
Mission Control Center
NASA
JAXA
esa

1
00:00:13,190 --> 00:00:10,790
international space station space

2
00:00:20,550 --> 00:00:13,200
station and science and briefing

3
00:00:24,550 --> 00:00:22,390
international space station space

4
00:00:26,310 --> 00:00:24,560
station flight director

5
00:00:28,230 --> 00:00:26,320
and tara rutley the associated

6
00:00:39,990 --> 00:00:28,240
international space station program

7
00:00:40,000 --> 00:00:52,549
quite a while

8
00:00:56,950 --> 00:00:54,630
we're doing and

9
00:00:58,229 --> 00:00:56,960
and one of my favorite topics now tara's

10
00:01:00,709 --> 00:00:58,239
going to spend some time with you about

11
00:01:02,790 --> 00:01:00,719
the research we're doing on board iss

12
00:01:06,070 --> 00:01:02,800
since that's the focus with assembly

13
00:01:09,030 --> 00:01:06,080

essentially being complete on board iss

14
00:01:11,270 --> 00:01:09,040
as everyone knows we moved our our

15
00:01:14,070 --> 00:01:11,280
launch dates a little to the right due

16
00:01:17,670 --> 00:01:14,080
to a pressure test problem

17
00:01:19,270 --> 00:01:17,680
that occurred while testing vehicle 704

18
00:01:21,270 --> 00:01:19,280
that's

19
00:01:22,950 --> 00:01:21,280
been taken care of we've moved up the

20
00:01:24,469 --> 00:01:22,960
other vehicles that were following

21
00:01:26,469 --> 00:01:24,479
behind that one

22
00:01:28,950 --> 00:01:26,479
and resulted in about a a month and a

23
00:01:31,510 --> 00:01:28,960
half a slip in our flights

24
00:01:33,910 --> 00:01:31,520
uh and so that's uh that's the team's

25
00:01:34,950 --> 00:01:33,920
preparation effort is towards a april

26
00:01:38,830 --> 00:01:34,960
30th

27
00:01:39,990 --> 00:01:38,840
return of uh of the crew on board

28
00:01:42,149 --> 00:01:40,000
and uh

29
00:01:44,789 --> 00:01:42,159
and the launch of the next crew uh in

30
00:01:46,870 --> 00:01:44,799
the middle of uh april

31
00:01:49,350 --> 00:01:46,880
uh however there are a number of things

32
00:01:50,550 --> 00:01:49,360
that have to occur on orbit uh in in

33
00:01:52,950 --> 00:01:50,560
sequence for

34
00:01:55,429 --> 00:01:52,960
for things to work uh and it's not just

35
00:01:57,670 --> 00:01:55,439
about crew rotations it's also about the

36
00:01:59,190 --> 00:01:57,680
logistics on board and then doing all

37
00:02:01,429 --> 00:01:59,200
the work that we need to do on board in

38
00:02:02,550 --> 00:02:01,439

between the arrival and departures of of

39
00:02:05,190 --> 00:02:02,560
vehicles

40
00:02:06,550 --> 00:02:05,200
so the crew on orbit today is in the

41
00:02:08,550 --> 00:02:06,560
last few weeks actually has been

42
00:02:10,869 --> 00:02:08,560
averaging on the order of about

43
00:02:13,190 --> 00:02:10,879
50 hours a week and this was our effort

44
00:02:14,869 --> 00:02:13,200
to catch back up with the

45
00:02:17,110 --> 00:02:14,879
crew time necessary to meet our

46
00:02:19,910 --> 00:02:17,120
requirement for the for the research

47
00:02:22,150 --> 00:02:19,920
community of 35 hours a week dedicated

48
00:02:24,070 --> 00:02:22,160
to research and so we're well on track

49
00:02:26,470 --> 00:02:24,080
to reach that average in spite of the

50
00:02:28,470 --> 00:02:26,480
progress anomaly that happened earlier

51
00:02:30,710 --> 00:02:28,480
uh or about the middle of of last year

52
00:02:31,670 --> 00:02:30,720
it's hard things are all going together

53
00:02:33,670 --> 00:02:31,680
for us

54
00:02:35,350 --> 00:02:33,680
um and so that's uh

55
00:02:36,949 --> 00:02:35,360
we're well on our way to catch back up

56
00:02:38,869 --> 00:02:36,959
that was our plan at the end of this

57
00:02:41,750 --> 00:02:38,879
increment to be there and i think hours

58
00:02:44,550 --> 00:02:41,760
wise we'll be in we'll be in good shape

59
00:02:47,270 --> 00:02:44,560
so we're proceeding along uh

60
00:02:50,790 --> 00:02:47,280
well on orbit we've had a couple of

61
00:02:53,589 --> 00:02:50,800
minor anomalies along the way

62
00:02:55,589 --> 00:02:53,599
one of them perhaps not so minor but not

63
00:02:56,470 --> 00:02:55,599

causing us any problem on board today is

64
00:03:26,550 --> 00:02:56,480
a

65
00:03:28,309 --> 00:03:26,560
gotten to the point where it won't

66
00:03:29,990 --> 00:03:28,319
communicate with us but it's still

67
00:03:32,630 --> 00:03:30,000
passing on power and we have all the

68
00:03:34,630 --> 00:03:32,640
protections we require from it so we've

69
00:03:36,710 --> 00:03:34,640
left it to operate

70
00:03:39,270 --> 00:03:36,720
alone and it seems to be doing the

71
00:03:41,910 --> 00:03:39,280
function that's required so assuming it

72
00:03:43,350 --> 00:03:41,920
doesn't fail in a manner that causes it

73
00:03:45,910 --> 00:03:43,360
not to provide power any longer which

74
00:03:48,229 --> 00:03:45,920
we're not expecting we are looking to

75
00:03:50,149 --> 00:03:48,239
replace that box in the late summer

76
00:03:51,589 --> 00:03:50,159
early fall time frame and i'll touch on

77
00:03:53,910 --> 00:03:51,599
that in just a minute

78
00:03:55,350 --> 00:03:53,920
as we go down the sequence of events

79
00:03:56,710 --> 00:03:55,360
so that's probably the main one we've

80
00:03:58,070 --> 00:03:56,720
been working on a little anomalies have

81
00:03:59,589 --> 00:03:58,080
occurred here and there you've seen that

82
00:04:01,589 --> 00:03:59,599
the water processor was down for a

83
00:04:04,149 --> 00:04:01,599
little while we had to replace a

84
00:04:06,390 --> 00:04:04,159
catalytic reactor uh in that unit it's

85
00:04:08,470 --> 00:04:06,400
back up and running now

86
00:04:10,630 --> 00:04:08,480
we've had a little uh

87
00:04:12,949 --> 00:04:10,640
hiccup with the one of the beta gimbals

88
00:04:15,910 --> 00:04:12,959

the 2a beta gimbal that we've recovered

89
00:04:18,310 --> 00:04:15,920
as well uh it had some calm

90
00:04:19,990 --> 00:04:18,320
problems as well which we think might be

91
00:04:21,909 --> 00:04:20,000
related to uh

92
00:04:23,510 --> 00:04:21,919
some fod inside the

93
00:04:26,710 --> 00:04:23,520
the uh

94
00:04:28,870 --> 00:04:26,720
um beta gimbal unit itself and so we'll

95
00:04:31,510 --> 00:04:28,880
be watching that closely uh but that's

96
00:04:34,070 --> 00:04:31,520
also when uh with since we have backup

97
00:04:35,590 --> 00:04:34,080
uh command capability or communication

98
00:04:39,030 --> 00:04:35,600
capability with that

99
00:04:40,550 --> 00:04:39,040
uh gimbal we're uh we're in good shape

100
00:04:42,469 --> 00:04:40,560
so with that i thought i'd take a minute

101
00:04:44,790 --> 00:04:42,479
and talk about the vehicles that are

102
00:04:46,870 --> 00:04:44,800
about to come to iss and then i'll pass

103
00:04:49,749 --> 00:04:46,880
it on to the rest of folks to tell you

104
00:04:53,590 --> 00:04:49,759
what's going on on orbit

105
00:04:54,469 --> 00:04:53,600
the next flight in sequence is the atv

106
00:04:56,390 --> 00:04:54,479
3

107
00:04:58,550 --> 00:04:56,400
which is in karoo getting ready to

108
00:05:00,390 --> 00:04:58,560
launch here on the 23rd

109
00:05:02,150 --> 00:05:00,400
uh so at the end of this week

110
00:05:03,510 --> 00:05:02,160
uh we there was a delay it was

111
00:05:05,749 --> 00:05:03,520
originally scheduled to launch on the

112
00:05:06,950 --> 00:05:05,759
9th we were looking at some closeout

113
00:05:08,629 --> 00:05:06,960

photos

114
00:05:10,950 --> 00:05:08,639
unfortunately after the shroud had

115
00:05:12,469 --> 00:05:10,960
already put up been put over the atv and

116
00:05:13,670 --> 00:05:12,479
we found that some of the buckles were

117
00:05:15,590 --> 00:05:13,680
loose

118
00:05:18,870 --> 00:05:15,600
and didn't have the

119
00:05:21,029 --> 00:05:18,880
the secondary locking feature installed

120
00:05:23,189 --> 00:05:21,039
and so the decision was made to go ahead

121
00:05:26,950 --> 00:05:23,199
and go back in and

122
00:05:29,430 --> 00:05:26,960
snug up those straps and also

123
00:05:30,790 --> 00:05:29,440
put in the secondary locking feature

124
00:05:32,390 --> 00:05:30,800
and then the spacecraft was buttoned

125
00:05:33,350 --> 00:05:32,400
back up

126
00:05:36,070 --> 00:05:33,360
and is

127
00:05:37,510 --> 00:05:36,080
on track to launch on time on the 23rd

128
00:05:39,430 --> 00:05:37,520
we have dealt with a couple issues

129
00:05:42,469 --> 00:05:39,440
having to do with uh

130
00:05:44,629 --> 00:05:42,479
elevated levels of uh of bacteria count

131
00:05:46,469 --> 00:05:44,639
and in both on on some of the surfaces

132
00:05:47,830 --> 00:05:46,479
of the bag and in the air we have ways

133
00:05:49,909 --> 00:05:47,840
to deal with that

134
00:05:52,230 --> 00:05:49,919
and in fact in the case of the surface

135
00:05:54,150 --> 00:05:52,240
area on the bags we have a higher

136
00:05:55,590 --> 00:05:54,160
constraint on the ground pre-launched

137
00:05:57,590 --> 00:05:55,600
than we actually have

138
00:05:59,510 --> 00:05:57,600

for the on-orbit requirement and we meet

139
00:06:01,909 --> 00:05:59,520
the on-orbit requirements so you can see

140
00:06:04,070 --> 00:06:01,919
that this is a level that we that we

141
00:06:05,990 --> 00:06:04,080
want to take a look at and think about

142
00:06:07,590 --> 00:06:06,000
and react to but it's not really a

143
00:06:09,430 --> 00:06:07,600
constraint to launch

144
00:06:11,350 --> 00:06:09,440
and so we'll process the paper for both

145
00:06:13,670 --> 00:06:11,360
of those uh

146
00:06:16,390 --> 00:06:13,680
concerns and and be ready for the launch

147
00:06:19,430 --> 00:06:16,400
on the 23rd and it docks

148
00:06:20,150 --> 00:06:19,440
uh on the 28th of march

149
00:06:28,070 --> 00:06:20,160
uh

150
00:06:29,990 --> 00:06:28,080
will come up launches on the 20th of

151
00:06:32,629 --> 00:06:30,000
april

152
00:06:34,629 --> 00:06:32,639
subsequent to that then is um or

153
00:06:36,390 --> 00:06:34,639
following that is um

154
00:06:38,070 --> 00:06:36,400
two things occur on the 30th of april

155
00:06:41,110 --> 00:06:38,080
one is we have the return of the crew

156
00:06:44,070 --> 00:06:41,120
antonio anton and dan come home

157
00:06:45,990 --> 00:06:44,080
on the 30th of april and also on that

158
00:06:49,510 --> 00:06:46,000
date today currently scheduled is the

159
00:06:52,150 --> 00:06:49,520
first launch of the spacex demo mission

160
00:06:54,710 --> 00:06:52,160
to iss which will

161
00:06:57,029 --> 00:06:54,720
plan to do its demo around iss on the

162
00:06:58,550 --> 00:06:57,039
2nd of may and

163
00:07:01,430 --> 00:06:58,560

and

164
00:07:03,830 --> 00:07:01,440
birth be birthed on the 3rd of may so

165
00:07:08,230 --> 00:07:03,840
that's in in the plan and then following

166
00:07:10,629 --> 00:07:08,240
that event uh the next crew uh comes up

167
00:07:12,150 --> 00:07:10,639
um gennady sergey and joe come up on the

168
00:07:15,830 --> 00:07:12,160
15th of may

169
00:07:17,670 --> 00:07:15,840
and uh and docked to the iss on the 17th

170
00:07:19,990 --> 00:07:17,680
of may

171
00:07:21,350 --> 00:07:20,000
then later in the summer

172
00:07:24,710 --> 00:07:21,360
although it's not been officially

173
00:07:27,029 --> 00:07:24,720
announced we have a planning date to

174
00:07:29,270 --> 00:07:27,039
to launch an htv

175
00:07:31,110 --> 00:07:29,280
about the 21st of july we're still

176
00:07:33,189 --> 00:07:31,120
finalizing that date that's the planning

177
00:07:35,430 --> 00:07:33,199
date we're using

178
00:07:37,270 --> 00:07:35,440
and then we'll get we'll get it docked

179
00:07:39,990 --> 00:07:37,280
there's a possibility we'll have a

180
00:07:42,550 --> 00:07:40,000
commercial launch in the august time

181
00:07:47,189 --> 00:07:44,710
it's possible that spacex one could

182
00:07:50,230 --> 00:07:47,199
arrive then so we're protecting that uh

183
00:07:52,629 --> 00:07:50,240
alternative but then the or the uh demo

184
00:07:53,990 --> 00:07:52,639
flight for the orbital uh spacecraft

185
00:07:54,950 --> 00:07:54,000
will be occurring

186
00:07:57,510 --> 00:07:54,960
um

187
00:08:00,790 --> 00:07:57,520
launching on the september 1st and

188
00:08:02,790 --> 00:08:00,800

docking um birthing excuse me on the 6th

189
00:08:05,189 --> 00:08:02,800
of september

190
00:08:06,390 --> 00:08:05,199
so let's go back to the august launch so

191
00:08:10,070 --> 00:08:06,400
if the

192
00:08:12,309 --> 00:08:10,080
if spacex 1 is ready to uh to launch

193
00:08:15,430 --> 00:08:12,319
we'll move the htv to the zenith port

194
00:08:17,670 --> 00:08:15,440
and uh and be prepared to bring the uh

195
00:08:19,830 --> 00:08:17,680
spacex vehicle up and birth it to the to

196
00:08:21,909 --> 00:08:19,840
the nader port uh and have two

197
00:08:23,749 --> 00:08:21,919
spacecraft at the same time if the

198
00:08:25,589 --> 00:08:23,759
spacex one

199
00:08:27,830 --> 00:08:25,599
flight does not occur in august and from

200
00:08:29,749 --> 00:08:27,840
a logistics standpoint that's not really

201
00:08:31,189 --> 00:08:29,759
a concern we're in very good shape on

202
00:08:32,709 --> 00:08:31,199
orbit for logistics so if it slips a

203
00:08:34,469 --> 00:08:32,719
little bit that's okay

204
00:08:36,389 --> 00:08:34,479
then we'll probably you'll see us go

205
00:08:39,029 --> 00:08:36,399
ahead and put that eva

206
00:08:40,790 --> 00:08:39,039
to replace the main bus switching unit

207
00:08:42,790 --> 00:08:40,800
at that time

208
00:08:44,630 --> 00:08:42,800
so now that's a whole lot of work that

209
00:08:46,870 --> 00:08:44,640
the crew has to do to do the birthings

210
00:08:48,150 --> 00:08:46,880
and the dockings and the ebas and in the

211
00:08:49,670 --> 00:08:48,160
middle of all that

212
00:08:51,269 --> 00:08:49,680
we've made a commitment to the research

213
00:08:53,430 --> 00:08:51,279

community that we would

214
00:08:55,670 --> 00:08:53,440
we would obligate 35 hours on average a

215
00:08:57,350 --> 00:08:55,680
week for research and we tend to meet

216
00:08:59,110 --> 00:08:57,360
that honor while doing all this work

217
00:09:00,870 --> 00:08:59,120
that i just told you about

218
00:09:02,310 --> 00:09:00,880
so with that i'll hand it over to dina

219
00:09:04,470 --> 00:09:02,320
who'll tell you about what's going on on

220
00:09:06,630 --> 00:09:04,480
orbit okay thank you

221
00:09:08,790 --> 00:09:06,640
well good morning thanks for joining us

222
00:09:11,030 --> 00:09:08,800
things are going extremely well on orbit

223
00:09:11,990 --> 00:09:11,040
and the crews in great spirits right now

224
00:09:14,949 --> 00:09:12,000
and i'm here to talk to you about

225
00:09:18,550 --> 00:09:14,959
expeditions 32 and 33 and i'm going to

226
00:09:23,350 --> 00:09:21,190
expedition 32 starts off with joe acaba

227
00:09:24,389 --> 00:09:23,360
gennady padalka and sergey revin on

228
00:09:26,070 --> 00:09:24,399
board

229
00:09:28,230 --> 00:09:26,080
going from left to right in the photo

230
00:09:30,630 --> 00:09:28,240
joe's our u.s segment lead he flew on

231
00:09:31,910 --> 00:09:30,640
sts-119

232
00:09:34,070 --> 00:09:31,920
gennady will be the space station

233
00:09:35,910 --> 00:09:34,080
commander of expedition 32

234
00:09:38,389 --> 00:09:35,920
which will make him the first three-time

235
00:09:40,150 --> 00:09:38,399
commander of the iss

236
00:09:41,910 --> 00:09:40,160
he was also previously a mere space

237
00:09:43,750 --> 00:09:41,920
station commander

238
00:09:46,710 --> 00:09:43,760

sergey is a rookie flyer and he'll be

239
00:09:48,230 --> 00:09:46,720
flight engineer too

240
00:09:50,070 --> 00:09:48,240
in this graphic the lower right photo

241
00:09:51,670 --> 00:09:50,080
shows the 31 soyuz crew that joins

242
00:09:53,670 --> 00:09:51,680
gennady's crew

243
00:09:56,550 --> 00:09:53,680
suni williams on the left will take over

244
00:09:58,150 --> 00:09:56,560
as expedition 33 commander after gennady

245
00:09:59,829 --> 00:09:58,160
soyuz departs

246
00:10:01,509 --> 00:09:59,839
she was a flight engineer on expedition

247
00:10:04,389 --> 00:10:01,519
14.

248
00:10:05,990 --> 00:10:04,399
next is yuri malenchenko who flew on mir

249
00:10:09,509 --> 00:10:06,000
sts-106

250
00:10:11,670 --> 00:10:09,519
expedition 7 and expedition 16.

251
00:10:14,389 --> 00:10:11,680
then you see akihiko hoshide on the

252
00:10:16,790 --> 00:10:14,399
right and we call him aki he flew on

253
00:10:18,470 --> 00:10:16,800
sts-124

254
00:10:20,150 --> 00:10:18,480
this crew of six is extremely

255
00:10:22,150 --> 00:10:20,160
experienced with more than thirteen

256
00:10:24,230 --> 00:10:22,160
hundred cumulative hours in space before

257
00:10:25,750 --> 00:10:24,240
they've even flown this mission

258
00:10:28,230 --> 00:10:25,760
and they have a combined eighteen

259
00:10:30,470 --> 00:10:28,240
spacewalks under their belts

260
00:10:32,069 --> 00:10:30,480
when gennady joe and sergey leave

261
00:10:33,430 --> 00:10:32,079
sunny's crew of three remains on board

262
00:10:35,269 --> 00:10:33,440
for about a month

263
00:10:36,870 --> 00:10:35,279

and then the 32 soyuz crew comes on

264
00:10:38,949 --> 00:10:36,880
board

265
00:10:42,310 --> 00:10:38,959
in the lower right you see kevin ford on

266
00:10:44,310 --> 00:10:42,320
the left who is the pilot on sts-128 and

267
00:10:46,310 --> 00:10:44,320
he'll become the expedition 34 commander

268
00:10:48,790 --> 00:10:46,320
when sunny leaves

269
00:10:50,949 --> 00:10:48,800
olive navetsky and evgeny tarelkin are

270
00:10:53,670 --> 00:10:50,959
next they're both rookie flyers and

271
00:10:55,670 --> 00:10:53,680
they'll be the flight engineers

272
00:10:59,990 --> 00:10:55,680
sunny yuri and aki undock on november

273
00:11:01,269 --> 00:11:00,000
12th which ends expedition 33.

