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1
00:00:05,829 --> 00:00:03,990
well good day and welcome back to the

2
00:00:07,670 --> 00:00:05,839
johnson space center for the preview of

3
00:00:09,830 --> 00:00:07,680
the next two expeditions to the

4
00:00:12,070 --> 00:00:09,840
international space station this is the

5
00:00:13,669 --> 00:00:12,080
iss mission and science overview

6
00:00:16,070 --> 00:00:13,679
briefing to look at current events on

7
00:00:19,349 --> 00:00:16,080
the station and to look at expeditions

8
00:00:21,429 --> 00:00:19,359
33 and 34 which will span the time frame

9
00:00:23,590 --> 00:00:21,439
from september 17th of this year through

10
00:00:25,670 --> 00:00:23,600
march 19th of next year

11
00:00:27,750 --> 00:00:25,680
with us today to discuss all of that are

12
00:00:29,669 --> 00:00:27,760
dan hartman the international space

13
00:00:30,870 --> 00:00:29,679

station manager for operations and

14
00:00:32,790 --> 00:00:30,880
integration

15
00:00:34,630 --> 00:00:32,800
chris edelen the lead flight director

16
00:00:36,709 --> 00:00:34,640
for expedition 34

17
00:00:38,869 --> 00:00:36,719
and dr julie robinson the international

18
00:00:40,310 --> 00:00:38,879
space station program scientist and

19
00:00:41,750 --> 00:00:40,320
we'll start off with dan all right thank

20
00:00:43,350 --> 00:00:41,760
you rob good morning good afternoon

21
00:00:44,869 --> 00:00:43,360
everybody

22
00:00:47,670 --> 00:00:44,879
you know i think we're in a almost

23
00:00:49,190 --> 00:00:47,680
unprecedented area of

24
00:00:51,590 --> 00:00:49,200
vehicle traffic to the international

25
00:00:53,670 --> 00:00:51,600
space station presently

26
00:00:55,590 --> 00:00:53,680
our teams across the partnerships are

27
00:00:58,150 --> 00:00:55,600
doing an outstanding job trying

28
00:01:00,310 --> 00:00:58,160
continuing to to plan and execute the

29
00:01:02,709 --> 00:01:00,320
the various missions uh that are behind

30
00:01:05,109 --> 00:01:02,719
us and the ones that we have coming up

31
00:01:06,789 --> 00:01:05,119
um you know last monday we increased our

32
00:01:09,750 --> 00:01:06,799
increased our crew size to a crew of six

33
00:01:12,710 --> 00:01:09,760
with the successful 31s docking

34
00:01:14,710 --> 00:01:12,720
on the 22nd we undocked 47p

35
00:01:16,550 --> 00:01:14,720
47p met its all of its mission

36
00:01:18,630 --> 00:01:16,560
objectives as far as unloading cargo

37
00:01:21,749 --> 00:01:18,640
doing propellant transfers

38
00:01:23,670 --> 00:01:21,759

reboost taking away trash force

39
00:01:25,429 --> 00:01:23,680
and i'll talk about the the status of

40
00:01:27,190 --> 00:01:25,439
the undock here in a second

41
00:01:30,069 --> 00:01:27,200
tomorrow morning we'll be on track to

42
00:01:32,469 --> 00:01:30,079
capture htv3 the vehicle looks very very

43
00:01:34,550 --> 00:01:32,479
healthy i believe that capture time is

44
00:01:36,710 --> 00:01:34,560
uh is around 7 a.m we'll be bringing

45
00:01:39,190 --> 00:01:36,720
that into the the node 2

46
00:01:41,749 --> 00:01:39,200
nader birthing port carrying about 2 300

47
00:01:43,429 --> 00:01:41,759
kilograms of pressurized cargo for us

48
00:01:44,870 --> 00:01:43,439
and a couple of external payloads that

49
00:01:47,590 --> 00:01:44,880
will be taken off the pallet and

50
00:01:49,510 --> 00:01:47,600
installed on the space station

51
00:01:51,030 --> 00:01:49,520
for 47p

52
00:01:53,190 --> 00:01:51,040
we have been the

53
00:01:55,910 --> 00:01:53,200
the progress has been experiencing

54
00:01:57,590 --> 00:01:55,920
some issues with their new new coors in

55
00:02:00,550 --> 00:01:57,600
a system that they installed while

56
00:02:03,670 --> 00:02:02,310
right now they continue to work through

57
00:02:05,590 --> 00:02:03,680
those

58
00:02:07,590 --> 00:02:05,600
they've tried i'd say

59
00:02:11,029 --> 00:02:07,600
five six seven times

60
00:02:13,910 --> 00:02:11,039
to run a self-test on the box itself

61
00:02:16,550 --> 00:02:13,920
it seems to appear to be getting a hung

62
00:02:18,070 --> 00:02:16,560
up in that sequence somewhere

63
00:02:19,589 --> 00:02:18,080

yet some of the parameters are a lot of

64
00:02:21,910 --> 00:02:19,599
the most of the parameters that they're

65
00:02:24,710 --> 00:02:21,920
receiving off of that box they can also

66
00:02:26,390 --> 00:02:24,720
see and they look perfectly healthy so

67
00:02:28,309 --> 00:02:26,400
it's failing a self-test not getting all

68
00:02:30,710 --> 00:02:28,319
the way through it but the avionics box

69
00:02:32,710 --> 00:02:30,720
itself appears to be healthy and so what

70
00:02:35,750 --> 00:02:32,720
we plan to do is uh take one more

71
00:02:38,470 --> 00:02:35,760
attempt of bringing that in on saturdays

72
00:02:41,350 --> 00:02:38,480
i believe it's saturday evening

73
00:02:43,270 --> 00:02:41,360
they'll come in to 46 kilometers

74
00:02:44,550 --> 00:02:43,280
and then we will try to activate the the

75
00:02:47,110 --> 00:02:44,560
n a system

76
00:02:48,949 --> 00:02:47,120
if we good good range range rate the the

77
00:02:51,830 --> 00:02:48,959
box looks healthy we'll continue to

78
00:02:54,470 --> 00:02:51,840
press in for for the for the docking uh

79
00:02:57,190 --> 00:02:54,480
if not i believe the plans will be uh

80
00:02:58,470 --> 00:02:57,200
it'll it'll abort uh and finish its

81
00:03:00,229 --> 00:02:58,480
mission associated with the space

82
00:03:01,830 --> 00:03:00,239
station and i think it stays in free

83
00:03:03,350 --> 00:03:01,840
flight for for several more days to

84
00:03:05,030 --> 00:03:03,360
carry out some secondary payload

85
00:03:05,830 --> 00:03:05,040
objectives

86
00:03:07,830 --> 00:03:05,840
so

87
00:03:09,750 --> 00:03:07,840
if we are successful with that docking

88
00:03:11,350 --> 00:03:09,760

on saturday night then the plan would be

89
00:03:15,190 --> 00:03:11,360
to undock it

90
00:03:17,910 --> 00:03:15,200
on monday which is i believe the 30th

91
00:03:21,190 --> 00:03:17,920
to make room for the 48 p launch which

92
00:03:23,830 --> 00:03:21,200
happens august 2nd and again we'll use

93
00:03:25,750 --> 00:03:23,840
the port vacated by 47p

94
00:03:26,789 --> 00:03:25,760
the dc1 nader

95
00:03:31,190 --> 00:03:26,799
and that

96
00:03:32,949 --> 00:03:31,200
that 48 p is implementing the new or a

97
00:03:35,830 --> 00:03:32,959
test run of the new four-orbit

98
00:03:38,070 --> 00:03:35,840
rendezvous uh that that energy and ross

99
00:03:39,670 --> 00:03:38,080
cosmos has proposed uh we still have

100
00:03:41,830 --> 00:03:39,680
some work to do on that as far as a

101
00:03:43,509 --> 00:03:41,840
final go no go but uh

102
00:03:46,470 --> 00:03:43,519
you know as long as the station stays in

103
00:03:47,910 --> 00:03:46,480
in kind of a stable attitude where it is

104
00:03:50,070 --> 00:03:47,920
i think they have the plans in place to

105
00:03:51,509 --> 00:03:50,080
be able to carry that off and so uh i

106
00:03:52,949 --> 00:03:51,519
would tell you that's our baseline now

107
00:03:54,710 --> 00:03:52,959
but there's just a little bit more work

108
00:03:56,550 --> 00:03:54,720
to do on that

109
00:03:59,030 --> 00:03:56,560
looking ahead we got two evas planned in

110
00:04:00,710 --> 00:03:59,040
the august time period mid-august we

111
00:04:03,429 --> 00:04:00,720
have a russian eva

112
00:04:05,270 --> 00:04:03,439
that'll a primary objective is to uh is

113
00:04:07,910 --> 00:04:05,280

to deploy and uh

114
00:04:09,750 --> 00:04:07,920
attach the service module extra debris

115
00:04:12,470 --> 00:04:09,760
panels that'll help our

116
00:04:15,429 --> 00:04:12,480
our mmod production protection

117
00:04:18,949 --> 00:04:15,439
and then we have an eba later a u.s eva

118
00:04:21,509 --> 00:04:18,959
later in august to deal with our mbsu

119
00:04:23,189 --> 00:04:21,519
one that we plan to r r uh we'll lay

120
00:04:26,070 --> 00:04:23,199
some mli cables

121
00:04:27,830 --> 00:04:26,080
as well and put a cover on our pma2

122
00:04:29,909 --> 00:04:27,840
adapter

123
00:04:31,909 --> 00:04:29,919
looking ahead we have spacex it's

124
00:04:34,070 --> 00:04:31,919
currently planned a spacex won the first

125
00:04:35,590 --> 00:04:34,080
crs mission planned for

126
00:04:36,469 --> 00:04:35,600
10-5

127
00:04:38,710 --> 00:04:36,479
and

128
00:04:41,909 --> 00:04:38,720
right now we're tracking orbital

129
00:04:44,390 --> 00:04:41,919
demo mission for december 12th

130
00:04:45,430 --> 00:04:44,400
consumables wise we remain in great

131
00:04:47,510 --> 00:04:45,440
shape

132
00:04:49,430 --> 00:04:47,520
i think if we looked at food and water

133
00:04:51,749 --> 00:04:49,440
without the vehicles

134
00:04:53,670 --> 00:04:51,759
that are coming to us we're good until

135
00:04:55,670 --> 00:04:53,680
you know like march april time period

136
00:04:57,510 --> 00:04:55,680
water obviously we're kind of unlimited

137
00:04:59,189 --> 00:04:57,520
as long as the as long as our water

138
00:05:00,070 --> 00:04:59,199

processor system works so when i talk

139
00:05:01,830 --> 00:05:00,080
water

140
00:05:03,990 --> 00:05:01,840
consumables that's if we experienced a

141
00:05:05,909 --> 00:05:04,000
failure almost immediately we we're good

142
00:05:08,629 --> 00:05:05,919
still good through the march time period

143
00:05:11,110 --> 00:05:08,639
and then when we get htv 3 in that'll

144
00:05:11,990 --> 00:05:11,120
just make us more healthy

145
00:05:15,270 --> 00:05:12,000
and

146
00:05:17,350 --> 00:05:15,280
we continue to focus uh our 35 hours a

147
00:05:19,189 --> 00:05:17,360
week on on research we've got a lot of

148
00:05:21,110 --> 00:05:19,199
external payloads that

149
00:05:22,710 --> 00:05:21,120
are performing the great science for us

150
00:05:24,550 --> 00:05:22,720
as well and i'm sure you'll hear more

151
00:05:27,110 --> 00:05:24,560
about that from julie here in a second

