 minutes was your ride

269

00:15:36,389 --> 00:15:25,160

that's