1
00:00:04,630 --> 00:00:02,090
good day and welcome to today's

2
00:00:07,249 --> 00:00:04,640
International Space Station dragon

3
00:00:09,650 --> 00:00:07,259
mission status briefing with us today

4
00:00:11,870 --> 00:00:09,660
here we have participants in Houston and

5
00:00:13,580 --> 00:00:11,880
in Hawthorne California here in Houston

6
00:00:15,640 --> 00:00:13,590
International Space Station program

7
00:00:17,599 --> 00:00:15,650
manager Mike Suffredini and

8
00:00:19,429 --> 00:00:17,609
International Space Station lead flight

9
00:00:23,150 --> 00:00:19,439
director for the SpaceX dragon mission

10
00:00:25,250 --> 00:00:23,160
Holly ridings in California we have Elon

11
00:00:28,609 --> 00:00:25,260
Musk the chief executive officer and

12
00:00:31,339 --> 00:00:28,619
designer for the SpaceX company as well

13
00:00:35,360 --> 00:00:31,349

as Alan Linda Moyer the manager of the

14
00:00:37,549 --> 00:00:35,370
commercial resupply demonstration

15
00:00:38,900 --> 00:00:37,559
project for NASA we'll start off with

16
00:00:42,229 --> 00:00:38,910
opening remarks and then we'll move to

17
00:00:43,490 --> 00:00:42,239
your questions all right well good

18
00:00:46,250 --> 00:00:43,500
afternoon

19
00:00:48,860 --> 00:00:46,260
just barely here in Houston it's been a

20
00:00:52,430 --> 00:00:48,870
long time coming but this morning about

21
00:00:56,090 --> 00:00:52,440
8:56 a.m. Don Pettit successfully

22
00:00:57,799 --> 00:00:56,100
grappled the Dragon spacecraft and only

23
00:01:02,000 --> 00:00:57,809
about 30 minutes ago we completed the

24
00:01:05,810 --> 00:01:02,010
birthing operations to the node 2 nadir

25
00:01:08,000 --> 00:01:05,820
port and I can't tell you how proud we

26
00:01:11,510 --> 00:01:08,010
are to have been a part of this historic

27
00:01:13,370 --> 00:01:11,520
moment many times this program manager

28
00:01:16,550 --> 00:01:13,380
of this program I've stood in front of

29
00:01:17,990 --> 00:01:16,560
you talked about historical historical

30
00:01:20,870 --> 00:01:18,000
moments things we've done that's never

31
00:01:25,520 --> 00:01:20,880
been done before and this rates right at

32
00:01:27,890 --> 00:01:25,530
the top having a contractor relatively

33
00:01:31,190 --> 00:01:27,900
independent of NASA design on its own a

34
00:01:32,990 --> 00:01:31,200
spacecraft that while yes we we

35
00:01:35,960 --> 00:01:33,000
participated in in the verification

36
00:01:37,520 --> 00:01:35,970
process to ensure it met our safety

37
00:01:39,319 --> 00:01:37,530
criteria and gave it gave them

38
00:01:42,770 --> 00:01:39,329

requirements to meet when it got to

39
00:01:45,020 --> 00:01:42,780
within the sphere of ISS they completely

40
00:01:47,020 --> 00:01:45,030
built and tested and flew this

41
00:01:49,219 --> 00:01:47,030
spacecraft in a manner that has really

42
00:01:51,740 --> 00:01:49,229
has been just remarkable it's a

43
00:01:55,969 --> 00:01:51,750
remarkable ride the spacecraft was and

44
00:01:58,459 --> 00:01:55,979
in our way of thinking performed nearly

45
00:02:00,499 --> 00:01:58,469
flawlessly until it got up to the to the

46
00:02:02,209 --> 00:02:00,509
r bar it gave him a few challenges but

47
00:02:06,230 --> 00:02:02,219
but that just showed you how good their

48
00:02:08,839 --> 00:02:06,240
team was it wasn't only a very very

49
00:02:10,790 --> 00:02:08,849
capable spacecraft but their team really

50
00:02:11,089 --> 00:02:10,800
took on some some challenges along the

51
00:02:13,400 --> 00:02:11,099
way

52
00:02:16,340 --> 00:02:13,410
they got the dragon in the birthday

53
00:02:18,860 --> 00:02:16,350
box and and Holly and her team went to

54
00:02:21,920 --> 00:02:18,870
work to grapple it and and I've got to

55
00:02:25,190 --> 00:02:21,930
say that as a country we should very

56
00:02:27,950 --> 00:02:25,200
proud we've taken we've taken a

57
00:02:31,460 --> 00:02:27,960
capability that this agency has nurtured

58
00:02:34,190 --> 00:02:31,470
for many many years and and and the

59
00:02:36,620 --> 00:02:34,200
combination of that capability that we

60
00:02:38,870 --> 00:02:36,630
have grown over many years of experience

61
00:02:41,900 --> 00:02:38,880
starting way way back in the mercury a

62
00:02:44,510 --> 00:02:41,910
timeframe up to now and combine that

63
00:02:46,610 --> 00:02:44,520

with with the different thought process

64
00:02:48,560 --> 00:02:46,620
really your process really in the design

65
00:02:50,900 --> 00:02:48,570
and development of a spacecraft that

66
00:02:52,670 --> 00:02:50,910
would be have to be able to fly within

67
00:02:55,070 --> 00:02:52,680
the vicinity of a human occupied

68
00:02:58,460 --> 00:02:55,080
spacecraft in orbit and together that

69
00:03:02,240 --> 00:02:58,470
that team really worked well and and I

70
00:03:04,820 --> 00:03:02,250
like to think the dragon and and

71
00:03:07,550 --> 00:03:04,830
Yvonne's and his SpaceX folks learned a

72
00:03:09,620 --> 00:03:07,560
lot and I know we as the NASA engineers

73
00:03:10,640 --> 00:03:09,630
picked up a few things along the way as

74
00:03:12,200 --> 00:03:10,650
well

75
00:03:14,690 --> 00:03:12,210
so I think it was a it was a great

76
00:03:17,870 --> 00:03:14,700
opportunity for us both to learn and and

77
00:03:20,960 --> 00:03:17,880
you can see the result of the success so

78
00:03:24,080 --> 00:03:20,970
my congratulations to to the SpaceX team

79
00:03:26,600 --> 00:03:24,090
they did have did a fantastic job not

80
00:03:29,810 --> 00:03:26,610
only designing both the launcher and the

81
00:03:32,900 --> 00:03:29,820
spacecraft but operating them and and

82
00:03:34,070 --> 00:03:32,910
also to the nest team not only the NASA

83
00:03:35,780 --> 00:03:34,080
engineers that helped do the

84
00:03:38,000 --> 00:03:35,790
verification work and the safety work

85
00:03:41,720 --> 00:03:38,010
pre-launch but to Holly and the entire

86
00:03:43,490 --> 00:03:41,730
ops team who who in combination with

87
00:03:45,729 --> 00:03:43,500
John Cloris and the lead who's a lead

88
00:03:48,140 --> 00:03:45,739

flight director for the further Dragon

89
00:03:51,770 --> 00:03:48,150
together they they operated this

90
00:03:53,320 --> 00:03:51,780
spacecraft and the ISS worked through

91
00:03:55,520 --> 00:03:53,330
some challenges along the way and

92
00:03:59,180 --> 00:03:55,530
successfully accomplished this historic

93
00:04:04,130 --> 00:03:59,190
step in our program so my hats off to

94
00:04:06,110 --> 00:04:04,140
the entire team Thank You Holly all

95
00:04:08,360 --> 00:04:06,120
right well thanks Mike certainly it's

96
00:04:12,650 --> 00:04:08,370
it's good to be sitting up here having

97
00:04:15,560 --> 00:04:12,660
had a really great day in space and I'd

98
00:04:19,190 --> 00:04:15,570
start out with saying congratulations as

99
00:04:21,680 --> 00:04:19,200
well to the entire SpaceX team for just

100
00:04:25,219 --> 00:04:21,690
building a really wonderful spacecraft

101
00:04:27,100 --> 00:04:25,229
that we were able to as a team bring

102
00:04:30,309 --> 00:04:27,110
into the space station

103
00:04:32,559 --> 00:04:30,319
earlier today through rendezvous process

104
00:04:34,860 --> 00:04:32,569
through capture and through birthing

105
00:04:37,300 --> 00:04:34,870
since we were here just yesterday

106
00:04:39,100 --> 00:04:37,310
talking about the completion of the the

107
00:04:42,309 --> 00:04:39,110
fly under and how successful that had

108
00:04:44,950 --> 00:04:42,319
been overnight actually really during

109
00:04:48,249 --> 00:04:44,960
that day the dragon flew out in front of

110
00:04:50,290 --> 00:04:48,259
the space station up above and over the

111
00:04:53,170 --> 00:04:50,300
space station and then back down behind

112
00:04:54,640 --> 00:04:53,180
the space station to kind of end up in

113
00:04:57,010 --> 00:04:54,650

the same place that it started right at

114
00:05:02,710 --> 00:04:57,020
the beginning of fly under to initiate

115
00:05:04,870 --> 00:05:02,720
the rendezvous so 1154 p.m. central

116
00:05:07,540 --> 00:05:04,880
Daylight Time last night

117
00:05:10,480 --> 00:05:07,550
we started that rendezvous process with

118
00:05:12,279 --> 00:05:10,490
a height adjust maneuver up to two and a

119
00:05:16,180 --> 00:05:12,289
half kilometers below the space station

120
00:05:19,870 --> 00:05:16,190
and then through a series of burns ended

121
00:05:21,610 --> 00:05:19,880
up on the r bar so again down below the

122
00:05:24,070 --> 00:05:21,620
space station just kind of in a straight

123
00:05:26,740 --> 00:05:24,080
line pointed at the earth we spent some

124
00:05:29,050 --> 00:05:26,750
time on the r bar learning about the new

125
00:05:31,480 --> 00:05:29,060
pieces of the spacecraft that we really

126
00:05:34,510 --> 00:05:31,490
hadn't seen before a lot of the

127
00:05:38,350 --> 00:05:34,520
proximity sensors that helped us safely

128
00:05:41,409 --> 00:05:38,360
guide the dragon into the area where we

129
00:05:43,719 --> 00:05:41,419
can grapple it with a robotic arm and so

130
00:05:45,430 --> 00:05:43,729