152
00:05:28,629 --> 00:05:27,120
and with that i'll turn it over to chris

153
00:05:31,270 --> 00:05:28,639
okay thank you dan and good morning

154
00:05:33,510 --> 00:05:31,280
everyone for my portion of the briefing

155
00:05:36,550 --> 00:05:33,520
here i'll be reviewing the major events

156
00:05:38,710 --> 00:05:36,560
during expedition 33 and 34 including

157
00:05:40,550 --> 00:05:38,720
vehicle traffic as well as uh the crew

158
00:05:42,390 --> 00:05:40,560
rotation schedule so let's start with

159
00:05:44,390 --> 00:05:42,400
the first graphic which shows the the

160
00:05:47,749 --> 00:05:44,400
current crew onboard the space station

161
00:05:48,710 --> 00:05:47,759
this is the crew of expedition 32

162
00:05:51,909 --> 00:05:48,720
and

163
00:05:54,150 --> 00:05:51,919

the uh this consists of two soyuz crews

164
00:05:56,710 --> 00:05:54,160
and the the crewmen located in the lower

165
00:05:59,590 --> 00:05:56,720
right hand side of the screen are the

166
00:06:02,230 --> 00:05:59,600
30s crew and they are scheduled to

167
00:06:04,710 --> 00:06:02,240
return to earth on september 17th that's

168
00:06:07,189 --> 00:06:04,720
joe acaba gennady padalka and sergey

169
00:06:09,189 --> 00:06:07,199
reven and so when they depart from the

170
00:06:12,550 --> 00:06:09,199
station middle of september that will

171
00:06:14,309 --> 00:06:12,560
begin uh expedition 33 and it will leave

172
00:06:15,990 --> 00:06:14,319
the crew on the uh the upper left there

173
00:06:18,950 --> 00:06:16,000
as the sole occupants of the space

174
00:06:20,710 --> 00:06:18,960
station uh for the first four weeks now

175
00:06:22,469 --> 00:06:20,720
that crew on the upper left that's the

176
00:06:23,990 --> 00:06:22,479
31s crew

177
00:06:26,309 --> 00:06:24,000
as dan just mentioned they they just

178
00:06:28,629 --> 00:06:26,319
arrived on station last week they're

179
00:06:30,230 --> 00:06:28,639
settling into their new home and uh

180
00:06:33,270 --> 00:06:30,240
already jumping into the research as

181
00:06:35,189 --> 00:06:33,280
well as preparing for uh htv birthing

182
00:06:36,710 --> 00:06:35,199
which is uh tomorrow so let's uh let's

183
00:06:40,469 --> 00:06:36,720
meet the individual crew members first

184
00:06:42,710 --> 00:06:40,479
is akihiko hoshade he's a astronaut for

185
00:06:44,870 --> 00:06:42,720
the japanese space agency he has an

186
00:06:48,629 --> 00:06:44,880
aerospace engineering background and he

187
00:06:50,990 --> 00:06:48,639
was selected as an astronaut in 1999 he

188
00:06:55,510 --> 00:06:51,000

previously flew on shuttle mission

189
00:06:58,150 --> 00:06:55,520
sts-124 which delivered the big kibo

190
00:07:00,950 --> 00:06:58,160
japanese experiment module

191
00:07:03,029 --> 00:07:00,960
next is yuri malenchenko he's a colonel

192
00:07:05,029 --> 00:07:03,039
in the russian air force uh with a very

193
00:07:07,990 --> 00:07:05,039
extensive flight history

194
00:07:11,110 --> 00:07:08,000
he first flew in space to the mir space

195
00:07:13,430 --> 00:07:11,120
station back in 1994 he performed two

196
00:07:15,550 --> 00:07:13,440
spacewalks on that mission

197
00:07:18,550 --> 00:07:15,560
and then he next flew on shuttle mission

198
00:07:20,309 --> 00:07:18,560
sts-106 which was an early outfitting

199
00:07:22,790 --> 00:07:20,319
flight for the space station and he

200
00:07:24,309 --> 00:07:22,800
performed one spacewalk on that mission

201
00:07:27,749 --> 00:07:24,319
then he was uh the commander of

202
00:07:31,510 --> 00:07:27,759
expedition 7 back in 2003 and he was

203
00:07:34,870 --> 00:07:31,520
flight engineer on expedition 16 in 2007

204
00:07:35,749 --> 00:07:34,880
and this current mission expedition 3233

205
00:07:38,309 --> 00:07:35,759
is his

206
00:07:42,070 --> 00:07:38,319
fifth space flight and yuri is also the

207
00:07:43,830 --> 00:07:42,080
commander of the 31s soyuz spacecraft

208
00:07:45,510 --> 00:07:43,840
and rounding out the crew is sanita

209
00:07:47,430 --> 00:07:45,520
williams she

210
00:07:49,589 --> 00:07:47,440
is a captain in the u.s navy and

211
00:07:51,909 --> 00:07:49,599
formerly a helicopter pilot she was

212
00:07:54,950 --> 00:07:51,919
selected selected as a nasa astronaut in

213
00:07:58,550 --> 00:07:54,960

1998 and uh previously flew to the space

214
00:08:01,430 --> 00:07:58,560
station on expedition 14 and 15 back in

215
00:08:03,990 --> 00:08:01,440
2006 and seven and she performed four

216
00:08:07,589 --> 00:08:04,000
space walks on that mission and she will

217
00:08:09,990 --> 00:08:07,599
be the commander of expedition 33.

218
00:08:12,790 --> 00:08:10,000
so the the first um

219
00:08:15,430 --> 00:08:12,800
cargo vehicle task for expedition 33

220
00:08:18,230 --> 00:08:15,440
will be the undocking of the european

221
00:08:20,950 --> 00:08:18,240
automated transfer vehicle or atv-3

222
00:08:22,230 --> 00:08:20,960
known as eduardo amaldi

223
00:08:24,790 --> 00:08:22,240
it will be

224
00:08:27,909 --> 00:08:24,800
undocked from the aft end of the zvezda

225
00:08:30,309 --> 00:08:27,919
service module on september 25th and

226
00:08:32,469 --> 00:08:30,319
this shows a graphic of the atv

227
00:08:36,310 --> 00:08:32,479
approaching uh the space station

228
00:08:40,790 --> 00:08:36,320
so uh the atv-3 it arrived

229
00:08:43,350 --> 00:08:40,800
back in march and it delivered oxygen uh

230
00:08:45,509 --> 00:08:43,360
water about two and a half tons of dry

231
00:08:47,670 --> 00:08:45,519
cargo as well as enough propellant to

232
00:08:49,190 --> 00:08:47,680
lift the station to its highest orbit

233
00:08:52,070 --> 00:08:49,200
that it's uh that it's ever been which

234
00:08:54,470 --> 00:08:52,080
is 400 kilometers or about 250 miles

235
00:08:56,870 --> 00:08:54,480
so um prior to the undocking of atv3 the

236
00:08:58,710 --> 00:08:56,880
crew will will be loading trash into it

237
00:09:01,190 --> 00:08:58,720
and then urine aki will actually perform

238
00:09:01,990 --> 00:09:01,200

the undocking and uh and then it will be

239
00:09:07,990 --> 00:09:02,000
uh

240
00:09:11,030 --> 00:09:08,000
the next task for the crew the next

241
00:09:13,590 --> 00:09:11,040
vehicle task will be uh the arrival of

242
00:09:15,829 --> 00:09:13,600
spacex one our next dragon mission

243
00:09:18,550 --> 00:09:15,839
that's currently planned for october 7th

244
00:09:20,389 --> 00:09:18,560
uh this graphic shows the uh the dragon

245
00:09:23,110 --> 00:09:20,399
spacecraft from the demonstration

246
00:09:26,150 --> 00:09:23,120
mission back in may but the the one

247
00:09:28,949 --> 00:09:26,160
planned for expedition 33 uh spacex one

248
00:09:31,590 --> 00:09:28,959
is the first uh commercially contracted

249
00:09:33,590 --> 00:09:31,600
resupply flight of a dragon so in the

250
00:09:36,150 --> 00:09:33,600
days leading up to this uh sunny anaki

251
00:09:38,870 --> 00:09:36,160
will be practicing using the big uh

252
00:09:41,190 --> 00:09:38,880
canadarm2 the robot arm on station to uh

253
00:09:43,829 --> 00:09:41,200
to perform the tricky grapple maneuver

254
00:09:45,590 --> 00:09:43,839
uh and then uh on the day of uh of

255
00:09:46,870 --> 00:09:45,600
birthing then they'll

256
00:09:48,550 --> 00:09:46,880
the dragon will come up and hover

257
00:09:50,070 --> 00:09:48,560
beneath the station

258
00:09:52,710 --> 00:09:50,080
they'll grab it with the robot arm and

259
00:09:55,750 --> 00:09:52,720
maneuver it to uh the node two or

260
00:09:56,949 --> 00:09:55,760
harmony node uh the earth facing port

261
00:09:57,990 --> 00:09:56,959
shown in the graphic there with the

262
00:10:00,150 --> 00:09:58,000
dragon

263
00:10:03,030 --> 00:10:00,160

and uh then they'll make the electrical

264
00:10:04,710 --> 00:10:03,040
and uh data connections that

265
00:10:06,550 --> 00:10:04,720
as well as some air ducting and the

266
00:10:08,710 --> 00:10:06,560
following day they'll open the hatches

267
00:10:10,790 --> 00:10:08,720
and then initiate about

268
00:10:13,030 --> 00:10:10,800
about 24 days of cargo transfer

269
00:10:15,269 --> 00:10:13,040
operations and some of the noteworthy

270
00:10:18,389 --> 00:10:15,279
cargo that's coming up on spacex one is

271
00:10:20,949 --> 00:10:18,399
a new japanese plant experiment known as

272
00:10:23,030 --> 00:10:20,959
resist tubule as well as a

273
00:10:25,269 --> 00:10:23,040
glacier refrigerator that's used to keep

274
00:10:26,870 --> 00:10:25,279
science samples biological samples cold

275
00:10:29,030 --> 00:10:26,880
for the return to earth

276
00:10:31,110 --> 00:10:29,040
nanoracks which is a modular payload

277
00:10:33,750 --> 00:10:31,120
rack that's coming up to the station as

278
00:10:36,310 --> 00:10:33,760
well as the usual resupply equipment

279
00:10:38,870 --> 00:10:36,320
such as food and clothing for the crew

280
00:10:42,949 --> 00:10:38,880
and spare parts for the station

281
00:10:46,870 --> 00:10:42,959
next big event for expedition 33 will be

282
00:10:49,750 --> 00:10:46,880
the arrival on october 17th of the 32s

283
00:10:51,990 --> 00:10:49,760
soyuz crew shown in the right-hand

284
00:10:54,069 --> 00:10:52,000
side of this uh portrait of

285
00:10:56,230 --> 00:10:54,079
expedition 33.

286
00:10:58,949 --> 00:10:56,240
uh so let's meet the the individual crew

287
00:11:01,509 --> 00:10:58,959
members starting with kevin ford

288
00:11:04,230 --> 00:11:01,519

kevin is a retired colonel from the u.s

289
00:11:06,069 --> 00:11:04,240
air force he's a former test pilot

290
00:11:09,670 --> 00:11:06,079
he was selected as an astronaut back in

291
00:11:12,389 --> 00:11:09,680
2000 and he previously flew as pilot on

292
00:11:14,550 --> 00:11:12,399
shuttle mission sts-128 which was a

293
00:11:16,310 --> 00:11:14,560
logistics flight to the space station

294
00:11:19,190 --> 00:11:16,320
and kevin will be the commander of

295
00:11:22,310 --> 00:11:19,200
expedition 34.