274
00:11:02,870 --> 00:11:01,279
at this stage

275
00:11:06,310 --> 00:11:02,880
in addition to the soyuz in progress

276
00:11:08,870 --> 00:11:06,320
operations we're very happy that we have

277
00:11:11,910 --> 00:11:08,880
almost all of our us cargo arriving on

278
00:11:12,949 --> 00:11:11,920
japanese and european and commercial

279
00:11:14,470 --> 00:11:12,959
vehicles

280
00:11:16,310 --> 00:11:14,480
up to iss

281
00:11:18,150 --> 00:11:16,320
and i have a video which shows

282
00:11:20,710 --> 00:11:18,160
you know a depiction as

283
00:11:22,389 --> 00:11:20,720
mr suffordini pointed out of how vehicle

284
00:11:25,750 --> 00:11:22,399
traffic might look in this summer time

285
00:11:28,710 --> 00:11:27,190
here you see the station's starboard

286
00:11:30,630 --> 00:11:28,720
side and the configuration it will be in

287
00:11:32,870 --> 00:11:30,640
at the time frame when gennady joe and

288
00:11:35,190 --> 00:11:32,880

sergey are on board

289
00:11:36,949 --> 00:11:35,200
the first vehicle i want to point out

290
00:11:39,030 --> 00:11:36,959
is the 30 soyuz

291
00:11:41,030 --> 00:11:39,040
which is the vehicle that gennady sergey

292
00:11:44,389 --> 00:11:41,040
and joe arrive in

293
00:11:46,389 --> 00:11:44,399
and this is their return vehicle as well

294
00:11:48,790 --> 00:11:46,399
next i've highlighted the 47 progress

295
00:11:50,310 --> 00:11:48,800
stock to the piers module

296
00:11:52,389 --> 00:11:50,320
this progress vehicle is specially

297
00:11:54,069 --> 00:11:52,399
outfitted with a new external rendezvous

298
00:11:56,150 --> 00:11:54,079
and docking antenna

299
00:11:57,829 --> 00:11:56,160
that on future vehicles will allow them

300
00:11:59,110 --> 00:11:57,839
to delete four other

301
00:12:00,550 --> 00:11:59,120
antennas

302
00:12:02,550 --> 00:12:00,560
although for this initial progress

303
00:12:04,069 --> 00:12:02,560
docking the standard antennas will be

304
00:12:05,430 --> 00:12:04,079
used

305
00:12:07,269 --> 00:12:05,440
our russian colleagues are making this

306
00:12:10,069 --> 00:12:07,279
change because some of the original

307
00:12:11,750 --> 00:12:10,079
components are no longer easily produced

308
00:12:15,190 --> 00:12:11,760
and the change also reduces mass and

309
00:12:17,350 --> 00:12:15,200
power requirements on future vehicles

310
00:12:19,750 --> 00:12:17,360
on the far left the european automated

311
00:12:21,990 --> 00:12:19,760
transfer vehicle eduardo and maldi is

312
00:12:23,509 --> 00:12:22,000
docked to the aft end of zvezda

313
00:12:24,949 --> 00:12:23,519

and the onboard crew will already have

314
00:12:27,590 --> 00:12:24,959
been unloading it and filling it with

315
00:12:30,389 --> 00:12:27,600
trash for disposal

316
00:12:31,910 --> 00:12:30,399
next the 30 soyuz arrives carrying yuri

317
00:12:34,710 --> 00:12:31,920
sunny and aki

318
00:12:36,470 --> 00:12:34,720
and it docks to rasviet on zarya's nader

319
00:12:37,910 --> 00:12:36,480
side

320
00:12:39,670 --> 00:12:37,920
after docking the crew really hits the

321
00:12:41,829 --> 00:12:39,680
ground running with their postdocking

322
00:12:43,829 --> 00:12:41,839
onboard emergency training

323
00:12:45,670 --> 00:12:43,839
some key science gathering associated

324
00:12:47,350 --> 00:12:45,680
with their first days on orbit

325
00:12:49,269 --> 00:12:47,360
and preparations for the next vehicles

326
00:12:50,790 --> 00:12:49,279
to come and go

327
00:12:53,269 --> 00:12:50,800
following docking they could have a

328
00:12:56,790 --> 00:12:53,279
quick series of three vehicles undocking

329
00:12:58,550 --> 00:12:56,800
docking and birthing in the next 10 days

330
00:12:59,829 --> 00:12:58,560
so first the progress

331
00:13:02,310 --> 00:12:59,839
our russian colleagues would like to

332
00:13:04,310 --> 00:13:02,320
test their new antenna in avionics

333
00:13:06,949 --> 00:13:04,320
and if their test is successful new

334
00:13:09,990 --> 00:13:06,959
progress is starting in 2013 or 2014

335
00:13:11,910 --> 00:13:10,000
will start incorporating this new system

336
00:13:13,110 --> 00:13:11,920
so after its nominal initial docking the

337
00:13:15,750 --> 00:13:13,120
crew will change out the standard

338
00:13:17,350 --> 00:13:15,760

avionics system with the new avionics

339
00:13:20,470 --> 00:13:17,360
internally

340
00:13:22,150 --> 00:13:20,480
this 47 progress will undock and perform

341
00:13:25,350 --> 00:13:22,160
some phasing burns will take it out to

342
00:13:28,790 --> 00:13:27,030
we'll perform an automated re-docking of

343
00:13:31,829 --> 00:13:28,800
the vehicle two days later using the new

344
00:13:37,190 --> 00:13:33,829
next i'm showing you the h2 transfer

345
00:13:39,430 --> 00:13:37,200
vehicle 3 arriving at iss

346
00:13:42,069 --> 00:13:39,440
we're planning on having joe aki and

347
00:13:43,990 --> 00:13:42,079
sunny perform the track and capture

348
00:13:46,470 --> 00:13:44,000
by grappling the free flying vehicle

349
00:13:48,949 --> 00:13:46,480
using canadarm2

350
00:13:51,110 --> 00:13:48,959
htv has internal cargo and it also has

351
00:13:52,310 --> 00:13:51,120
an exposed pallet with some attached

352
00:13:54,470 --> 00:13:52,320
payloads that will be extracted

353
00:13:56,790 --> 00:13:54,480
robotically

354
00:13:58,230 --> 00:13:56,800
after hdv birthing 47 progress that i

355
00:14:00,949 --> 00:13:58,240
talked about previously will undock

356
00:14:04,310 --> 00:14:00,959
again but this time for good that 48

357
00:14:05,670 --> 00:14:04,320
progress quickly takes its place

358
00:14:07,750 --> 00:14:05,680
at this point

359
00:14:09,910 --> 00:14:07,760
the nader port of harmony is occupied by

360
00:14:11,430 --> 00:14:09,920
htv so our team as mr safranini

361
00:14:13,910 --> 00:14:11,440
mentioned is getting products ready to

362
00:14:15,990 --> 00:14:13,920
support the robotic relocation of htv to

363
00:14:18,310 --> 00:14:16,000

the zenith port if needed to make way

364
00:14:19,910 --> 00:14:18,320
for spacex1 and the orbital demo

365
00:14:21,189 --> 00:14:19,920
missions

366
00:14:23,030 --> 00:14:21,199
we're likely going to complete our

367
00:14:25,030 --> 00:14:23,040
exposed pallet operations before that

368
00:14:27,829 --> 00:14:25,040
move

369
00:14:30,310 --> 00:14:27,839
next you'll see spacex dragon shown on

370
00:14:32,150 --> 00:14:30,320
that nader port

371
00:14:33,350 --> 00:14:32,160
spacex one is the second dragon vehicle

372
00:14:35,110 --> 00:14:33,360
to visit

373
00:14:38,629 --> 00:14:35,120
and it'll be birthed approximately 30

374
00:14:42,069 --> 00:14:40,150
next i'm showing you orbital cygnus

375
00:14:43,350 --> 00:14:42,079
stock to the nade report

376
00:14:46,069 --> 00:14:43,360
and we're looking forward to welcoming

377
00:14:47,430 --> 00:14:46,079
this first cygnus flight

378
00:14:49,590 --> 00:14:47,440
there are separate press conferences

379
00:14:51,189 --> 00:14:49,600
planned for the htv dragon and cygnus

380
00:14:55,590 --> 00:14:51,199
missions so you'll receive a lot more

381
00:14:58,629 --> 00:14:57,509
next i've highlighted atv

382
00:14:59,750 --> 00:14:58,639
which will depart in late in the

383
00:15:01,269 --> 00:14:59,760
increment

384
00:15:02,870 --> 00:15:01,279
gennady and uri will be in charge of the

385
00:15:05,509 --> 00:15:02,880
undock

386
00:15:07,750 --> 00:15:05,519
and 49 progress will dock to this port

387
00:15:09,590 --> 00:15:07,760
later

388
00:15:11,990 --> 00:15:09,600

next you see gennady sergey and joe

389
00:15:14,629 --> 00:15:12,000
soyuz which is the next to leave at

390
00:15:16,230 --> 00:15:14,639
which point sunny will take command

391
00:15:18,150 --> 00:15:16,240
they'll have an extended period of three

392
00:15:20,790 --> 00:15:18,160
crew person ops

393
00:15:21,829 --> 00:15:20,800
and this is going to be about one month

394
00:15:23,430 --> 00:15:21,839
which is

395
00:15:25,670 --> 00:15:23,440
much longer than the standard two week

396
00:15:27,430 --> 00:15:25,680
period

397
00:15:29,749 --> 00:15:27,440
then all like kevin and evgeny soyuz

398
00:15:31,350 --> 00:15:29,759
arrives at the same port which is 32

399
00:15:32,310 --> 00:15:31,360
soyuz

400
00:15:34,470 --> 00:15:32,320
and they're there until the end of

401
00:15:35,430 --> 00:15:34,480
increment 33 when sunny yuri and aki

402
00:15:38,470 --> 00:15:35,440
leave

403
00:15:40,629 --> 00:15:38,480
and kevin takes command

404
00:15:42,790 --> 00:15:40,639
so yes we'll be conducting a lot of

405
00:15:44,150 --> 00:15:42,800
research on board and you can also see

406
00:15:47,749 --> 00:15:44,160
it's going to be a very busy time with

407
00:15:52,870 --> 00:15:50,310
so as mr semperdini mentioned we are

408
00:15:54,550 --> 00:15:52,880
carrying a usc va on the books and also

409
00:15:57,430 --> 00:15:54,560
a russian eva

410
00:16:00,069 --> 00:15:57,440
the uscv is a usc va 18 and i have some

411
00:16:03,269 --> 00:16:00,079
graphics for that

412
00:16:05,189 --> 00:16:03,279
same will be ev1 and akiel bev2

413
00:16:07,430 --> 00:16:05,199

they'll be in extravehicular mobility

414
00:16:09,670 --> 00:16:07,440
units emu's on the u.s segment out of

415
00:16:11,110 --> 00:16:09,680
the quest airlock

416
00:16:13,829 --> 00:16:11,120
the first task is the removal and

417
00:16:15,269 --> 00:16:13,839
replacement of that main bus switching

418
00:16:16,389 --> 00:16:15,279
unit one which we can't currently

419
00:16:18,150 --> 00:16:16,399
command to

420
00:16:19,509 --> 00:16:18,160
and we'd like to get that replaced

421
00:16:21,509 --> 00:16:19,519
before the russian multipurpose

422
00:16:24,870 --> 00:16:21,519
logistics module in nuaka comes up in

423
00:16:28,790 --> 00:16:27,189
i have a video here you see aki on the

424
00:16:30,949 --> 00:16:28,800
top of the screen

425
00:16:33,590 --> 00:16:30,959
and he's writing on canadarm2 installing

426
00:16:34,829 --> 00:16:33,600
a new mbsu onto the s0 truss in the

427
00:16:36,870 --> 00:16:34,839
neutral buoyancy

428
00:16:39,430 --> 00:16:36,880
laboratory sonny's the free floating

429
00:16:41,030 --> 00:16:39,440
crew member in the lower right corner

430
00:16:43,590 --> 00:16:41,040
it's a pretty big box

431
00:16:45,910 --> 00:16:43,600
about three and a half feet long and 236

432
00:16:48,230 --> 00:16:45,920
pounds

433
00:16:49,189 --> 00:16:48,240
the crew will also be routing two cables

434
00:16:51,749 --> 00:16:49,199
they're

435
00:16:53,350 --> 00:16:51,759
38 feet and 70 feet long these are power

436
00:16:55,189 --> 00:16:53,360
cables that we're going to ride on the

437
00:16:57,829 --> 00:16:55,199
u.s segment right up to the zarya

438
00:16:59,670 --> 00:16:57,839

interface on the russian segment and

439
00:17:01,430 --> 00:16:59,680
these will be used to feed power to

440
00:17:03,189 --> 00:17:01,440
nuaka

441
00:17:04,789 --> 00:17:03,199
in the future

442
00:17:06,230 --> 00:17:04,799
so in terms of get-aheads we do have one

443
00:17:10,309 --> 00:17:06,240
get ahead associated with covering the

444
00:17:13,110 --> 00:17:11,590
um

445
00:17:16,150 --> 00:17:13,120
basically we're going to install a

446
00:17:17,590 --> 00:17:16,160
protective cover over the end of pma2

447
00:17:21,990 --> 00:17:17,600
here you see them installing a similar

448
00:17:23,510 --> 00:17:22,000
cover on pma3 during the eva on sts-135

449
00:17:25,189 --> 00:17:23,520
we've improved the cover design to make

450
00:17:26,949 --> 00:17:25,199
it easier this to install this time

451
00:17:29,190 --> 00:17:26,959
around

452
00:17:31,190 --> 00:17:29,200
so other get-aheads include

453
00:17:33,750 --> 00:17:31,200
the prepping of the

454
00:17:35,430 --> 00:17:33,760
zarya power and data grapple fixture

455
00:17:36,310 --> 00:17:35,440
that um

456
00:17:39,029 --> 00:17:36,320
that

457
00:17:40,390 --> 00:17:39,039
we'd like to clear and we would like to

458
00:17:42,230 --> 00:17:40,400
route some

459
00:17:43,830 --> 00:17:42,240
and route a cable to that in order to

460
00:17:45,110 --> 00:17:43,840
allow it to be used

461
00:17:47,430 --> 00:17:45,120
so we have a lot to think about

462
00:17:49,430 --> 00:17:47,440
regarding this eva i'm still still quite

463
00:17:50,310 --> 00:17:49,440

a bit up in the air

464
00:17:52,710 --> 00:17:50,320
and now i'd like to talk about the

465
00:17:56,630 --> 00:17:52,720
russian segment eva it's russian segment

466
00:18:00,150 --> 00:17:57,830
the eva is going to be in orlon

467
00:18:03,750 --> 00:18:00,160
spacesuits out of the piers module get

468
00:18:05,029 --> 00:18:03,760
audio will be ev1 and url be ev2

469
00:18:07,110 --> 00:18:05,039
the first priority is going to be to

470
00:18:08,549 --> 00:18:07,120
install five shields on this vista

471
00:18:09,909 --> 00:18:08,559
module

472
00:18:11,830 --> 00:18:09,919
these shields reduce the likelihood of

473
00:18:14,950 --> 00:18:11,840
hole penetration so should orbital

474
00:18:16,950 --> 00:18:14,960
debris strike the area

475
00:18:18,390 --> 00:18:16,960
the crew is also going to be relocating

476
00:18:20,870 --> 00:18:18,400
a strela boom

477
00:18:23,110 --> 00:18:20,880
from the piers to zarya

478
00:18:24,549 --> 00:18:23,120
on the graphic you see strela 1 extended

479
00:18:26,549 --> 00:18:24,559
to strela 2.

480
00:18:27,750 --> 00:18:26,559
since strela 2 is going to be used to

481
00:18:30,230 --> 00:18:27,760
since stroller 1 one's going to be used

482
00:18:32,310 --> 00:18:30,240
to move strela 2.