that took us some time to understand

131
00:05:47,740 --> 00:05:45,440
those sensors certainly for a test

132
00:05:50,350 --> 00:05:47,750
flight this demonstration those are the

133
00:05:53,379 --> 00:05:50,360
first time they had been operated in the

134
00:05:55,330 --> 00:05:53,389
space environment and so the dragon team

135
00:05:57,969 --> 00:05:55,340
just did a wonderful job of

136
00:06:00,040 --> 00:05:57,979
understanding the data that they were

137
00:06:04,089 --> 00:06:00,050
receiving and and seeing for the first

138
00:06:07,360 --> 00:06:04,099

time and working jointly with us to

139
00:06:09,879 --> 00:06:07,370
overcome some challenges and and some

140
00:06:13,689 --> 00:06:09,889
just really new and interesting pieces

141
00:06:15,610 --> 00:06:13,699
of data that they saw and flying in

142
00:06:17,860 --> 00:06:15,620
space really with two dynamic vehicles

143
00:06:19,899 --> 00:06:17,870
is first about team work and second of

144
00:06:21,879 --> 00:06:19,909
all really about trust and so over the

145
00:06:24,999 --> 00:06:21,889
last several years we've worked really

146
00:06:27,640 --> 00:06:25,009
closely with the SpaceX Operations team

147
00:06:31,839 --> 00:06:27,650
and really you know they're engineers as

148
00:06:34,180 --> 00:06:31,849
well the entire SpaceX community to work

149
00:06:37,300 --> 00:06:34,190
together and learn how to trust each

150
00:06:39,279 --> 00:06:37,310
other in terms of being able to fly in

151
00:06:40,690 --> 00:06:39,289
space and so you know that trust and

152
00:06:42,130 --> 00:06:40,700
that teamwork really made all the

153
00:06:45,160 --> 00:06:42,140
for us today as we work through all of

154
00:06:47,610 --> 00:06:45,170
these new items that we observed during

155
00:06:50,890 --> 00:06:47,620
this test flight and so again I'd say

156
00:06:53,880 --> 00:06:50,900
congratulations to the SpaceX team and

157
00:06:56,380 --> 00:06:53,890
today was a really great thing in space

158
00:07:05,930 --> 00:06:56,390
okay with that we'll go out to our

159
00:07:16,100 --> 00:07:08,470
all right

160
00:07:23,719 --> 00:07:22,129
and I can hear okay so well this has

161
00:07:26,330 --> 00:07:23,729
really been the culmination of an

162
00:07:30,020 --> 00:07:26,340
enormous amount of work by the SpaceX

163
00:07:32,059 --> 00:07:30,030

team in partnership with NASA and we're

164
00:07:34,700 --> 00:07:32,069
incredibly excited in fact I mean really

165
00:07:36,830 --> 00:07:34,710
I don't have words enough to express the

166
00:07:39,890 --> 00:07:36,840
global excitement and elation that we

167
00:07:45,290 --> 00:07:39,900
feel here at SpaceX for for for having

168
00:07:47,270 --> 00:07:45,300
having this work I mean I I mean uh this

169
00:07:50,659 --> 00:07:47,280
there's so much that that could have

170
00:07:52,189 --> 00:07:50,669
gone wrong and it went right and we're

171
00:07:54,260 --> 00:07:52,199
over able to overcome some some

172
00:07:57,379 --> 00:07:54,270
last-minute issues with some some fast

173
00:07:59,839 --> 00:07:57,389
thinking attenti National NASA mission

174
00:08:02,659 --> 00:07:59,849
controllers SpaceX mission control and

175
00:08:04,820 --> 00:08:02,669
and and I've got it there and it's it's

176
00:08:07,719 --> 00:08:04,830
just a fantastic day and I think a great

177
00:08:10,670 --> 00:08:07,729
day for the country and for the world

178
00:08:12,969 --> 00:08:10,680
this really is I think going to be

179
00:08:15,439 --> 00:08:12,979
recognized as as a as a as a

180
00:08:18,890 --> 00:08:15,449
significantly historical step forward in

181
00:08:21,439 --> 00:08:18,900
in space travel so and hopefully the

182
00:08:23,330 --> 00:08:21,449
first of many to come I think this is

183
00:08:24,649 --> 00:08:23,340
this is a fantastic thing but this

184
00:08:27,529 --> 00:08:24,659
there's going to be even better things

185
00:08:29,719 --> 00:08:27,539
in the future and we're super super

186
00:08:33,439 --> 00:08:29,729
excited for what's happened and what

187
00:08:39,570 --> 00:08:33,449
will happen so I'd like to thank the

188
00:08:39,580 --> 00:09:31,999

I love you guys too

189
00:09:36,720 --> 00:09:35,040
and I'd like to actually have a big hand

190
00:09:46,910 --> 00:09:36,730
for our friends at NASA who helped make

191
00:09:53,160 --> 00:09:50,150
Thanks I'd like just like to thank

192
00:09:56,220 --> 00:09:53,170
everyone at NASA best admission control

193
00:09:58,710 --> 00:09:56,230
and that's threatened and to Ellen who's

194
00:10:01,380 --> 00:09:58,720
been with us from the beginning it's

195
00:10:02,820 --> 00:10:01,390
just been awesome working with you and I

196
00:10:04,860 --> 00:10:02,830
mean usually you've seen it to do

197
00:10:05,550 --> 00:10:04,870
through thick and thin and it's it's

198
00:10:08,940 --> 00:10:05,560
been awesome

199
00:10:12,300 --> 00:10:08,950
Thanks oh that's great that's great Egon

200
00:10:14,220 --> 00:10:12,310
you know it was just six short years ago

201
00:10:16,139 --> 00:10:14,230
not even six years less than six years

202
00:10:18,660 --> 00:10:16,149
ago we first met you didn't your little

203
00:10:21,180 --> 00:10:18,670
factory not too far from here yeah we

204
00:10:22,590 --> 00:10:21,190
had a little tiny factory I mean it was

205
00:10:26,490 --> 00:10:22,600
kind of like providing a quite a lot of

206
00:10:28,170 --> 00:10:26,500
imagination yeah you had to walk from

207
00:10:32,579 --> 00:10:28,180
one building to the next to go from the

208
00:10:34,710 --> 00:10:32,589
first stage to the second stage today we

209
00:10:39,449 --> 00:10:34,720
knew then that you had something special

210
00:10:42,230 --> 00:10:39,459
going on here we knew it and worked at

211
00:10:44,639 --> 00:10:42,240
becoming partners good partners with us

212
00:10:46,650 --> 00:10:44,649
and we thought we did a pretty good job

213
00:10:48,360 --> 00:10:46,660

yeah learning how to become partners

214
00:10:51,750 --> 00:10:48,370
with the government and industry but I

215
00:10:55,680 --> 00:10:51,760
tell you what today watching this team

216
00:10:57,170 --> 00:10:55,690
in action of the professionalism and the

217
00:10:58,910 --> 00:10:57,180
skill and

218
00:11:02,680 --> 00:10:58,920
and the absolutely incredible

219
00:11:11,890 --> 00:11:02,690
performance between NASA and SpaceX

220
00:11:50,259 --> 00:11:17,540
great so president Gwen Shotwell

221
00:11:57,350 --> 00:11:53,620
so when and I started this tradition

222
00:11:58,790 --> 00:11:57,360
where we had defined at all these formal

223
00:12:00,380 --> 00:11:58,800
objectives that everything that it takes

224
00:12:02,960 --> 00:12:00,390
to meet the milestones in the space a

225
00:12:06,019 --> 00:12:02,970
career and in the first launch we sat

226
00:12:07,940 --> 00:12:06,029
there and checked them all off and check

227
00:12:09,860 --> 00:12:07,950
check check and before you know it they

228
00:12:11,060 --> 00:12:09,870
were all checked off so today we were

229
00:12:13,910 --> 00:12:11,070
doing the same thing and these

230
00:12:15,620 --> 00:12:13,920
milestones and we had several dozen of

231
00:12:19,730 --> 00:12:15,630
them just just checking off like crazy

232
00:12:21,790 --> 00:12:19,740
so there's just a handful left right now

233
00:12:35,000 --> 00:12:21,800
oh what's that

234
00:12:37,460 --> 00:12:35,010
alright really a really great work you

235
00:12:40,100 --> 00:12:37,470
know I'm just so glad we we had a small

236
00:12:45,829 --> 00:12:40,110
part and help paving the way just just

237
00:12:48,199 --> 00:12:45,839
paving the way to enable you guys to

238
00:12:50,660 --> 00:12:48,209

help supply commercial services to the

239
00:12:52,880 --> 00:12:50,670
space station I am so proud to have

240
00:12:54,530 --> 00:12:52,890
played a played a role in that and I

241
00:12:56,600 --> 00:12:54,540
said at the beginning of the launch I

242
00:12:58,490 --> 00:12:56,610
said you know there was a thousand

243
00:13:03,410 --> 00:12:58,500
things that had to go right right well

244
00:13:07,100 --> 00:13:03,420
exactly well there's still a several

245
00:13:08,300 --> 00:13:07,110
hundred left but I am very confident

246
00:13:09,889 --> 00:13:08,310
we'll get through it and you know one of

247
00:13:11,329 --> 00:13:09,899
the last things we did on all the

248
00:13:14,540 --> 00:13:11,339
briefings we did over the years we had a

249
00:13:17,150 --> 00:13:14,550
chart that said you made that come true

250
00:13:18,980 --> 00:13:17,160
today that today this really is the

251
00:13:32,009 --> 00:13:18,990
beginning of a new era in commercial

252
00:13:36,160 --> 00:13:34,449
all right we're back here in Houston

253
00:13:37,660 --> 00:13:36,170
before we go to your questions

254
00:13:39,189 --> 00:13:37,670
holly has a little bit of video

255
00:13:43,960 --> 00:13:39,199
highlights she'd like to share with

256
00:13:46,479 --> 00:13:43,970
y'all from today's activities okay here

257
00:13:49,509 --> 00:13:46,489
you can see the dragon in the video

258
00:13:51,189 --> 00:13:49,519
still relatively far away from us here