296
00:11:24,230 --> 00:11:22,320
our soyuz commander is oleg novitskiy

297
00:11:26,870 --> 00:11:24,240
he's a colonel in the russian air force

298
00:11:29,190 --> 00:11:26,880
he's been a cosmonaut since 2006 and

299
00:11:32,069 --> 00:11:29,200
this will be his first space flight

300
00:11:34,870 --> 00:11:32,079
and rounding out the 32s uh soyuz crew

301
00:11:36,550 --> 00:11:34,880
is evgeny terrelkin he's a captain in

302
00:11:39,269 --> 00:11:36,560
the russian air force and he's been a

303
00:11:41,269 --> 00:11:39,279
cosmonaut since 2003 and this is also

304
00:11:43,350 --> 00:11:41,279
his first space flight

305
00:11:45,750 --> 00:11:43,360
and in addition to the the three humans

306
00:11:49,110 --> 00:11:45,760
that'll be coming up uh in october we'll

307
00:11:50,790 --> 00:11:49,120
also have 32 madoka fish which are on

308
00:11:53,590 --> 00:11:50,800
the soyuz which will be destined for the

309
00:11:54,870 --> 00:11:53,600
aquatic habitat which uh the uh which is

310
00:11:57,829 --> 00:11:54,880
a scientific

311
00:11:59,910 --> 00:11:57,839
uh fish tank that will be uh stationed

312
00:12:01,829 --> 00:11:59,920
in the japanese module that's being

313
00:12:03,269 --> 00:12:01,839

delivered actually tomorrow by the the

314
00:12:05,190 --> 00:12:03,279
htv

315
00:12:07,030 --> 00:12:05,200
3 which uh which is coming to the

316
00:12:09,110 --> 00:12:07,040
station tomorrow this will be used to

317
00:12:10,949 --> 00:12:09,120
study the effects of microgravity on on

318
00:12:12,870 --> 00:12:10,959
the fish especially their skeletal

319
00:12:14,389 --> 00:12:12,880
systems and the the

320
00:12:16,069 --> 00:12:14,399
how they evolve over multiple

321
00:12:17,269 --> 00:12:16,079
generations in space and julia will have

322
00:12:18,150 --> 00:12:17,279
more details on that in just a few

323
00:12:19,829 --> 00:12:18,160
minutes

324
00:12:23,190 --> 00:12:19,839
another important work that we'll be

325
00:12:26,150 --> 00:12:23,200
doing uh with the beginning of the 32s

326
00:12:28,150 --> 00:12:26,160
crew time on station is uh taking the

327
00:12:30,550 --> 00:12:28,160
baseline physiological measurements

328
00:12:32,230 --> 00:12:30,560
which are very important to establish

329
00:12:34,790 --> 00:12:32,240
the initial conditions and then we can

330
00:12:35,910 --> 00:12:34,800
study how the long-term exposure to

331
00:12:37,750 --> 00:12:35,920
weightlessness

332
00:12:40,150 --> 00:12:37,760
in the space environment affects the

333
00:12:41,990 --> 00:12:40,160
crew's physiology and we have all types

334
00:12:45,670 --> 00:12:42,000
of measurement devices on the station

335
00:12:47,670 --> 00:12:45,680
including an ekg an ultrasound machine

336
00:12:50,629 --> 00:12:47,680
we measure the oxygen uptake when they

337
00:12:52,550 --> 00:12:50,639
exercise as well as take blood urine and

338
00:12:54,949 --> 00:12:52,560

saliva specimens and again to study

339
00:12:56,310 --> 00:12:54,959
their bone and muscle loss as well as

340
00:12:58,310 --> 00:12:56,320
changes to their immune system while

341
00:13:00,310 --> 00:12:58,320
they're in space

342
00:13:02,150 --> 00:13:00,320
so uh this will be a busy time after the

343
00:13:04,230 --> 00:13:02,160
32s crew arrives

344
00:13:06,389 --> 00:13:04,240
they'll also be finishing up the cargo

345
00:13:08,870 --> 00:13:06,399
transfer operations with uh with the

346
00:13:12,310 --> 00:13:08,880
dragon the dragon will be undocked on

347
00:13:14,629 --> 00:13:12,320
october 31st and this is a short uh

348
00:13:16,949 --> 00:13:14,639
sequence to show you uh how we undock a

349
00:13:18,710 --> 00:13:16,959
dragon uh this is from the demo mission

350
00:13:21,110 --> 00:13:18,720
first the crew grabs it with the canada

351
00:13:23,030 --> 00:13:21,120
arm two and releases the bolts from uh

352
00:13:25,509 --> 00:13:23,040
from the station node then the arm

353
00:13:27,269 --> 00:13:25,519
maneuvers it below the station and uh

354
00:13:30,550 --> 00:13:27,279
and the crew commands the release of the

355
00:13:32,949 --> 00:13:30,560
arm and they uh they back away and uh as

356
00:13:35,030 --> 00:13:32,959
they're doing this the spacex mission

357
00:13:36,870 --> 00:13:35,040
control team in hawthorne california

358
00:13:39,030 --> 00:13:36,880
activates the spacecraft

359
00:13:41,269 --> 00:13:39,040
guidance and control systems and then

360
00:13:43,670 --> 00:13:41,279
we'll perform uh the series of back away

361
00:13:45,590 --> 00:13:43,680
maneuvers and several orbits later we'll

362
00:13:47,670 --> 00:13:45,600
deorbit the spacecraft

363
00:13:49,829 --> 00:13:47,680

for a landing in the ocean off the coast

364
00:13:51,670 --> 00:13:49,839
of california and they at which point

365
00:13:54,150 --> 00:13:51,680
they will retrieve the science samples

366
00:13:55,910 --> 00:13:54,160
and other returned hardware from spacex

367
00:13:58,310 --> 00:13:55,920
dragon

368
00:14:01,269 --> 00:13:58,320
okay moving on

369
00:14:02,710 --> 00:14:01,279
a few days later on november 3rd

370
00:14:04,790 --> 00:14:02,720
we'll have a

371
00:14:08,870 --> 00:14:04,800
a new progress vehicle arrive at the

372
00:14:11,110 --> 00:14:08,880
station the 49p vehicle uh the russian

373
00:14:14,069 --> 00:14:11,120
unmanned supply ship it will dock to the

374
00:14:15,590 --> 00:14:14,079
aft end of zvezda service module where

375
00:14:16,710 --> 00:14:15,600
it will remain for about four and a half

376
00:14:20,150 --> 00:14:16,720
months

377
00:14:24,230 --> 00:14:20,160
and then the next event is october 12th

378
00:14:27,030 --> 00:14:24,240
when the 31s soyuz crew with sunny yuri

379
00:14:28,790 --> 00:14:27,040
and aki undock and return to earth

380
00:14:30,550 --> 00:14:28,800
they're shown there in the uh

381
00:14:32,069 --> 00:14:30,560
the lower right hand corner

382
00:14:34,310 --> 00:14:32,079
so they'll return to earth after their

383
00:14:36,470 --> 00:14:34,320
four-month stay on the station and then

384
00:14:39,030 --> 00:14:36,480
kevin ford will take over as commander

385
00:14:41,990 --> 00:14:39,040
of expedition 34

386
00:14:45,110 --> 00:14:42,000
and will begin another four-week period

387
00:14:47,509 --> 00:14:45,120
with just three crew members on station

388
00:14:51,269 --> 00:14:47,519

and then at the end of that period uh on

389
00:14:54,470 --> 00:14:51,279
december 7th is when we expect the 33

390
00:14:57,350 --> 00:14:54,480
soyuz crew to arrive and here you see a

391
00:14:59,269 --> 00:14:57,360
portrait of the expedition 34 crew and

392
00:15:01,670 --> 00:14:59,279
our new crewmen are shown on the right

393
00:15:06,790 --> 00:15:01,680
hand side of this photo

394
00:15:07,910 --> 00:15:06,800
the crew on board 33s are tom marshburn

395
00:15:10,629 --> 00:15:07,920
he's a

396
00:15:12,150 --> 00:15:10,639
nasa astronaut and a medical doctor

397
00:15:15,670 --> 00:15:12,160
before becoming an astronaut he was a

398
00:15:17,269 --> 00:15:15,680
life flight physician and an er doctor

399
00:15:19,430 --> 00:15:17,279
before he came to work at johnson space

400
00:15:21,910 --> 00:15:19,440
center as a flight surgeon and he was

401
00:15:25,110 --> 00:15:21,920
selected as an astronaut in 2004 and

402
00:15:27,750 --> 00:15:25,120
flew on shuttle mission sts-127

403
00:15:29,829 --> 00:15:27,760
back in 2009 which delivered the

404
00:15:31,509 --> 00:15:29,839
japanese external facility and he

405
00:15:33,910 --> 00:15:31,519
performed three spacewalks on that

406
00:15:35,430 --> 00:15:33,920
flight and this will be his second trip

407
00:15:38,470 --> 00:15:35,440
into space

408
00:15:40,550 --> 00:15:38,480
next is chris hadfield he is a retired

409
00:15:43,430 --> 00:15:40,560
colonel in the canadian air force

410
00:15:45,269 --> 00:15:43,440
and a former test pilot he was selected

411
00:15:48,629 --> 00:15:45,279
by canada to be an astronaut back in

412
00:15:51,350 --> 00:15:48,639
1992 he also has an extensive flight

413
00:15:53,110 --> 00:15:51,360

record he flew to the mir space station

414
00:15:55,829 --> 00:15:53,120
on sts-74

415
00:15:59,030 --> 00:15:55,839
back in 1995 and he was a mission

416
00:16:01,990 --> 00:15:59,040
specialist on shuttle mission sts-100

417
00:16:04,949 --> 00:16:02,000
which delivered the canadian robot arm

418
00:16:07,350 --> 00:16:04,959
to the station in 2001 and he performed

419
00:16:08,870 --> 00:16:07,360
two spacewalks on that flight to

420
00:16:09,910 --> 00:16:08,880
assemble and attach the arm to the

421
00:16:11,829 --> 00:16:09,920
station

422
00:16:14,870 --> 00:16:11,839
and chris will be the commander of

423
00:16:17,670 --> 00:16:14,880
expedition 35 making him the first

424
00:16:19,670 --> 00:16:17,680
canadian to command a spacecraft

425
00:16:22,550 --> 00:16:19,680
and then rounding out the crew is our

426
00:16:24,550 --> 00:16:22,560
soyuz commander roman romanenko

427
00:16:27,829 --> 00:16:24,560
he's a major in the russian air force

428
00:16:30,710 --> 00:16:27,839
and selected as a cosmonaut in 1997

429
00:16:34,550 --> 00:16:30,720
and he previously flew on to the station

430
00:16:37,990 --> 00:16:34,560
on expedition 20 back in 2009 and his

431
00:16:41,670 --> 00:16:38,000
father yuri is also a cosmonaut

432
00:16:43,430 --> 00:16:41,680
so again after the 33 soyuz crew arrives

433
00:16:45,590 --> 00:16:43,440
first order of business as before will

434
00:16:47,829 --> 00:16:45,600
be to take those baseline

435
00:16:49,990 --> 00:16:47,839
medical measurements for the crew

436
00:16:51,590 --> 00:16:50,000
as well as to prepare for the next cargo

437
00:16:53,910 --> 00:16:51,600
vehicle arrival

438
00:16:55,829 --> 00:16:53,920

which is scheduled for 10 days later on

439
00:16:57,829 --> 00:16:55,839
december 17th

440
00:17:00,629 --> 00:16:57,839
they will be training to uh to perform

441
00:17:03,189 --> 00:17:00,639
the similar maneuvers as with the dragon

442
00:17:05,990 --> 00:17:03,199
on december 17th there will either be a

443
00:17:07,110 --> 00:17:06,000
dragon or an orbital cygnus vehicle that

444
00:17:08,789 --> 00:17:07,120
will arrive

445
00:17:10,870 --> 00:17:08,799
we're holding that date for either of

446
00:17:12,230 --> 00:17:10,880
those two vehicles and it's to be

447
00:17:13,750 --> 00:17:12,240
determined

448
00:17:15,750 --> 00:17:13,760
by the station program working with

449
00:17:18,710 --> 00:17:15,760
these uh with spacex and with orbital to

450
00:17:20,069 --> 00:17:18,720
determine uh which vehicle will be ready

451
00:17:21,909 --> 00:17:20,079
for that mission in the middle of

452
00:17:23,110 --> 00:17:21,919
december so again

453
00:17:25,110 --> 00:17:23,120
we'll have

454
00:17:27,270 --> 00:17:25,120
another future press conference on that

455
00:17:29,190 --> 00:17:27,280
one to discuss that visiting vehicle

456
00:17:31,110 --> 00:17:29,200
plan but for now we're holding the spot

457
00:17:32,870 --> 00:17:31,120
in the crew schedule and the training is

458
00:17:34,710 --> 00:17:32,880
very similar regardless of which vehicle

459
00:17:36,310 --> 00:17:34,720
arrives and we'll make sure the crew and

460
00:17:38,470 --> 00:17:36,320
the vehicle are ready uh when the

461
00:17:40,549 --> 00:17:38,480
decision is made based on which vehicle

462
00:17:41,990 --> 00:17:40,559
uh will be scheduled in december and

463
00:17:42,950 --> 00:17:42,000

then presumably the other vehicle will

464
00:17:45,590 --> 00:17:42,960
be

465
00:17:46,870 --> 00:17:45,600
early 2013 based on the launch vehicle

466
00:17:48,470 --> 00:17:46,880
readiness

467
00:17:49,750 --> 00:17:48,480
so um

468
00:17:51,510 --> 00:17:49,760
as before

469
00:17:52,789 --> 00:17:51,520
while the visit the commercial vehicle

470
00:17:56,710 --> 00:17:52,799
is docked to station we'll be doing the

471
00:17:59,430 --> 00:17:56,720
cargo transfer operations and then uh

472
00:18:00,789 --> 00:17:59,440
on december 29th if it's the cygnus

473
00:18:02,789 --> 00:18:00,799
vehicle it will undock and we have a

474
00:18:04,870 --> 00:18:02,799
graphic to show you the cygnus vehicle

475
00:18:07,510 --> 00:18:04,880
in free flight or if it's a spacex

476
00:18:10,630 --> 00:18:07,520
dragon it'll the undock will be uh

477
00:18:13,350 --> 00:18:10,640
or unberthing will be on december 16th

478
00:18:16,070 --> 00:18:13,360
so after the visiting vehicle ops we'll

479
00:18:18,870 --> 00:18:16,080
have a full complement of six crew

480
00:18:20,549 --> 00:18:18,880
we will ramp up our research objectives

481
00:18:21,510 --> 00:18:20,559
using taking advantage of the full crew

482
00:18:23,190 --> 00:18:21,520
size

483
00:18:25,190 --> 00:18:23,200
we'll also be trying to do some uh some

484
00:18:28,549 --> 00:18:25,200
improvements to station during this

485
00:18:30,870 --> 00:18:28,559
early 2013 time frame some of those

486
00:18:33,830 --> 00:18:30,880
include we're going to overhaul the us

487
00:18:36,390 --> 00:18:33,840
toilet we're also going to replace a

488
00:18:39,430 --> 00:18:36,400

heat exchanger in the air lock and we

489
00:18:41,830 --> 00:18:39,440
plan to upgrade our high rate com system

490
00:18:44,230 --> 00:18:41,840
our big dish antenna system the internal

491
00:18:46,710 --> 00:18:44,240
avionics we're gonna we're gonna install

492
00:18:48,230 --> 00:18:46,720
a solid state uh video recorder uh we're

493
00:18:50,310 --> 00:18:48,240
gonna make some other avionics

494
00:18:52,549 --> 00:18:50,320
improvements that will basically double

495
00:18:53,510 --> 00:18:52,559
our downlink bandwidth increase our

496
00:18:55,350 --> 00:18:53,520
number of

497
00:18:59,350 --> 00:18:55,360
standard def video channels from four to

498
00:19:01,750 --> 00:18:59,360
six and add two new voice channels on on

499
00:19:04,150 --> 00:19:01,760
our ku system so again lots of lots of

500
00:19:06,150 --> 00:19:04,160
things for both research as well as

501
00:19:07,350 --> 00:19:06,160
station systems maintenance during that

502
00:19:09,510 --> 00:19:07,360
time frame

503
00:19:11,190 --> 00:19:09,520
there's also a few more visiting vehicle

504
00:19:12,549 --> 00:19:11,200
operations to tell you about

505
00:19:14,150 --> 00:19:12,559
towards the end of increment or

506
00:19:16,789 --> 00:19:14,160
expedition 34.

507
00:19:18,870 --> 00:19:16,799
in late december the 48 p progress

508
00:19:20,549 --> 00:19:18,880
vehicle will undock from the piers

509
00:19:23,750 --> 00:19:20,559
docking compartment and it will be

510
00:19:25,750 --> 00:19:23,760
replaced by the 50p progress which will

511
00:19:28,070 --> 00:19:25,760
remain until february when it will be

512
00:19:30,310 --> 00:19:28,080
replaced by the 51p

513
00:19:32,310 --> 00:19:30,320

progress and then also

514
00:19:34,230 --> 00:19:32,320
in march the 49

515
00:19:36,470 --> 00:19:34,240
p progress will

516
00:19:38,230 --> 00:19:36,480
undock from the aft end of the service

517
00:19:39,669 --> 00:19:38,240
module and eventually it will be

518
00:19:42,310 --> 00:19:39,679
replaced by

519
00:19:44,950 --> 00:19:42,320
the next european automated transfer

520
00:19:47,350 --> 00:19:44,960
vehicle atv4 which is

521
00:19:50,070 --> 00:19:47,360
tentatively scheduled for launch in uh

522
00:19:52,950 --> 00:19:50,080
april of 2013.