483
00:18:34,390 --> 00:18:32,320
on the next graphic you see strela 1

484
00:18:35,990 --> 00:18:34,400
moving stroller 2 over to zarya on the

485
00:18:37,590 --> 00:18:36,000
forward end

486
00:18:40,310 --> 00:18:37,600
and on the right you see its final

487
00:18:44,150 --> 00:18:41,750
right now the crew is also planning to

488
00:18:45,510 --> 00:18:44,160

release a passive spherical satellite

489
00:18:47,430 --> 00:18:45,520
that will allow our russian colleagues

490
00:18:51,029 --> 00:18:47,440
to evaluate ground station tracking and

491
00:18:52,470 --> 00:18:51,039
module and modeling for orbital debris

492
00:18:54,950 --> 00:18:52,480
in the photo on the left you can see the

493
00:18:56,710 --> 00:18:54,960
sphere which is 13 kilograms and 53

494
00:18:59,029 --> 00:18:56,720
centimeters in diameter

495
00:19:01,350 --> 00:18:59,039
of course we'll be analyzing this from a

496
00:19:03,029 --> 00:19:01,360
orbital dynamics standpoint

497
00:19:04,710 --> 00:19:03,039
in the second photo you can see a tool

498
00:19:06,870 --> 00:19:04,720
for holding the satellite on the right

499
00:19:08,230 --> 00:19:06,880
with someone demonstrating the deploy

500
00:19:10,870 --> 00:19:08,240
and a mock-up of the satellite on the

501
00:19:12,310 --> 00:19:10,880
left

502
00:19:14,230 --> 00:19:12,320
so the

503
00:19:16,230 --> 00:19:14,240
get aheads for the eva include bringing

504
00:19:18,549 --> 00:19:16,240
in some material exposure experiments

505
00:19:21,350 --> 00:19:18,559
and also installing some struts on the

506
00:19:24,230 --> 00:19:21,360
piers eva ladder

507
00:19:25,430 --> 00:19:24,240
and so another interesting um another

508
00:19:28,310 --> 00:19:25,440
interesting effort that we're talking

509
00:19:30,630 --> 00:19:28,320
about for this increment is

510
00:19:32,630 --> 00:19:30,640
adding on board instant messaging

511
00:19:35,029 --> 00:19:32,640
and also sending up to the crew some

512
00:19:37,350 --> 00:19:35,039
more automated procedures autonomous

513
00:19:39,510 --> 00:19:37,360

procedures procedures that

514
00:19:41,270 --> 00:19:39,520
involve the ground a little bit less

515
00:19:44,630 --> 00:19:41,280
and these two items are really to gather

516
00:19:46,470 --> 00:19:44,640
some data so that we can

517
00:19:49,830 --> 00:19:46,480
work towards an experiment in the future

518
00:19:51,350 --> 00:19:49,840
with a calm delay on iss

519
00:19:52,630 --> 00:19:51,360
essentially this is not something that's

520
00:19:53,990 --> 00:19:52,640
right around the corner but we wanted to

521
00:19:58,390 --> 00:19:54,000
get these

522
00:20:01,270 --> 00:19:58,400
these two items on board at this time so

523
00:20:02,470 --> 00:20:01,280
we can gather some information

524
00:20:04,549 --> 00:20:02,480
you can imagine that you might need some

525
00:20:06,310 --> 00:20:04,559
sort of counter measure for a comm delay

526
00:20:07,510 --> 00:20:06,320
and so instant messaging might be

527
00:20:09,029 --> 00:20:07,520
something that you could use something

528
00:20:10,549 --> 00:20:09,039
kind of like an email that kind of thing

529
00:20:12,630 --> 00:20:10,559
for communication

530
00:20:15,350 --> 00:20:12,640
so we're looking at um at those types of

531
00:20:16,789 --> 00:20:15,360
things on this particular increment

532
00:20:18,390 --> 00:20:16,799
and additionally i wanted to talk to you

533
00:20:19,590 --> 00:20:18,400
about five small satellites that we're

534
00:20:20,950 --> 00:20:19,600
going to be deploying these are called

535
00:20:22,789 --> 00:20:20,960
cubesats

536
00:20:27,350 --> 00:20:22,799
cubic satellites and i have a video for

537
00:20:31,669 --> 00:20:29,590
the satellites launch inside on htv and

538
00:20:33,510 --> 00:20:31,679

the crew installs them on a deployer on

539
00:20:35,830 --> 00:20:33,520
a platform that gets transferred to

540
00:20:38,070 --> 00:20:35,840
space via the kibo airlock

541
00:20:39,669 --> 00:20:38,080
the gem rms grabs the platform packed

542
00:20:41,270 --> 00:20:39,679
with the satellites on it

543
00:20:43,669 --> 00:20:41,280
and then moves it out to a location away

544
00:20:45,110 --> 00:20:43,679
from structure

545
00:20:47,029 --> 00:20:45,120
there are three satellite units per

546
00:20:48,789 --> 00:20:47,039
rectangular deployer

547
00:20:50,390 --> 00:20:48,799
a door on the end of the deployer opens

548
00:20:52,230 --> 00:20:50,400
allowing spring force to push the

549
00:20:54,470 --> 00:20:52,240
satellites out

550
00:20:56,470 --> 00:20:54,480
one satellite is 20 centimeters by 10 by

551
00:20:59,430 --> 00:20:56,480
10 which is the double unit

552
00:21:00,789 --> 00:20:59,440
and the rest are all 10 centimeter cubes

553
00:21:02,070 --> 00:21:00,799
each cubesat

554
00:21:05,510 --> 00:21:02,080
has experiments conducted by

555
00:21:09,750 --> 00:21:07,270
so that's an overview of increment 32

556
00:21:10,630 --> 00:21:09,760
and 33 operations uh thank you for your

557
00:21:13,270 --> 00:21:10,640
time

558
00:21:14,950 --> 00:21:13,280
to tara who's going to talk to you about

559
00:21:17,830 --> 00:21:14,960
the interesting science that we're going

560
00:21:18,870 --> 00:21:17,840
to be doing during this expedition

561
00:21:20,789 --> 00:21:18,880
okay

562
00:21:22,470 --> 00:21:20,799
thanks dina i'm happy to be here and i'm

563
00:21:23,510 --> 00:21:22,480

hoping everybody stay dry on their way

564
00:21:25,590 --> 00:21:23,520
over

565
00:21:26,950 --> 00:21:25,600
i'm excited to talk the research to me

566
00:21:29,669 --> 00:21:26,960
it's always one of the coolest things

567
00:21:31,750 --> 00:21:29,679
happening on station and i've seen as we

568
00:21:34,070 --> 00:21:31,760
transition into the next decade of

569
00:21:36,470 --> 00:21:34,080
utilization our teams internally have

570
00:21:38,630 --> 00:21:36,480
been really busy managing and processing

571
00:21:40,630 --> 00:21:38,640
the research that's coming and going and

572
00:21:42,870 --> 00:21:40,640
i've seen the crew on orbit

573
00:21:45,110 --> 00:21:42,880
is just as busy implementing it

574
00:21:46,710 --> 00:21:45,120
so we're looking ahead to meeting the

575
00:21:48,310 --> 00:21:46,720
full research objectives that were

576
00:21:50,789 --> 00:21:48,320
created when space station was first

577
00:21:53,350 --> 00:21:50,799
envisioned and i think everyone as i'm

578
00:21:55,270 --> 00:21:53,360
hearing from scientists to students are

579
00:21:57,430 --> 00:21:55,280
anxiously anticipating what's to come

580
00:21:58,630 --> 00:21:57,440
now in the next decade of space station

581
00:22:00,630 --> 00:21:58,640
research

582
00:22:03,190 --> 00:22:00,640
in relation to this unique orbiting

583
00:22:05,029 --> 00:22:03,200
laboratory which is what it is

584
00:22:07,510 --> 00:22:05,039
so to date on station there have been

585
00:22:10,230 --> 00:22:07,520
nearly 1300 investigations performed

586
00:22:13,669 --> 00:22:10,240
through expedition 30. this represents

587
00:22:15,350 --> 00:22:13,679
over 1300 scientists worldwide and 65

588
00:22:17,110 --> 00:22:15,360

countries globally

589
00:22:18,950 --> 00:22:17,120
through the remainder of this year there

590
00:22:21,590 --> 00:22:18,960
will be over 200 investigations

591
00:22:23,669 --> 00:22:21,600
performed in the areas of human research

592
00:22:26,070 --> 00:22:23,679
biology and biotech earth and space

593
00:22:28,390 --> 00:22:26,080
sciences physical science technology

594
00:22:30,149 --> 00:22:28,400
development and education

595
00:22:31,590 --> 00:22:30,159
each of these investigations will

596
00:22:33,750 --> 00:22:31,600
provide knowledge that advances the

597
00:22:35,350 --> 00:22:33,760
human exploration of space improves our

598
00:22:37,190 --> 00:22:35,360
daily life on earth

599
00:22:38,830 --> 00:22:37,200
and contributes our own fundamental

600
00:22:41,590 --> 00:22:38,840
knowledge through new

601
00:22:43,830 --> 00:22:41,600
discoveries no laboratory on the planet

602
00:22:45,590 --> 00:22:43,840
allows scientists to perform sustained

603
00:22:47,750 --> 00:22:45,600
repeatable measurements of their data

604
00:22:49,430 --> 00:22:47,760
while controlling for gravity and no

605
00:22:51,270 --> 00:22:49,440
unmanned orbiting vehicle can provide

606
00:22:52,950 --> 00:22:51,280
the combination of automated and

607
00:22:54,950 --> 00:22:52,960
real-time human intended constant

608
00:22:57,029 --> 00:22:54,960
observation of the earth's ecosystems

609
00:22:58,789 --> 00:22:57,039
and natural disaster events no

610
00:23:01,270 --> 00:22:58,799
laboratory on the planet has inspired

611
00:23:04,310 --> 00:23:01,280
the scientific creativity and over 4

612
00:23:05,909 --> 00:23:04,320
million students in the u.s alone

613
00:23:07,669 --> 00:23:05,919

although hundreds of investigations will

614
00:23:10,470 --> 00:23:07,679
be performed on space station during

615
00:23:12,870 --> 00:23:10,480
expeditions 32 and 33. today i only have

616
00:23:14,549 --> 00:23:12,880
time to tell you just about a few of

617
00:23:17,510 --> 00:23:14,559
those and their relevance in the

618
00:23:19,270 --> 00:23:17,520
research programs portfolio

619
00:23:20,870 --> 00:23:19,280
so first i'll tell you about one of the

620
00:23:23,029 --> 00:23:20,880
new research facilities headed to space

621
00:23:24,870 --> 00:23:23,039
station on htv3 this summer and that's

622
00:23:25,990 --> 00:23:24,880
of primary importance to our japanese

623
00:23:28,710 --> 00:23:26,000
partners

624
00:23:30,549 --> 00:23:28,720
and that's the aquatic habitat the

625
00:23:33,270 --> 00:23:30,559
aquatic habitat will house small

626
00:23:36,630 --> 00:23:33,280
freshwater fish such as medaka and zebra

627
00:23:38,870 --> 00:23:36,640
fish and allow scientists to watch them

628
00:23:40,789 --> 00:23:38,880
grow over generations on space station

629
00:23:42,390 --> 00:23:40,799
and understand the physiological changes

630
00:23:44,390 --> 00:23:42,400
that happen in these small

631
00:23:46,470 --> 00:23:44,400
model vertebrates

632
00:23:48,230 --> 00:23:46,480
the aquatic habitat has two uh

633
00:23:50,789 --> 00:23:48,240
transparent aquariums designed for the

634
00:23:52,870 --> 00:23:50,799
microgravity environment it consists of

635
00:23:54,789 --> 00:23:52,880
environmental control systems and ccd

636
00:23:56,390 --> 00:23:54,799
cameras for imaging and crew including

637
00:23:57,990 --> 00:23:56,400
infrared

638
00:23:59,830 --> 00:23:58,000

the first investigation in the aquatic

639
00:24:01,669 --> 00:23:59,840
habitat is actually planned for next

640
00:24:03,350 --> 00:24:01,679
year and a look at changes in skeletal

641
00:24:05,350 --> 00:24:03,360
composition of fish grown in a

642
00:24:06,870 --> 00:24:05,360
microgravity environment

643
00:24:08,630 --> 00:24:06,880
because we know that bone density is

644
00:24:11,110 --> 00:24:08,640
lost in astronauts at a rate of about

645
00:24:12,630 --> 00:24:11,120
two percent per month on orbit studies

646
00:24:14,470 --> 00:24:12,640
like these are critical to keep our

647
00:24:16,149 --> 00:24:14,480
astronauts healthy and the data

648
00:24:17,510 --> 00:24:16,159
collected from investigations like this

649
00:24:19,590 --> 00:24:17,520
will also contribute to better

650
00:24:21,669 --> 00:24:19,600
understandings of debilitating skeletal

651
00:24:24,149 --> 00:24:21,679
muscles that skeletal conditions that we

652
00:24:26,470 --> 00:24:24,159
see here on earth such as osteoporosis

653
00:24:28,789 --> 00:24:26,480
which currently affects an estimated 75

654
00:24:31,029 --> 00:24:28,799
million people in japan europe and

655
00:24:33,430 --> 00:24:31,039
america

656
00:24:35,669 --> 00:24:33,440
the space station also offers unique

657
00:24:36,950 --> 00:24:35,679
opportunities for observing the earth

658
00:24:38,789 --> 00:24:36,960
both from terms of orbital

659
00:24:40,549 --> 00:24:38,799
characteristics and human and

660
00:24:42,630 --> 00:24:40,559
infrastructure support

661
00:24:44,630 --> 00:24:42,640
a new investigation called the iss

662
00:24:47,750 --> 00:24:44,640
severe environmental research and

663
00:24:49,190 --> 00:24:47,760

visualization system or iserv for short

664
00:24:51,909 --> 00:24:49,200
we'll arrive at the space station on

665
00:24:53,750 --> 00:24:51,919
htv3 and it'll serve as a pathfinder to

666
00:24:55,510 --> 00:24:53,760
increase earth imaging capabilities that

667
00:24:58,070 --> 00:24:55,520
could be used to support disaster

668
00:25:01,110 --> 00:24:58,080
assessment humanitarian humanitarian

669
00:25:03,430 --> 00:25:01,120
assistance and environmental management

670
00:25:05,190 --> 00:25:03,440
this investigation is part of the server

671
00:25:07,510 --> 00:25:05,200
program which is a joint partnership

672
00:25:09,830 --> 00:25:07,520
between nasa and the us agency for

673
00:25:11,669 --> 00:25:09,840
international development or you said

674
00:25:13,510 --> 00:25:11,679
that allows people in developing regions

675
00:25:15,190 --> 00:25:13,520
to access data about the earth for a

676
00:25:17,269 --> 00:25:15,200
variety of purposes

677
00:25:18,870 --> 00:25:17,279
the iserv is a fully automated earth

678
00:25:20,549 --> 00:25:18,880
imaging instrument that'll be mounted

679
00:25:22,630 --> 00:25:20,559
earth-facing in the optical quality

680
00:25:23,430 --> 00:25:22,640
window within the wharf in the destiny

681
00:25:24,789 --> 00:25:23,440
lab

682
00:25:26,230 --> 00:25:24,799
and to give you an example of the types

683
00:25:28,230 --> 00:25:26,240
of images you can get from the space

684
00:25:30,230 --> 00:25:28,240
station this is a picture of hurricane

685
00:25:32,070 --> 00:25:30,240
isabel taken by astronaut ed lu from the

686
00:25:33,190 --> 00:25:32,080
space station as it headed for the u.s

687
00:25:34,789 --> 00:25:33,200
east coast

688
00:25:36,390 --> 00:25:34,799

and images like these have been used by

689
00:25:37,990 --> 00:25:36,400
global organizations such as the

690
00:25:40,070 --> 00:25:38,000
national hurricane center to

691
00:25:41,669 --> 00:25:40,080
characterize storm dynamics and plan for

692
00:25:43,190 --> 00:25:41,679
appropriate response

693
00:25:44,950 --> 00:25:43,200
so this is just one more example of how

694
00:25:47,430 --> 00:25:44,960
the space station partnership is working

695
00:25:50,710 --> 00:25:47,440
to maximize the benefits of the vehicle

696
00:25:52,230 --> 00:25:50,720
as an earth observation platform

697
00:25:54,710 --> 00:25:52,240
along the physical sciences front the

698
00:25:56,549 --> 00:25:54,720
new advanced colloids experiment one

699
00:25:58,070 --> 00:25:56,559
that will begin this fall is the first

700
00:25:59,669 --> 00:25:58,080
in a series of complex fluid

701
00:26:02,390 --> 00:25:59,679
investigations that will explore how

702
00:26:04,470 --> 00:26:02,400
colloids behave in microgravity

703
00:26:06,230 --> 00:26:04,480
under using the on-orbit light

704
00:26:07,830 --> 00:26:06,240
microscope

705
00:26:09,909 --> 00:26:07,840
because colloids are the basis for many

706
00:26:11,350 --> 00:26:09,919
of the materials we use here on earth

707
00:26:12,630 --> 00:26:11,360
understanding their behavior under

708
00:26:13,990 --> 00:26:12,640
different conditions could tell us how

709
00:26:16,070 --> 00:26:14,000
to improve many of the products that we

710
00:26:18,149 --> 00:26:16,080
use such as household cleaners

711
00:26:20,070 --> 00:26:18,159
foods and medicine as well as how to

712
00:26:21,750 --> 00:26:20,080
engineer brand new ones it's also

713
00:26:23,909 --> 00:26:21,760

important in the design of spacecraft

714
00:26:26,390 --> 00:26:23,919
materials improvements and propellant

715
00:26:28,870 --> 00:26:26,400
and enabling us to have long stor

716
00:26:30,470 --> 00:26:28,880
long-term stowage of goods and products

717
00:26:31,830 --> 00:26:30,480
on longer missions as we go up along low

718
00:26:33,669 --> 00:26:31,840
earth orbit

719
00:26:35,190 --> 00:26:33,679
on earth it's tough to study colloidal

720
00:26:37,110 --> 00:26:35,200
behavior because under the force of

721
00:26:38,950 --> 00:26:37,120
gravity particles tend to settle within

722
00:26:40,390 --> 00:26:38,960
their fluid so scientists don't get a

723
00:26:41,990 --> 00:26:40,400
true representation of the particle

724
00:26:43,590 --> 00:26:42,000
particle interaction and so you can see

725
00:26:45,029 --> 00:26:43,600
an image of the colloids on the bottom

726
00:26:47,190 --> 00:26:45,039
of your screen there

727
00:26:48,870 --> 00:26:47,200
removing gravities removing gravity

728
00:26:50,789 --> 00:26:48,880
allows us to watch the natural

729
00:26:52,950 --> 00:26:50,799
interaction of colloidal systems as they

730
00:26:55,669 --> 00:26:52,960
remain suspended over an infinite amount

731
00:26:57,510 --> 00:26:55,679
of time in a microgravity environment

732
00:27:00,070 --> 00:26:57,520
so you get a true visual of what their

733
00:27:02,310 --> 00:27:00,080
behavior is like without the gravity

734
00:27:03,669 --> 00:27:02,320
masking their behavior

735
00:27:05,830 --> 00:27:03,679
so you're looking at an image of dan

736
00:27:07,510 --> 00:27:05,840
burbank now currently on orbit and he's

737
00:27:09,269 --> 00:27:07,520
actually been performing the preliminary

738
00:27:10,950 --> 00:27:09,279

experiments on the light microscopy

739
00:27:12,549 --> 00:27:10,960
module in that picture

740
00:27:13,909 --> 00:27:12,559
he's looking at different samples under

741
00:27:15,990 --> 00:27:13,919
different conditions to ensure the

742
00:27:19,029 --> 00:27:16,000
microscope is ready for the ace-1

743
00:27:20,789 --> 00:27:19,039
investigation this fall

744
00:27:22,950 --> 00:27:20,799
the space station is also the ideal

745
00:27:23,990 --> 00:27:22,960