259
00:13:53,319 --> 00:13:51,199
it's coming up the are bar that's the

260
00:13:56,679 --> 00:13:53,329
view out of the SSRMS end-effector

261
00:13:58,869 --> 00:13:56,689
camera in this video you can see some of

262
00:14:00,939 --> 00:13:58,879
the thrusters firing on the dragon and

263
00:14:03,400 --> 00:14:00,949

here it is in very close proximity to

264
00:14:05,530 --> 00:14:03,410
the station coming in from 30 meters to

265
00:14:07,840 --> 00:14:05,540
10 meters there it is at the capture

266
00:14:10,119 --> 00:14:07,850
point getting ready for the crew to move

267
00:14:12,429 --> 00:14:10,129
the robotic arm out to grapple it there

268
00:14:15,669 --> 00:14:12,439
you see the robotic arm moving in to

269
00:14:19,030 --> 00:14:15,679
perform the grapple just at the 10 meter

270
00:14:20,710 --> 00:14:19,040
from the space station range certainly

271
00:14:22,749 --> 00:14:20,720
in Mission Control both here and in

272
00:14:25,239 --> 00:14:22,759
Hawthorne we were very very excited at

273
00:14:27,309 --> 00:14:25,249
that point because certainly for my team

274
00:14:29,379 --> 00:14:27,319
their work was done for the day we hand

275
00:14:31,780 --> 00:14:29,389
it over to the next team you can see

276
00:14:34,299 --> 00:14:31,790
them beginning to position the dragon on

277
00:14:37,539 --> 00:14:34,309
the end of the arm getting ready for the

278
00:14:40,869 --> 00:14:37,549
berthing activity the node 2 nadir CBM

279
00:14:43,179 --> 00:14:40,879
to the pass of CBM on the dragon capsule

280
00:14:45,730 --> 00:14:43,189
there we are getting close to the

281
00:14:48,429 --> 00:14:45,740
station and then moving on in for the

282
00:14:53,189 --> 00:14:48,439
berthing activity which as was mentioned

283
00:14:56,590 --> 00:14:53,199
a few minutes ago by Gwen has just been

284
00:15:00,100 --> 00:14:56,600
completed in terms of all the CBMs and

285
00:15:02,980 --> 00:15:00,110
the bolts a couple more items I didn't

286
00:15:05,410 --> 00:15:02,990
mention the rendezvous was initiated

287
00:15:09,519 --> 00:15:05,420
about 1152 central Daylight Time

288
00:15:12,939 --> 00:15:09,529

yesterday ended up with a capture 8:56

289
00:15:14,710 --> 00:15:12,949
a.m. central Daylight Time mission

290
00:15:19,710 --> 00:15:14,720
elapsed time in terms of launch to

291
00:15:23,889 --> 00:15:19,720
capture 3 days 6 hours 11 minutes and

292
00:15:27,729 --> 00:15:23,899
certainly about 1102 was the first

293
00:15:31,449 --> 00:15:27,739
stages capture to tie together the two

294
00:15:33,429 --> 00:15:31,459
CBM parts for berthing and then just

295
00:15:37,070 --> 00:15:33,439
moments ago they had completed all of

296
00:15:39,530 --> 00:15:37,080
the bolting activities to finish up that

297
00:15:41,230 --> 00:15:39,540
thing process today for the rest of the

298
00:15:43,700 --> 00:15:41,240
day the crew is doing some of the

299
00:15:47,150 --> 00:15:43,710
preparations in the vestibule the area

300
00:15:50,080 --> 00:15:47,160
between the hatches the dragon hats will

301
00:15:54,440 --> 00:15:50,090
actually be opened for the timeline

302
00:15:57,020 --> 00:15:54,450
tomorrow morning it's about 11:40 GMT so

303
00:15:59,540 --> 00:15:57,030
I think that's 6:40 a.m. local if I'm

304
00:16:00,860 --> 00:15:59,550
doing the math right I'll tell you the

305
00:16:02,110 --> 00:16:00,870
crew is pretty excited so don't be

306
00:16:04,460 --> 00:16:02,120
surprised if it's a little bit early

307
00:16:06,680 --> 00:16:04,470
tomorrow when they get that hatch open

308
00:16:09,140 --> 00:16:06,690
and take a first look at the cargos

309
00:16:10,250 --> 00:16:09,150
that's been delivered and moving forward

310
00:16:13,310 --> 00:16:10,260
a little bit it's going to be a

311
00:16:14,360 --> 00:16:13,320
relatively short mission on the space

312
00:16:17,230 --> 00:16:14,370
station where we're going to do the

313
00:16:21,340 --> 00:16:17,240

cargo operations unloading and loading

314
00:16:25,250 --> 00:16:21,350
departure planned for May 31st and in

315
00:16:28,160 --> 00:16:25,260
GMT about 10:00 a.m. so I think local

316
00:16:30,680 --> 00:16:28,170
that's 5 a.m. of course if I'm doing the

317
00:16:33,350 --> 00:16:30,690
conversion again so I think that runs

318
00:16:35,600 --> 00:16:33,360
through the the basic statistics of the

319
00:16:39,200 --> 00:16:35,610
mission and hopefully answers some of

320
00:16:41,210 --> 00:16:39,210
your questions preemptively okay we'll

321
00:16:43,040 --> 00:16:41,220
start out with questions here in Houston

322
00:16:44,180 --> 00:16:43,050
please remember to state your name and

323
00:16:47,330 --> 00:16:44,190
affiliation and come up to the

324
00:16:49,490 --> 00:16:47,340
microphone and specify since we got

325
00:16:52,250 --> 00:16:49,500
folks on two different coasts who you're

326
00:16:54,380 --> 00:16:52,260
asking your question of and then once we

327
00:16:56,030 --> 00:16:54,390
get through folks around here we'll take

328
00:16:57,380 --> 00:16:56,040
questions off the foam bridge we have a

329
00:16:58,760 --> 00:16:57,390
lot of folks on the phone bridge we'll

330
00:17:00,500 --> 00:16:58,770
do our best to get one question to

331
00:17:02,630 --> 00:17:00,510
everybody but if you could keep your

332
00:17:21,410 --> 00:17:02,640
questions to one and maybe a follow up

333
00:17:27,730 --> 00:17:21,420
that'd be great Tom could you repeat

334
00:17:35,139 --> 00:17:30,039
really is just the start of what is

335
00:17:36,669 --> 00:17:35,149
expected to be a very long sure the of

336
00:17:39,549 --> 00:17:36,679
course this is the first flight of the

337
00:17:43,029 --> 00:17:39,559
of the Dragon spacecraft to ISS the

338
00:17:47,320 --> 00:17:43,039

other cargo vehicle that will come to

339
00:17:50,320 --> 00:17:47,330
ISS is being built by the orbital folks

340
00:17:52,930 --> 00:17:50,330
and that's the Cygnus spacecraft and so

341
00:17:55,960 --> 00:17:52,940
between those two spacecraft they will

342
00:17:57,370 --> 00:17:55,970
supply the lion's share of the cargo to

343
00:18:00,159 --> 00:17:57,380
the international space station for the

344
00:18:04,360 --> 00:18:00,169
life of the station the autonomous

345
00:18:06,610 --> 00:18:04,370
transfer vehicle the the h2 Transfer

346
00:18:07,799 --> 00:18:06,620
Vehicle that's the East and JAXA provide

347
00:18:14,169 --> 00:18:07,809
spacecraft

348
00:18:15,850 --> 00:18:14,179
about once a year the last ATV vehicle

349
00:18:17,980 --> 00:18:15,860
flies in a couple of years so we're on

350
00:18:19,659 --> 00:18:17,990
ATV three we've got four and five left

351
00:18:21,659 --> 00:18:19,669
and then there are no other ATVs in the

352
00:18:25,240 --> 00:18:21,669
history of the program at least planned

353
00:18:28,000 --> 00:18:25,250
and HTV will probably be limited after

354
00:18:30,880 --> 00:18:28,010
the 7h TVs that fly and so these two

355
00:18:32,860 --> 00:18:30,890
vehicles will do the lion's share of the

356
00:18:35,620 --> 00:18:32,870
work necessary to keep space station

357
00:18:37,450 --> 00:18:35,630
flying and this also is paving a way to

358
00:18:40,720 --> 00:18:37,460
the work that NASA has been doing with

359
00:18:41,769 --> 00:18:40,730
many of the folks in industry to provide

360
00:18:44,590 --> 00:18:41,779
a similar service for crew

361
00:18:46,510 --> 00:18:44,600
transportation so particularly as it

362
00:18:49,360 --> 00:18:46,520
relates to the international space

363
00:18:51,760 --> 00:18:49,370

station we will almost rely exclusively

364
00:18:53,490 --> 00:18:51,770
on commercial provided services in the

365
00:18:59,230 --> 00:18:53,500
out here so if everything proceeds

366
00:19:00,279 --> 00:18:59,240
according to the plan today okay and we

367
00:19:01,600 --> 00:19:00,289
were having a little bit technical

368
00:19:10,100 --> 00:19:01,610
difficulty in the room so if you come

369
00:19:17,039 --> 00:19:13,190
hi Robert Perlman with collect space.com

370
00:19:19,889 --> 00:19:17,049
for Holly and maybe for Elon can you go

371
00:19:23,430 --> 00:19:19,899
into a little bit of detail of the of

372
00:19:26,519 --> 00:19:23,440
the approach and in person specifically

373
00:19:28,769 --> 00:19:26,529
about what occurred that made you hold

374
00:19:31,430 --> 00:19:28,779
for a little while with the thermal

375
00:19:33,960 --> 00:19:31,440
imagers and then what again what

376
00:19:36,720 --> 00:19:33,970
resulted in the the back of the retreat

377
00:19:38,820 --> 00:19:36,730
for the lidar and what the final state

378
00:19:40,289 --> 00:19:38,830
of that of the lidar system is I think I

379
00:19:43,769 --> 00:19:40,299
heard a call that said there was only

380
00:19:48,840 --> 00:19:43,779
one good lidar when you when you came in

381
00:19:52,350 --> 00:19:48,850
for capture okay yeah I can expand on

382
00:19:55,080 --> 00:19:52,360
that so we arrived on the ARB our dragon

383
00:19:59,029 --> 00:19:55,090
arrives on the r bar just a little bit

384
00:20:02,639 --> 00:19:59,039
below 350 heads up to 350 performs

385
00:20:04,560 --> 00:20:02,649