523
00:19:55,990 --> 00:19:52,960
and so uh for the last graphic there uh

524
00:19:58,150 --> 00:19:56,000
expedition 34 will end on

525
00:20:00,549 --> 00:19:58,160
uh march 19th

526
00:20:03,270 --> 00:20:00,559
when the 32s soyuz crew shown in the

527
00:20:05,510 --> 00:20:03,280
lower right-hand corner undocks from the

528
00:20:07,510 --> 00:20:05,520
station and returns to earth after their

529
00:20:10,950 --> 00:20:07,520
five months in space and that's when

530
00:20:13,029 --> 00:20:10,960
we'll transition to expedition 35 with

531
00:20:15,909 --> 00:20:13,039
chris hadfield in command of the station

532
00:20:18,070 --> 00:20:15,919
so i'd like to conclude just by

533
00:20:21,270 --> 00:20:18,080
mentioning the the crew's motto for

534
00:20:23,669 --> 00:20:21,280
expedition 34 is from the earth for the

535
00:20:25,270 --> 00:20:23,679
earth which captures the uh the goal of

536
00:20:27,350 --> 00:20:25,280
this mission and all the space station

537
00:20:29,270 --> 00:20:27,360
missions which is to perform research

538
00:20:31,190 --> 00:20:29,280

that's uh not only advances space

539
00:20:33,270 --> 00:20:31,200
science and and helps us develop space

540
00:20:35,190 --> 00:20:33,280
technology but is really rooted towards

541
00:20:36,870 --> 00:20:35,200
uh or geared towards improving the lives

542
00:20:38,549 --> 00:20:36,880
of those on earth especially in the

543
00:20:40,470 --> 00:20:38,559
fields of uh medical science and

544
00:20:41,750 --> 00:20:40,480
understanding uh improving our

545
00:20:44,789 --> 00:20:41,760
understanding of how the human body

546
00:20:47,270 --> 00:20:44,799
functions as well as uh material science

547
00:20:49,750 --> 00:20:47,280
and fluid fluid dynamics that that have

548
00:20:51,909 --> 00:20:49,760
lots of applications for industrial

549
00:20:54,470 --> 00:20:51,919
processes on earth so uh that's sort of

550
00:20:56,070 --> 00:20:54,480
an intro for dr robinson i'll let her

551
00:20:57,909 --> 00:20:56,080
fill in on more of the research details

552
00:21:00,310 --> 00:20:57,919
for the for the expedition

553
00:21:03,669 --> 00:21:00,320
thanks a lot chris

554
00:21:05,669 --> 00:21:03,679
expedition 33 and 34 really represent

555
00:21:06,950 --> 00:21:05,679
the beginning of the second year of the

556
00:21:08,789 --> 00:21:06,960
full research mission of the

557
00:21:11,190 --> 00:21:08,799
international space station we think of

558
00:21:13,590 --> 00:21:11,200
that as sort of our era of research that

559
00:21:15,110 --> 00:21:13,600
began after assembly was complete and

560
00:21:16,870 --> 00:21:15,120
one of the transformative things that

561
00:21:19,110 --> 00:21:16,880
we've seen over the last year is the

562
00:21:21,110 --> 00:21:19,120
ramp up in the numbers of investigations

563
00:21:22,549 --> 00:21:21,120

going on at any one time

564
00:21:26,630 --> 00:21:22,559
during this six-month period for

565
00:21:29,190 --> 00:21:26,640
expedition 33 and 34 we'll see over 198

566
00:21:30,950 --> 00:21:29,200
experiments active on the space station

567
00:21:33,190 --> 00:21:30,960
with hundreds of participating

568
00:21:35,110 --> 00:21:33,200
scientists across the entire partnership

569
00:21:37,270 --> 00:21:35,120
and across around the world

570
00:21:39,669 --> 00:21:37,280
of those about 81 will be nasa

571
00:21:41,590 --> 00:21:39,679
investigations with nasa principal

572
00:21:43,510 --> 00:21:41,600
investigators but many of these have

573
00:21:44,870 --> 00:21:43,520
additional international collaborations

574
00:21:46,950 --> 00:21:44,880
included

575
00:21:49,430 --> 00:21:46,960
and those disciplines cover a broad

576
00:21:50,870 --> 00:21:49,440
range probably broader than any other

577
00:21:53,350 --> 00:21:50,880
laboratory or any other national

578
00:21:56,390 --> 00:21:53,360
laboratory in the country from human

579
00:21:58,310 --> 00:21:56,400
physiology biology and biotechnology

580
00:22:00,230 --> 00:21:58,320
physical sciences earth and space

581
00:22:02,549 --> 00:22:00,240
sciences technology development and

582
00:22:04,789 --> 00:22:02,559
demonstration and education and of

583
00:22:06,950 --> 00:22:04,799
course i can only talk about just a tiny

584
00:22:08,549 --> 00:22:06,960
selection of those 200 investigations

585
00:22:10,470 --> 00:22:08,559
today

586
00:22:12,470 --> 00:22:10,480
over the years especially the last two

587
00:22:14,950 --> 00:22:12,480
years we've really moved into

588
00:22:17,029 --> 00:22:14,960

the second phase of our human physiology

589
00:22:18,630 --> 00:22:17,039
research that's really focused on how to

590
00:22:21,510 --> 00:22:18,640
keep crew members healthy when they're

591
00:22:23,029 --> 00:22:21,520
living in a weightless environment

592
00:22:24,789 --> 00:22:23,039
in that weightless environment their

593
00:22:28,149 --> 00:22:24,799
muscles can atrophy their hearts can

594
00:22:30,149 --> 00:22:28,159
atrophy they lose a lot of bone and from

595
00:22:32,310 --> 00:22:30,159
our early iss investigations we learned

596
00:22:34,789 --> 00:22:32,320
a lot about those processes those have

597
00:22:36,549 --> 00:22:34,799
let us move on to a phase of testing and

598
00:22:37,990 --> 00:22:36,559
we're really seeing differences in the

599
00:22:40,070 --> 00:22:38,000
health status of crew members when they

600
00:22:41,830 --> 00:22:40,080
return as we move through those

601
00:22:42,870 --> 00:22:41,840
experiments so i want to talk briefly

602
00:22:44,710 --> 00:22:42,880
about just a couple of those

603
00:22:46,630 --> 00:22:44,720
investigations that show what the second

604
00:22:49,590 --> 00:22:46,640
phase is like

605
00:22:51,909 --> 00:22:49,600
one of these we call sprint which is an

606
00:22:54,630 --> 00:22:51,919
experiment looking at how we can do

607
00:22:56,470 --> 00:22:54,640
higher intensity lower duration exercise

608
00:22:58,789 --> 00:22:56,480
and still maintain bone and muscle and

609
00:23:01,110 --> 00:22:58,799
here you see a picture of dan burbank

610
00:23:03,029 --> 00:23:01,120
using the advanced resistive exercise

611
00:23:04,549 --> 00:23:03,039
device which you can think of as a

612
00:23:07,110 --> 00:23:04,559
high-tech squat machine on the

613
00:23:09,270 --> 00:23:07,120

international space station

614
00:23:11,830 --> 00:23:09,280
so balancing the way we use that machine

615
00:23:13,830 --> 00:23:11,840
as well as our treadmill uh helps us to

616
00:23:15,510 --> 00:23:13,840
get the most efficient exercise that we

617
00:23:17,510 --> 00:23:15,520
can to maintain bone and muscle and

618
00:23:19,270 --> 00:23:17,520
cardiovascular health it's kind of not

619
00:23:20,870 --> 00:23:19,280
surprising that that maintaining

620
00:23:22,390 --> 00:23:20,880
cardiovascular health and fitness is a

621
00:23:24,310 --> 00:23:22,400
core to the health of crew members on

622
00:23:26,310 --> 00:23:24,320
orbit and as we learn more about those

623
00:23:28,070 --> 00:23:26,320
processes they do give us insights into

624
00:23:30,149 --> 00:23:28,080
our health on earth as well

625
00:23:32,149 --> 00:23:30,159
integrated cardiovascular is another

626
00:23:33,430 --> 00:23:32,159
investigation that is ongoing on the

627
00:23:35,909 --> 00:23:33,440
space station right now and will

628
00:23:39,110 --> 00:23:35,919
continue in expedition 3334 we're almost

629
00:23:41,190 --> 00:23:39,120
done with that activity and it was the

630
00:23:42,470 --> 00:23:41,200
first comprehensive survey of how the

631
00:23:45,909 --> 00:23:42,480
heart is responding to the

632
00:23:48,470 --> 00:23:45,919
deconditioning from being in space and

633
00:23:50,549 --> 00:23:48,480
in particular here you see a

634
00:23:52,149 --> 00:23:50,559
crew member getting giving and receiving

635
00:23:54,230 --> 00:23:52,159
a cardiac ultrasound to look at the

636
00:23:56,070 --> 00:23:54,240
structure of the heart we also do heart

637
00:23:57,669 --> 00:23:56,080
monitoring halter recording and have

638
00:24:00,310 --> 00:23:57,679

learned a substantial amount about how

639
00:24:02,950 --> 00:24:00,320
the heart deconditions and how that is

640
00:24:04,710 --> 00:24:02,960
prevented by exercise programs

641
00:24:06,789 --> 00:24:04,720
we also need to understand the core

642
00:24:10,230 --> 00:24:06,799
fitness of our crew members in orbit and

643
00:24:13,029 --> 00:24:10,240
to do that we use a technique called vo2

644
00:24:15,590 --> 00:24:13,039
max which is basically looking at the

645
00:24:17,110 --> 00:24:15,600
maximum oxygen uptake that a crew member

646
00:24:19,110 --> 00:24:17,120
has when they're exercising at their

647
00:24:21,110 --> 00:24:19,120
peak loads and here you can see a

648
00:24:23,830 --> 00:24:21,120
picture of mike fossum participating in

649
00:24:25,830 --> 00:24:23,840
the vo2 max experiment on orbit and this

650
00:24:28,149 --> 00:24:25,840
is another activity that will be ongoing

651
00:24:29,909 --> 00:24:28,159
in expedition 3334.