platform to advance space technology and

746
00:27:26,149 --> 00:27:24,000
i'll discuss

747
00:27:27,669 --> 00:27:26,159
two of these demonstrations today

748
00:27:30,470 --> 00:27:27,679
the first of these is the robotic

749
00:27:32,710 --> 00:27:30,480
refueling mission or rrm which is a

750
00:27:33,590 --> 00:27:32,720
joint nasa and canadian space agency

751
00:27:37,029 --> 00:27:33,600
effort

752
00:27:38,549 --> 00:27:37,039
and the the purpose of the rrm is to

753
00:27:41,190 --> 00:27:38,559
operationally

754
00:27:43,350 --> 00:27:41,200
check out and test

755
00:27:45,350 --> 00:27:43,360
a mock-up satellite for potential

756
00:27:47,110 --> 00:27:45,360
refueling on orbit

757
00:27:49,430 --> 00:27:47,120
the first operations actually started a

758
00:27:50,789 --> 00:27:49,440
few weeks ago and the point is to

759
00:27:52,310 --> 00:27:50,799
robotically service and refuel

760
00:27:54,310 --> 00:27:52,320
satellites in space it's something that

761
00:27:56,870 --> 00:27:54,320
can't be done right now

762
00:27:58,549 --> 00:27:56,880
the rrm hardware is located on the elc

763
00:28:01,029 --> 00:27:58,559

position of the external space station

764
00:28:02,710 --> 00:28:01,039
truss and again it's a satellite mock-up

765
00:28:05,110 --> 00:28:02,720
about the size of a washing machine that

766
00:28:07,430 --> 00:28:05,120
provides activity boards and tools to

767
00:28:09,190 --> 00:28:07,440
practice these servicing tasks

768
00:28:11,590 --> 00:28:09,200
operations are actually remotely

769
00:28:13,669 --> 00:28:11,600
controlled at nasa and csa's control

770
00:28:15,909 --> 00:28:13,679
center and the first fuel servicing is

771
00:28:17,190 --> 00:28:15,919
planned to occur during expeditions 32

772
00:28:19,430 --> 00:28:17,200
and 33

773
00:28:21,350 --> 00:28:19,440
and we actually have a brief animation

774
00:28:23,029 --> 00:28:21,360
of what this is expected to look like

775
00:28:25,430 --> 00:28:23,039
and we begin here with dexter using the

776
00:28:27,269 --> 00:28:25,440
safety cap tool to remove the safety cap

777
00:28:29,590 --> 00:28:27,279
from a fill and drain valve and allows

778
00:28:31,430 --> 00:28:29,600
access for refueling on real satellites

779
00:28:33,190 --> 00:28:31,440
the safety cap helps prevent hazardous

780
00:28:35,029 --> 00:28:33,200
fuel from leaking while a spacecraft is

781
00:28:36,950 --> 00:28:35,039
still on the ground and now the safety

782
00:28:38,710 --> 00:28:36,960
cap tool is going to be and the cap is

783
00:28:41,669 --> 00:28:38,720
going to be stowed away and we'll move

784
00:28:43,669 --> 00:28:41,679
on to the actual fuel servicing task

785
00:28:46,070 --> 00:28:43,679
dexter here switches to

786
00:28:48,230 --> 00:28:46,080
the nozzle refueling the nozzle tool

787
00:28:49,750 --> 00:28:48,240
with the robotic fueling holes

788
00:28:51,830 --> 00:28:49,760

with the hose to transfer the liquid

789
00:28:54,710 --> 00:28:51,840
ethanol fuse fuel through the fill and

790
00:28:57,430 --> 00:28:54,720
drain valve in a closed loop so so rrm

791
00:28:59,029 --> 00:28:57,440
carries about 1.7 liters of ethanol fuel

792
00:29:01,110 --> 00:28:59,039
for this demonstration and there's a

793
00:29:02,710 --> 00:29:01,120
demonstration of the transfer and after

794
00:29:04,549 --> 00:29:02,720
the fuel transfer the fitting is left

795
00:29:06,389 --> 00:29:04,559
behind which on a real satellite

796
00:29:08,789 --> 00:29:06,399
refueling mission would give easy access

797
00:29:10,710 --> 00:29:08,799
to the fuel valve on a return visit

798
00:29:12,470 --> 00:29:10,720
rrm will remain on the space station for

799
00:29:14,470 --> 00:29:12,480
two years and will lay the foundation

800
00:29:16,230 --> 00:29:14,480
for potential fuel servicing missions in

801
00:29:18,149 --> 00:29:16,240
space

802
00:29:19,669 --> 00:29:18,159
the second investigation making use of

803
00:29:21,750 --> 00:29:19,679
space station as a test bed for

804
00:29:24,230 --> 00:29:21,760
advancing space technology is the space

805
00:29:26,789 --> 00:29:24,240
communications and navigation testbed

806
00:29:29,269 --> 00:29:26,799
investigation or scan testbed

807
00:29:31,190 --> 00:29:29,279
scan testbed will be the first software

808
00:29:32,870 --> 00:29:31,200
defined radios that will be sent to

809
00:29:34,470 --> 00:29:32,880
station that will allow engineers to

810
00:29:37,029 --> 00:29:34,480
actually change the software on these

811
00:29:38,950 --> 00:29:37,039
devices even after they've launched so

812
00:29:41,190 --> 00:29:38,960
for example ground controllers will be

813
00:29:42,950 --> 00:29:41,200

able to reprogram these radios to change

814
00:29:44,630 --> 00:29:42,960
the type of data that that needs to be

815
00:29:46,470 --> 00:29:44,640
transferred depending on the experiment

816
00:29:48,549 --> 00:29:46,480
depending on the situation and this

817
00:29:51,510 --> 00:29:48,559
includes things data such as video

818
00:29:53,190 --> 00:29:51,520
telemetry and voice just to name a few

819
00:29:55,510 --> 00:29:53,200
the scan test bed will launch to the

820
00:29:57,029 --> 00:29:55,520
station on htv 3 this summer and the

821
00:29:59,269 --> 00:29:57,039
robotic arms will move it to its

822
00:30:00,870 --> 00:29:59,279
permanent location on the external truss

823
00:30:02,230 --> 00:30:00,880
which is what you're seeing here as it's

824
00:30:04,070 --> 00:30:02,240
being placed

825
00:30:05,909 --> 00:30:04,080
scan will allow researchers to conduct a

826
00:30:07,510 --> 00:30:05,919
suite of experiments over the next five

827
00:30:08,789 --> 00:30:07,520
years that will enable the advancement

828
00:30:11,110 --> 00:30:08,799
of a new generation of space

829
00:30:13,350 --> 00:30:11,120
communication now the antenna you see

830
00:30:15,350 --> 00:30:13,360
that's about to gimbal will allow

831
00:30:17,350 --> 00:30:15,360
communications between nasa's relay

832
00:30:19,029 --> 00:30:17,360
satellites and ground station around the

833
00:30:20,789 --> 00:30:19,039
u.s so we're really looking forward to

834
00:30:24,070 --> 00:30:20,799
seeing what scan testbed can do for us

835
00:30:25,830 --> 00:30:24,080
for communications and data transfer

836
00:30:27,590 --> 00:30:25,840
and we're excited about some all of

837
00:30:30,470 --> 00:30:27,600
these investigations that are going to

838
00:30:32,070 --> 00:30:30,480

be implemented in 3233 so you can see

839
00:30:34,070 --> 00:30:32,080
from the breadth of these experiments

840
00:30:36,389 --> 00:30:34,080
that station is really realizing its

841
00:30:37,750 --> 00:30:36,399
potential across all the disciplines

842
00:30:39,669 --> 00:30:37,760
we're excited to get to work with the

843
00:30:42,070 --> 00:30:39,679
crew to start these investigations and

844
00:30:43,669 --> 00:30:42,080
the other hundreds of others planned for

845
00:30:46,549 --> 00:30:43,679
the remainder of this year

846
00:30:48,549 --> 00:30:46,559
and thank you very much

847
00:30:50,789 --> 00:30:48,559
all right thanks tara

848
00:30:52,389 --> 00:30:50,799
just a note here that for the first time

849
00:30:54,470 --> 00:30:52,399
here in houston today we're going to be

850
00:30:56,149 --> 00:30:54,480
taking some social media questions

851
00:30:57,909 --> 00:30:56,159
during the briefing

852
00:31:01,590 --> 00:30:57,919
anyone who'd like to send a question in

853
00:31:03,909 --> 00:31:01,600
via twitter should use the hashtag of

854
00:31:05,669 --> 00:31:03,919
askstation and we'll try to get your

855
00:31:07,830 --> 00:31:05,679
question answered as we have time we

856
00:31:09,750 --> 00:31:07,840
will first of all however go to media

857
00:31:11,830 --> 00:31:09,760
here at jsc and then at

858
00:31:13,509 --> 00:31:11,840
the kennedy space center in florida

859
00:31:16,549 --> 00:31:13,519
please if you have a question come to

860
00:31:18,389 --> 00:31:16,559
the microphone and ask it and then we'll

861
00:31:21,669 --> 00:31:18,399
move on to the next ones

862
00:31:26,950 --> 00:31:21,679
any questions here in houston

863
00:31:31,110 --> 00:31:28,870

jim over for nbc good morning and thank

864
00:31:32,710 --> 00:31:31,120
you for sharing your time

865
00:31:34,630 --> 00:31:32,720
do you know you mentioned the second

866
00:31:37,190 --> 00:31:34,640
delay issue the question really from

867
00:31:39,830 --> 00:31:37,200
mike there's talk about using the iss as

868
00:31:42,470 --> 00:31:39,840
the location for an analog mission a a

869
00:31:44,549 --> 00:31:42,480
re-flight of a of the russian mars 500

870
00:31:46,389 --> 00:31:44,559
long-duration mission are we really

871
00:31:48,149 --> 00:31:46,399
looking toward uh

872
00:31:50,230 --> 00:31:48,159
emissions in the next couple years that

873
00:31:52,789 --> 00:31:50,240
could last people compete people in

874
00:31:55,029 --> 00:31:52,799
orbit for two years or longer uh is that

875
00:31:56,870 --> 00:31:55,039
sort of thing being discussed and uh can

876
00:31:59,269 --> 00:31:56,880
you just access is that scientifically

877
00:32:02,389 --> 00:31:59,279
or medically uh feasible

878
00:32:04,149 --> 00:32:02,399
well clearly in order to be able to uh

879
00:32:05,350 --> 00:32:04,159
explore beyond low earth orbit we're

880
00:32:07,590 --> 00:32:05,360
going to stay in over a little longer

881
00:32:09,669 --> 00:32:07,600
than six months and so one of the things

882
00:32:11,430 --> 00:32:09,679
we have been talking about for some time

883
00:32:14,310 --> 00:32:11,440
in fact since the

884
00:32:16,710 --> 00:32:14,320
advent of the of a low earth orbiting

885
00:32:17,750 --> 00:32:16,720
platform is its benefit for human

886
00:32:19,509 --> 00:32:17,760
research

887
00:32:22,470 --> 00:32:19,519
and and part of that of course is

888
00:32:23,990 --> 00:32:22,480

determining uh how long the human system

889
00:32:25,909 --> 00:32:24,000
can survive in a microgravity

890
00:32:27,509 --> 00:32:25,919
environment and can it survive a

891
00:32:28,950 --> 00:32:27,519
microgravity environment for extended

892
00:32:31,830 --> 00:32:28,960
period of time and then

893
00:32:34,149 --> 00:32:31,840
land on a foreign planet and expect the

894
00:32:36,230 --> 00:32:34,159
human to be able to do

895
00:32:38,950 --> 00:32:36,240
his or her tasks while while they're

896
00:32:40,630 --> 00:32:38,960
there and then and then return home

897
00:32:42,149 --> 00:32:40,640
again experience the same microgravity

898
00:32:43,430 --> 00:32:42,159
environment for extended period of time

899
00:32:45,029 --> 00:32:43,440
so

900
00:32:46,870 --> 00:32:45,039
that's a long-winded way of saying yes

901
00:32:48,549 --> 00:32:46,880
we're considering that

902
00:32:51,029 --> 00:32:48,559
we're talking to our partners about that

903
00:32:53,029 --> 00:32:51,039
in fact it was a bit of a discussion

904
00:32:54,070 --> 00:32:53,039
during our heads of agency in quebec

905
00:32:55,669 --> 00:32:54,080
about

906
00:32:56,470 --> 00:32:55,679
some of our offline discussions were

907
00:32:58,070 --> 00:32:56,480
about

908
00:33:00,470 --> 00:32:58,080
what steps do we need to take to put

909
00:33:03,269 --> 00:33:00,480
ourselves in a position to be able to

910
00:33:06,310 --> 00:33:03,279
extend the crew's time on orbit

911
00:33:09,110 --> 00:33:06,320
as part of the human research study

912
00:33:12,470 --> 00:33:09,120
on the human system's ability to to

913
00:33:13,750 --> 00:33:12,480

withstand long duration space flight so

914
00:33:15,750 --> 00:33:13,760
absolutely that's part of what we're

915
00:33:16,950 --> 00:33:15,760
looking at and what dina

916
00:33:19,590 --> 00:33:16,960
will tell you about here in just a

917
00:33:23,669 --> 00:33:19,600
second is really the beginning of a set

918
00:33:25,509 --> 00:33:23,679
of simulations that were to also include

919
00:33:27,430 --> 00:33:25,519
extension of the crew on orbit but as

920
00:33:29,029 --> 00:33:27,440
you said that's um

921
00:33:31,750 --> 00:33:29,039
that's not an activity that's going to

922
00:33:34,470 --> 00:33:31,760
occur tomorrow we're taking steps and we

923
00:33:36,310 --> 00:33:34,480
will evolve to this point over

924
00:33:39,430 --> 00:33:36,320
over a number of years

925
00:33:40,710 --> 00:33:39,440
so that we can get all the data we need

926
00:33:44,470 --> 00:33:40,720
before

927
00:33:46,070 --> 00:33:44,480
the end of the iss lifetime

928
00:33:48,310 --> 00:33:46,080
okay and then so related just

929
00:33:49,990 --> 00:33:48,320
specifically to these particular

930
00:33:51,590 --> 00:33:50,000
experiments you know we talked about

931
00:33:53,830 --> 00:33:51,600
instant messaging and this is like a

932
00:33:55,830 --> 00:33:53,840
chat feature and that sort of thing so

933
00:33:57,750 --> 00:33:55,840
you can imagine if we had capcom or

934
00:33:59,669 --> 00:33:57,760
flight director calling up to the crew

935
00:34:01,990 --> 00:33:59,679
and there was a significant delay this

936
00:34:04,470 --> 00:34:02,000
would be in some future mission

937
00:34:06,310 --> 00:34:04,480
that you'd sort of wonder well did they

938
00:34:07,750 --> 00:34:06,320

hear me i have something else i want to

939
00:34:09,430 --> 00:34:07,760
add and it's more difficult to have a

940
00:34:10,790 --> 00:34:09,440
conversation with the comm delay so

941
00:34:12,550 --> 00:34:10,800
potentially we're looking at something

942
00:34:14,389 --> 00:34:12,560
that would be more akin to email or a

943
00:34:16,230 --> 00:34:14,399
chat feature so we're talking about

944
00:34:18,069 --> 00:34:16,240
doing that on this increment and

945
00:34:19,750 --> 00:34:18,079
additionally um

946
00:34:22,710 --> 00:34:19,760
you know the crew if they're gonna go

947
00:34:25,109 --> 00:34:22,720
land on some foreign planet or um go out

948
00:34:26,389 --> 00:34:25,119
into into deep space um you know onto

949
00:34:28,950 --> 00:34:26,399
some other mission

950
00:34:30,550 --> 00:34:28,960
you could conceive of um it being

951
00:34:31,909 --> 00:34:30,560
difficult for them to have a

952
00:34:34,629 --> 00:34:31,919
conversation with the ground if some

953
00:34:35,750 --> 00:34:34,639
piece of equipment breaks so we would

954
00:34:37,589 --> 00:34:35,760
want to make sure that we would have all

955
00:34:39,270 --> 00:34:37,599
kinds of contingencies sort of in place

956
00:34:41,270 --> 00:34:39,280
in our procedures well if you can't find

957
00:34:41,990 --> 00:34:41,280
this cable use this one

958
00:34:44,310 --> 00:34:42,000
or

959
00:34:46,310 --> 00:34:44,320
if you have trouble with this wire then

960
00:34:48,149 --> 00:34:46,320
this is our recommendation so what we're

961
00:34:49,829 --> 00:34:48,159
going to do is put some some slightly

962
00:34:51,270 --> 00:34:49,839
more autonomous type procedures and

963
00:34:52,710 --> 00:34:51,280

stowage information and that sort of

964
00:34:54,950 --> 00:34:52,720
thing on board for the crew so they

965
00:34:56,710 --> 00:34:54,960
would rely on the ground less

966
00:34:59,829 --> 00:34:56,720
on this particular experiment on

967
00:35:01,589 --> 00:34:59,839
expedition 3233 so that's kind of

968
00:35:02,950 --> 00:35:01,599
a lead-in and we're really just sort of

969
00:35:04,710 --> 00:35:02,960
laying the groundwork and getting some

970
00:35:06,069 --> 00:35:04,720
of these tools ready

971
00:35:08,150 --> 00:35:06,079
and we're working our way basically

972
00:35:10,150 --> 00:35:08,160
working our way up to an eventual type

973
00:35:11,910 --> 00:35:10,160
of calm delay kind of experiment but

974
00:35:14,790 --> 00:35:11,920
that would be a few increments in the

975
00:35:14,800 --> 00:35:19,430
okay

976
00:35:23,910 --> 00:35:21,910
oh medically yes um our numbers our

977
00:35:26,470 --> 00:35:23,920
sample sizes for any human being that's

978
00:35:27,670 --> 00:35:26,480
gone beyond a year on orbit is really

979
00:35:29,510 --> 00:35:27,680
small right

980
00:35:31,270 --> 00:35:29,520
so those are the things that our flight

981
00:35:33,589 --> 00:35:31,280
docs and our scientists are working

982
00:35:35,430 --> 00:35:33,599
internally to figure out and determine

983
00:35:36,470 --> 00:35:35,440
the best approach to that

984
00:35:38,550 --> 00:35:36,480
medically

985
00:35:39,750 --> 00:35:38,560
as we know right now

986
00:35:41,589 --> 00:35:39,760
there are challenges to the

987
00:35:43,670 --> 00:35:41,599
physiological system that that we're not

988
00:35:45,190 --> 00:35:43,680

ready for if we were to plan for mars

989
00:35:48,069 --> 00:35:45,200
for example tomorrow

990
00:35:49,910 --> 00:35:48,079
so this and uh so this series of analogs

991
00:35:50,870 --> 00:35:49,920
that dina and mr suffradini have talked

992
00:35:53,109 --> 00:35:50,880
about

993
00:35:55,349 --> 00:35:53,119
will prepare us for that but the flight

994
00:36:01,190 --> 00:35:55,359
docs and the scientists internally are

995
00:36:06,470 --> 00:36:03,589
thanks uh mark caro aviation week and i

996
00:36:08,630 --> 00:36:06,480
had a question for mike safradini

997
00:36:10,710 --> 00:36:08,640
about a year ago with the final shuttle

998
00:36:12,550 --> 00:36:10,720
missions uh queuing up

999
00:36:14,630 --> 00:36:12,560
you were

1000
00:36:16,150 --> 00:36:14,640
preparing the space station to go a year

1001
00:36:17,430 --> 00:36:16,160
without

1002
00:36:19,510 --> 00:36:17,440
resupply

1003
00:36:21,670 --> 00:36:19,520
and i wonder how that

1004
00:36:24,069 --> 00:36:21,680
forecast is holding up and i believe you

1005
00:36:26,150 --> 00:36:24,079
did touch on that during your portion of

1006
00:36:28,550 --> 00:36:26,160
the briefing but i'm sort of looking at

1007
00:36:32,950 --> 00:36:30,950
you know at this point in time how how

1008
00:36:34,710 --> 00:36:32,960
long are you good for

1009
00:36:36,230 --> 00:36:34,720