maneuver their term is a slough yas

386
00:20:09,419 --> 00:20:04,570
around and then it heads up to the 250

387
00:20:11,820 --> 00:20:09,429
hold point and so we got to 250 the

388
00:20:13,980 --> 00:20:11,830

dragon team was again keeping an eye on

389
00:20:16,740 --> 00:20:13,990
a lot of their new data that they were

390
00:20:19,830 --> 00:20:16,750
receiving and they have two thermal

391
00:20:22,470 --> 00:20:19,840
imagers on the dragon and so looking at

392
00:20:26,879 --> 00:20:22,480
that data and where the Sun was in

393
00:20:29,610 --> 00:20:26,889
relation to the dragon they discussed

394
00:20:31,710 --> 00:20:29,620
with us just holding a little bit and

395
00:20:34,409 --> 00:20:31,720
and waiting until the Sun had passed by

396
00:20:37,169 --> 00:20:34,419
in order to give the thermal imagers the

397
00:20:40,409 --> 00:20:37,179
best chance of working the way the

398
00:20:43,470 --> 00:20:40,419
proximity design is you have a certain

399
00:20:46,799 --> 00:20:43,480
number of sensors that need to work in

400
00:20:48,930 --> 00:20:46,809
order to define where the Dragon

401
00:20:51,360 --> 00:20:48,940
spacecraft is in relationship to the

402
00:20:53,909 --> 00:20:51,370
International Space Station and in that

403
00:20:56,399 --> 00:20:53,919
set of sensors you have enough

404
00:20:59,580 --> 00:20:56,409
redundancy so multiple sensors and some

405
00:21:00,690 --> 00:20:59,590
independence and so that you can figure

406
00:21:02,310 --> 00:21:00,700
out where the truth you always know

407
00:21:04,590 --> 00:21:02,320
exactly where dragon is and we do that

408
00:21:06,840 --> 00:21:04,600
to obviously keep the the space station

409
00:21:09,539 --> 00:21:06,850
safe because it's important to

410
00:21:12,210 --> 00:21:09,549
understand exactly the location of your

411
00:21:13,919 --> 00:21:12,220
two dynamic spacecraft so yeah pausing

412
00:21:15,389 --> 00:21:13,929
and giving the thermal imagers the best

413
00:21:17,190 --> 00:21:15,399

chance to work to get the Sun out of the

414
00:21:19,440 --> 00:21:17,200
way made the most sense from an

415
00:21:20,700 --> 00:21:19,450
operational perspective so I kind of

416
00:21:22,620 --> 00:21:20,710
explains how we were managed in the

417
00:21:25,769 --> 00:21:22,630
thermal imagers as we headed in towards

418
00:21:28,470 --> 00:21:25,779
the capture point lied ours are similar

419
00:21:32,250 --> 00:21:28,480
in nature where again they're looking at

420
00:21:33,899 --> 00:21:32,260
the space station there they're going

421
00:21:35,549 --> 00:21:33,909
back and forth from a laser perspective

422
00:21:39,419 --> 00:21:35,559
with a specific point on the space

423
00:21:41,970 --> 00:21:39,429
station they it's hard to hit that

424
00:21:43,980 --> 00:21:41,980
single point and so sometimes they were

425
00:21:45,659 --> 00:21:43,990
getting some information back from the

426
00:21:47,279 --> 00:21:45,669
space station that was a little bit

427
00:21:49,259 --> 00:21:47,289
different than they expected

428
00:21:51,360 --> 00:21:49,269
probably some some tuning of the

429
00:21:53,519 --> 00:21:51,370
software because remember this was the

430
00:21:56,430 --> 00:21:53,529
first you know test flight and they were

431
00:21:59,250 --> 00:21:56,440
demonstrating it and so as the dragon

432
00:22:00,899 --> 00:21:59,260
team was watching those returns back

433
00:22:03,750 --> 00:22:00,909
from the space station that were not

434
00:22:07,259 --> 00:22:03,760
exactly what they expected it made sense

435
00:22:09,480 --> 00:22:07,269
in in several cases to go ahead and hold

436
00:22:10,799 --> 00:22:09,490
the spacecraft or even retreat it back

437
00:22:13,620 --> 00:22:10,809
to a point where we had been getting

438
00:22:16,470 --> 00:22:13,630

good solid information to take a look at

439
00:22:19,139 --> 00:22:16,480
it when we headed up to the capture

440
00:22:21,810 --> 00:22:19,149
point we headed that direction with with

441
00:22:24,990 --> 00:22:21,820
two lied ours you do in fact only need

442
00:22:27,899 --> 00:22:25,000
one to do the rendezvous that capture

443
00:22:30,629 --> 00:22:27,909
only one to keep the space station safe

444
00:22:33,419 --> 00:22:30,639
it works in conjunction with the thermal

445
00:22:35,490 --> 00:22:33,429
imagers and so we did press in during

446
00:22:37,889 --> 00:22:35,500
that process the dragon team has the

447
00:22:40,470 --> 00:22:37,899
ability as they're watching their data

448
00:22:42,360 --> 00:22:40,480
to kind of reset that lighter and get it

449
00:22:43,710 --> 00:22:42,370
to come back into the solution so they

450
00:22:46,470 --> 00:22:43,720
did that a couple times so there were

451
00:22:47,940 --> 00:22:46,480
points in that process where we had one

452
00:22:49,769 --> 00:22:47,950
lighter available points where we had

453
00:22:51,990 --> 00:22:49,779
two light hours available and so we were

454
00:22:54,330 --> 00:22:52,000
managing that trying to make sure we had

455
00:22:57,480 --> 00:22:54,340
the redundancy available we did get to

456
00:22:59,220 --> 00:22:57,490
the capture point we got there we did

457
00:23:03,269 --> 00:22:59,230
have one of those light hours go ahead

458
00:23:04,710 --> 00:23:03,279
and see enough errors that goes to a

459
00:23:06,779 --> 00:23:04,720
state that's called unconverted so it's

460
00:23:09,269 --> 00:23:06,789
not being used in the solution to

461
00:23:12,960 --> 00:23:09,279
determine the location of the dragon

462
00:23:14,940 --> 00:23:12,970
again perfectly safe and not unexpected

463
00:23:17,669 --> 00:23:14,950

for a test flight and we did sit in that

464
00:23:22,230 --> 00:23:17,679
configuration and go ahead and capture

465
00:23:24,539 --> 00:23:22,240
the dragon more questions here in

466
00:23:26,399 --> 00:23:24,549
Houston all right then we'll go off to

467
00:23:28,590 --> 00:23:26,409
our foam bridge so I'll go in order

468
00:23:29,860 --> 00:23:28,600
remember again state your name and

469
00:23:31,480 --> 00:23:29,870
affiliation

470
00:23:32,529 --> 00:23:31,490
the person you're asking the question of

471
00:23:41,710 --> 00:23:32,539
so we'll be sure and get to the right

472
00:23:46,390 --> 00:23:41,720
coast alan boyle alright i will move on

473
00:23:49,620 --> 00:23:46,400
to Dan Leone I was a little bit I had a

474
00:23:53,940 --> 00:23:49,630
question for you on just a big-picture

475
00:23:56,909 --> 00:23:53,950
question where this fits into grand plan

476
00:24:01,029 --> 00:23:56,919
with every lift and going on to Mars

477
00:24:03,700 --> 00:24:01,039
where does this milestone fit in in your

478
00:24:07,690 --> 00:24:03,710
larger plan for making humanity a

479
00:24:09,340 --> 00:24:07,700
multi-planet species all right well

480
00:24:12,639 --> 00:24:09,350
that's that's a big question

481
00:24:16,360 --> 00:24:12,649
but I can also maybe summarize for for

482
00:24:18,990 --> 00:24:16,370
sort of a kind of a lay audience what

483
00:24:22,779 --> 00:24:19,000
what the issue was just coming into

484
00:24:27,250 --> 00:24:22,789
Space Station you see dragon has these

485
00:24:31,380 --> 00:24:27,260
things called lasers and the laser scan

486
00:24:35,970 --> 00:24:31,390
the space station and one of the lasers

487
00:24:38,560 --> 00:24:35,980
wasn't working well so we had to

488
00:24:42,039 --> 00:24:38,570

recalibrate that the laser and tighten

489
00:24:46,269 --> 00:24:42,049
the beam and then it did work and where

490
00:24:48,029 --> 00:24:46,279
else doc that's basically that's the

491
00:24:53,470 --> 00:24:48,039
short version

492
00:24:57,060 --> 00:24:53,480
it told in dr. evil format so let's see

493
00:25:00,880 --> 00:24:57,070
with respect to the longer term

494
00:25:02,950 --> 00:25:00,890
objectives I think what what needs to

495
00:25:07,480 --> 00:25:02,960
happen is is continued advancement in

496
00:25:09,820 --> 00:25:07,490
space technology in particular to to

497
00:25:12,100 --> 00:25:09,830
scale up the rockets and to make them

498
00:25:15,100 --> 00:25:12,110
reusable which is very very important

499
00:25:19,120 --> 00:25:15,110
because the cost of the fuel is only

500
00:25:21,490 --> 00:25:19,130
about 0.3% of the cost of the mission so

501
00:25:23,860 --> 00:25:21,500
if if rocket speed can be made reusable

502
00:25:25,899 --> 00:25:23,870
then it's possible to reduce the cost of

503
00:25:29,250 --> 00:25:25,909
spaceflight maybe by a factor of 100 or

504
00:25:36,070 --> 00:25:29,260
more so that that that's really the the

505
00:25:38,409 --> 00:25:36,080
focus of SpaceX is someone making

506
00:25:41,350 --> 00:25:38,419
Rockets reusable and then of course

507
00:25:45,610 --> 00:25:41,360
working with NASA to add crew capability

508
00:25:48,520 --> 00:25:45,620
to Dragon and and hopefully fly crew in

509
00:25:52,120 --> 00:25:48,530
as little as three years that's that's

510
00:25:56,139 --> 00:25:52,130
the next step on on the path towards

511
00:25:57,310 --> 00:25:56,149
advancing space technology but I'm

512
00:25:59,919 --> 00:25:57,320
really excited because this was a

513