652
00:24:31,590 --> 00:24:29,919
so these are kind of the core of the

653
00:24:33,590 --> 00:24:31,600
advances that we've made to really

654
00:24:35,269 --> 00:24:33,600
understand how to keep the body fit and

655
00:24:37,669 --> 00:24:35,279
still how to minimize the time that we

656
00:24:40,070 --> 00:24:37,679
spend doing that so that we can maximize

657
00:24:42,549 --> 00:24:40,080
our research mission

658
00:24:44,470 --> 00:24:42,559
we work with our partners in sharing the

659
00:24:45,750 --> 00:24:44,480
crew as human subjects and there are

660
00:24:48,070 --> 00:24:45,760
some pretty interesting issa

661
00:24:50,870 --> 00:24:48,080
investigations that will be ongoing in

662
00:24:52,789 --> 00:24:50,880
expedition 3334 as well

663
00:24:54,789 --> 00:24:52,799

our european colleagues especially led

664
00:24:57,909 --> 00:24:54,799
by some scientists at charite hospital

665
00:24:59,750 --> 00:24:57,919
in berlin have developed a method of

666
00:25:01,990 --> 00:24:59,760
monitoring core body temperature that's

667
00:25:04,470 --> 00:25:02,000
much more accurate than anything

668
00:25:06,070 --> 00:25:04,480
used to date it involves a sensor placed

669
00:25:08,470 --> 00:25:06,080
on the forehead and then another sensor

670
00:25:11,029 --> 00:25:08,480
placed upon the chest and these are used

671
00:25:13,669 --> 00:25:11,039
on earth now because of their value both

672
00:25:16,230 --> 00:25:13,679
in monitoring neonatal patients babies

673
00:25:17,510 --> 00:25:16,240
in neonatal icus as well as monitoring

674
00:25:19,029 --> 00:25:17,520
patients while they're having certain

675
00:25:21,590 --> 00:25:19,039
kinds of surgeries where their body has

676
00:25:23,430 --> 00:25:21,600
been cooled down such as heart surgery

677
00:25:25,350 --> 00:25:23,440
so these have had important applications

678
00:25:26,789 --> 00:25:25,360
on earth what

679
00:25:28,789 --> 00:25:26,799
scientists are interested in studying on

680
00:25:30,870 --> 00:25:28,799
the space station is how we can

681
00:25:33,110 --> 00:25:30,880
understand the thermal properties on the

682
00:25:34,950 --> 00:25:33,120
human body in space and if i could have

683
00:25:37,190 --> 00:25:34,960
this heat stress graphic

684
00:25:38,710 --> 00:25:37,200
this summarizes why being in space is so

685
00:25:40,789 --> 00:25:38,720
different in terms of the thermal load

686
00:25:42,950 --> 00:25:40,799
on your body on the left is your body on

687
00:25:44,630 --> 00:25:42,960
the ground where you've got convection

688
00:25:46,230 --> 00:25:44,640

and warm air rising and carrying that

689
00:25:48,390 --> 00:25:46,240
heat away from your body and on the

690
00:25:51,430 --> 00:25:48,400
right as a representation of what can

691
00:25:53,110 --> 00:25:51,440
happen in space if you don't have enough

692
00:25:55,029 --> 00:25:53,120
air flow to help carry that heat away

693
00:25:57,350 --> 00:25:55,039
from you you can really start building a

694
00:25:59,269 --> 00:25:57,360
more solid core body temperature so the

695
00:26:01,430 --> 00:25:59,279
european thermal lab experiment looks

696
00:26:03,110 --> 00:26:01,440
just at body temperature to get basic

697
00:26:05,110 --> 00:26:03,120
information since this has never really

698
00:26:06,549 --> 00:26:05,120
been measured before the new

699
00:26:09,990 --> 00:26:06,559
investigation they'll be starting in

700
00:26:11,590 --> 00:26:10,000
expedition 3334 is to also use this core

701
00:26:14,310 --> 00:26:11,600
body temperature as a measure of

702
00:26:16,230 --> 00:26:14,320
circadian rhythms circadian rhythms are

703
00:26:18,549 --> 00:26:16,240
those diurnal rhythms that we all have

704
00:26:20,710 --> 00:26:18,559
where we get sleepy at night we sleep we

705
00:26:22,789 --> 00:26:20,720
wake up we feel more alert and there's a

706
00:26:25,269 --> 00:26:22,799
cycle of body temperature that goes

707
00:26:26,950 --> 00:26:25,279
along with those same diurnal cycles and

708
00:26:29,510 --> 00:26:26,960
of course those are regulated for us by

709
00:26:31,190 --> 00:26:29,520
the sun so crew members in orbit they

710
00:26:33,590 --> 00:26:31,200
don't have the thermal convection that

711
00:26:35,350 --> 00:26:33,600
we expect to see and they don't have the

712
00:26:36,310 --> 00:26:35,360
sun rising every day and setting every

713
00:26:38,149 --> 00:26:36,320

day instead they're going through

714
00:26:40,230 --> 00:26:38,159
multiple sunrise and sunsets inside a

715
00:26:41,750 --> 00:26:40,240
closed environment and so this study

716
00:26:43,830 --> 00:26:41,760
will be the first to really look

717
00:26:45,190 --> 00:26:43,840
comprehensively at how the thermal

718
00:26:47,909 --> 00:26:45,200
patterns help us understand the

719
00:26:50,149 --> 00:26:47,919
circadian rhythm disruption that has a

720
00:26:51,590 --> 00:26:50,159
good basic science value but it also

721
00:26:53,750 --> 00:26:51,600
will help us in managing mission

722
00:26:55,350 --> 00:26:53,760
operations better particularly when we

723
00:26:56,549 --> 00:26:55,360
need to do sleep shifts or when we need

724
00:26:58,070 --> 00:26:56,559
to do other things and make sure the

725
00:27:01,669 --> 00:26:58,080
astronauts out there are at their peak

726
00:27:04,710 --> 00:27:01,679
alertness for difficult mission activity

727
00:27:06,549 --> 00:27:04,720
we also use model organisms to help us

728
00:27:08,549 --> 00:27:06,559
understand processes in studies that we

729
00:27:10,070 --> 00:27:08,559
really couldn't do on humans and chris

730
00:27:11,830 --> 00:27:10,080
mentioned one of those

731
00:27:13,590 --> 00:27:11,840
because there's a new aquatic habitat

732
00:27:17,750 --> 00:27:13,600
being launched by the japanese space

733
00:27:19,269 --> 00:27:17,760
agency to the iss and their first set of

734
00:27:22,630 --> 00:27:19,279
studies will be an experiment called

735
00:27:25,590 --> 00:27:22,640
madaka osteoclast it will use the medaka

736
00:27:27,110 --> 00:27:25,600
fish in this aquatic habitat incubator

737
00:27:29,750 --> 00:27:27,120
and it's going to be focused on the

738
00:27:31,990 --> 00:27:29,760

cellular processes of bone loss

739
00:27:34,870 --> 00:27:32,000
so here you can see a picture of a

740
00:27:36,710 --> 00:27:34,880
madoka fish and the osteoblasts are the

741
00:27:38,710 --> 00:27:36,720
cells that

742
00:27:40,310 --> 00:27:38,720
build bone and the osteoclasts are the

743
00:27:43,110 --> 00:27:40,320
cells that remove the bone here in this

744
00:27:44,870 --> 00:27:43,120
image you can see that that using

745
00:27:47,190 --> 00:27:44,880
fluorescent protein techniques you can

746
00:27:49,990 --> 00:27:47,200
actually build into the fish the ability

747
00:27:51,669 --> 00:27:50,000
to visualize whether those osteoclasts

748
00:27:53,669 --> 00:27:51,679
are building bone or absorbing bone or

749
00:27:55,590 --> 00:27:53,679
whether the osteoblasts are building

750
00:27:58,310 --> 00:27:55,600
bone and so this allows us to get

751
00:28:00,389 --> 00:27:58,320
insight into that dynamic process of

752
00:28:02,950 --> 00:28:00,399
bone remodeling bone remodeling is

753
00:28:05,029 --> 00:28:02,960
fundamental to osteoporosis here on

754
00:28:07,029 --> 00:28:05,039
earth because as women that have

755
00:28:08,950 --> 00:28:07,039
osteoporosis have that bone remodeling

756
00:28:11,110 --> 00:28:08,960
essentially out of balance and it's

757
00:28:13,029 --> 00:28:11,120
absolutely necessary to keep remodeling

758
00:28:14,389 --> 00:28:13,039
your bone or your bones become brittle

759
00:28:16,310 --> 00:28:14,399
so these are really important core

760
00:28:18,710 --> 00:28:16,320
physiological processes that can be

761
00:28:20,230 --> 00:28:18,720
studied using these fish

762
00:28:23,350 --> 00:28:20,240
there will also be studies going on in

763
00:28:25,269 --> 00:28:23,360

expedition 3334 using model plants and

764
00:28:27,510 --> 00:28:25,279
these are now also in their second phase

765
00:28:28,950 --> 00:28:27,520
based on what was learned early in iss

766
00:28:30,470 --> 00:28:28,960
utilization

767
00:28:33,750 --> 00:28:30,480
so one of the things that we can study

768
00:28:35,510 --> 00:28:33,760
in space using our emcs facility is the

769
00:28:37,510 --> 00:28:35,520
growth of plants and here you see some

770
00:28:39,990 --> 00:28:37,520
results from the trophy investigation

771
00:28:42,470 --> 00:28:40,000
done in the past on iss these plants are

772
00:28:44,710 --> 00:28:42,480
pointing or growing toward red light

773
00:28:46,630 --> 00:28:44,720
without any other stimulation so there's

774
00:28:48,310 --> 00:28:46,640
no gravity stimulation which plants can

775
00:28:50,310 --> 00:28:48,320
sense and there's no blue light

776
00:28:52,710 --> 00:28:50,320
stimulation which plants can sense and

777
00:28:54,310 --> 00:28:52,720
this allowed investigators to determine

778
00:28:56,470 --> 00:28:54,320
and separate out these three different

779
00:28:58,389 --> 00:28:56,480
processes and understand which which

780
00:29:00,230 --> 00:28:58,399
genes controlled each one

781
00:29:01,990 --> 00:29:00,240
it also allowed them to do studies with

782
00:29:04,470 --> 00:29:02,000
partial gravity which are quite

783
00:29:06,230 --> 00:29:04,480
interesting to see if in 1 6g say on the

784
00:29:07,590 --> 00:29:06,240
moon how would how would a plant be able

785
00:29:08,950 --> 00:29:07,600
to know which way to grow up and how

786
00:29:11,350 --> 00:29:08,960
would a shoot be able to know which way

787
00:29:13,110 --> 00:29:11,360
to grow down also they can do studies

788
00:29:14,950 --> 00:29:13,120

using three-fifths g which would be the

789
00:29:17,269 --> 00:29:14,960
equivalent of a mars gravity

790
00:29:19,190 --> 00:29:17,279
and so we'll have the follow-on set of

791
00:29:21,430 --> 00:29:19,200
these investigations which going on over

792
00:29:22,950 --> 00:29:21,440
the next year which is a set of

793
00:29:24,470 --> 00:29:22,960
experiments called seedling growth

794
00:29:26,630 --> 00:29:24,480
you'll see seedling growth one two and

795
00:29:28,549 --> 00:29:26,640
three and it's a collaboration between

796
00:29:30,630 --> 00:29:28,559
us investigators as well as european

797
00:29:32,710 --> 00:29:30,640
investigators to share our centrifuge

798
00:29:34,470 --> 00:29:32,720
hardware and do a series of follow-on

799
00:29:36,470 --> 00:29:34,480
studies that build on the results of

800
00:29:38,870 --> 00:29:36,480
trophy in the past to understand at a

801
00:29:39,669 --> 00:29:38,880
very fundamental level how plants grow

802
00:29:40,870 --> 00:29:39,679
but

803
00:29:42,630 --> 00:29:40,880
it's also very important because it

804
00:29:44,549 --> 00:29:42,640
helps us understand the stress responses

805
00:29:46,630 --> 00:29:44,559
of plants and those can have important

806
00:29:47,830 --> 00:29:46,640
applications back here on earth for crop

807
00:29:50,070 --> 00:29:47,840
health and other

808
00:29:52,630 --> 00:29:50,080
horticultural studies

809
00:29:54,310 --> 00:29:52,640
and shift gears from living things then

810
00:29:56,310 --> 00:29:54,320
quite dramatically to talk about a

811
00:29:58,230 --> 00:29:56,320
technology demonstration on iss that you

812
00:29:59,669 --> 00:29:58,240
may have seen ongoing on nasa tv

813
00:30:01,350 --> 00:29:59,679

sometimes

814
00:30:03,350 --> 00:30:01,360
one very visible

815
00:30:06,230 --> 00:30:03,360
technology demonstration going on over

816
00:30:08,389 --> 00:30:06,240
the last year and continuing

817
00:30:10,070 --> 00:30:08,399
in expedition 3334

818
00:30:12,070 --> 00:30:10,080
will be the robonaut study and here you

819
00:30:13,990 --> 00:30:12,080
can see a picture of robonaut this is

820
00:30:16,630 --> 00:30:14,000
really a springboard that is very

821
00:30:19,590 --> 00:30:16,640
flexible and can be used to evolve

822
00:30:21,909 --> 00:30:19,600
new robotic capabilities in space and by

823
00:30:23,350 --> 00:30:21,919
adapting and learning over time as we

824
00:30:25,750 --> 00:30:23,360
learn how to program and control this

825
00:30:27,750 --> 00:30:25,760
robot and complete tasks it gives us the

826
00:30:30,389 --> 00:30:27,760
opportunity to really start having

827
00:30:33,269 --> 00:30:30,399
robots work cooperatively with humans in

828
00:30:35,750 --> 00:30:33,279
space in this video you saw

829
00:30:37,590 --> 00:30:35,760
the r2 robot working with a task panel

830
00:30:39,190 --> 00:30:37,600
where it can show that it can rotate a

831
00:30:41,510 --> 00:30:39,200