if you still didn't get the commercial

1010
00:36:37,750 --> 00:36:36,240
resupply

1011
00:36:39,430 --> 00:36:37,760
yeah that's a

1012
00:36:41,190 --> 00:36:39,440
good question mark and yeah i did try to

1013
00:36:42,790 --> 00:36:41,200

say that from a logistics standpoint we

1014
00:36:44,630 --> 00:36:42,800
feel like we're covered

1015
00:36:46,150 --> 00:36:44,640
for a good while the

1016
00:36:47,910 --> 00:36:46,160
at that time i

1017
00:36:50,550 --> 00:36:47,920
i don't remember the specific briefing

1018
00:36:52,829 --> 00:36:50,560
but we had estimated for some time that

1019
00:36:55,270 --> 00:36:52,839
we could get with

1020
00:36:56,790 --> 00:36:55,280
sts-135 we could get ourselves in a

1021
00:36:59,589 --> 00:36:56,800
position that

1022
00:37:01,829 --> 00:36:59,599
given sts-135 the upmass we'd already

1023
00:37:03,990 --> 00:37:01,839
had planned on progress vehicles and the

1024
00:37:06,069 --> 00:37:04,000
up mass that would come up on the other

1025
00:37:07,349 --> 00:37:06,079
partner vehicles the atv and htv

1026
00:37:08,790 --> 00:37:07,359
specifically

1027
00:37:10,950 --> 00:37:08,800
that we thought we could get to the end

1028
00:37:11,750 --> 00:37:10,960
of 2012

1029
00:37:14,870 --> 00:37:11,760
with

1030
00:37:19,510 --> 00:37:17,190
operations on board iss meaning we we

1031
00:37:21,190 --> 00:37:19,520
have enough up mass to do not only the

1032
00:37:23,990 --> 00:37:21,200
consumables for the crew but the full

1033
00:37:26,550 --> 00:37:24,000
suite of research we wanted to do

1034
00:37:28,230 --> 00:37:26,560
and in fact now we think that that we

1035
00:37:31,750 --> 00:37:28,240
could do a little bit better that and

1036
00:37:33,190 --> 00:37:31,760
get into the early 13 time frame

1037
00:37:35,109 --> 00:37:33,200
we have

1038
00:37:37,190 --> 00:37:35,119

commitments as you recall we lost the

1039
00:37:38,550 --> 00:37:37,200
progress early on that had quite a bit

1040
00:37:39,910 --> 00:37:38,560
of mass for

1041
00:37:42,470 --> 00:37:39,920
for the u.s and so we've been working

1042
00:37:45,030 --> 00:37:42,480
with our russian colleagues to

1043
00:37:47,510 --> 00:37:45,040
front load that that at mass

1044
00:37:50,470 --> 00:37:47,520
in the early 2013 time frame

1045
00:37:53,750 --> 00:37:50,480
um and so uh

1046
00:37:56,230 --> 00:37:53,760
that's helping us get into the into into

1047
00:37:58,950 --> 00:37:56,240
2013 so we're in really good shape from

1048
00:38:01,190 --> 00:37:58,960
a logistics standpoint um and of course

1049
00:38:04,390 --> 00:38:01,200
our partner vehicles have moved to the

1050
00:38:06,710 --> 00:38:04,400
right uh we think that's a prudent uh

1051
00:38:08,470 --> 00:38:06,720
for them to really focus on

1052
00:38:09,990 --> 00:38:08,480
on the details as they get close to

1053
00:38:11,670 --> 00:38:10,000
flying look at all the data look at all

1054
00:38:13,750 --> 00:38:11,680
your test data make sure you understand

1055
00:38:15,910 --> 00:38:13,760
it before you go try to fly

1056
00:38:17,910 --> 00:38:15,920
and so we

1057
00:38:19,829 --> 00:38:17,920
from my perspective

1058
00:38:21,589 --> 00:38:19,839
things are are

1059
00:38:23,030 --> 00:38:21,599
taking the the right amount of time

1060
00:38:24,950 --> 00:38:23,040
we're being

1061
00:38:27,670 --> 00:38:24,960
thorough we're not rushing

1062
00:38:31,190 --> 00:38:27,680
either of the the two

1063
00:38:33,270 --> 00:38:31,200

commercial providers to the launch pad

1064
00:38:35,270 --> 00:38:33,280
and uh and we're able to give them that

1065
00:38:38,790 --> 00:38:35,280
uh that leeway because of what we did on

1066
00:38:42,870 --> 00:38:41,109
if if um

1067
00:38:44,829 --> 00:38:42,880
if there were difficulties or more

1068
00:38:46,550 --> 00:38:44,839
development time was

1069
00:38:49,270 --> 00:38:46,560
needed uh

1070
00:38:51,670 --> 00:38:49,280
is it possible to estimate your i guess

1071
00:38:54,230 --> 00:38:51,680
your estimate is early 2013 and then you

1072
00:38:57,670 --> 00:38:54,240
would need some sort of

1073
00:38:59,750 --> 00:38:57,680
uh decision on on adjusting to the

1074
00:39:01,670 --> 00:38:59,760
to the logistics yeah

1075
00:39:02,870 --> 00:39:01,680
there's variations on that

1076
00:39:04,550 --> 00:39:02,880
um

1077
00:39:06,870 --> 00:39:04,560
i would tell you we still have the

1078
00:39:08,550 --> 00:39:06,880
partner vehicles in those years and and

1079
00:39:10,470 --> 00:39:08,560
before we had done analysis as long as

1080
00:39:11,829 --> 00:39:10,480
we still have htvs and atvs we could

1081
00:39:12,950 --> 00:39:11,839
probably keep the crew on board but we

1082
00:39:14,310 --> 00:39:12,960
wouldn't be able to do much in the way

1083
00:39:15,510 --> 00:39:14,320
of research so we're not talking about a

1084
00:39:17,270 --> 00:39:15,520
situation where we're going to return

1085
00:39:18,950 --> 00:39:17,280
the crew home we're talking about a

1086
00:39:20,870 --> 00:39:18,960
situation won't be able to fully utilize

1087
00:39:23,349 --> 00:39:20,880
iss the way we'd like to

1088
00:39:25,510 --> 00:39:23,359

with that said we do have means we have

1089
00:39:27,510 --> 00:39:25,520
we we could still talk to our russian

1090
00:39:29,589 --> 00:39:27,520
colleagues perhaps about

1091
00:39:31,510 --> 00:39:29,599
flying they don't have

1092
00:39:33,430 --> 00:39:31,520
they don't have extra vehicles that's a

1093
00:39:35,430 --> 00:39:33,440
that's a two-year call-up kind of thing

1094
00:39:36,710 --> 00:39:35,440
two plus year call-up thing

1095
00:39:38,790 --> 00:39:36,720
but we might be able to work with them

1096
00:39:40,950 --> 00:39:38,800
to find more margin on their flights and

1097
00:39:42,950 --> 00:39:40,960
and and make some trades to minimize the

1098
00:39:44,390 --> 00:39:42,960
impact to research

1099
00:39:46,870 --> 00:39:44,400
and we we would begin those

1100
00:39:48,870 --> 00:39:46,880
conversations of course before we get

1101
00:39:50,950 --> 00:39:48,880
too close to to the period where we had

1102
00:39:52,710 --> 00:39:50,960
to have it in order to see

1103
00:39:55,109 --> 00:39:52,720
if we could

1104
00:39:57,109 --> 00:39:55,119
could provide enough up mass to keep the

1105
00:39:58,150 --> 00:39:57,119
research going i would tell you that in

1106
00:40:01,270 --> 00:39:58,160
some

1107
00:40:03,750 --> 00:40:01,280
areas of the consumables were where

1108
00:40:05,990 --> 00:40:03,760
what we call the term we use is fat so

1109
00:40:08,550 --> 00:40:06,000
we've got plenty of water on board

1110
00:40:10,710 --> 00:40:08,560
we've got a lot of food on board

1111
00:40:13,750 --> 00:40:10,720
crew supplies is something we can we can

1112
00:40:17,270 --> 00:40:13,760
work through so as we as we get later in

1113
00:40:20,309 --> 00:40:17,280

the flow as we get for instance to 2013

1114
00:40:21,990 --> 00:40:20,319
at the first quarter 2013 if if we need

1115
00:40:24,710 --> 00:40:22,000
the additional up mass on the progress

1116
00:40:26,309 --> 00:40:24,720
we'll probably try to focus that up mass

1117
00:40:28,230 --> 00:40:26,319
more on research

1118
00:40:31,430 --> 00:40:28,240
because we we're in pretty good shape

1119
00:40:33,510 --> 00:40:31,440
relative to the rest of the supply so

1120
00:40:36,790 --> 00:40:33,520
so it's not that everything is going to

1121
00:40:37,750 --> 00:40:36,800
be low come 2013 some things will start

1122
00:40:39,109 --> 00:40:37,760
to

1123
00:40:40,950 --> 00:40:39,119
push the limits so we'll take care of

1124
00:40:43,270 --> 00:40:40,960
those and meanwhile use the rest of the

1125
00:40:44,550 --> 00:40:43,280
up mass to keep the research going but

1126
00:40:46,150 --> 00:40:44,560
but again we're not getting to a point

1127
00:40:49,030 --> 00:40:46,160
where we're gonna we're gonna have to

1128
00:40:50,470 --> 00:40:49,040
demand iss with the with the

1129
00:40:52,309 --> 00:40:50,480
target with the vehicles we have the

1130
00:40:53,910 --> 00:40:52,319
commercial vehicles we have we'll be

1131
00:40:55,030 --> 00:40:53,920
able to keep iss banned we're talking

1132
00:40:56,390 --> 00:40:55,040
about being able to continue to do

1133
00:40:58,870 --> 00:40:56,400
research which of course is a very big

1134
00:41:01,270 --> 00:40:58,880
deal that's why station station is there

1135
00:41:05,990 --> 00:41:01,280
but it's not as traumatic as losing the

1136
00:41:10,390 --> 00:41:08,309
my name is ken obar from nhk japanese

1137
00:41:11,829 --> 00:41:10,400
broadcasting corporation um i think you

1138
00:41:14,309 --> 00:41:11,839

realize that we got a lot of japanese

1139
00:41:16,069 --> 00:41:14,319
media here one of the most um uh things

1140
00:41:19,510 --> 00:41:16,079
that we're very interested in is the

1141
00:41:21,589 --> 00:41:19,520
upcoming launch date of aki's launch

1142
00:41:23,589 --> 00:41:21,599
i was pretty much hearing cautiously but

1143
00:41:25,829 --> 00:41:23,599
i didn't think i i might have missed the

1144
00:41:27,670 --> 00:41:25,839
launch date or the predicted launch date

1145
00:41:29,750 --> 00:41:27,680
of aki's launch if you could tell us

1146
00:41:31,510 --> 00:41:29,760
what the current situation is and number

1147
00:41:33,829 --> 00:41:31,520
two

1148
00:41:35,510 --> 00:41:33,839
you mentioned about waukee's

1149
00:41:37,030 --> 00:41:35,520
but you also mentioned that it's a

1150
00:41:39,430 --> 00:41:37,040
little bit up in the air

1151
00:41:42,630 --> 00:41:39,440
could we say that aki will be doing a

1152
00:41:45,910 --> 00:41:42,640
spacewalk but it's the the content is

1153
00:41:47,990 --> 00:41:45,920
still a little bit or is it still

1154
00:41:50,309 --> 00:41:48,000
up in the air whether or not he is going

1155
00:41:53,829 --> 00:41:50,319
to do a spacewalk

1156
00:41:57,270 --> 00:41:53,839
let's see the launch date for aki um

1157
00:42:00,470 --> 00:41:57,280
and and his crew so we'll we'll fly yuri

1158
00:42:02,309 --> 00:42:00,480
and sunny as well is the 15th of july

1159
00:42:03,910 --> 00:42:02,319
and they dock on the 17th of july and

1160
00:42:05,349 --> 00:42:03,920
that's the current launch date

1161
00:42:07,990 --> 00:42:05,359
um

1162
00:42:10,470 --> 00:42:08,000
don't be too bold with the eva crews

1163
00:42:12,630 --> 00:42:10,480

love to do ebas um unfortunately evas

1164
00:42:14,950 --> 00:42:12,640
take quite a bit of crew time

1165
00:42:17,190 --> 00:42:14,960
to prepare for the the day they go

1166
00:42:19,750 --> 00:42:17,200
outside is a is a

1167
00:42:21,990 --> 00:42:19,760
small portion of the overall 100 or so

1168
00:42:24,630 --> 00:42:22,000
hours that it takes to for crews to get

1169
00:42:26,790 --> 00:42:24,640
ready and so we try to only do the evas

1170
00:42:28,150 --> 00:42:26,800
when we can fit them into the timeline

1171
00:42:29,190 --> 00:42:28,160
we first we'll do them when they have to

1172
00:42:30,470 --> 00:42:29,200
occur

1173
00:42:32,230 --> 00:42:30,480
but if they if

1174
00:42:34,390 --> 00:42:32,240
if they don't have to occur if we're not

1175
00:42:36,470 --> 00:42:34,400
driven by a contingency case we try to

1176
00:42:38,630 --> 00:42:36,480
fit them in where they fit so if the

1177
00:42:40,710 --> 00:42:38,640
spacex flight doesn't occur then odds

1178
00:42:41,990 --> 00:42:40,720
are will have us a schedule spot where

1179
00:42:43,670 --> 00:42:42,000
they can fit

1180
00:42:45,589 --> 00:42:43,680
but if we don't make that date as i

1181
00:42:47,430 --> 00:42:45,599
recall the dates start to get closer to

1182
00:42:50,309 --> 00:42:47,440
december that we find the next spot

1183
00:42:53,109 --> 00:42:50,319
where we think we can fit them in so

1184
00:42:54,950 --> 00:42:53,119
so uh it's not a given that we'd find a

1185
00:42:59,750 --> 00:42:54,960
opportunity although it's very likely

1186
00:43:03,510 --> 00:43:01,510
okay rob

1187
00:43:05,109 --> 00:43:03,520
hi robert perelman with collectspace.com

1188
00:43:07,510 --> 00:43:05,119

and space.com

1189
00:43:09,430 --> 00:43:07,520
um mike i believe you mentioned uh

1190
00:43:10,470 --> 00:43:09,440
utilization time for the crew of 50

1191
00:43:13,109 --> 00:43:10,480
hours

1192
00:43:14,309 --> 00:43:13,119
per week right now um can you talk a

1193
00:43:16,390 --> 00:43:14,319
little bit about

1194
00:43:17,270 --> 00:43:16,400
how long that extended

1195
00:43:19,109 --> 00:43:17,280
um

1196
00:43:20,390 --> 00:43:19,119
amount in terms of catch up is going to

1197
00:43:23,349 --> 00:43:20,400
be

1198
00:43:26,230 --> 00:43:23,359
hours or if it's going to drop back down

1199
00:43:27,829 --> 00:43:26,240
to 35 hours

1200
00:43:29,270 --> 00:43:27,839
uh terrell helped me with this one i

1201
00:43:31,430 --> 00:43:29,280
thought we had i thought if we got to

1202
00:43:33,990 --> 00:43:31,440
the end of increment 30 with the 50

1203
00:43:35,990 --> 00:43:34,000
hours we could get 35 between 29 and 30

1204
00:43:37,990 --> 00:43:36,000
is that right that's right so at the end

1205
00:43:41,030 --> 00:43:38,000
of increment 30 which is it ends with

1206
00:43:42,550 --> 00:43:41,040
the return of this next crew and

1207
00:43:43,349 --> 00:43:42,560
with the talk of instant messaging and

1208
00:43:45,270 --> 00:43:43,359
such

1209
00:43:47,190 --> 00:43:45,280
there's also been talk on orbit by some

1210
00:43:47,910 --> 00:43:47,200
of the crew members about

1211
00:43:51,349 --> 00:43:47,920
the

1212
00:43:53,349 --> 00:43:51,359
desire or use of tablet computers

1213
00:43:55,270 --> 00:43:53,359

like the ipad

1214
00:43:59,270 --> 00:43:55,280
are there plans from the u.s side to

1215
00:44:01,109 --> 00:43:59,280
launch tablets for operational use

1216
00:44:03,190 --> 00:44:01,119
yes

1217
00:44:04,790 --> 00:44:03,200
so is there a timeline for that

1218
00:44:08,870 --> 00:44:04,800
and do you have you picked out a model

1219
00:44:10,710 --> 00:44:08,880
just had a conversation about that uh

1220
00:44:12,069 --> 00:44:10,720
somebody is working on picking out a

1221
00:44:14,309 --> 00:44:12,079
model that hasn't come to me for a

1222
00:44:16,390 --> 00:44:14,319
decision yet okay um and they're looking

1223
00:44:18,550 --> 00:44:16,400
at the standard ones that you'd that

1224
00:44:20,309 --> 00:44:18,560
you'd probably be interested in

1225
00:44:22,470 --> 00:44:20,319
at the store and we're

1226
00:44:23,670 --> 00:44:22,480
we're actually the crew's interest in it

1227
00:44:25,990 --> 00:44:23,680
is to

1228
00:44:28,470 --> 00:44:26,000
so today we have procedures and stuff on

1229
00:44:30,069 --> 00:44:28,480
the laptops they carry around and they

1230
00:44:32,230 --> 00:44:30,079
they've been talking to us about if you

1231
00:44:34,790 --> 00:44:32,240
can get this board that they can velcro

1232
00:44:36,710 --> 00:44:34,800
to their knee even and take with them

1233
00:44:38,150 --> 00:44:36,720
that that it would make it simpler for

1234
00:44:39,910 --> 00:44:38,160
them to get procedures around with them

1235
00:44:41,829 --> 00:44:39,920
where they're at so that's the that's

1236
00:44:43,430 --> 00:44:41,839
one of the big applications for it if

1237
00:44:45,990 --> 00:44:43,440
they're just doing email and stuff it's

1238
00:44:47,589 --> 00:44:46,000

just as easy to do it from a laptop

1239
00:44:49,670 --> 00:44:47,599
so there is a procedural application

1240
00:44:51,430 --> 00:44:49,680
that we like and we're looking at

1241
00:44:54,069 --> 00:44:51,440
options to

1242
00:44:57,349 --> 00:44:54,079
for laptops i mean for the right one to

1243
00:44:59,349 --> 00:44:57,359
fly and and certified to go fly but

1244
00:45:01,030 --> 00:44:59,359
i don't think we've decided on the model

1245
00:45:02,309 --> 00:45:01,040
yet i remember a discussion about it a

1246
00:45:04,390 --> 00:45:02,319
few months ago but i don't think we've

1247
00:45:05,990 --> 00:45:04,400
picked one yet we can verify that and

1248
00:45:09,510 --> 00:45:06,000
we'll let you know that through the

1249
00:45:13,510 --> 00:45:11,430
david hirsch nhk

1250
00:45:15,589 --> 00:45:13,520
you uh kind of a follow-up to mark's

1251
00:45:17,750 --> 00:45:15,599
question if i could on on the c2c3

1252
00:45:19,910 --> 00:45:17,760
flight you mentioned may 2nd as being a

1253
00:45:20,870 --> 00:45:19,920
rendezvous day and may 5th i believe for

1254
00:45:22,550 --> 00:45:20,880
birthing

1255
00:45:24,150 --> 00:45:22,560
uh when we're on a conference call about

1256
00:45:26,309 --> 00:45:24,160
a month or so ago you gave us an idea of

1257
00:45:27,750 --> 00:45:26,319
what was standing in the way between

1258
00:45:29,270 --> 00:45:27,760
getting that mission off

1259
00:45:31,349 --> 00:45:29,280
and now if you could update us on what

1260
00:45:33,910 --> 00:45:31,359
what what you're working and how likely

1261
00:45:36,550 --> 00:45:33,920
may i think it's april 30th looks to you

1262
00:45:38,870 --> 00:45:36,560
as being a firm launch date for that

1263
00:45:41,109 --> 00:45:38,880

you know i don't i'm just sitting here

1264
00:45:43,750 --> 00:45:41,119
thinking the um

1265
00:45:47,030 --> 00:45:43,760
the simulations are taking place and

1266
00:45:48,710 --> 00:45:47,040
they've we had a trajectory tool that we

1267
00:45:50,790 --> 00:45:48,720
were working on

1268
00:45:53,030 --> 00:45:50,800
spacex was working on that we were

1269
00:45:54,790 --> 00:45:53,040
evaluating with them that's done and

1270
00:45:56,309 --> 00:45:54,800
being used in simulations now that's

1271
00:45:59,109 --> 00:45:56,319
going well

1272
00:46:02,309 --> 00:45:59,119
they were going to they needed to paint

1273
00:46:04,710 --> 00:46:02,319
the service module part of the

1274
00:46:07,190 --> 00:46:04,720
of the spacecraft in order to take care

1275
00:46:08,470 --> 00:46:07,200
of a thermal issue with tanks

1276