00:26:02,289 --> 00:25:59,929

crucial step and having achieved this

514
00:26:04,810 --> 00:26:02,299
step it makes the things in the in the

515
00:26:06,730 --> 00:26:04,820
future and the output path towards

516
00:26:10,840 --> 00:26:06,740
humanity becoming as a multi-planet

517
00:26:12,070 --> 00:26:10,850
species much much more likely the chance

518
00:26:13,690 --> 00:26:12,080
of that happening just went up

519
00:26:17,010 --> 00:26:13,700
dramatically so people should be really

520
00:26:23,889 --> 00:26:20,230
okay thanks Alan and now back to Dan

521
00:26:25,899 --> 00:26:23,899
Leone hi Dan Leone with space news

522
00:26:27,010 --> 00:26:25,909
thanks for throwing the presser and for

523
00:26:29,889 --> 00:26:27,020
joining us all the folks out in

524
00:26:32,830 --> 00:26:29,899
California my question when now will

525
00:26:40,169 --> 00:26:32,840
SpaceX be cleared to begin its regular

526
00:26:43,060 --> 00:26:40,179
cargo deliveries under CRS let's see uh

527
00:26:45,789 --> 00:26:43,070
I'll take a heck that one and then Alan

528
00:26:49,320 --> 00:26:45,799
might want to add a word or two the

529
00:26:52,840 --> 00:26:49,330
objective of the demo flights was to

530
00:26:56,350 --> 00:26:52,850
test the ability of the spacecraft to

531
00:26:58,330 --> 00:26:56,360
make it to ISS and meet objectives along

532
00:27:00,850 --> 00:26:58,340
the way to ensure that was safe to make

533
00:27:04,090 --> 00:27:00,860
it up to the up to the space station and

534
00:27:06,549 --> 00:27:04,100
so of course along the way as you as you

535
00:27:08,649 --> 00:27:06,559
heard we met the objectives necessary to

536
00:27:09,520 --> 00:27:08,659
get all the way to station and of course

537
00:27:13,060 --> 00:27:09,530
we're there today

538
00:27:16,060 --> 00:27:13,070

there were also objectives for the for

539
00:27:17,860 --> 00:27:16,070
the departure and the and the safe

540
00:27:20,080 --> 00:27:17,870
reentry of the spacecraft and the

541
00:27:22,629 --> 00:27:20,090
recovery of hardware from the spacecraft

542
00:27:24,430 --> 00:27:22,639
so there's still objectives that need to

543
00:27:27,659 --> 00:27:24,440
be met and there's there's work that

544
00:27:30,310 --> 00:27:27,669
needs to be done to verify that the

545
00:27:32,890 --> 00:27:30,320
all the objectives are closed out as

546
00:27:36,520 --> 00:27:32,900
part of the earlier cots Space Act

547
00:27:40,000 --> 00:27:36,530
agreement but assuming that all of that

548
00:27:41,680 --> 00:27:40,010
is successful meaning that the the

549
00:27:44,320 --> 00:27:41,690
latter half of the mission and it's

550
00:27:47,650 --> 00:27:44,330
still got some significant milestones to

551
00:27:50,500 --> 00:27:47,660
go as Alan mentioned all gets checked

552
00:27:53,980 --> 00:27:50,510
out then we could step into the CRS

553
00:27:56,710 --> 00:27:53,990
flights immediately with the with the

554
00:27:59,320 --> 00:27:56,720
next flight and in fact we have we have

555
00:28:01,570 --> 00:27:59,330
plans for that in our in our current

556
00:28:05,350 --> 00:28:01,580
schedule is to is to start the CRS

557
00:28:06,490 --> 00:28:05,360
flights in the in the I think the newest

558
00:28:09,820 --> 00:28:06,500
schedule is going to show the first

559
00:28:11,860 --> 00:28:09,830
flight in in the September timeframe and

560
00:28:13,990 --> 00:28:11,870
but that assumes that we do successfully

561
00:28:16,029 --> 00:28:14,000
accomplish the Romanian objectives in

562
00:28:17,529 --> 00:28:16,039
the cots program but assuming they're

563
00:28:21,610 --> 00:28:17,539

all successful there's there's not a

564
00:28:23,950 --> 00:28:21,620
long wait we're the next spacecraft in

565
00:28:27,310 --> 00:28:23,960
line is being built and prepared to come

566
00:28:29,080 --> 00:28:27,320
to ISS so assuming all the objectives

567
00:28:36,310 --> 00:28:29,090
are successfully accomplished we can

568
00:28:39,010 --> 00:28:36,320
move right into that flight and Alan did

569
00:28:40,419 --> 00:28:39,020
you want to add anything well no no I

570
00:28:44,950 --> 00:28:40,429
think you got that exactly right

571
00:28:46,240 --> 00:28:44,960
sup tomorrow there'll be the opening of

572
00:28:48,490 --> 00:28:46,250
the hatch and there will be a

573
00:28:53,140 --> 00:28:48,500
demonstration of the transfer of the

574
00:28:59,860 --> 00:28:56,140
reentry in return and landing and that

575
00:29:02,410 --> 00:28:59,870
will constitute the remaining lost times

576
00:29:03,730 --> 00:29:02,420
that we had on this mission and then as

577
00:29:06,010 --> 00:29:03,740
early as next week we'll take a quick

578
00:29:11,470 --> 00:29:06,020
look after that not next week but after

579
00:29:13,800 --> 00:29:11,480
the week after the I don't think it's

580
00:29:20,860 --> 00:29:13,810
going to take us very long to figure out

581
00:29:23,140 --> 00:29:20,870
how well achieve some gems okay our next

582
00:29:25,990 --> 00:29:23,150
reporter is Marcia Donald Associated

583
00:29:28,240 --> 00:29:26,000
Press yes I have a question for mr. buzz

584
00:29:30,640 --> 00:29:28,250
I'm wondering after the capture and

585
00:29:32,050 --> 00:29:30,650
berthing how did you and your team to

586
00:29:34,000 --> 00:29:32,060
celebrate I'm wondering did you toast

587
00:29:37,030 --> 00:29:34,010
with champagne or perhaps hand out

588
00:29:38,410 --> 00:29:37,040

friend Sheila Brewer cheese or maybe the

589
00:29:40,090 --> 00:29:38,420
party starts right after this news

590
00:29:43,000 --> 00:29:40,100
conference I'm just looking at for some

591
00:29:48,940 --> 00:29:43,010
details on how you did or about to

592
00:29:52,770 --> 00:29:48,950
celebrate yeah I think we did actually

593
00:29:55,570 --> 00:29:52,780
ban alcohol from the premises because

594
00:30:00,100 --> 00:29:55,580
you know that can people can get a

595
00:30:02,470 --> 00:30:00,110
little crazy but and now that things

596
00:30:03,970 --> 00:30:02,480
were good I think I think we'll probably

597
00:30:09,460 --> 00:30:03,980
have a bit of champagne and have some

598
00:30:11,620 --> 00:30:09,470
fun yeah it's best to be very sober in

599
00:30:15,090 --> 00:30:11,630
these circumstances until the deed is

600
00:30:22,690 --> 00:30:20,980
all right moving on to bill Harwood yeah

601
00:30:24,220 --> 00:30:22,700
hi a question for Mike Suffredini can

602
00:30:26,110 --> 00:30:24,230
you do the same thing you did a minute

603
00:30:27,250 --> 00:30:26,120
ago for but except do it for orbital and

604
00:30:29,320 --> 00:30:27,260
give us a little look ahead at their

605
00:30:30,700 --> 00:30:29,330
schedule and where they stand on a the

606
00:30:32,670 --> 00:30:30,710
test flight and if there's goes well

607
00:30:36,310 --> 00:30:32,680
when they would start in line Thanks

608
00:30:39,130 --> 00:30:36,320
let's see my understanding is the the

609
00:30:43,500 --> 00:30:39,140
pad preparations are going well they did

610
00:30:46,810 --> 00:30:43,510
the cryo shock tests last week I believe

611
00:30:49,030 --> 00:30:46,820
time is kind of all coming together last

612
00:30:51,460 --> 00:30:49,040
few days so forgive me if I'm off a bit

613
00:30:54,430 --> 00:30:51,470

but that went largely went very well

614
00:30:57,430 --> 00:30:54,440
they have a few minor things they you'd

615
00:30:58,060 --> 00:30:57,440
normally expect to find that will be

616
00:31:01,090 --> 00:30:58,070
repaired

617
00:31:03,220 --> 00:31:01,100
they they tell me that as early as

618
00:31:05,860 --> 00:31:03,230
August they believe they can do their

619
00:31:06,350 --> 00:31:05,870
test flight remember that's the one that

620
00:31:08,960 --> 00:31:06,360
doesn't come

621
00:31:11,150 --> 00:31:08,970
station and then be ready for their demo

622
00:31:13,790 --> 00:31:11,160
flight right now we have their demo

623
00:31:19,400 --> 00:31:13,800
flight scheduled for a December mid

624
00:31:20,660 --> 00:31:19,410
December if they are do really well with

625
00:31:21,680 --> 00:31:20,670
their test flight and stay ahead of

626
00:31:24,440 --> 00:31:21,690
schedule

627
00:31:26,750 --> 00:31:24,450
and can pull it up sooner into say the

628
00:31:29,450 --> 00:31:26,760
mid October time frame we could we could

629
00:31:34,010 --> 00:31:29,460
actually fly them a little bit earlier

630
00:31:35,450 --> 00:31:34,020
so so if if they're able to get all

631
00:31:37,250 --> 00:31:35,460
their objectives accomplished with their

632
00:31:40,100 --> 00:31:37,260
test flight in their test flight fly in

633
00:31:41,420 --> 00:31:40,110
the August timeframe its potential we

634
00:31:43,250 --> 00:31:41,430
could pull them up but right now we have

635
00:31:46,600 --> 00:31:43,260
them scheduled for their demo flight in

636
00:31:49,490 --> 00:31:46,610
December and then I believe they're

637
00:31:53,780 --> 00:31:49,500
their first flight under the CRS

638
00:31:56,150 --> 00:31:53,790

contract I believe is April of the of

639
00:32:00,580 --> 00:31:56,160
next year don't hold me to that but it's

640
00:32:08,210 --> 00:32:06,080
okay Mike wall space comm hi this yeah