valve that it can position a needle

832
00:30:43,750 --> 00:30:41,520
valve it can essentially push a button

833
00:30:45,430 --> 00:30:43,760
and everything that you're seeing here

834
00:30:47,190 --> 00:30:45,440
is being controlled by operators on the

835
00:30:49,669 --> 00:30:47,200
ground not by the crew on orbit and so

836
00:30:51,990 --> 00:30:49,679
this is demonstrating for us robonaut's

837
00:30:53,430 --> 00:30:52,000
ability to do simple kinds of tasks that

838
00:30:55,830 --> 00:30:53,440

you might be able to offload from the

839
00:30:57,430 --> 00:30:55,840
crew onto the robot and they're the

840
00:30:59,190 --> 00:30:57,440
kinds of tasks you would need both to

841
00:31:01,990 --> 00:30:59,200
have robonaut work inside the crew

842
00:31:04,710 --> 00:31:02,000
volume but also to go outside and start

843
00:31:06,789 --> 00:31:04,720
working outside the iss and be able to

844
00:31:09,029 --> 00:31:06,799
cover some tasks that today we would

845
00:31:11,669 --> 00:31:09,039
have to do with a spacewalk

846
00:31:13,350 --> 00:31:11,679
in expedition 33 and 34

847
00:31:14,789 --> 00:31:13,360
we'll continue these kinds of task board

848
00:31:17,190 --> 00:31:14,799
operations

849
00:31:19,110 --> 00:31:17,200
we'll also be incorporating more vision

850
00:31:20,950 --> 00:31:19,120
and additional automation capabilities

851
00:31:23,669 --> 00:31:20,960
so that robonaut is making a few

852
00:31:25,269 --> 00:31:23,679
decisions on its own and then using a

853
00:31:26,710 --> 00:31:25,279
set of guidance and then we can

854
00:31:28,549 --> 00:31:26,720
demonstrate that those decisions are

855
00:31:30,549 --> 00:31:28,559
good decisions in completing tasks

856
00:31:32,389 --> 00:31:30,559
without having quite as much specific

857
00:31:35,750 --> 00:31:32,399
control from the ground

858
00:31:37,909 --> 00:31:35,760
we'll see teleoperation and checkout and

859
00:31:40,470 --> 00:31:37,919
new commanding tools all of these are

860
00:31:42,630 --> 00:31:40,480
moving us forward to more independent

861
00:31:44,070 --> 00:31:42,640
intravehicular task demonstrations more

862
00:31:45,909 --> 00:31:44,080
complex things than what you're seeing

863
00:31:48,149 --> 00:31:45,919

now and then eventually toward being

864
00:31:50,070 --> 00:31:48,159
able to bring a test article outside of

865
00:31:52,389 --> 00:31:50,080
the vehicle and have robonaut do a

866
00:31:53,909 --> 00:31:52,399
spacewalk in the future

867
00:31:55,269 --> 00:31:53,919
i'm not going to have time today to talk

868
00:31:56,549 --> 00:31:55,279
about some of our earth and space

869
00:31:58,230 --> 00:31:56,559
science results

870
00:32:00,389 --> 00:31:58,240
the alpha magnetic spectrometer for

871
00:32:02,230 --> 00:32:00,399
example is is still collecting data

872
00:32:03,590 --> 00:32:02,240
they're up to 19 billion observations

873
00:32:05,350 --> 00:32:03,600
they're collecting data at a rate of

874
00:32:07,110 --> 00:32:05,360
about a billion per month so there's a

875
00:32:08,950 --> 00:32:07,120
lot of other things going on that that i

876
00:32:11,110 --> 00:32:08,960
won't be able to talk about today but i

877
00:32:13,190 --> 00:32:11,120
wanted to close my remarks um because of

878
00:32:14,470 --> 00:32:13,200
the passing of sally ride this week and

879
00:32:16,710 --> 00:32:14,480
talk about her project on the

880
00:32:19,110 --> 00:32:16,720
international space station earth cam

881
00:32:20,710 --> 00:32:19,120
earthkam is a an educational project

882
00:32:21,990 --> 00:32:20,720
where students middle school students

883
00:32:24,549 --> 00:32:22,000
learn about the earth they even learn

884
00:32:26,549 --> 00:32:24,559
about orbital dynamics and they take

885
00:32:28,789 --> 00:32:26,559
pictures of the earth by writing

886
00:32:30,230 --> 00:32:28,799
commands selecting targets and then

887
00:32:32,070 --> 00:32:30,240
university students do the mission

888
00:32:33,509 --> 00:32:32,080

operations to control a camera on the

889
00:32:35,830 --> 00:32:33,519
international space station actually

890
00:32:39,029 --> 00:32:35,840
acquire those images and return them to

891
00:32:41,269 --> 00:32:39,039
the students it began originally as the

892
00:32:42,950 --> 00:32:41,279
kid sat project back in shuttle flight

893
00:32:46,230 --> 00:32:42,960
sts-76

894
00:32:48,230 --> 00:32:46,240
it rapidly grew in 1998 it was so

895
00:32:50,789 --> 00:32:48,240
successful it was renamed earthkam and

896
00:32:53,509 --> 00:32:50,799
started preparing to be an iss-based

897
00:32:55,269 --> 00:32:53,519
investigation and it's been on iss

898
00:32:57,110 --> 00:32:55,279
pretty much since the beginning of our

899
00:32:58,149 --> 00:32:57,120
assembly

900
00:33:01,669 --> 00:32:58,159
it

901
00:33:04,230 --> 00:33:01,679
in 2001

902
00:33:08,070 --> 00:33:04,240
and to date over 190 000 students have

903
00:33:09,590 --> 00:33:08,080
taken over 45 000 images there's even

904
00:33:12,470 --> 00:33:09,600
an ops controller in mission control

905
00:33:14,310 --> 00:33:12,480
today that began uh her career as a

906
00:33:16,389 --> 00:33:14,320
university student helping with earth

907
00:33:18,149 --> 00:33:16,399
cam control from the mission operations

908
00:33:19,750 --> 00:33:18,159
center at the university of california

909
00:33:21,669 --> 00:33:19,760
san diego

910
00:33:23,509 --> 00:33:21,679
i just wanted to personally mention some

911
00:33:26,149 --> 00:33:23,519
of the impacts that i see from sally

912
00:33:27,750 --> 00:33:26,159
rides life i look around at nasa and my

913
00:33:29,590 --> 00:33:27,760

own work group and when you compare that

914
00:33:31,750 --> 00:33:29,600
to what things look like during apollo i

915
00:33:33,509 --> 00:33:31,760
think you really see that influence so

916
00:33:35,110 --> 00:33:33,519
in my own team of scientists and

917
00:33:37,430 --> 00:33:35,120
engineers we actually have more women

918
00:33:39,430 --> 00:33:37,440
than men today that's a huge contrast

919
00:33:41,190 --> 00:33:39,440
from what things look like say when i

920
00:33:43,350 --> 00:33:41,200
was in chemistry class in the 1980s and

921
00:33:45,669 --> 00:33:43,360
i would be the only girl in the class

922
00:33:48,149 --> 00:33:45,679
and that that change having that kind of

923
00:33:50,549 --> 00:33:48,159
a figure has transformed girls lives

924
00:33:52,070 --> 00:33:50,559
both from seeing her as a model and then

925
00:33:53,750 --> 00:33:52,080
also from some of these specific

926
00:33:55,750 --> 00:33:53,760
projects like earth cam and like sally

927
00:33:57,509 --> 00:33:55,760
ride science i've had the opportunity to

928
00:33:59,269 --> 00:33:57,519
take my own daughter to a sally ride

929
00:34:01,669 --> 00:33:59,279
science festival and see how excited

930
00:34:03,990 --> 00:34:01,679
girls get about science by having things

931
00:34:05,430 --> 00:34:04,000
accessible and fun and by seeing models

932
00:34:06,470 --> 00:34:05,440
of women who have been successful

933
00:34:08,869 --> 00:34:06,480
scientists

934
00:34:10,710 --> 00:34:08,879
and those girls now today don't even

935
00:34:12,470 --> 00:34:10,720
realize that there was ever a time when

936
00:34:14,470 --> 00:34:12,480
women weren't commanders of the space

937
00:34:16,950 --> 00:34:14,480
station when women weren't commanders of

938
00:34:18,310 --> 00:34:16,960

space vehicles when women weren't uh

939
00:34:21,030 --> 00:34:18,320
scientific leaders and engineering

940
00:34:21,829 --> 00:34:21,040
leaders and so i uh i'm definitely going

941
00:34:24,950 --> 00:34:21,839
to

942
00:34:26,470 --> 00:34:24,960
but that legacy is one that will be with

943
00:34:28,389 --> 00:34:26,480
us forever

944
00:34:30,950 --> 00:34:28,399
so with that let me uh hand back to our

945
00:34:32,310 --> 00:34:30,960
moderator four questions

946
00:34:34,550 --> 00:34:32,320
thank you julie uh those thoughts are

947
00:34:36,629 --> 00:34:34,560
greatly appreciated and one point of

948
00:34:39,190 --> 00:34:36,639
clarification on dan's opening remarks

949
00:34:42,069 --> 00:34:39,200
uh so many vehicles so many deadlines so

950
00:34:44,310 --> 00:34:42,079
many time zones the progress 48 cargo

951
00:34:47,589 --> 00:34:44,320
ship launch coming up next week is on

952
00:34:49,190 --> 00:34:47,599
wednesday august 1st u.s time august 2nd

953
00:34:50,710 --> 00:34:49,200
baikonur time

954
00:34:52,149 --> 00:34:50,720
and we'll talk about our coverage plans

955
00:34:54,149 --> 00:34:52,159
at the end of the briefing so with that

956
00:34:55,669 --> 00:34:54,159
we're ready to take questions

957
00:34:57,910 --> 00:34:55,679
here in houston

958
00:35:00,230 --> 00:34:57,920
mark in the back

959
00:35:02,950 --> 00:35:00,240
we have we have the mics up above your

960
00:35:04,550 --> 00:35:02,960
head no problem yeah thank you very much

961
00:35:07,270 --> 00:35:04,560
i think i have a couple

962
00:35:09,829 --> 00:35:07,280
dan hartman

963
00:35:12,310 --> 00:35:09,839

if i've got this directed correctly can

964
00:35:16,790 --> 00:35:12,320
you can you talk a little bit about the

965
00:35:17,670 --> 00:35:16,800
47 progress of redoc and and just

966
00:35:20,230 --> 00:35:17,680
um

967
00:35:22,310 --> 00:35:20,240
i gather the station mission management

968
00:35:24,950 --> 00:35:22,320
team sort of went over the

969
00:35:26,470 --> 00:35:24,960
the sequence of events today

970
00:35:27,510 --> 00:35:26,480
and um

971
00:35:30,150 --> 00:35:27,520
is

972
00:35:33,750 --> 00:35:30,160
what were there concerns over any sort

973
00:35:35,670 --> 00:35:33,760
of safety or or is this pretty benign if

974
00:35:37,430 --> 00:35:35,680
you if you

975
00:35:39,990 --> 00:35:37,440
run the self-test and it fails at a

976
00:35:41,670 --> 00:35:40,000
certain distance there's not really

977
00:35:43,030 --> 00:35:41,680
any sort of a collision throughout it

978
00:35:44,710 --> 00:35:43,040
sure okay

979
00:35:45,829 --> 00:35:44,720
the mission management team did talk at

980
00:35:48,069 --> 00:35:45,839
night this morning and i think there's

981
00:35:50,550 --> 00:35:48,079
some still some follow-up discussions i

982
00:35:52,790 --> 00:35:50,560
i would say going in it is it is

983
00:35:53,910 --> 00:35:52,800
recognized by by both sides us and the

984
00:35:55,589 --> 00:35:53,920
russians quite honestly the whole

985
00:35:57,670 --> 00:35:55,599
partnership uh there's we're going to

986
00:35:59,510 --> 00:35:57,680
follow the flight rules okay so what we

987
00:36:02,550 --> 00:35:59,520
need to be in place will be in place

988
00:36:07,910 --> 00:36:06,470

when they get to the the 45-46 kilometer

989
00:36:09,750 --> 00:36:07,920
check

990
00:36:11,670 --> 00:36:09,760
you know if range and range rate are

991
00:36:13,430 --> 00:36:11,680
within the specifications allowed for a

992
00:36:16,069 --> 00:36:13,440
typical course

993
00:36:19,349 --> 00:36:16,079
we don't see any any issues on on

994
00:36:23,349 --> 00:36:21,670
in fact

995
00:36:25,270 --> 00:36:23,359
the folks from minerga that we talked to

996
00:36:27,270 --> 00:36:25,280
this morning i mean they basically said

997
00:36:29,030 --> 00:36:27,280
that as well as safety is their one

998
00:36:31,030 --> 00:36:29,040
priority in doing this they are very

999
00:36:33,030 --> 00:36:31,040
interested in obviously conducting this

1000
00:36:34,870 --> 00:36:33,040
test and and seeing the results off this

1001
00:36:36,870 --> 00:36:34,880
new avionics box which would you know

1002
00:36:39,109 --> 00:36:36,880
subsequently go into uh

1003
00:36:41,829 --> 00:36:39,119
potentially downstream missions as an

1004
00:36:43,670 --> 00:36:41,839
upgrade um if they are successful uh

1005
00:36:46,550 --> 00:36:43,680
bringing in the

1006
00:36:48,630 --> 00:36:46,560
47p i would imagine they'll also try to

1007
00:36:50,630 --> 00:36:48,640
dismantle and take that box out because

1008
00:36:52,230 --> 00:36:50,640
obviously it did have some issues

1009
00:36:54,630 --> 00:36:52,240
and then i would probably bring it home

1010
00:36:56,950 --> 00:36:54,640
on some subsequent mission for them to

1011
00:36:58,710 --> 00:36:56,960
to do additional troubleshooting but uh

1012
00:37:00,630 --> 00:36:58,720
you know real time there's a lot of

1013
00:37:01,750 --> 00:37:00,640

there's you know as in any docking

1014
00:37:03,349 --> 00:37:01,760
birthing event there's a lot of

1015
00:37:05,190 --> 00:37:03,359
real-time work that goes on as well

1016
00:37:06,870 --> 00:37:05,200
right but right now

1017
00:37:08,069 --> 00:37:06,880