00:46:10,309 --> 00:46:08,480
uh i think

1277
00:46:11,990 --> 00:46:10,319
that one's behind us i think in the end

1278
00:46:14,630 --> 00:46:12,000
we didn't end up having to paint the

1279
00:46:15,589 --> 00:46:14,640
spacecraft

1280
00:46:17,589 --> 00:46:15,599
we've been

1281
00:46:22,630 --> 00:46:17,599
we've inspected the engines so i don't

1282
00:46:26,390 --> 00:46:24,710
i don't know of any big drivers right

1283
00:46:28,470 --> 00:46:26,400
now other than just what they have to do

1284
00:46:31,670 --> 00:46:28,480
between now and launch date

1285
00:46:36,390 --> 00:46:33,990
but but still every there's still work

1286
00:46:38,470 --> 00:46:36,400
to be done and getting ready for loading

1287
00:46:39,510 --> 00:46:38,480
doing their final tests buttoning things

1288
00:46:41,109 --> 00:46:39,520

up so

1289
00:46:43,109 --> 00:46:41,119
there's a lot of work to do between now

1290
00:46:47,589 --> 00:46:43,119
and april 30th but their schedule

1291
00:46:54,150 --> 00:46:50,150
okay i know we have reporters at the

1292
00:46:56,630 --> 00:46:54,160
kennedy space center in florida so let's

1293
00:46:58,390 --> 00:46:56,640
go off to florida right now and answer

1294
00:47:02,710 --> 00:46:58,400
their questions we'll come back here as

1295
00:47:06,550 --> 00:47:04,309
yes hi this is marcia dunham the

1296
00:47:09,109 --> 00:47:06,560
associated press with a couple questions

1297
00:47:11,510 --> 00:47:09,119
for you mike um for the dragon launch

1298
00:47:13,670 --> 00:47:11,520
i'm wondering if what is the payload

1299
00:47:15,829 --> 00:47:13,680
what have you decided to put on board to

1300
00:47:18,870 --> 00:47:15,839
take to the space station

1301
00:47:20,549 --> 00:47:18,880
to benefit the crew and could you

1302
00:47:22,790 --> 00:47:20,559
sort of talk a little bit about the demo

1303
00:47:25,750 --> 00:47:22,800
that's going to be involved

1304
00:47:28,230 --> 00:47:25,760
the complexities uh

1305
00:47:30,069 --> 00:47:28,240
all that sort of thing involving um

1306
00:47:32,630 --> 00:47:30,079
which how you want to make sure it's

1307
00:47:35,910 --> 00:47:32,640
good before it comes in for a grab

1308
00:47:37,829 --> 00:47:35,920
uh sure um first the payload we have

1309
00:47:39,670 --> 00:47:37,839
between four and five hundred kilograms

1310
00:47:43,109 --> 00:47:39,680
of up mass

1311
00:47:45,510 --> 00:47:43,119
it's it's uh low sodium food

1312
00:47:47,910 --> 00:47:45,520
some crew supplies it's it's not

1313
00:47:50,549 --> 00:47:47,920

one-of-a-kind oru's

1314
00:47:53,349 --> 00:47:50,559
but it is important uh cargo all the

1315
00:47:55,270 --> 00:47:53,359
same and we're going to learn two things

1316
00:47:57,829 --> 00:47:55,280
from the demo flight one is can you

1317
00:47:59,510 --> 00:47:57,839
birth the other is how we unload and

1318
00:48:01,990 --> 00:47:59,520
reload and efficiencies and learn from

1319
00:48:03,510 --> 00:48:02,000
that as well so actually having

1320
00:48:05,109 --> 00:48:03,520
actual supplies on board that we need to

1321
00:48:07,589 --> 00:48:05,119
do something with when they get there as

1322
00:48:10,150 --> 00:48:07,599
opposed to just dummy cargo is a is

1323
00:48:11,670 --> 00:48:10,160
really a big advantage uh of course from

1324
00:48:13,430 --> 00:48:11,680
standpoint we get real cargo out of it

1325
00:48:14,710 --> 00:48:13,440
but also it it's going to help us

1326
00:48:16,309 --> 00:48:14,720
understand

1327
00:48:21,190 --> 00:48:16,319
how most efficiently to unload and

1328
00:48:22,630 --> 00:48:21,200
reload the the dragon spacecraft so um

1329
00:48:25,109 --> 00:48:22,640
i don't have the precise number off top

1330
00:48:27,670 --> 00:48:25,119
my head marsha but it's in it's in that

1331
00:48:29,270 --> 00:48:27,680
uh that area

1332
00:48:31,030 --> 00:48:29,280
let's see as far as the demonstration

1333
00:48:33,430 --> 00:48:31,040
and we'll talk about this when we when

1334
00:48:35,270 --> 00:48:33,440
we had the press conference bef before

1335
00:48:36,870 --> 00:48:35,280
the flight so we'll give you a little

1336
00:48:39,190 --> 00:48:36,880
more detail on it but

1337
00:48:41,670 --> 00:48:39,200
first of all as as the spacecraft is

1338
00:48:44,790 --> 00:48:41,680

flying towards iss there's information

1339
00:48:46,309 --> 00:48:44,800
you gain from the models that you the

1340
00:48:48,710 --> 00:48:46,319
environmental models you created that

1341
00:48:49,829 --> 00:48:48,720
you expected the vehicle to be reacting

1342
00:48:56,150 --> 00:48:49,839
to

1343
00:48:59,109 --> 00:48:56,160
learn is modeling and and how the

1344
00:49:01,430 --> 00:48:59,119
vehicle is operating with respect to how

1345
00:49:02,950 --> 00:49:01,440
spacex believed it would would operate

1346
00:49:04,470 --> 00:49:02,960
of course some of that's been learned a

1347
00:49:06,470 --> 00:49:04,480
little bit

1348
00:49:08,630 --> 00:49:06,480
with their last flight and then as you

1349
00:49:11,750 --> 00:49:08,640
get close to iss there is some specific

1350
00:49:13,589 --> 00:49:11,760
testing of the long-range uh rendezvous

1351
00:49:16,069 --> 00:49:13,599
capability and near-term prox ops

1352
00:49:19,109 --> 00:49:16,079
capability so we'll come up we'll fly

1353
00:49:20,470 --> 00:49:19,119
under the space station to get the

1354
00:49:23,349 --> 00:49:20,480
do the

1355
00:49:25,670 --> 00:49:23,359
relative gps to to make sure we that

1356
00:49:26,790 --> 00:49:25,680
system works correctly we'll we'll of

1357
00:49:28,150 --> 00:49:26,800
course in the process of doing that

1358
00:49:30,150 --> 00:49:28,160
we'll communicate with the vehicle to

1359
00:49:31,670 --> 00:49:30,160
make sure the uhf com system is working

1360
00:49:33,670 --> 00:49:31,680
together

1361
00:49:35,750 --> 00:49:33,680
and then what we'll do is sort of do a

1362
00:49:37,270 --> 00:49:35,760
big fly around of the space station

1363
00:49:38,950 --> 00:49:37,280

which should take us about a day we'll

1364
00:49:41,030 --> 00:49:38,960
assess that data

1365
00:49:43,910 --> 00:49:41,040
against pass fail criteria that's in the

1366
00:49:46,390 --> 00:49:43,920
flight rules today if we pass we're

1367
00:49:48,950 --> 00:49:46,400
we're done the the rest of the uh

1368
00:49:51,270 --> 00:49:48,960
approach and the birthing can occur

1369
00:49:54,870 --> 00:49:51,280
uh and if we don't pass we'll talk about

1370
00:49:56,950 --> 00:49:54,880
it and uh and the agreement is uh unless

1371
00:49:58,630 --> 00:49:56,960
it's approved at the immt they will then

1372
00:50:00,790 --> 00:49:58,640
go and hold as part of that pattern

1373
00:50:02,630 --> 00:50:00,800
they'll go hold and we'll we'll sort

1374
00:50:05,270 --> 00:50:02,640
through the issue and then and then let

1375
00:50:07,510 --> 00:50:05,280
them approach once we've sorted it out

1376
00:50:09,510 --> 00:50:07,520
um but then the next day what happens is

1377
00:50:12,790 --> 00:50:09,520
we don't just fly right in we actually

1378
00:50:15,430 --> 00:50:12,800
come in and we fly up a little bit to

1379
00:50:18,309 --> 00:50:15,440
our bar and we we

1380
00:50:19,750 --> 00:50:18,319
get the close-in uh systems working the

1381
00:50:21,670 --> 00:50:19,760
lidar systems

1382
00:50:23,349 --> 00:50:21,680
and then they'll then we'll practice and

1383
00:50:25,030 --> 00:50:23,359
abort away and we'll board away a little

1384
00:50:26,950 --> 00:50:25,040
way then we'll hold and then eventually

1385
00:50:28,630 --> 00:50:26,960
we'll look at the data and then we'll

1386
00:50:29,829 --> 00:50:28,640
finally come up to the birthing box and

1387
00:50:31,430 --> 00:50:29,839
birth

1388
00:50:33,750 --> 00:50:31,440

so we've got a number

1389
00:50:35,349 --> 00:50:33,760
a couple of cases we're going to test

1390
00:50:38,069 --> 00:50:35,359
the far field

1391
00:50:40,870 --> 00:50:38,079
rendezvous system the incom system and

1392
00:50:43,510 --> 00:50:40,880
then the next day we'll get the close-in

1393
00:50:44,870 --> 00:50:43,520
proxop systems uh it will test the abort

1394
00:50:47,589 --> 00:50:44,880
capabilities there's another board

1395
00:50:48,790 --> 00:50:47,599
actually we test further away from iss

1396
00:50:51,349 --> 00:50:48,800
as well

1397
00:50:52,470 --> 00:50:51,359
so we'll test the final abort capability

1398
00:50:54,150 --> 00:50:52,480
and then

1399
00:50:56,069 --> 00:50:54,160
assume it meets all the criteria that's

1400
00:50:57,750 --> 00:50:56,079
predefined and the flight rules will uh

1401
00:51:00,549 --> 00:50:57,760
come up into the birthing box and let

1402
00:51:05,270 --> 00:51:03,109
thanks on that two more questions um one

1403
00:51:08,069 --> 00:51:05,280
of which is from where you sit how

1404
00:51:10,069 --> 00:51:08,079
important is this demo flight how

1405
00:51:13,589 --> 00:51:10,079
important is it for it to go well and to

1406
00:51:15,030 --> 00:51:13,599
succeed and to to pave the way for

1407
00:51:17,670 --> 00:51:15,040
commercial

1408
00:51:19,670 --> 00:51:17,680
cargo halls to the space station

1409
00:51:21,270 --> 00:51:19,680
uh that's a great question so so of

1410
00:51:24,870 --> 00:51:21,280
course you all you want every flight to

1411
00:51:27,109 --> 00:51:24,880
work exactly as you planned it

1412
00:51:29,990 --> 00:51:27,119
but we had we had initially planned on

1413
00:51:31,270 --> 00:51:30,000

two demo flights and so um

1414
00:51:33,430 --> 00:51:31,280
you know if something happens during

1415
00:51:36,950 --> 00:51:33,440
this flight regardless of what that is

1416
00:51:38,630 --> 00:51:36,960
we will learn spacex will learn um and

1417
00:51:41,670 --> 00:51:38,640
then we will have to sit down and say

1418
00:51:43,829 --> 00:51:41,680
okay now did did even though it perhaps

1419
00:51:46,790 --> 00:51:43,839
didn't make it all the way or

1420
00:51:48,950 --> 00:51:46,800
or we had some problems along the way

1421
00:51:51,270 --> 00:51:48,960
we will assess that and go okay now is

1422
00:51:52,470 --> 00:51:51,280
it necessary to do another demo flight

1423
00:51:56,950 --> 00:51:52,480
before we

1424
00:51:59,510 --> 00:51:56,960
we assume we'll pick up the last piece

1425
00:52:01,990 --> 00:51:59,520
of demonstration on a on a crs type

1426
00:52:04,390 --> 00:52:02,000
flight of course the the the the

1427
00:52:06,630 --> 00:52:04,400
difference between the two being

1428
00:52:09,030 --> 00:52:06,640
you know how much we loaded up

1429
00:52:11,670 --> 00:52:09,040
for that flight so

1430
00:52:13,910 --> 00:52:11,680
that's forward work so i would tell you

1431
00:52:16,150 --> 00:52:13,920
marcia we need to be careful not to

1432
00:52:17,670 --> 00:52:16,160
assume that the success or failure of

1433
00:52:19,270 --> 00:52:17,680
commercial

1434
00:52:21,510 --> 00:52:19,280
flight's going to hang in the balance of

1435
00:52:23,910 --> 00:52:21,520
the single flight of the first

1436
00:52:26,150 --> 00:52:23,920
spacex flight both of these companies

1437
00:52:27,589 --> 00:52:26,160
are committed the agency is committing

1438
00:52:29,910 --> 00:52:27,599

to committed to supporting these

1439
00:52:31,510 --> 00:52:29,920
companies for them to be successful

1440
00:52:33,829 --> 00:52:31,520
they're really they're building very

1441
00:52:35,990 --> 00:52:33,839
capable spacecraft so if they have

1442
00:52:37,910 --> 00:52:36,000
problems along the way it's the kind of

1443
00:52:40,549 --> 00:52:37,920
things that you experience in this

1444
00:52:43,190 --> 00:52:40,559
difficult process of trying to not only

1445
00:52:45,190 --> 00:52:43,200
launch into low earth orbit but but do

1446
00:52:48,309 --> 00:52:45,200
the do the next hardest thing which is

1447
00:52:51,030 --> 00:52:48,319
to try to rendezvous safely with another

1448
00:52:52,549 --> 00:52:51,040
spacecraft in orbit so

1449
00:52:55,109 --> 00:52:52,559
there's a lot of challenges with all

1450
00:52:56,790 --> 00:52:55,119
that as we as we say or at least

1451
00:52:58,790 --> 00:52:56,800
one of my mentors used to say it's the

1452
00:53:00,390 --> 00:52:58,800
first 50 feet in the last 50 feet or the

1453
00:53:01,829 --> 00:53:00,400
hardest and

1454
00:53:04,230 --> 00:53:01,839
and so they have to do both on this

1455
00:53:06,549 --> 00:53:04,240
flight so we're going to learn

1456
00:53:08,470 --> 00:53:06,559
and if it's not a complete success we

1457
00:53:11,190 --> 00:53:08,480
still learn quite a bit and we will you

1458
00:53:13,510 --> 00:53:11,200
know we'll move on to the next flight

1459
00:53:15,589 --> 00:53:13,520
based on what we've learned and and and

1460
00:53:17,430 --> 00:53:15,599
do it as well and as we've said we're

1461
00:53:18,549 --> 00:53:17,440
from a logistics standpoint we're doing

1462
00:53:20,069 --> 00:53:18,559
pretty good

1463
00:53:21,910 --> 00:53:20,079

and we've got a little margin in the

1464
00:53:23,750 --> 00:53:21,920
system and so um

1465
00:53:25,829 --> 00:53:23,760
so we need to treat this as what it

1466
00:53:27,430 --> 00:53:25,839
really is which is a demo flight and as

1467
00:53:29,510 --> 00:53:27,440
we all know demonstrations don't always

1468
00:53:33,190 --> 00:53:29,520
go exactly as we've planned but that's

1469
00:53:34,790 --> 00:53:33,200
that's why we do demonstration clients

1470
00:53:37,190 --> 00:53:34,800
thank you and the last question from

1471
00:53:40,549 --> 00:53:37,200
here is it's been eight months since the

1472
00:53:44,150 --> 00:53:40,559
last shuttle delivery

1473
00:53:47,270 --> 00:53:44,160
how is it going without shuttles uh to

1474
00:53:50,069 --> 00:53:47,280
to bring up and bring down um i'm just

1475
00:53:51,750 --> 00:53:50,079
wondering the status in orbit

1476
00:53:54,790 --> 00:53:51,760
without the coming and going of the big

1477
00:53:56,630 --> 00:53:54,800
shuttles uh as they once did

1478
00:53:58,790 --> 00:53:56,640
well you know we'd reached

1479
00:54:00,549 --> 00:53:58,800
we'd reached a point well first of all i

1480
00:54:02,309 --> 00:54:00,559
missed my shuttle friends shuttle was an

1481
00:54:04,710 --> 00:54:02,319
amazing vehicle and

1482
00:54:07,190 --> 00:54:04,720
and and personally it was fascinating to

1483
00:54:08,710 --> 00:54:07,200
watch and and to try to utilize

1484
00:54:11,030 --> 00:54:08,720
um but

1485
00:54:13,750 --> 00:54:11,040
we finished assembly of iss and we no

1486
00:54:17,510 --> 00:54:13,760
longer required a vehicle of that

1487
00:54:20,230 --> 00:54:17,520
capacity uh to to just service the iss

1488
00:54:21,670 --> 00:54:20,240

and so from that respect we're we're not

1489
00:54:23,430 --> 00:54:21,680
we're not missing the shuttle now there

1490
00:54:25,349 --> 00:54:23,440
were things that shuttle was uniquely

1491
00:54:28,230 --> 00:54:25,359
able to do

1492
00:54:30,549 --> 00:54:28,240
that we don't get with smaller vehicles

1493
00:54:32,950 --> 00:54:30,559
um and that's okay because that's where

1494
00:54:35,190 --> 00:54:32,960
we are in the life cycle of the iss and

1495
00:54:39,589 --> 00:54:35,200
and really it's time for us to focus not

1496
00:54:42,069 --> 00:54:39,599
on big missions that that we end up uh

1497
00:54:44,390 --> 00:54:42,079
you know racing through the work to do a

1498
00:54:45,990 --> 00:54:44,400
major mod to the iss but rather now is

1499
00:54:47,109 --> 00:54:46,000
the time to have the logistics vehicle

1500
00:54:48,950 --> 00:54:47,119
show up

1501
00:54:50,710 --> 00:54:48,960
logistics vehicles that can stay a while

1502
00:54:54,470 --> 00:54:50,720
while the crew while they're doing their

1503
00:54:56,150 --> 00:54:54,480
other jobs can can empty it out as as

1504
00:54:59,030 --> 00:54:56,160
necessary eventually

1505
00:55:01,270 --> 00:54:59,040
do the external offload and reload

1506
00:55:04,069 --> 00:55:01,280
and and then depart in a in a manner

1507
00:55:05,510 --> 00:55:04,079
that allows us to continue the the other

1508
00:55:07,190 --> 00:55:05,520
things we're doing

1509
00:55:09,349 --> 00:55:07,200
before the vehicle arrived so in some

1510
00:55:11,589 --> 00:55:09,359
respects these other vehicles that

1511
00:55:14,630 --> 00:55:11,599
service iss are more

1512
00:55:16,470 --> 00:55:14,640
adapt to how we operate today as opposed

1513
00:55:17,430 --> 00:55:16,480

to the assembly phase so

1514
00:55:19,990 --> 00:55:17,440
um

1515
00:55:21,829 --> 00:55:20,000
so while the iso wild shuttle was a very

1516
00:55:24,069 --> 00:55:21,839
very capable vehicle

1517
00:55:27,510 --> 00:55:24,079
um it is really it would have been

1518
00:55:30,470 --> 00:55:27,520
overkill to to maintain the iss long

1519
00:55:33,270 --> 00:55:30,480
term with that vehicle now

1520
00:55:35,430 --> 00:55:33,280
the the piece that that we

1521
00:55:36,789 --> 00:55:35,440
as a country are working on and should

1522
00:55:39,190 --> 00:55:36,799
of course is the

1523
00:55:40,390 --> 00:55:39,200
is the alternate means for rotating a

1524
00:55:42,549 --> 00:55:40,400
crew

1525
00:55:44,710 --> 00:55:42,559
which we do miss without a shuttle and

1526
00:55:46,789 --> 00:55:44,720
and we are of course as you know working

1527
00:55:50,230 --> 00:55:46,799
towards creating a capability an

1528
00:55:53,829 --> 00:55:50,240
alternate capability so we have a backup

1529
00:55:58,230 --> 00:55:55,190
and tara did you want to address

1530
00:56:00,069 --> 00:55:58,240
research yeah so so with regard to

1531
00:56:01,670 --> 00:56:00,079
payload capabilities of the vehicles

1532
00:56:03,829 --> 00:56:01,680
that we're using now versus shuttle

1533
00:56:06,069 --> 00:56:03,839
we've we've actually had

1534
00:56:07,750 --> 00:56:06,079
even ample even more

1535
00:56:10,309 --> 00:56:07,760
room than we've ever had on shuttle in

1536
00:56:12,789 --> 00:56:10,319
terms of volume for payloads up and down

1537