641
00:32:12,530 --> 00:32:08,220
this one's done yeah oh yeah probably

642
00:32:13,880 --> 00:32:12,540
also for yes mr. must go home so there's

643
00:32:15,920 --> 00:32:13,890
a lot of cheering and stuff I'm the

644
00:32:18,260 --> 00:32:15,930
obviously birthing with the station was

645
00:32:19,580 --> 00:32:18,270
the big big deal and and it's great to

646
00:32:20,990 --> 00:32:19,590
get that out of the way I wasn't even if

647
00:32:22,280 --> 00:32:21,000
you could just talk a little bit about I

648
00:32:24,890 --> 00:32:22,290
mean what are some of the major hurdles

649
00:32:26,810 --> 00:32:24,900
going going forward now do you guys

650
00:32:28,100 --> 00:32:26,820
worry at all about any of the steps that

651
00:32:30,590 --> 00:32:28,110
are going to be involved in getting back

652
00:32:32,330 --> 00:32:30,600
to earth and and actually yet I'm

653
00:32:33,620 --> 00:32:32,340
surviving going through the atmosphere

654
00:32:38,150 --> 00:32:33,630
or does it seem like all the heavy

655
00:32:41,690 --> 00:32:38,160
lifting is is done now well I think

656
00:32:45,800 --> 00:32:41,700
that's the the critical steps have been

657
00:32:48,670 --> 00:32:45,810
achieved the really important thing of

658
00:32:53,810 --> 00:32:48,680
being able to approach the space station

659
00:32:56,450 --> 00:32:53,820
have the the the sensors lock on

660
00:32:58,730 --> 00:32:56,460
and as mentioned that the sort of the

661
00:33:02,630 --> 00:32:58,740
you know that the laser radar so

662
00:33:03,890 --> 00:33:02,640
lighters having having all that I go

663
00:33:05,810 --> 00:33:03,900

through which was the riskiest part of

664
00:33:08,960 --> 00:33:05,820
the mission and connect to the space

665
00:33:10,970 --> 00:33:08,970
station that's that's really the what's

666
00:33:12,410 --> 00:33:10,980
most important about this mission on our

667
00:33:14,290 --> 00:33:12,420
last mission we did demonstrate the

668
00:33:16,880 --> 00:33:14,300
ability to return through the atmosphere

669
00:33:18,290 --> 00:33:16,890
have the parachutes deploy and recover

670
00:33:22,340 --> 00:33:18,300
the Dragon spacecraft

671
00:33:25,400 --> 00:33:22,350
so I would expect that to occur this

672
00:33:27,230 --> 00:33:25,410
time but I think it's really important

673
00:33:28,460 --> 00:33:27,240
that the critical part of the mission

674
00:33:31,190 --> 00:33:28,470
the most important part of the mission

675
00:33:33,770 --> 00:33:31,200
has been successfully achieved so we're

676
00:33:36,800 --> 00:33:33,780
incredibly excited and I think is it is

677
00:33:44,060 --> 00:33:36,810
fair to to celebrate at this point a

678
00:33:47,900 --> 00:33:44,070
significant victory okay next is Irene

679
00:33:50,080 --> 00:33:47,910
Klotz from Reuters thanks Kelly um my

680
00:33:54,020 --> 00:33:50,090
question is for my except for Dini

681
00:33:55,940 --> 00:33:54,030
dragon of course is the third new cargo

682
00:33:58,880 --> 00:33:55,950
ship to come in station I was just

683
00:34:01,070 --> 00:33:58,890
wondering if you might be able to touch

684
00:34:03,320 --> 00:34:01,080
on what is different what was different

685
00:34:07,070 --> 00:34:03,330
about working with a private company as

686
00:34:09,650 --> 00:34:07,080
opposed to the government organisations

687
00:34:14,000 --> 00:34:09,660
of the European Space Agency and Japan

688
00:34:16,880 --> 00:34:14,010

and bring in their vehicles online well

689
00:34:21,380 --> 00:34:16,890
we to start with the the the approach we

690
00:34:24,350 --> 00:34:21,390
took with both the Europeans and the

691
00:34:26,720 --> 00:34:24,360
Japanese was similar and that is we

692
00:34:29,360 --> 00:34:26,730
provided them requirements that met met

693
00:34:32,720 --> 00:34:29,370
safety requirements and we verified

694
00:34:34,190 --> 00:34:32,730
those requirements and we expected the

695
00:34:37,690 --> 00:34:34,200
government's then to work with their

696
00:34:40,790 --> 00:34:37,700
contractors to ensure they met all their

697
00:34:43,640 --> 00:34:40,800
build two requirements for other phases

698
00:34:46,520 --> 00:34:43,650
of flight and the Europeans and the

699
00:34:49,280 --> 00:34:46,530
Japanese and the US have actually kind

700
00:34:53,300 --> 00:34:49,290
of grown up together so we have actually

701
00:34:54,770 --> 00:34:53,310
very similar techniques that's not to

702
00:34:57,230 --> 00:34:54,780
say they do everything exactly the same

703
00:35:00,650 --> 00:34:57,240
but they do have similar techniques and

704
00:35:02,450 --> 00:35:00,660
so the the the process from that

705
00:35:05,090 --> 00:35:02,460
standpoint in terms of the hardware they

706
00:35:06,920 --> 00:35:05,100
use and how they used it was is was

707
00:35:10,339 --> 00:35:06,930
familiar to us

708
00:35:12,440 --> 00:35:10,349
and similar so we took the similar

709
00:35:13,789 --> 00:35:12,450
approach with SpaceX but it was it was

710
00:35:15,650 --> 00:35:13,799
different because now you didn't have a

711
00:35:17,870 --> 00:35:15,660
you you didn't have a government entity

712
00:35:21,289 --> 00:35:17,880
backing up the performance of the

713
00:35:24,380 --> 00:35:21,299

contractor that was won and SpaceX took

714
00:35:27,289 --> 00:35:24,390
a unique approach to many phases of the

715
00:35:31,510 --> 00:35:27,299
flights and and so from in that respect

716
00:35:34,490 --> 00:35:31,520
it was different because we would spend

717
00:35:38,450 --> 00:35:34,500
time the engineers to engineers with us

718
00:35:41,480 --> 00:35:38,460
explaining not only what we have done in

719
00:35:43,039 --> 00:35:41,490
the past but why we did it which sounds

720
00:35:44,510 --> 00:35:43,049
pretty simple but it's one of those

721
00:35:45,799 --> 00:35:44,520
things it's kind of hard for you to do

722
00:35:47,329 --> 00:35:45,809
if you've done it a long time you tend

723
00:35:47,900 --> 00:35:47,339
to talk about how you do instead of why

724
00:35:50,480 --> 00:35:47,910
you do it

725
00:35:53,750 --> 00:35:50,490
as much and so as we went through those

726
00:35:56,029 --> 00:35:53,760
iterations with our SpaceX colleagues

727
00:35:57,650 --> 00:35:56,039
and then then their engineers would go

728
00:35:58,880 --> 00:35:57,660
okay now I understand what you're what

729
00:36:00,920 --> 00:35:58,890
you're trying to accomplish and when I

730
00:36:03,950 --> 00:36:00,930
look at how I'm designing my spacecraft

731
00:36:05,990 --> 00:36:03,960
and tools I'm using and this is how I

732
00:36:09,109 --> 00:36:06,000
would accomplish that same objective and

733
00:36:13,250 --> 00:36:09,119
so we had really more discussions along

734
00:36:15,710 --> 00:36:13,260
those lines unique ways to to solve the

735
00:36:18,620 --> 00:36:15,720
similar kind of problems that we had to

736
00:36:21,680 --> 00:36:18,630
levy on the those other two vehicles and

737
00:36:25,120 --> 00:36:21,690
verify as well so in some respects it

738
00:36:27,559 --> 00:36:25,130

was very similar the the level of

739
00:36:29,809 --> 00:36:27,569
insight and oversight and and

740
00:36:32,829 --> 00:36:29,819
requirements that we that we levied on

741
00:36:35,809 --> 00:36:32,839
on SpaceX relative to the two

742
00:36:37,549 --> 00:36:35,819
government-provided systems but in other

743
00:36:40,099 --> 00:36:37,559
respects it was completely different in

744
00:36:42,109 --> 00:36:40,109
terms of how they approach problems and

745
00:36:44,089 --> 00:36:42,119
and how they're our partners have

746
00:36:46,609 --> 00:36:44,099
approached problems and mostly because

747
00:36:48,589 --> 00:36:46,619
like I said we had worked so closely for

748
00:36:50,690 --> 00:36:48,599
so many years that we kind of we already

749
00:36:53,029 --> 00:36:50,700
took sort of similar approaches to

750
00:36:54,760 --> 00:36:53,039
solving similar problems if that makes

751
00:36:58,970 --> 00:36:54,770
sense

752
00:37:02,029 --> 00:36:58,980
okay Brian best ad with Washington Post

753
00:37:05,269 --> 00:37:02,039
oh yeah hi this is a question for Ilan

754
00:37:07,309 --> 00:37:05,279
musk so Ilan I noticed that when I was

755
00:37:09,289 --> 00:37:07,319
looking at the the web video of the

756
00:37:12,230 --> 00:37:09,299
folks at your company it looks like

757
00:37:14,000 --> 00:37:12,240
nobody's over the age of 30 uh I'm just

758
00:37:15,799 --> 00:37:14,010
wondering who are you tapping to work

759
00:37:17,660 --> 00:37:15,809
the company and it sounds like you're

760
00:37:19,700 --> 00:37:17,670
finding people who are young and excited

761
00:37:20,450 --> 00:37:19,710
about space I'm just wondering you know

762
00:37:25,460 --> 00:37:20,460
where is all this

763
00:37:28,250 --> 00:37:25,470

coming from yeah well actually to be

764
00:37:30,410 --> 00:37:28,260
clear our average age is around 30 so

765
00:37:33,470 --> 00:37:30,420
that means there are as many people over

766
00:37:37,010 --> 00:37:33,480
30 as below 30 and so we have a good

767
00:37:39,770 --> 00:37:37,020
mixture I think of experienced people as

768
00:37:41,240 --> 00:37:39,780