we're going into this

1018
00:37:10,710 --> 00:37:08,079
with every intent we're going to follow

1019
00:37:12,150 --> 00:37:10,720
the flight rules and bring it in safely

1020
00:37:14,710 --> 00:37:12,160
thank you

1021
00:37:17,030 --> 00:37:14,720
it's an interesting project uh same

1022
00:37:19,910 --> 00:37:17,040
could probably be said with the

1023
00:37:22,390 --> 00:37:19,920
48 progress

1024
00:37:23,589 --> 00:37:22,400
launch plans and the and the one day

1025
00:37:25,190 --> 00:37:23,599
launch to

1026
00:37:26,950 --> 00:37:25,200
dock scenario

1027
00:37:29,030 --> 00:37:26,960
um could you sort of talk about where

1028
00:37:31,670 --> 00:37:29,040
that might be going i i realize it's a

1029
00:37:33,910 --> 00:37:31,680
russian project but uh

1030
00:37:36,230 --> 00:37:33,920
it's it's a little bit difficult to get

1031
00:37:38,069 --> 00:37:36,240
you know because we're so far apart to

1032
00:37:40,630 --> 00:37:38,079
get their perspective but what what's in

1033
00:37:43,829 --> 00:37:40,640
store that helps the space station

1034
00:37:45,670 --> 00:37:43,839
down the road if if this comes off sure

1035
00:37:47,349 --> 00:37:45,680
and i know chris is prepared to talk

1036
00:37:48,550 --> 00:37:47,359
some of the specifics as far as orbital

1037
00:37:49,990 --> 00:37:48,560
dynamics if you want to get into that

1038
00:37:51,030 --> 00:37:50,000

aspect of it but they're they're looking

1039
00:37:56,550 --> 00:37:51,040
to

1040
00:37:58,310 --> 00:37:56,560
phase right so um in it in my mind from

1041
00:38:00,950 --> 00:37:58,320
what i've heard from in discussions with

1042
00:38:03,750 --> 00:38:00,960
them it's a crew comfort uh if you can

1043
00:38:05,030 --> 00:38:03,760
get uh the crew to orbit in in six hours

1044
00:38:07,829 --> 00:38:05,040
and on board the international space

1045
00:38:08,790 --> 00:38:07,839
station um that could be a tremendous

1046
00:38:09,990 --> 00:38:08,800
benefit

1047
00:38:11,670 --> 00:38:10,000
um

1048
00:38:13,829 --> 00:38:11,680
then over you know the two plus days

1049
00:38:15,430 --> 00:38:13,839
that it takes today you know i think

1050
00:38:16,790 --> 00:38:15,440
they're able to take out a spin rate

1051
00:38:20,790 --> 00:38:16,800
which

1052
00:38:22,710 --> 00:38:20,800
duration uh soyuz missions and so i

1053
00:38:24,550 --> 00:38:22,720
think that's their ultimate goal in

1054
00:38:25,829 --> 00:38:24,560
trying to do this

1055
00:38:27,109 --> 00:38:25,839
thank you

1056
00:38:31,750 --> 00:38:27,119
robert

1057
00:38:32,390 --> 00:38:31,760
with questions from dan i think chris as

1058
00:38:34,550 --> 00:38:32,400
well

1059
00:38:35,270 --> 00:38:34,560
um just to clarify something you just

1060
00:38:36,390 --> 00:38:35,280
said

1061
00:38:39,030 --> 00:38:36,400
if um

1062
00:38:40,550 --> 00:38:39,040
if the curtin a test

1063
00:38:41,829 --> 00:38:40,560

retest does not

1064
00:38:47,750 --> 00:38:41,839
go as planned

1065
00:38:53,270 --> 00:38:51,270
if it fails that test at 46 uh it'll

1066
00:38:55,670 --> 00:38:53,280
it'll do an abort and it'll be done and

1067
00:38:58,069 --> 00:38:55,680
it'll it'll be on its secondary payload

1068
00:39:00,950 --> 00:38:58,079
mission and then re-enter four or five

1069
00:39:03,990 --> 00:39:00,960
days later i think is the plan it'll be

1070
00:39:05,589 --> 00:39:04,000
done if it fails that test uh it's over

1071
00:39:07,750 --> 00:39:05,599
they don't they want and

1072
00:39:09,190 --> 00:39:07,760
because again the 48 p coming in there's

1073
00:39:10,069 --> 00:39:09,200
really not an opportunity to try to

1074
00:39:12,710 --> 00:39:10,079
bring in

1075
00:39:15,750 --> 00:39:12,720
have another attempt let's say

1076
00:39:17,430 --> 00:39:15,760
and are there any um

1077
00:39:19,270 --> 00:39:17,440
are there any concerns or connections i

1078
00:39:21,750 --> 00:39:19,280
know they're two different systems but

1079
00:39:22,470 --> 00:39:21,760
where this test would have an impact on

1080
00:39:25,190 --> 00:39:22,480
the

1081
00:39:27,109 --> 00:39:25,200
or or rendezvous

1082
00:39:29,270 --> 00:39:27,119
test going forward yeah

1083
00:39:31,030 --> 00:39:29,280
the the it's this is a kind of a

1084
00:39:33,510 --> 00:39:31,040
one-account one-of-a-kind box that flew

1085
00:39:35,670 --> 00:39:33,520
on this n a uh the old or the 48 p

1086
00:39:38,630 --> 00:39:35,680
progress has the the existing core

1087
00:39:40,630 --> 00:39:38,640
systems that uh tried and true for them

1088
00:39:41,829 --> 00:39:40,640

and then since it was mentioned um

1089
00:39:44,069 --> 00:39:41,839
kristy you could talk a little bit about

1090
00:39:46,790 --> 00:39:44,079
the orbital dynamics what makes this

1091
00:39:49,190 --> 00:39:46,800
upcoming four-orbit rendezvous

1092
00:39:52,069 --> 00:39:49,200
what makes this possible now

1093
00:39:53,829 --> 00:39:52,079
and why is it just being introduced now

1094
00:39:56,470 --> 00:39:53,839
and does this have potential to be

1095
00:39:58,790 --> 00:39:56,480
applied to american vehicles

1096
00:40:00,069 --> 00:39:58,800
as we move into commercial leasing

1097
00:40:01,750 --> 00:40:00,079
sure robert i'll be glad to give you

1098
00:40:03,430 --> 00:40:01,760
some of the background um as dan

1099
00:40:05,109 --> 00:40:03,440
mentioned before the benefit obviously

1100
00:40:07,109 --> 00:40:05,119
is uh the quicker rendezvous that you

1101
00:40:09,349 --> 00:40:07,119
have the the less consumables you would

1102
00:40:10,870 --> 00:40:09,359
need for the first first day and

1103
00:40:13,510 --> 00:40:10,880
the better crew comfort on a small

1104
00:40:15,670 --> 00:40:13,520
capsule so as we move from shuttle with

1105
00:40:18,710 --> 00:40:15,680
a big volume to smaller smaller

1106
00:40:20,069 --> 00:40:18,720
commercial vehicles capsules

1107
00:40:21,990 --> 00:40:20,079
we'll have the same issue as the

1108
00:40:23,270 --> 00:40:22,000
russians where we'll want to minimize

1109
00:40:25,670 --> 00:40:23,280
the amount of time that the crew spends

1110
00:40:27,030 --> 00:40:25,680
in a small volume minimize the amount of

1111
00:40:29,030 --> 00:40:27,040
food and other supplies that they would

1112
00:40:30,470 --> 00:40:29,040
need for instead of doing a flight day

1113
00:40:32,870 --> 00:40:30,480

three rendezvous if they can do a flight

1114
00:40:34,710 --> 00:40:32,880
day one rendezvous and this is this is

1115
00:40:36,470 --> 00:40:34,720
actually old technology our first

1116
00:40:38,470 --> 00:40:36,480
ground-up rendezvous on the gemini

1117
00:40:39,910 --> 00:40:38,480
program was a flight day 1 rendezvous

1118
00:40:42,550 --> 00:40:39,920
and the russians have done this before

1119
00:40:45,030 --> 00:40:42,560
so it's it's sort of back to the future

1120
00:40:47,670 --> 00:40:45,040
now it does impose

1121
00:40:50,829 --> 00:40:47,680
more constraints on the geometry the

1122
00:40:52,550 --> 00:40:50,839
orbital mechanics of the launch

1123
00:40:54,630 --> 00:40:52,560
because uh

1124
00:40:56,390 --> 00:40:54,640
you have less time to catch up to the

1125
00:40:57,990 --> 00:40:56,400
space station you've got to basically

1126
00:40:59,349 --> 00:40:58,000
launch and be in the right spot and the

1127
00:41:01,349 --> 00:40:59,359
space station has to be in the right

1128
00:41:04,470 --> 00:41:01,359
spot we refer to that as the phase

1129
00:41:06,630 --> 00:41:04,480
window and so there's a very

1130
00:41:08,710 --> 00:41:06,640
strict limit on that phase window for a

1131
00:41:11,190 --> 00:41:08,720
flight day one rendezvous and those

1132
00:41:12,870 --> 00:41:11,200
conditions will exist uh this this

1133
00:41:17,829 --> 00:41:12,880
coming week when when the russians

1134
00:41:21,510 --> 00:41:19,910
the conditions repeat themselves every

1135
00:41:23,990 --> 00:41:21,520
three days with the current altitude of

1136
00:41:25,430 --> 00:41:24,000
the space station so um again that's the

1137
00:41:27,430 --> 00:41:25,440
kind of thing that the trajectory

1138
00:41:28,950 --> 00:41:27,440

specialists in houston and moscow have

1139
00:41:30,790 --> 00:41:28,960
to closely monitor and make sure that

1140
00:41:32,150 --> 00:41:30,800
they set up the right the right initial

1141
00:41:34,150 --> 00:41:32,160
conditions to support this kind of

1142
00:41:36,710 --> 00:41:34,160
rendezvous and that sort of explains why

1143
00:41:38,309 --> 00:41:36,720
we haven't done this a whole lot uh in

1144
00:41:40,950 --> 00:41:38,319
the earlier phase of

1145
00:41:42,230 --> 00:41:40,960
of space station because it does require

1146
00:41:46,829 --> 00:41:42,240
a bit of overhead in terms of the

1147
00:41:49,910 --> 00:41:47,910
questions uh

1148
00:41:51,670 --> 00:41:49,920
i don't think we have any questions at

1149
00:41:53,109 --> 00:41:51,680
other centers but we have two reporters

1150
00:41:54,390 --> 00:41:53,119
on the phone bridge and i believe we

1151
00:41:56,950 --> 00:41:54,400
start off with marcia dunn of the

1152
00:41:58,870 --> 00:41:56,960
associated press marcie out there yes i

1153
00:42:01,910 --> 00:41:58,880
am can you hear me sure ken

1154
00:42:03,510 --> 00:42:01,920
yes um for dan or chris

1155
00:42:05,510 --> 00:42:03,520
i'm wondering um

1156
00:42:07,109 --> 00:42:05,520
looking ahead to the next best spacex

1157
00:42:07,990 --> 00:42:07,119
launch what lessons were learned from

1158
00:42:12,870 --> 00:42:08,000
the

1159
00:42:13,670 --> 00:42:12,880
any changes that are going to be made or

1160
00:42:16,550 --> 00:42:13,680
any

1161
00:42:18,390 --> 00:42:16,560
improvements or and and also along those

1162
00:42:21,630 --> 00:42:18,400
lines the payloads that you will have on

1163
00:42:23,750 --> 00:42:21,640

board um will there be any one-of-a-kind

1164
00:42:25,349 --> 00:42:23,760
irreplaceables or

1165
00:42:26,950 --> 00:42:25,359
um or not

1166
00:42:29,109 --> 00:42:26,960
okay i'll let julie be thinking about

1167
00:42:31,670 --> 00:42:29,119
the the payload question um

1168
00:42:32,870 --> 00:42:31,680
as far as uh you know major lessons

1169
00:42:34,309 --> 00:42:32,880
learned uh

1170
00:42:36,550 --> 00:42:34,319
you know they did have

1171
00:42:37,910 --> 00:42:36,560
some um some issues with the lidar and

1172
00:42:39,510 --> 00:42:37,920
the thermal imagers and i know they've

1173
00:42:42,150 --> 00:42:39,520
been working through those

1174
00:42:44,550 --> 00:42:42,160
major modifications i i don't follow it

1175
00:42:47,270 --> 00:42:44,560
as closely as a lot of others but

1176
00:42:49,190 --> 00:42:47,280
i i think just primarily in the areas of

1177
00:42:52,150 --> 00:42:49,200
you know a few software upgrades and

1178
00:42:53,829 --> 00:42:52,160
improvements and so as far as

1179
00:42:56,230 --> 00:42:53,839
you know changing out major components

1180
00:42:58,790 --> 00:42:56,240
on the vehicle or based on demo from

1181
00:42:59,750 --> 00:42:58,800
this i haven't heard of anything and so

1182
00:43:01,349 --> 00:42:59,760
you know and

1183
00:43:03,670 --> 00:43:01,359
if you look back at the demo performance

1184
00:43:04,710 --> 00:43:03,680
it was it was outstanding and so uh

1185
00:43:06,069 --> 00:43:04,720
maybe not

1186
00:43:08,150 --> 00:43:06,079
don't change a good thing kind of thing

1187
00:43:09,990 --> 00:43:08,160
so like i said i do know that they are

1188
00:43:12,150 --> 00:43:10,000

making some software upgrades probably

1189
00:43:13,430 --> 00:43:12,160
try to improve some performance margins

1190
00:43:14,950 --> 00:43:13,440
things like that

1191
00:43:16,870 --> 00:43:14,960
but overall

1192
00:43:17,990 --> 00:43:16,880
no major changes i'm aware of julian

1193
00:43:21,589 --> 00:43:18,000
payloads

1194
00:43:23,589 --> 00:43:21,599
the next spacex flight as a nominal

1195
00:43:25,270 --> 00:43:23,599
flight there are going to be a number of

1196
00:43:27,030 --> 00:43:25,280
unique things going up and unique things

1197
00:43:29,190 --> 00:43:27,040
going down but people sometimes

1198
00:43:30,950 --> 00:43:29,200
misunderstand that for example many

1199
00:43:33,030 --> 00:43:30,960
biological samples that are in our

1200
00:43:34,550 --> 00:43:33,040
freezers on iss they're actually

1201
00:43:36,790 --> 00:43:34,560
degrading over time even though they're

1202
00:43:38,309 --> 00:43:36,800
in the freezer so they're absolutely

1203
00:43:39,589 --> 00:43:38,319
priceless samples and if we don't bring

1204
00:43:41,670 --> 00:43:39,599
them home they'll become worthless on

1205
00:43:43,349 --> 00:43:41,680
iss and spacex for us is a really