00:56:15,349 --> 00:56:12,799
mass or at least that mass

1538
00:56:17,349 --> 00:56:15,359

and so we've been able to

1539
00:56:19,670 --> 00:56:17,359
implement our research complement and

1540
00:56:22,549 --> 00:56:19,680
we're also looking forward to spacex

1541
00:56:24,150 --> 00:56:22,559
even spacex demo has an investigation on

1542
00:56:26,069 --> 00:56:24,160
it and that's the nanoracks

1543
00:56:28,950 --> 00:56:26,079
investigation so

1544
00:56:30,789 --> 00:56:28,960
so with the spacex complement coming up

1545
00:56:32,630 --> 00:56:30,799
we will have up and down mass and so

1546
00:56:34,390 --> 00:56:32,640
we're looking forward to that capability

1547
00:56:37,190 --> 00:56:34,400
to bring our samples home

1548
00:56:39,670 --> 00:56:37,200
and so we've uh so we've had good

1549
00:56:40,549 --> 00:56:39,680
progress so far without shuttle

1550
00:56:42,710 --> 00:56:40,559
at least

1551
00:56:44,789 --> 00:56:42,720
with regard to research and so we're

1552
00:56:47,349 --> 00:56:44,799
again looking forward to spacex and and

1553
00:56:48,870 --> 00:56:47,359
uh orbital coming online as well

1554
00:56:50,470 --> 00:56:48,880
and then i'll just jump on the bandwagon

1555
00:56:52,470 --> 00:56:50,480
a little and point out that you know i

1556
00:56:53,349 --> 00:56:52,480
think that there's um folks might think

1557
00:56:55,670 --> 00:56:53,359
that

1558
00:56:57,190 --> 00:56:55,680
things have gotten kind of less busy now

1559
00:56:59,430 --> 00:56:57,200
on space station

1560
00:57:00,870 --> 00:56:59,440
but it's incredibly busy

1561
00:57:02,549 --> 00:57:00,880
first of all the research that tara

1562
00:57:04,630 --> 00:57:02,559
mentioned this

1563
00:57:05,829 --> 00:57:04,640

really takes over a huge amount of the

1564
00:57:08,069 --> 00:57:05,839
cruise day

1565
00:57:10,150 --> 00:57:08,079
it's really exciting to watch the crew

1566
00:57:12,230 --> 00:57:10,160
they're talking to scientists around the

1567
00:57:13,829 --> 00:57:12,240
world and they're doing some incredible

1568
00:57:15,270 --> 00:57:13,839
incredible research

1569
00:57:17,510 --> 00:57:15,280
additionally we have all these vehicles

1570
00:57:19,510 --> 00:57:17,520
coming and going and it's really busy it

1571
00:57:21,109 --> 00:57:19,520
seems like the assembly phase so i don't

1572
00:57:22,789 --> 00:57:21,119
want folks to think that things have

1573
00:57:25,589 --> 00:57:22,799
just slowed down on space station it's

1574
00:57:26,470 --> 00:57:25,599
really not the case

1575
00:57:27,990 --> 00:57:26,480
okay

1576
00:57:29,430 --> 00:57:28,000
we have a couple of questions on the

1577
00:57:30,630 --> 00:57:29,440
phone bridge today let's go to those

1578
00:57:34,150 --> 00:57:30,640
first and then we'll take some of our

1579
00:57:37,349 --> 00:57:34,160
twitter questions uh phillip slossy on

1580
00:57:39,030 --> 00:57:37,359
yeah can you hear me yes

1581
00:57:41,109 --> 00:57:39,040
can you hear me yes please go ahead with

1582
00:57:43,750 --> 00:57:41,119
your question yeah this is for mr

1583
00:57:45,829 --> 00:57:43,760
suffredini can you provide a status on

1584
00:57:49,349 --> 00:57:45,839
failure analysis of the pump module that

1585
00:57:51,589 --> 00:57:49,359
was brought back on sts-135

1586
00:57:53,910 --> 00:57:51,599
i can tell you that we found

1587
00:57:56,069 --> 00:57:53,920
that ammonia had leaked into the stator

1588
00:57:56,870 --> 00:57:56,079

area of the pump

1589
00:57:59,030 --> 00:57:56,880
which

1590
00:58:00,789 --> 00:57:59,040
ultimately

1591
00:58:03,510 --> 00:58:00,799
resulted in the in the failure of the

1592
00:58:05,829 --> 00:58:03,520
pump where we have not determined the

1593
00:58:06,710 --> 00:58:05,839
root cause of

1594
00:58:08,470 --> 00:58:06,720
of

1595
00:58:10,390 --> 00:58:08,480
whether or not we

1596
00:58:11,510 --> 00:58:10,400
had some

1597
00:58:13,430 --> 00:58:11,520
um

1598
00:58:15,349 --> 00:58:13,440
whether or not the bearings had gotten

1599
00:58:18,069 --> 00:58:15,359
worn to the point that they started

1600
00:58:20,230 --> 00:58:18,079
allow rubbing which caused the leak

1601
00:58:23,109 --> 00:58:20,240
in an ultimate failure or whether the

1602
00:58:25,270 --> 00:58:23,119
leak occurred and and then this caused

1603
00:58:26,710 --> 00:58:25,280
a reaction that resulted in the the

1604
00:58:28,309 --> 00:58:26,720
ultimate failure

1605
00:58:30,230 --> 00:58:28,319
that's still work in front of us and

1606
00:58:32,630 --> 00:58:30,240
it's been a long uh

1607
00:58:33,510 --> 00:58:32,640
it's been a long process because as we

1608
00:58:35,109 --> 00:58:33,520
it

1609
00:58:36,470 --> 00:58:35,119
of course as you know the ammonia pump

1610
00:58:39,109 --> 00:58:36,480
pumps ammonia

1611
00:58:41,030 --> 00:58:39,119
and that's a that's a hazardous

1612
00:58:43,750 --> 00:58:41,040
uh

1613
00:58:45,829 --> 00:58:43,760

substance and in the process of

1614
00:58:47,829 --> 00:58:45,839
of disassembling it we found ammonia in

1615
00:58:49,430 --> 00:58:47,839
areas we hadn't planned and so it's it's

1616
00:58:50,950 --> 00:58:49,440
taken us a while to

1617
00:58:53,990 --> 00:58:50,960
it took us a while to get it all

1618
00:58:55,510 --> 00:58:54,000
disassembled and do the analysis you do

1619
00:58:56,789 --> 00:58:55,520
as you disassemble is just don't take

1620
00:58:58,710 --> 00:58:56,799
all the pieces apart as you know you

1621
00:59:00,069 --> 00:58:58,720
take it a little at a time to make sure

1622
00:59:02,069 --> 00:59:00,079
you don't destroy the evidence so it's

1623
00:59:04,150 --> 00:59:02,079
been kind of a long process

1624
00:59:05,990 --> 00:59:04,160
but the but the pump is all dissembled

1625
00:59:07,030 --> 00:59:06,000
we we we know

1626
00:59:09,270 --> 00:59:07,040
um

1627
00:59:11,670 --> 00:59:09,280
uh what occurred uh we're still trying

1628
00:59:13,109 --> 00:59:11,680
to determine a root cause i would tell

1629
00:59:15,270 --> 00:59:13,119
you though that we've been looking we

1630
00:59:16,789 --> 00:59:15,280
keep very close track there was a couple

1631
00:59:18,789 --> 00:59:16,799
month period

1632
00:59:21,510 --> 00:59:18,799
beforehand where we started to see signs

1633
00:59:23,910 --> 00:59:21,520
this pump was was having um these

1634
00:59:25,670 --> 00:59:23,920
problems from a current perspective

1635
00:59:27,670 --> 00:59:25,680
and we pay very close attention these

1636
00:59:31,030 --> 00:59:27,680
pumps from that perspective and have not

1637
00:59:32,950 --> 00:59:31,040
seen any indication of a of a similar

1638
00:59:34,870 --> 00:59:32,960

concern with the pumps that are running

1639
00:59:35,990 --> 00:59:34,880
on orbit today so we still have a little

1640
00:59:37,670 --> 00:59:36,000
ways to go

1641
00:59:39,750 --> 00:59:37,680
in determining root cause on the pump

1642
00:59:41,589 --> 00:59:39,760
module

1643
00:59:43,750 --> 00:59:41,599
okay thank you that's it for me

1644
00:59:45,990 --> 00:59:43,760
okay and i believe we had todd halverson

1645
00:59:47,910 --> 00:59:46,000
on the line

1646
00:59:50,549 --> 00:59:47,920
thanks very much todd halverson of

1647
00:59:52,789 --> 00:59:50,559
florida today for mike suffordini mike

1648
00:59:56,069 --> 00:59:52,799
i'm wondering if you could uh tell us

1649
00:59:57,670 --> 00:59:56,079
what the earliest date is that you

1650
01:00:00,390 --> 00:59:57,680
believe uh

1651
01:00:03,910 --> 01:00:00,400
you guys might be able to

1652
01:00:05,430 --> 01:00:03,920
fly an analog type mars mission on the

1653
01:00:08,710 --> 01:00:05,440
space station

1654
01:00:11,670 --> 01:00:08,720
and could you also update us on your

1655
01:00:13,910 --> 01:00:11,680
analysis of

1656
01:00:16,309 --> 01:00:13,920
how long the station could actually

1657
01:00:17,990 --> 01:00:16,319
operate i think you were looking at

1658
01:00:21,910 --> 01:00:18,000
whether it would be

1659
01:00:23,430 --> 01:00:21,920
structurally good through 2028 thanks

1660
01:00:25,030 --> 01:00:23,440
uh let's see the answer to the second

1661
01:00:26,789 --> 01:00:25,040
one is uh of course we're approved

1662
01:00:28,390 --> 01:00:26,799
through 2020 and we're we haven't

1663
01:00:29,990 --> 01:00:28,400

actually completed all of our analysis

1664
01:00:33,270 --> 01:00:30,000
through 2020 but

1665
01:00:35,030 --> 01:00:33,280
uh it's it it takes time um

1666
01:00:37,589 --> 01:00:35,040
and and

1667
01:00:39,030 --> 01:00:37,599
it really from a 2020 perspective you

1668
01:00:40,230 --> 01:00:39,040
have to just

1669
01:00:41,910 --> 01:00:40,240
approve

1670
01:00:43,829 --> 01:00:41,920
or complete the analysis on all the

1671
01:00:45,349 --> 01:00:43,839
components that flew before the columbia

1672
01:00:47,349 --> 01:00:45,359
accident all the components that flew

1673
01:00:51,109 --> 01:00:47,359
after that actually don't reach their

1674
01:00:53,030 --> 01:00:51,119
15-year life until until 2020 or beyond

1675
01:00:55,430 --> 01:00:53,040
so anyway that now is still going on we

1676
01:00:57,109 --> 01:00:55,440
actually finished that in the late 2013

1677
01:00:58,150 --> 01:00:57,119
time frame but all the data we've seen

1678
01:01:00,309 --> 01:00:58,160
so far

1679
01:01:01,750 --> 01:01:00,319
is very positive and so

1680
01:01:02,789 --> 01:01:01,760
as we've stepped through the older

1681
01:01:05,109 --> 01:01:02,799
elements

1682
01:01:07,430 --> 01:01:05,119
first we haven't

1683
01:01:08,630 --> 01:01:07,440
reached seen anything that causes us

1684
01:01:10,870 --> 01:01:08,640
concern

1685
01:01:13,829 --> 01:01:10,880
we still have work to do to to close out

1686
01:01:16,710 --> 01:01:13,839
a couple areas uh and then finish up the

1687
01:01:19,030 --> 01:01:16,720
the newer modules which you would expect

1688
01:01:20,309 --> 01:01:19,040

uh will not have is don't have as much

1689
01:01:22,710 --> 01:01:20,319
life and so you would expect to be

1690
01:01:24,390 --> 01:01:22,720
easier clear all of the work we're doing

1691
01:01:27,349 --> 01:01:24,400
as you said however

1692
01:01:30,150 --> 01:01:27,359
we we when we began this process

1693
01:01:30,870 --> 01:01:30,160
since the what the law says is 2020 and

1694
01:01:35,829 --> 01:01:30,880
not

1695
01:01:37,910 --> 01:01:35,839
we we kicked off the effort assuming

1696
01:01:41,190 --> 01:01:37,920
30-year life of the oldest elements

1697
01:01:43,109 --> 01:01:41,200
which gets you to 2028 and again that

1698
01:01:45,510 --> 01:01:43,119
we're still doing the analysis we got

1699
01:01:47,670 --> 01:01:45,520
even further to go to get to 2028 with

1700
01:01:50,789 --> 01:01:47,680
some of the components

1701
01:01:52,630 --> 01:01:50,799
but the life work we've done

1702
01:01:53,990 --> 01:01:52,640
we're doing in phases one two and three

1703
01:01:55,589 --> 01:01:54,000
we're just about done with phase one

1704
01:01:58,309 --> 01:01:55,599
phase one was all the elements flew up

1705
01:01:59,670 --> 01:01:58,319
through the air lock the seven a flight

1706
01:02:02,230 --> 01:01:59,680
we have some

1707
01:02:03,750 --> 01:02:02,240
some question mark areas we have to do

1708
01:02:05,190 --> 01:02:03,760
go in and then do a more detailed

1709
01:02:06,950 --> 01:02:05,200
analysis

1710
01:02:10,069 --> 01:02:06,960
to clear certain areas but all that

1711
01:02:11,430 --> 01:02:10,079
analysis is assuming 2028 and so that's

1712
01:02:13,430 --> 01:02:11,440
all that's all the work we've been doing

1713
01:02:15,109 --> 01:02:13,440

so as we go a little further along as we

1714
01:02:16,870 --> 01:02:15,119
clear the phase one effort and move to

1715
01:02:19,829 --> 01:02:16,880
phase complete phase two we're

1716
01:02:22,150 --> 01:02:19,839
completing it all the way to 2028 and

1717
01:02:23,990 --> 01:02:22,160
my prediction is we we while we may have

1718
01:02:26,069 --> 01:02:24,000
to do one or two things

1719
01:02:27,829 --> 01:02:26,079
to clear a couple of uh individual

1720
01:02:29,670 --> 01:02:27,839
components to get only 20 28 i don't

1721
01:02:31,190 --> 01:02:29,680
expect it to be anything

1722
01:02:32,710 --> 01:02:31,200
overwhelming that

1723
01:02:37,589 --> 01:02:32,720
that would be a driver to us not

1724
01:02:42,150 --> 01:02:40,470
and then that question about the analog

1725
01:02:45,109 --> 01:02:42,160
oh i apologize

1726
01:02:47,109 --> 01:02:45,119
i thought i was done there uh analog uh

1727
01:02:48,789 --> 01:02:47,119
you know it's a little too early top for

1728
01:02:51,190 --> 01:02:48,799
me to quote times but it won't be in the

1729
01:02:52,870 --> 01:02:51,200
near future you're you're

1730
01:02:54,390 --> 01:02:52,880
you know it's probably

1731
01:02:55,510 --> 01:02:54,400
not reasonable expect us to be able to

1732
01:02:56,710 --> 01:02:55,520
do this

1733
01:02:58,470 --> 01:02:56,720
uh

1734
01:03:04,470 --> 01:02:58,480
sooner than you know two or three years

1735
01:03:07,910 --> 01:03:06,150
anything else todd yeah

1736
01:03:10,230 --> 01:03:07,920
and i need to clarify that todd before

1737
01:03:11,910 --> 01:03:10,240
you run away as dina says we actually

1738
01:03:14,069 --> 01:03:11,920

are already starting

1739
01:03:15,510 --> 01:03:14,079
the work towards that i assumed your

1740
01:03:17,109 --> 01:03:15,520
question meant that we'd be extending

1741
01:03:19,029 --> 01:03:17,119
the crew on orbit

1742
01:03:20,390 --> 01:03:19,039
the cruise on orbit time and that will

1743
01:03:23,190 --> 01:03:20,400
take us a little while to get to the

1744
01:03:25,109 --> 01:03:23,200
point in our process of of

1745
01:03:26,710 --> 01:03:25,119
of gaining more and more experience of

1746
01:03:28,390 --> 01:03:26,720
long duration space flight that we do

1747
01:03:30,069 --> 01:03:28,400
that and one of the things

1748
01:03:31,910 --> 01:03:30,079
as part of the human research effort

1749
01:03:34,069 --> 01:03:31,920
that we have to discuss

1750
01:03:36,309 --> 01:03:34,079
and it's already come up is

1751
01:03:38,390 --> 01:03:36,319
do you reach equilibrium in six months i

1752
01:03:40,069 --> 01:03:38,400
mean is it reasonable for us to assume

1753
01:03:42,150 --> 01:03:40,079
that anything after six months if you've

1754
01:03:43,829 --> 01:03:42,160
been able to mitigate the effects for

1755
01:03:45,430 --> 01:03:43,839
six months does that mean you can

1756
01:03:48,150 --> 01:03:45,440
mitigate the effects

1757
01:03:49,990 --> 01:03:48,160
for a longer duration travel and but you

1758
01:03:52,230 --> 01:03:50,000
have to think about that

1759
01:03:54,309 --> 01:03:52,240
across not only the physiological issues

1760
01:03:56,309 --> 01:03:54,319
but the psychological issues as well and

1761
01:03:58,630 --> 01:03:56,319
so that's part of what we will discuss

1762
01:04:00,950 --> 01:03:58,640
as we go i would expect

1763
01:04:02,309 --> 01:04:00,960

however that that the consensus of

1764
01:04:04,549 --> 01:04:02,319
opinion

1765
01:04:06,870 --> 01:04:04,559
will be that we'll end up wanting to

1766
01:04:08,549 --> 01:04:06,880
assimilate in low earth orbit

1767
01:04:10,829 --> 01:04:08,559
at least the

1768
01:04:13,910 --> 01:04:10,839
first leg of a trip to a distant

1769
01:04:15,349 --> 01:04:13,920
planet that's it for me thanks

1770
01:04:17,670 --> 01:04:15,359
okay thanks todd

1771
01:04:19,589 --> 01:04:17,680
um let's go down to uh our first twitter

1772
01:04:23,430 --> 01:04:19,599
questions

1773
01:04:25,670 --> 01:04:23,440
um from the public on twitter the couple

1774
01:04:27,029 --> 01:04:25,680
of them are two part questions so two

1775
01:04:29,349 --> 01:04:27,039
for ones the first one is a two-part

1776
01:04:31,430 --> 01:04:29,359
question this one comes from atrisvee

1777
01:04:35,109 --> 01:04:31,440
how do you guys communicate with the iss

1778
01:04:37,109 --> 01:04:35,119
crew and how do you get data

1779
01:04:39,190 --> 01:04:37,119
yeah i think you should

1780
01:04:41,270 --> 01:04:39,200
okay so how do we communicate with the

1781
01:04:45,190 --> 01:04:41,280
crew excellent question

1782
01:04:47,510 --> 01:04:45,200
so um so as one one location that we

1783
01:04:49,190 --> 01:04:47,520
communicate to the crew from is houston

1784
01:04:51,430 --> 01:04:49,200
and mission control so you can envision

1785
01:04:52,870 --> 01:04:51,440
capcom um sitting there with his headset

1786
01:04:54,630 --> 01:04:52,880
on and

1787
01:04:56,549 --> 01:04:54,640
talks into the headset and that goes

1788
01:04:58,309 --> 01:04:56,559

throughout the building that information

1789
01:05:00,630 --> 01:04:58,319
gets transmitted over to white sands new

1790
01:05:03,270 --> 01:05:00,640
mexico and then up to a tracking and

1791
01:05:04,950 --> 01:05:03,280
data relates relay satellite system

1792
01:05:06,630 --> 01:05:04,960
and then that goes uh get gets

1793
01:05:07,910 --> 01:05:06,640
transmitted over to space station and

1794
01:05:10,069 --> 01:05:07,920
then of course the crew hears that on

1795
01:05:12,069 --> 01:05:10,079
speakers or on their headset

1796
01:05:13,910 --> 01:05:12,079
and the data path is the same way so we

1797
01:05:16,470 --> 01:05:13,920
have a bunch of sensors all over uh

1798
01:05:18,069 --> 01:05:16,480
space station and those are

1799
01:05:19,349 --> 01:05:18,079
those are gathering data and then all

1800
01:05:21,990 --> 01:05:19,359
that information gets what's called

1801
01:05:24,069 --> 01:05:22,000
multiplex together and this data package

1802
01:05:25,670 --> 01:05:24,079
gets sent like a bunch of bits over to

1803
01:05:26,950 --> 01:05:25,680
that satellite down to the ground in

1804
01:05:28,230 --> 01:05:26,960
white sands and then back over to

1805
01:05:29,430 --> 01:05:28,240
mission control

1806
01:05:31,430 --> 01:05:29,440
now something to think about is that we

1807
01:05:33,829 --> 01:05:31,440