well as people all the way to just

769
00:37:44,570 --> 00:37:41,250
coming out of college and and and

770
00:37:47,420 --> 00:37:44,580
interns so I do think it's important to

771
00:37:50,570 --> 00:37:47,430
mix but the wisdom of age with the

772
00:37:53,870 --> 00:37:50,580
vibrancy of youth in order to to get the

773
00:37:55,849 --> 00:37:53,880
the best outcome and and and create and

774
00:37:59,510 --> 00:37:55,859
really drive forward the state of

775
00:38:01,370 --> 00:37:59,520
Technology while avoiding obvious

776
00:38:03,109 --> 00:38:01,380
mistakes that have been made in the past

777
00:38:07,099 --> 00:38:03,119
I think that's that's the best

778
00:38:08,660 --> 00:38:07,109
combination so and I think we really

779
00:38:12,050 --> 00:38:08,670
just got a got a great team here at

780
00:38:14,420 --> 00:38:12,060
SpaceX it super super motivated and and

781
00:38:16,820 --> 00:38:14,430
I think nothing nothing fires people up

782
00:38:18,980 --> 00:38:16,830
more than a successful mission like this

783
00:38:31,940 --> 00:38:18,990
so I think people just feeling super

784
00:38:38,309 --> 00:38:34,709
so I think I think I think we're super

785
00:38:40,410 --> 00:38:38,319
excited to keep going and you know and

786
00:38:42,719 --> 00:38:40,420
keep pushing forward and really looking

787
00:38:46,769 --> 00:38:42,729
forward to taking out those crude

788
00:38:48,660 --> 00:38:46,779

mission to the space station and you

789
00:38:53,219 --> 00:38:48,670
know doing doing great things for the

790
00:38:56,430 --> 00:38:53,229
for the country and for the world okay

791
00:38:59,789 --> 00:38:56,440
next is Hannah Elliot with Forbes hi

792
00:39:03,890 --> 00:38:59,799
this question is for Ilan - a two-part

793
00:39:06,359 --> 00:39:03,900
question number one how are you

794
00:39:09,089 --> 00:39:06,369
responding to people who doubted that

795
00:39:11,279 --> 00:39:09,099
this would happen successfully Ilan and

796
00:39:13,609 --> 00:39:11,289
and just in general your your many

797
00:39:15,839 --> 00:39:13,619
endeavors that they'll be successful

798
00:39:17,880 --> 00:39:15,849
successful and number two what did you

799
00:39:26,729 --> 00:39:17,890
eat during the three days that we were

800
00:39:31,319 --> 00:39:26,739
going through this well I think there

801
00:39:33,359 --> 00:39:31,329
was reason to to doubt that we would

802
00:39:36,749 --> 00:39:33,369
succeed because there's not a lot of

803
00:39:38,279 --> 00:39:36,759
precedent for what we've done this is

804
00:39:43,319 --> 00:39:38,289
the first time that a commercial company

805
00:39:45,449 --> 00:39:43,329
is has done such a thing so you know for

806
00:39:46,769 --> 00:39:45,459
those who doubted they they had the

807
00:39:49,259 --> 00:39:46,779
reasons for doubting for lack of

808
00:39:51,479 --> 00:39:49,269
precedent but I think I think that those

809
00:39:55,589 --> 00:39:51,489
reasons is no longer remain having done

810
00:39:57,870 --> 00:39:55,599
today what we've done so I I'm hopeful

811
00:40:01,370 --> 00:39:57,880
that a lot of people's doubts where we

812
00:40:04,799 --> 00:40:01,380
will have been put to rest and and that

813
00:40:06,640 --> 00:40:04,809

and that we can hopefully look look for

814
00:40:10,089 --> 00:40:06,650
their support going forward

815
00:40:12,190 --> 00:40:10,099
and in terms of what did I eat I ate

816
00:40:20,370 --> 00:40:12,200
somewhat erratically over the last few

817
00:40:24,940 --> 00:40:20,380
days I can't even remember what age I

818
00:40:33,900 --> 00:40:24,950
probably do not eat eat healthily but I

819
00:40:40,749 --> 00:40:37,329
our next reporter is Jason par with

820
00:40:43,690 --> 00:40:40,759
Wired magazine hi this is a question

821
00:40:46,359 --> 00:40:43,700
again again for Ilan there's a question

822
00:40:49,450 --> 00:40:46,369
a little bit about maneuvers and the

823
00:40:52,269 --> 00:40:49,460
extra time spent near the station and

824
00:40:53,950 --> 00:40:52,279
how much propellant ended up being used

825
00:40:56,049 --> 00:40:53,960
were you guys ever at risk of having to

826
00:40:58,960 --> 00:40:56,059
call it off were there any concerns

827
00:41:04,450 --> 00:40:58,970
during the with all the extra time spent

828
00:41:08,999 --> 00:41:04,460
in proximity to station yeah there were

829
00:41:12,309 --> 00:41:09,009
definitely some close moments where it

830
00:41:13,960 --> 00:41:12,319
potentially could have called an abort

831
00:41:15,940 --> 00:41:13,970
and in fact there were moments where we

832
00:41:18,160 --> 00:41:15,950
had to retreat a little bit just to

833
00:41:21,269 --> 00:41:18,170
reassess the situation which makes them

834
00:41:23,769 --> 00:41:21,279
last-minute adjustments in particular

835
00:41:27,819 --> 00:41:23,779
narrowing the field of view of the the

836
00:41:33,039 --> 00:41:27,829
lidar or laser radar and unfortunately

837
00:41:35,789 --> 00:41:33,049
those worked and we were in very close

838
00:41:38,140 --> 00:41:35,799

cooperation with NASA mission control

839
00:41:40,989 --> 00:41:38,150
and together we worked out a solution

840
00:41:44,440 --> 00:41:40,999
that allowed us to go in and get

841
00:41:46,960 --> 00:41:44,450
grappled by the arm and and and and

842
00:41:48,999 --> 00:41:46,970
berth okay occasionally by the way you

843
00:41:50,859 --> 00:41:49,009
make Mike I tend to say doc instead of

844
00:41:52,359 --> 00:41:50,869
both technically it's both but but I

845
00:41:53,650 --> 00:41:52,369
found sometimes when I'd say we're

846
00:41:54,759 --> 00:41:53,660
birthing with the space station people

847
00:41:58,800 --> 00:41:54,769
thought I was saying birthing with an

848
00:42:00,960 --> 00:41:58,810
eye and got very confused

849
00:42:02,850 --> 00:42:00,970
since technically technically it's

850
00:42:05,490 --> 00:42:02,860
birthing with an age but but I say

851
00:42:07,230 --> 00:42:05,500
talking some people you know ultimately

852
00:42:13,710 --> 00:42:07,240
with the situation instead what I'm

853
00:42:17,790 --> 00:42:13,720
talking about okay I'm next to the

854
00:42:20,070 --> 00:42:17,800
Steven Clark with Space Flight now hi

855
00:42:22,980 --> 00:42:20,080
guys but but question for either Holly

856
00:42:25,350 --> 00:42:22,990
or Mike Suffredini and that's looking

857
00:42:28,950 --> 00:42:25,360
ahead over the next few days the cargo

858
00:42:30,650 --> 00:42:28,960
transfer first when does the hatch I'm

859
00:42:32,820 --> 00:42:30,660
going to come open tomorrow morning and

860
00:42:35,790 --> 00:42:32,830
what crew members are fall from the

861
00:42:37,050 --> 00:42:35,800
cargo trance pretty busy time over the

862
00:42:42,210 --> 00:42:37,060
next few days to get all the cargo

863
00:42:46,820 --> 00:42:42,220

transferred or where is it so I'll take

864
00:42:51,180 --> 00:42:46,830
a hatch opening playing for 11:40 GMT

865
00:42:53,970 --> 00:42:51,190
tomorrow so we've got 6:40 a.m. central

866
00:42:57,270 --> 00:42:53,980
Daylight Time we do have just a little

867
00:43:00,720 --> 00:42:57,280
bit of cargo operations that we may do

868
00:43:02,550 --> 00:43:00,730
over the weekend to take a first look at

869
00:43:05,280 --> 00:43:02,560
Dragon make sure everything's as we

870
00:43:07,380 --> 00:43:05,290
expected and nothing changed on the ride

871
00:43:08,940 --> 00:43:07,390
to the space station we are going to

872
00:43:10,830 --> 00:43:08,950
give our crew some time off they've been

873
00:43:13,590 --> 00:43:10,840
working very hard over the next couple

874
00:43:14,820 --> 00:43:13,600
of days over the last couple of days and

875
00:43:16,650 --> 00:43:14,830
so they will have a little bit time off

876
00:43:20,310 --> 00:43:16,660
over the weekend and then Monday and

877
00:43:22,320 --> 00:43:20,320
Tuesday are very big cargo days on the

878
00:43:24,120 --> 00:43:22,330
space station with regard to Dragon will

879
00:43:25,590 --> 00:43:24,130
be doing at least one of the crew

880
00:43:28,760 --> 00:43:25,600
members will be doing cargo operations

881
00:43:32,280 --> 00:43:28,770
almost all of their workday those days

882
00:43:35,790 --> 00:43:32,290
primarily Andre Jo and Don will be

883
00:43:38,130 --> 00:43:35,800
handling the cargo operations kind of

884
00:43:39,990 --> 00:43:38,140
rotating generally you only have one

885
00:43:41,730 --> 00:43:40,000
person and the dragon at least that's

886
00:43:44,400 --> 00:43:41,740
how we've planned it with a second

887
00:43:46,230 --> 00:43:44,410
person helping them and then once you

888
00:43:48,030 --> 00:43:46,240

add the third it's not as efficient but

889
00:43:50,070 --> 00:43:48,040
the three of them will be rotating and

890
00:43:52,140 --> 00:43:50,080
performing all those cop cargo

891
00:43:54,840 --> 00:43:52,150
operations somewhere in the order of the

892
00:43:57,270 --> 00:43:54,850
the mid-20 in the numbers of hours so

893
00:44:02,520 --> 00:43:57,280
about 25 hours worth of cargo operations

894
00:44:06,500 --> 00:44:02,530
we have planned for this mission all

895
00:44:09,210 --> 00:44:06,510