have a lot of international partners and

1808
01:05:35,589 --> 01:05:33,839
also a lot of payload experts and

1809
01:05:37,430 --> 01:05:35,599
scientists around the world and so of

1810
01:05:39,029 --> 01:05:37,440
course that information then further

1811
01:05:41,589 --> 01:05:39,039
gets transmitted

1812
01:05:42,870 --> 01:05:41,599
out to those folks that that need it

1813
01:05:44,630 --> 01:05:42,880

and additionally we have voice

1814
01:05:45,349 --> 01:05:44,640
communication we have

1815
01:06:14,150 --> 01:05:45,359
a

1816
01:06:17,349 --> 01:06:15,990
well it'll look

1817
01:06:18,950 --> 01:06:17,359
let's start with what it looked like and

1818
01:06:20,230 --> 01:06:18,960
then

1819
01:06:22,309 --> 01:06:20,240
what it'll be like will be an

1820
01:06:24,630 --> 01:06:22,319
interesting one to see if i can come up

1821
01:06:25,990 --> 01:06:24,640
with an answer to that it'll look um

1822
01:06:28,549 --> 01:06:26,000
let's see in

1823
01:06:31,510 --> 01:06:28,559
in 10 years uh our russian colleagues as

1824
01:06:33,430 --> 01:06:31,520
we mentioned will add a module

1825
01:06:35,750 --> 01:06:33,440
called the multi-purpose laboratory

1826
01:06:37,990 --> 01:06:35,760
module that's coming towards the end of

1827
01:06:40,549 --> 01:06:38,000
2013 as we understand it

1828
01:06:44,309 --> 01:06:40,559
and it will have a docking

1829
01:06:45,589 --> 01:06:44,319
ball on the bottom of it as well

1830
01:06:47,589 --> 01:06:45,599
we are

1831
01:06:49,990 --> 01:06:47,599
going to add um

1832
01:06:52,470 --> 01:06:50,000
docking we already have two apac docking

1833
01:06:54,710 --> 01:06:52,480
ports but the the team is looking at

1834
01:06:55,910 --> 01:06:54,720
international docking standard and and

1835
01:06:57,670 --> 01:06:55,920
having that

1836
01:06:59,990 --> 01:06:57,680
implemented in time for the commercial

1837
01:07:01,910 --> 01:07:00,000
crew vehicles to show up so from a

1838
01:07:04,069 --> 01:07:01,920

outside looking in it'll look a little

1839
01:07:06,710 --> 01:07:04,079
different we'll probably still put them

1840
01:07:08,950 --> 01:07:06,720
on the pmas and so it may be be hard to

1841
01:07:10,710 --> 01:07:08,960
notice in addition to that i'm i'm

1842
01:07:16,069 --> 01:07:10,720
thinking there's going to be

1843
01:07:20,390 --> 01:07:18,470
bear themselves and we'll be utilizing

1844
01:07:22,150 --> 01:07:20,400
additional ports one is

1845
01:07:24,230 --> 01:07:22,160
there's been some discussion about

1846
01:07:26,470 --> 01:07:24,240
perhaps a demonstration of an inflatable

1847
01:07:30,150 --> 01:07:26,480
module that we would bring to iss for

1848
01:07:32,390 --> 01:07:30,160
some time in plate and see how it works

1849
01:07:34,710 --> 01:07:32,400
in the around the confines of iss to

1850
01:07:37,910 --> 01:07:34,720
decide if it has applications

1851
01:07:39,349 --> 01:07:37,920
for the future if we look beyond 2020

1852
01:07:41,829 --> 01:07:39,359
you may even see

1853
01:07:43,029 --> 01:07:41,839
another solar power

1854
01:07:44,710 --> 01:07:43,039
module

1855
01:07:46,630 --> 01:07:44,720
on the russian segment to provide

1856
01:07:47,910 --> 01:07:46,640
additional power to it

1857
01:07:49,430 --> 01:07:47,920
as they try to

1858
01:07:52,150 --> 01:07:49,440
do more and more experiments on the

1859
01:07:54,230 --> 01:07:52,160
russian segment and the and the

1860
01:07:56,309 --> 01:07:54,240
solar rays that are on orbit today get a

1861
01:07:58,710 --> 01:07:56,319
little older and a little less efficient

1862
01:08:00,630 --> 01:07:58,720
so from the outside it'll look a little

1863
01:08:03,589 --> 01:08:00,640

different but not not dramatically

1864
01:08:04,710 --> 01:08:03,599
different than it than it looks today

1865
01:08:06,390 --> 01:08:04,720
would be my

1866
01:08:07,910 --> 01:08:06,400
my answer how it's going to operate i

1867
01:08:11,109 --> 01:08:07,920
think you're starting to see the

1868
01:08:13,750 --> 01:08:11,119
evolution of where we're going to end up

1869
01:08:15,750 --> 01:08:13,760
the operations team is going to be in

1870
01:08:17,430 --> 01:08:15,760
the background running like dina said

1871
01:08:19,030 --> 01:08:17,440
doing amazing things because there's

1872
01:08:20,229 --> 01:08:19,040
going to be anomalies to solve there's

1873
01:08:22,470 --> 01:08:20,239
going to be

1874
01:08:25,430 --> 01:08:22,480
vehicles coming and going

1875
01:08:28,229 --> 01:08:25,440
crew members doing ebas

1876
01:08:30,149 --> 01:08:28,239
but you're going to see the focus is

1877
01:08:31,510 --> 01:08:30,159
going to be on what have we done on iss

1878
01:08:34,309 --> 01:08:31,520
it's going to be more of what research

1879
01:08:35,990 --> 01:08:34,319
did you do getting things done no longer

1880
01:08:37,590 --> 01:08:36,000
is about the assembly job or the

1881
01:08:39,910 --> 01:08:37,600
maintenance job getting things done is

1882
01:08:42,789 --> 01:08:39,920
about what research we did for who and

1883
01:08:46,229 --> 01:08:42,799
what the benefit is to the to the earth

1884
01:08:48,229 --> 01:08:46,239
um and and the operations piece will

1885
01:08:50,390 --> 01:08:48,239
while still be going on will will start

1886
01:08:51,430 --> 01:08:50,400
to i think evolve a little bit more

1887
01:08:53,189 --> 01:08:51,440
towards the

1888
01:08:54,789 --> 01:08:53,199

back seat until the next major problem

1889
01:08:56,470 --> 01:08:54,799
occurs then we'll all remember why that

1890
01:08:58,149 --> 01:08:56,480
the ops guys are there and why they're

1891
01:09:00,470 --> 01:08:58,159
there

1892
01:09:02,550 --> 01:09:00,480
but but i think that's the evolution

1893
01:09:05,349 --> 01:09:02,560
we'll see is the program

1894
01:09:08,229 --> 01:09:05,359
i hope as we evolve over the next few

1895
01:09:10,870 --> 01:09:08,239
years that we'll really begin to see why

1896
01:09:13,430 --> 01:09:10,880
iss is there the benefit it has to

1897
01:09:16,149 --> 01:09:13,440
humankind in general

1898
01:09:18,070 --> 01:09:16,159
and and and start to look for that each

1899
01:09:20,309 --> 01:09:18,080
day what what happened on iss today

1900
01:09:22,309 --> 01:09:20,319
what's going on what's it what's the

1901
01:09:24,229 --> 01:09:22,319
application for my life on the ground

1902
01:09:26,470 --> 01:09:24,239
and a lot of that is going on as tara

1903
01:09:29,749 --> 01:09:26,480
told you and i hope that comes to the

1904
01:09:31,269 --> 01:09:29,759
forefront as the as the years go on

1905
01:09:32,630 --> 01:09:31,279
okay thank you now we have another

1906
01:09:35,269 --> 01:09:32,640
question this is another two-part

1907
01:09:37,189 --> 01:09:35,279
question it comes from cecil i t

1908
01:09:38,309 --> 01:09:37,199
how much technology is being used in

1909
01:09:39,590 --> 01:09:38,319
this mission

1910
01:09:41,510 --> 01:09:39,600
and the second part of the question is

1911
01:09:49,110 --> 01:09:41,520
and what safety measures are in place to

1912
01:09:53,510 --> 01:09:51,430
with regard to the research i'd i'd say

1913
01:09:55,270 --> 01:09:53,520

about one-third of what happens is

1914
01:09:58,229 --> 01:09:55,280
technology development

1915
01:10:00,709 --> 01:09:58,239
um one-third to one-fourth um

1916
01:10:02,229 --> 01:10:00,719
and at least for 32-33 now i see things

1917
01:10:04,550 --> 01:10:02,239
as we go through the research planning

1918
01:10:06,550 --> 01:10:04,560
process that cross our desk that that

1919
01:10:09,510 --> 01:10:06,560
look like technology demo is ramping up

1920
01:10:11,189 --> 01:10:09,520
significantly so as mr suffrage talked

1921
01:10:12,950 --> 01:10:11,199
about one of the things could be the

1922
01:10:15,270 --> 01:10:12,960
inflatable habitat

1923
01:10:17,350 --> 01:10:15,280
edition right now we on orbit we have

1924
01:10:19,590 --> 01:10:17,360
robonaut 2 that's a tech demo we have

1925
01:10:21,350 --> 01:10:19,600
the robotic refueling mission that's a

1926
01:10:23,350 --> 01:10:21,360
tech demo actually started two weeks ago

1927
01:10:24,790 --> 01:10:23,360
but it's planned to continue through

1928
01:10:27,590 --> 01:10:24,800
this expedition

1929
01:10:29,110 --> 01:10:27,600
and so um so with regard to the research

1930
01:10:31,510 --> 01:10:29,120
that's being done our technology

1931
01:10:33,590 --> 01:10:31,520
demonstration portfolio is really

1932
01:10:35,669 --> 01:10:33,600
ramping up as i see it across my desk on

1933
01:10:37,270 --> 01:10:35,679
a regular basis with regard to the

1934
01:10:40,550 --> 01:10:37,280
second part of the question i'll turf it

1935
01:10:42,470 --> 01:10:40,560
to mr suffordini

1936
01:10:45,189 --> 01:10:42,480
well it's be again

1937
01:10:47,110 --> 01:10:45,199
for iss we we take advantage of

1938
01:10:49,350 --> 01:10:47,120

technologies operationally speaking

1939
01:10:53,030 --> 01:10:49,360
we're actually flying a new a radio

1940
01:10:54,790 --> 01:10:53,040
where we've got about seven oru's uh

1941
01:10:57,030 --> 01:10:54,800
orbital replacement units on orbit that

1942
01:10:58,870 --> 01:10:57,040
are being replaced by a single

1943
01:11:00,790 --> 01:10:58,880
unit and that's these units are flying

1944
01:11:02,310 --> 01:11:00,800
up here in the in the summer time frame

1945
01:11:05,030 --> 01:11:02,320
and they're gonna you'll start to hear

1946
01:11:06,870 --> 01:11:05,040
them rewiring the iss for this

1947
01:11:08,790 --> 01:11:06,880
high rate com system

1948
01:11:11,590 --> 01:11:08,800
that's a case where we've evolved

1949
01:11:14,070 --> 01:11:11,600
technology uh to utilize on orbit you'll

1950
01:11:15,750 --> 01:11:14,080
also see us use more technology that we

1951
01:11:18,149 --> 01:11:15,760
use on the ground day-to-day you heard

1952
01:11:20,709 --> 01:11:18,159
the thing about using the ipads and

1953
01:11:22,310 --> 01:11:20,719
and uh and and

1954
01:11:23,669 --> 01:11:22,320
other technologies like that that we're

1955
01:11:26,709 --> 01:11:23,679
trying to evolve

1956
01:11:28,550 --> 01:11:26,719
uh to iss but it's always a balance for

1957
01:11:30,070 --> 01:11:28,560
us because you're trying to

1958
01:11:32,229 --> 01:11:30,080
hey we're not trying we're trying not to

1959
01:11:34,310 --> 01:11:32,239
modify the vehicle unless we have to now

1960
01:11:36,149 --> 01:11:34,320
our job is to get the most out of it and

1961
01:11:38,149 --> 01:11:36,159
when we do do the modifications if

1962
01:11:39,270 --> 01:11:38,159
they're critical systems you to some

1963
01:11:40,790 --> 01:11:39,280

degree you need to make sure that you

1964
01:11:42,950 --> 01:11:40,800
have the heritage to ensure that they're

1965
01:11:44,950 --> 01:11:42,960
going to safely perform the functions

1966
01:11:47,110 --> 01:11:44,960
that's required and so

1967
01:11:49,669 --> 01:11:47,120
that's more the push for us technology

1968
01:11:51,590 --> 01:11:49,679
tends to be those things that

1969
01:11:54,470 --> 01:11:51,600
you utilize to accomplish objectives you

1970
01:11:57,430 --> 01:11:54,480
couldn't otherwise accomplish and so

1971
01:11:59,030 --> 01:11:57,440
while we will implement

1972
01:12:01,830 --> 01:11:59,040
technology

1973
01:12:03,669 --> 01:12:01,840
driven changes on board iss i would see

1974
01:12:05,750 --> 01:12:03,679
more and more of the technology you see

1975
01:12:07,590 --> 01:12:05,760
on iss will be the demonstrations of a

1976
01:12:10,310 --> 01:12:07,600
technology we use

1977
01:12:11,910 --> 01:12:10,320
to explore beyond iss

1978
01:12:13,590 --> 01:12:11,920
okay thank you so our followers are

1979
01:12:14,790 --> 01:12:13,600
definitely watching so we have one more

1980
01:12:17,510 --> 01:12:14,800
zinger and i think this one's going to

1981
01:12:19,750 --> 01:12:17,520
go for tara the question is what is the

1982
01:12:22,229 --> 01:12:19,760
longest running research project on the

1983
01:12:25,430 --> 01:12:22,239
iss and this comes from karen lopez at

1984
01:12:27,750 --> 01:12:25,440
data check oh wow okay longest running

1985
01:12:29,830 --> 01:12:27,760
research probably

1986
01:12:31,270 --> 01:12:29,840
there are two that come to mind

1987
01:12:33,750 --> 01:12:31,280
they're actually three there's

1988
01:12:35,030 --> 01:12:33,760

repository where there's continuous

1989
01:12:37,910 --> 01:12:35,040
collection of

1990
01:12:40,709 --> 01:12:37,920
bodily samples from the uh crew that the

1991
01:12:43,669 --> 01:12:40,719
crew offers uh to to

1992
01:12:45,990 --> 01:12:43,679
return home and uh it's a repository of

1993
01:12:48,070 --> 01:12:46,000
of physiological specimens blood urine

1994
01:12:51,110 --> 01:12:48,080
that goes here to jsc and it gets stowed

1995
01:12:52,229 --> 01:12:51,120
away for future use on upcoming

1996
01:12:53,430 --> 01:12:52,239
investigations that we haven't even

1997
01:12:55,350 --> 01:12:53,440
thought about yet and so that's

1998
01:12:57,669 --> 01:12:55,360
constantly going another one would be

1999
01:12:59,990 --> 01:12:57,679
the nutrition study where we're

2000
01:13:01,510 --> 01:13:00,000
constantly analyzing and the the crew

2001
01:13:03,830 --> 01:13:01,520
are constantly logging what they're

2002
01:13:06,550 --> 01:13:03,840
eating and then we we do a number of

2003
01:13:07,669 --> 01:13:06,560
different uh studies and

2004
01:13:12,070 --> 01:13:07,679
and

2005
01:13:16,070 --> 01:13:12,080
changes

2006
01:13:17,590 --> 01:13:16,080
status and so that one seems to be

2007
01:13:19,910 --> 01:13:17,600
ongoing

2008
01:13:20,870 --> 01:13:19,920
the third i can think of is the journals

2009
01:13:22,310 --> 01:13:20,880
study

2010
01:13:25,110 --> 01:13:22,320
it's a behavioral

2011
01:13:26,950 --> 01:13:25,120
study that's ongoing and and as you can

2012
01:13:28,149 --> 01:13:26,960
imagine over the last 10 years of space

2013
01:13:29,590 --> 01:13:28,159

station

2014
01:13:31,430 --> 01:13:29,600
through the assembly phase and as we

2015
01:13:33,430 --> 01:13:31,440
change from the number of

2016
01:13:36,390 --> 01:13:33,440
crew on board at any one time and just

2017
01:13:37,910 --> 01:13:36,400
the culture changes and the time changes

2018
01:13:39,910 --> 01:13:37,920
over over the time that we've seen a

2019
01:13:41,990 --> 01:13:39,920
space station the journal entries and

2020
01:13:44,310 --> 01:13:42,000
the physiolog or the the behavioral

2021
01:13:47,110 --> 01:13:44,320
responses of the crew are important and

2022
01:13:49,990 --> 01:13:47,120
so those are being monitored and

2023
01:13:52,709 --> 01:13:50,000
considered and and applied to potential

2024
01:13:54,149 --> 01:13:52,719
future uh use for human exploration

2025
01:13:56,070 --> 01:13:54,159
beyond

2026
01:13:57,910 --> 01:13:56,080
low earth orbit so those i think are the

2027
01:14:00,229 --> 01:13:57,920
three continuous there's also a sleep

2028
01:14:01,910 --> 01:14:00,239
study that's been ongoing for a while

2029
01:14:03,350 --> 01:14:01,920
most of the continuous

2030
01:14:05,189 --> 01:14:03,360
investigations that have been up on

2031
01:14:06,229 --> 01:14:05,199
station for a while are human research

2032
01:14:08,550 --> 01:14:06,239
based

2033
01:14:11,030 --> 01:14:08,560
because we need so many

2034
01:14:13,669 --> 01:14:11,040
humans involved in data collection you

2035
01:14:15,590 --> 01:14:13,679
need a solid sample size and that takes

2036
01:14:18,310 --> 01:14:15,600
time over a period of several years in

2037
01:14:20,630 --> 01:14:18,320
some cases so we see those ongoing and

2038
01:14:22,070 --> 01:14:20,640

they are also critical as

2039
01:14:23,990 --> 01:14:22,080
as things just change on orbit the

2040
01:14:26,229 --> 01:14:24,000
culture changes the the

2041
01:14:27,910 --> 01:14:26,239
the environment changes the personality

2042
01:14:29,189 --> 01:14:27,920
types changes the crew complement size

2043
01:14:30,550 --> 01:14:29,199
changes

2044
01:14:34,790 --> 01:14:30,560
and then we also need those human

2045
01:14:39,270 --> 01:14:36,790
okay well that's the end of our twitter

2046
01:14:41,590 --> 01:14:39,280
questions and our media questions here

2047
01:14:43,590 --> 01:14:41,600
at johnson space and other nasa centers

2048
01:14:46,550 --> 01:14:43,600
i want to thank everybody for joining us

2049
01:14:48,550 --> 01:14:46,560
for today's briefing

2050
01:14:50,709 --> 01:14:48,560
a reminder that

2051
01:14:53,189 --> 01:14:50,719
we will be having the crew news

2052
01:14:56,470 --> 01:14:53,199
conference coming up at 1 pm central 2

2053
01:14:59,990 --> 01:14:56,480
p.m eastern with sunita williams akihiko

2054
01:15:01,430 --> 01:15:00,000
hadiche hoshide and yuri malenchenko

2055
01:15:03,110 --> 01:15:01,440
they'll discuss their mission of course

2056
01:15:05,830 --> 01:15:03,120
that's set to start with launch on july

2057
01:15:07,350 --> 01:15:05,840
the 15th on the soyuz and remember all

2058
01:15:10,390 --> 01:15:07,360
the latest information about the

2059
01:15:12,870 --> 01:15:10,400
international space station is available

2060
01:15:14,709 --> 01:15:12,880
you can tune in through twitter

2061
01:15:16,630 --> 01:15:14,719
we have the twitter address that we can

2062
01:15:19,910 --> 01:15:16,640
show to you on our screen how

2063
01:15:22,310 --> 01:15:19,920

at nasa johnson and at and pound side

2064
01:15:24,149 --> 01:15:22,320
ask station is the hashtag we also have

2065
01:15:25,110 --> 01:15:24,159
the international space station facebook

2066
01:15:27,430 --> 01:15:25,120
page

2067
01:15:28,630 --> 01:15:27,440
and of course as always the latest

2068
01:15:31,270 --> 01:15:28,640
information

2069
01:15:32,790 --> 01:15:31,280
images and video including video

2070
01:15:36,229 --> 01:15:32,800
wrap-ups from our daily updates are

2071
01:15:37,270 --> 01:15:36,239
available at www.nasa.gov