right now on to Roger ball with the BBC

896
00:44:10,560 --> 00:44:09,220
good afternoon to you Roger Ball BBC

897
00:44:12,720 --> 00:44:10,570
Radio Devon

898
00:44:16,080 --> 00:44:12,730
first of all I'd like to congratulate

899
00:44:19,140 --> 00:44:16,090
all three teams Hawthorne Houston and

900
00:44:20,040 --> 00:44:19,150
the guys are upstairs for making it look

901
00:44:23,250 --> 00:44:20,050
so easy

902
00:44:25,980 --> 00:44:23,260
my experience of flight testing if it

903
00:44:29,130 --> 00:44:25,990
looks easy it means it's really hard and

904
00:44:29,760 --> 00:44:29,140
you did a brilliant job making it look

905
00:44:32,400 --> 00:44:29,770
so easy

906
00:44:35,610 --> 00:44:32,410
my question is and I guess it's probably

907
00:44:39,390 --> 00:44:35,620
mister suffered a knee for this one the

908
00:44:41,760 --> 00:44:39,400
two crafts but are going to be carrying

909
00:44:44,100 --> 00:44:41,770
cargo dragon and Cygnus in the near

910
00:44:47,610 --> 00:44:44,110
future dragon is the only one that has

911
00:44:50,240 --> 00:44:47,620
an unpressurized capability what size o

912
00:44:51,720 --> 00:44:50,250
our use would you be able to carry on

913
00:44:56,520 --> 00:44:51,730

dragon

914
00:44:59,750 --> 00:44:56,530
for instance we saw an ammonia tank

915
00:45:04,860 --> 00:44:59,760
being transferred from the shuttle and

916
00:45:07,230 --> 00:45:04,870
Sarge parts would you be able to carry

917
00:45:11,730 --> 00:45:07,240
kid like that or would it be smaller

918
00:45:14,370 --> 00:45:11,740
such as another version of the robotic

919
00:45:17,550 --> 00:45:14,380
refueling mission and I've got to follow

920
00:45:20,970 --> 00:45:17,560
up for mr. musk to ask him what actually

921
00:45:26,670 --> 00:45:20,980
happened to the cheese from the first

922
00:45:28,260 --> 00:45:26,680
dragon return well I'll answer the my

923
00:45:29,610 --> 00:45:28,270
question because the Ilan will take a

924
00:45:33,150 --> 00:45:29,620
lot longer to explain what happened to

925
00:45:36,180 --> 00:45:33,160
the G so the the dragon spacecraft was

926
00:45:39,720 --> 00:45:36,190
designed to carry the lion's share of

927
00:45:41,340 --> 00:45:39,730
the law of the external o our use in

928
00:45:43,980 --> 00:45:41,350
fact I was just racking my brain here

929
00:45:47,190 --> 00:45:43,990
think if there were any that would not

930
00:45:49,680 --> 00:45:47,200
fit in the trunk it really it really

931
00:45:52,590 --> 00:45:49,690
comes down to the number of our use you

932
00:45:56,370 --> 00:45:52,600
could fly in in this in the dragon

933
00:45:58,230 --> 00:45:56,380
versus the HTV but as I recall all of

934
00:46:03,330 --> 00:45:58,240
the or use today that we intend to carry

935
00:46:05,400 --> 00:46:03,340
to ISS will fit inside the the dragon

936
00:46:12,010 --> 00:46:05,410
trunk so it's fully capable to taking

937
00:46:17,290 --> 00:46:15,910
yes so and and if it turns out that the

938
00:46:19,210 --> 00:46:17,300

dragon trunk isn't bigger we'll make it

939
00:46:22,690 --> 00:46:19,220
bigger you know if it's not big enough

940
00:46:24,450 --> 00:46:22,700
so make sure it's that anything in a

941
00:46:26,950 --> 00:46:24,460
sneeze can be taken care of there

942
00:46:28,750 --> 00:46:26,960
one thing that's also noteworthy with

943
00:46:31,930 --> 00:46:28,760
respect to Dragon is that it's the only

944
00:46:36,910 --> 00:46:31,940
means of taking cargo back from the

945
00:46:39,400 --> 00:46:36,920
space station to a this is the HTV ATV

946
00:46:40,870 --> 00:46:39,410
and Cygnus can take cargo to the space

947
00:46:41,830 --> 00:46:40,880
station but they cannot register a

948
00:46:44,140 --> 00:46:41,840
number to earth

949
00:46:46,060 --> 00:46:44,150
the Soyuz can return a very tiny amount

950
00:46:47,530 --> 00:46:46,070
of cargo but it's it's really meant for

951
00:46:50,980 --> 00:46:47,540
carrying people back so you can put

952
00:46:53,920 --> 00:46:50,990
maybe something the size of a well a

953
00:46:57,310 --> 00:46:53,930
small knapsack or something on the on

954
00:46:59,290 --> 00:46:57,320
the Soyuz so so dragon is really the

955
00:47:03,310 --> 00:46:59,300
main means of carrying cargo back from

956
00:47:05,710 --> 00:47:03,320
the space station and let's see what

957
00:47:09,660 --> 00:47:05,720
happened to the cheese the cheese is

958
00:47:15,250 --> 00:47:09,670
right here in the in the SpaceX Factory

959
00:47:16,780 --> 00:47:15,260
as you may know the cheese is in part a

960
00:47:19,480 --> 00:47:16,790
tribute to the Monty Python cheese shop

961
00:47:22,390 --> 00:47:19,490
sketch we kept the cheese car very tough

962
00:47:25,420 --> 00:47:22,400
secret until the mission succeeded on

963
00:47:26,500 --> 00:47:25,430

last flight because I thought people

964
00:47:27,700 --> 00:47:26,510
might have been worried that we'd be

965
00:47:28,120 --> 00:47:27,710
distracted by the cheese or something

966
00:47:30,370 --> 00:47:28,130
like that

967
00:47:31,630 --> 00:47:30,380
if something went wrong but it's here in

968
00:47:34,630 --> 00:47:31,640
our factory if you want to come and see

969
00:47:36,400 --> 00:47:34,640
it it's encased in lucite it's a very

970
00:47:40,800 --> 00:47:36,410
stinky wheeler career but fortunately

971
00:47:54,460 --> 00:47:52,870
okay Jerry Hume with news 13 Jerry we're

972
00:47:57,070 --> 00:47:54,470
not hearing you if you're calling in and

973
00:48:04,960 --> 00:47:57,080
I will try again Jason Ryan with America

974
00:48:09,910 --> 00:48:07,510
and moving on to Brenda McGarry with

975
00:48:11,740 --> 00:48:09,920
Bloomberg alright thanks for taking the

976
00:48:14,230 --> 00:48:11,750
call congratulations I had a question

977
00:48:16,180 --> 00:48:14,240
for Elon Musk and that is will the

978
00:48:18,880 --> 00:48:16,190
apparent success of this mission in any

979
00:48:21,730 --> 00:48:18,890
way change the planned timing of a

980
00:48:23,860 --> 00:48:21,740
SpaceX IPO I know he has talked about

981
00:48:28,660 --> 00:48:23,870
possibly doing that as early as next

982
00:48:32,130 --> 00:48:28,670
year well I don't think this is going to

983
00:48:35,170 --> 00:48:32,140
change any IPO timing and and I mean

984
00:48:36,730 --> 00:48:35,180
really I I I don't think the IPO is

985
00:48:39,100 --> 00:48:36,740
something that should be necessarily

986
00:48:41,530 --> 00:48:39,110
aimed for us explicitly it's something

987
00:48:45,820 --> 00:48:41,540
that occurs if a company is in a

988
00:48:47,530 --> 00:48:45,830

particular position and the important

989
00:48:50,470 --> 00:48:47,540
thing for SpaceX is to be in a steady

990
00:48:52,390 --> 00:48:50,480
cadence of launches so that we're sort

991
00:48:55,450 --> 00:48:52,400
of steadily launching a significant

992
00:48:57,040 --> 00:48:55,460
number of missions if we're doing sort

993
00:48:59,200 --> 00:48:57,050
of a launch every month and things are

994
00:49:01,830 --> 00:48:59,210
really steady state that would be an

995
00:49:04,300 --> 00:49:01,840
appropriate time to go public because

996
00:49:07,330 --> 00:49:04,310
then we have good predictability about

997
00:49:09,190 --> 00:49:07,340
the future but as long as they're still

998
00:49:10,540 --> 00:49:09,200
significant question marks about future

999
00:49:13,300 --> 00:49:10,550
developments and when things will launch

1000
00:49:16,210 --> 00:49:13,310
and dates moving around it's best to

1001
00:49:18,040 --> 00:49:16,220
remain private and you know because

1002
00:49:22,020 --> 00:49:18,050
stock market is not a big fan of

1003
00:49:25,720 --> 00:49:24,220
okay that's all of our foam bridge

1004
00:49:27,790 --> 00:49:25,730
questions I'll give one more opportunity

1005
00:49:31,420 --> 00:49:27,800
for the folks here in Houston to ask any

1006
00:49:33,910 --> 00:49:31,430
follow-ups with that we'll begin to

1007
00:49:35,410 --> 00:49:33,920
close out this briefing just a few

1008
00:49:36,760 --> 00:49:35,420
programming notes on the upcoming

1009
00:49:37,990 --> 00:49:36,770
coverage on the rest of the dragon

1010
00:49:41,050 --> 00:49:38,000
mission to the International Space

1011
00:49:43,270 --> 00:49:41,060
Station coming up our live coverage

1012
00:49:47,530 --> 00:49:43,280
starts tomorrow for hatch opening at

1013
00:49:49,300 --> 00:49:47,540

4:30 a.m. Central time and then at 10:25

1014
00:49:52,240 --> 00:49:49,310
a.m. tomorrow we'll have the expedition

1015
00:49:53,680 --> 00:49:52,250
31 crew news conference we will be

1016
00:49:55,060 --> 00:49:53,690
activating the phone bridge for that

1017
00:49:57,970 --> 00:49:55,070
news conference so if you'd like to

1018
00:49:59,200 --> 00:49:57,980
participate please call in at least 15

1019
00:50:01,000 --> 00:49:59,210
minutes early to the Johnson Space

1020
00:50:03,880 --> 00:50:01,010
Center newsroom so we can get a good

1021
00:50:06,220 --> 00:50:03,890
connection for you with that I want to

1022
00:50:08,500 --> 00:50:06,230
thank everybody here in Houston and in

1023
00:50:09,970 --> 00:50:08,510
Hawthorne for the participation and