1206
00:43:45,270 --> 00:43:43,359
important capability for bringing home

1207
00:43:47,030 --> 00:43:45,280
those kinds of samples that's especially

1208
00:43:48,870 --> 00:43:47,040
important for our national lab users in

1209
00:43:50,470 --> 00:43:48,880
biology and biotechnology where that

1210
00:43:52,390 --> 00:43:50,480
where a lot of that research is located

1211
00:43:54,950 --> 00:43:52,400
so we're really excited about the flight

1212
00:43:56,470 --> 00:43:54,960
we're happy to see the results so far

1213
00:43:58,230 --> 00:43:56,480

and we're getting all the kinks worked

1214
00:43:59,510 --> 00:43:58,240
out and how to handle those sensitive

1215
00:44:02,630 --> 00:43:59,520
samples

1216
00:44:04,550 --> 00:44:02,640
yeah yes um yes for julie speaking of

1217
00:44:05,589 --> 00:44:04,560
payloads weren't there some issues with

1218
00:44:07,109 --> 00:44:05,599
some of the

1219
00:44:08,630 --> 00:44:07,119
student experiments on board they didn't

1220
00:44:11,190 --> 00:44:08,640
get activated or something could you

1221
00:44:12,790 --> 00:44:11,200
comment on that and are you seeing a lot

1222
00:44:15,349 --> 00:44:12,800
more um

1223
00:44:17,349 --> 00:44:15,359
uh interested parties uh who want to

1224
00:44:18,870 --> 00:44:17,359
send things up to the space station for

1225
00:44:20,950 --> 00:44:18,880
research now that they would have a way

1226
00:44:22,790 --> 00:44:20,960
of getting them back

1227
00:44:24,710 --> 00:44:22,800
uh yeah to address your first question

1228
00:44:25,829 --> 00:44:24,720
um there was a set of students student

1229
00:44:28,550 --> 00:44:25,839
experiments that were essentially

1230
00:44:29,990 --> 00:44:28,560
activated like a glow stick is where you

1231
00:44:32,470 --> 00:44:30,000
bend the stick and you hear a crack

1232
00:44:34,309 --> 00:44:32,480
inside um unfortunately when the crew

1233
00:44:36,069 --> 00:44:34,319
was given the procedures

1234
00:44:37,750 --> 00:44:36,079
it was left out that they should listen

1235
00:44:39,589 --> 00:44:37,760
for that crack so they bent them the

1236
00:44:40,950 --> 00:44:39,599
amount that was shown in the video and

1237
00:44:43,430 --> 00:44:40,960
they didn't know that they needed to

1238
00:44:44,630 --> 00:44:43,440

wait for a crack on that uh so that was

1239
00:44:46,309 --> 00:44:44,640
one of those things that sometimes

1240
00:44:47,670 --> 00:44:46,319
happens with a brand new experiment

1241
00:44:48,710 --> 00:44:47,680
there was a little bit of mispress out

1242
00:44:50,550 --> 00:44:48,720
there because the students were

1243
00:44:52,870 --> 00:44:50,560
disappointed and at first we didn't

1244
00:44:54,390 --> 00:44:52,880
understand exactly what had happened

1245
00:44:56,470 --> 00:44:54,400
and we'll just fly it again the beauty

1246
00:44:57,750 --> 00:44:56,480
of the space station compared to the

1247
00:44:59,750 --> 00:44:57,760
shuttle is that when something goes

1248
00:45:01,270 --> 00:44:59,760
wrong you just do it again just like any

1249
00:45:02,950 --> 00:45:01,280
other laboratory and things go wrong in

1250
00:45:04,710 --> 00:45:02,960
the lab all the time so it's really not

1251
00:45:06,790 --> 00:45:04,720
a big deal and they'll just have to wait

1252
00:45:07,990 --> 00:45:06,800
a few extra months

1253
00:45:09,990 --> 00:45:08,000
and

1254
00:45:12,710 --> 00:45:10,000
in ancestor answer to your other

1255
00:45:14,630 --> 00:45:12,720
question you know we just had the um

1256
00:45:17,190 --> 00:45:14,640
a big iss research and development

1257
00:45:19,829 --> 00:45:17,200
conference in denver at the end of june

1258
00:45:21,910 --> 00:45:19,839
and it was amazing to see the number of

1259
00:45:23,750 --> 00:45:21,920
new users coming forward

1260
00:45:25,670 --> 00:45:23,760
cases has their first announcement of

1261
00:45:27,670 --> 00:45:25,680
opportunity out on the street and a

1262
00:45:30,309 --> 00:45:27,680
large number of different types of users

1263
00:45:32,790 --> 00:45:30,319

that are not traditional users of iss

1264
00:45:35,349 --> 00:45:32,800
are expressing interest in using iss as

1265
00:45:37,589 --> 00:45:35,359
a national laboratory so we're already

1266
00:45:39,190 --> 00:45:37,599
working hard on the program side to try

1267
00:45:41,270 --> 00:45:39,200
and plan ahead and make sure we get

1268
00:45:43,990 --> 00:45:41,280
ahead of the capacity demands because

1269
00:45:46,069 --> 00:45:44,000
we're seeing a lot of new work coming in

1270
00:45:48,630 --> 00:45:46,079
and if i might ask a quick spacewalk

1271
00:45:50,550 --> 00:45:48,640
question um for the next two spacewalks

1272
00:45:51,589 --> 00:45:50,560
who who are going to be performing those

1273
00:45:53,990 --> 00:45:51,599
on board

1274
00:45:55,589 --> 00:45:54,000
and i'm i wasn't quite clear on what the

1275
00:46:00,790 --> 00:45:55,599
u.s

1276
00:46:02,550 --> 00:46:00,800
what's going to be done can you handle

1277
00:46:05,030 --> 00:46:02,560
it i can handle the tasks i can't i'm

1278
00:46:07,510 --> 00:46:05,040
not quite sure let's see for the uh

1279
00:46:11,750 --> 00:46:07,520
yeah i'm not sure which russian crew

1280
00:46:16,870 --> 00:46:14,230
okay thank you rob and uh for the u.s

1281
00:46:18,950 --> 00:46:16,880
eva it will be sunny and aki

1282
00:46:22,630 --> 00:46:18,960
let's see marcia in the task all right

1283
00:46:25,510 --> 00:46:22,640
so uh the mbsu uh one r r uh we're going

1284
00:46:27,270 --> 00:46:25,520
to perform that uh you know again

1285
00:46:28,790 --> 00:46:27,280
the box is performing as far as

1286
00:46:31,270 --> 00:46:28,800
distributing power across the the

1287
00:46:32,710 --> 00:46:31,280
station loads uh outside on the truss

1288
00:46:34,710 --> 00:46:32,720

but we've lost kind of command and

1289
00:46:35,910 --> 00:46:34,720
control insight into the box so it's

1290
00:46:37,750 --> 00:46:35,920
kind of like you know the circuit

1291
00:46:39,589 --> 00:46:37,760
breakers have stayed closed

1292
00:46:41,510 --> 00:46:39,599
um but we haven't

1293
00:46:43,109 --> 00:46:41,520
basically lost any inability to

1294
00:46:45,750 --> 00:46:43,119
understand

1295
00:46:47,270 --> 00:46:45,760
if any changes are going on and so

1296
00:46:49,270 --> 00:46:47,280
you know if we had a hiccup upstream of

1297
00:46:51,430 --> 00:46:49,280
that that would trip the box off for

1298
00:46:53,510 --> 00:46:51,440
whatever reason we would not have the

1299
00:46:55,750 --> 00:46:53,520
ability to command that box on and so

1300
00:46:56,870 --> 00:46:55,760
that's kind of our vulnerability there

1301
00:46:59,109 --> 00:46:56,880
so we're going to go

1302
00:47:01,750 --> 00:46:59,119
get after that task it's i think a

1303
00:47:04,309 --> 00:47:01,760
couple hours of part of the eba

1304
00:47:06,230 --> 00:47:04,319
we'll also be laying in some mlm power

1305
00:47:08,829 --> 00:47:06,240
cables for when the mlm shows up in

1306
00:47:09,829 --> 00:47:08,839
december of next year

1307
00:47:11,829 --> 00:47:09,839
and uh

1308
00:47:14,790 --> 00:47:11,839
we're also going to be putting a cover

1309
00:47:16,790 --> 00:47:14,800
on pma2 forward which is where the

1310
00:47:19,270 --> 00:47:16,800
orbiter berth

1311
00:47:21,670 --> 00:47:19,280
are docked we're going to protect that

1312
00:47:23,990 --> 00:47:21,680
that docking ring

1313
00:47:26,150 --> 00:47:24,000

to support our future commercial crew

1314
00:47:28,470 --> 00:47:26,160
vehicles that'll be coming up and so

1315
00:47:31,109 --> 00:47:28,480
just uh again a cover to to protect the

1316
00:47:32,470 --> 00:47:31,119
seals and in the infrastructure there

1317
00:47:34,390 --> 00:47:32,480
thank you and if you could repeat the

1318
00:47:36,309 --> 00:47:34,400
two cosmonauts who are going to be doing

1319
00:47:38,069 --> 00:47:36,319
the space walk i i didn't hear you rob

1320
00:47:39,910 --> 00:47:38,079
and and will this be the last of the

1321
00:47:42,870 --> 00:47:39,920
debris shields to be put on the russian

1322
00:47:45,270 --> 00:47:42,880
side or are there more to come

1323
00:47:47,829 --> 00:47:45,280
yeah the the two cosmonauts uh for the

1324
00:47:50,470 --> 00:47:47,839
august 20th russian spacewalk are

1325
00:47:52,549 --> 00:47:50,480
gennady padalka and yuri malenchenko

1326
00:47:54,630 --> 00:47:52,559
and i'll let dan talk and marcia my

1327
00:47:56,710 --> 00:47:54,640
understanding these are the last set of

1328
00:47:57,910 --> 00:47:56,720
debris panels for the sm

1329
00:47:59,430 --> 00:47:57,920
thank you very much

1330
00:48:02,069 --> 00:47:59,440
and we're going to have a comprehensive

1331
00:48:03,670 --> 00:48:02,079
spacewalk preview briefing uh here on

1332
00:48:05,990 --> 00:48:03,680
august 14th

1333
00:48:08,549 --> 00:48:06,000
at 1 pm central time to preview both the

1334
00:48:10,069 --> 00:48:08,559
russian and the u.s evas

1335
00:48:12,950 --> 00:48:10,079
i think next up on the phone bridge

1336
00:48:15,510 --> 00:48:12,960
denise ciao of space.com

1337
00:48:17,190 --> 00:48:15,520
hi thanks um actually just a couple of

1338
00:48:19,430 --> 00:48:17,200

clarifications

1339
00:48:23,670 --> 00:48:19,440
if the cygnus does launch in december

1340
00:48:25,430 --> 00:48:23,680
does it um also dock to the harmony node

1341
00:48:27,670 --> 00:48:25,440
yes that's correct it will dock to the

1342
00:48:29,589 --> 00:48:27,680
uh the same port there on harmony uh the

1343
00:48:30,309 --> 00:48:29,599
node two module the earth facing port

1344
00:48:37,829 --> 00:48:30,319
that

1345
00:48:39,270 --> 00:48:37,839
okay great and also um with the pace of

1346
00:48:40,870 --> 00:48:39,280
the visiting vehicle the schedule that

1347
00:48:42,790 --> 00:48:40,880
you just outlined

1348
00:48:43,670 --> 00:48:42,800
once the commercial vehicles both of

1349
00:48:45,990 --> 00:48:43,680
them

1350
00:48:48,390 --> 00:48:46,000
the dragon and the cygnus come online

1351
00:48:50,309 --> 00:48:48,400
are you expecting uh that schedule to

1352
00:48:51,750 --> 00:48:50,319
increase significantly or because there

1353
00:48:55,910 --> 00:48:51,760
are more vehicles

1354
00:48:59,270 --> 00:48:57,430
i was gonna say naturally you know we

1355
00:49:01,829 --> 00:48:59,280
work all the all the visiting vehicles

1356
00:49:04,390 --> 00:49:01,839
in with the hdvs the atvs progress and

1357
00:49:06,470 --> 00:49:04,400
uh you know we we purchase a certain

1358
00:49:08,309 --> 00:49:06,480
amount of up mass we try to lay in these

1359
00:49:10,230 --> 00:49:08,319
vehicles uh

1360
00:49:12,790 --> 00:49:10,240
honestly when when they're ready as well

1361
00:49:14,710 --> 00:49:12,800
as when we have a need for them and so

1362
00:49:16,630 --> 00:49:14,720
um and when i say need form a lot of

1363
00:49:18,309 --> 00:49:16,640

that in the future will be driven by

1364
00:49:20,630 --> 00:49:18,319
some of the research

1365
00:49:21,990 --> 00:49:20,640
that's critical to get up and back and

1366
00:49:23,670 --> 00:49:22,000
so

1367
00:49:25,589 --> 00:49:23,680
they'll be coming major players into

1368
00:49:27,750 --> 00:49:25,599
when these vehicles launch in the future

1369
00:49:30,230 --> 00:49:27,760
but typically evenly spaced out so we

1370
00:49:31,030 --> 00:49:30,240
have a good resupply and even if we had

1371
00:49:57,190 --> 00:49:31,040
a

1372
00:49:59,510 --> 00:49:57,200
with the 48 er i'm sorry 47

1373
00:50:01,190 --> 00:49:59,520
progresses is activated for the

1374
00:50:03,750 --> 00:50:01,200
self-test for the

1375
00:50:05,510 --> 00:50:03,760
next stocking attempt

1376
00:50:07,270 --> 00:50:05,520
is it

1377
00:50:09,270 --> 00:50:07,280
behind space state i'm just wondering

1378
00:50:10,309 --> 00:50:09,280
what the relative position

1379
00:50:14,710 --> 00:50:10,319
is

1380
00:50:18,150 --> 00:50:16,390
can you answer that i can i can tell you

1381
00:50:20,069 --> 00:50:18,160
they're on their i'll put this way they

1382
00:50:22,309 --> 00:50:20,079
are going to be following their normal

1383
00:50:23,750 --> 00:50:22,319
flight plan of how they bring in

1384
00:50:26,390 --> 00:50:23,760
in the progress

1385
00:50:29,430 --> 00:50:26,400
yeah and the 47p vehicle is currently

1386
00:50:31,349 --> 00:50:29,440
located in front of station so uh they

1387
00:50:33,270 --> 00:50:31,359
will be rendezvouing from in front i

1388
00:50:36,790 --> 00:50:33,280

think they're about 400 kilometers out

1389
00:50:38,630 --> 00:50:36,800
in front making way for the japanese htv

1390
00:50:40,870 --> 00:50:38,640
to come in and rendezvous from behind a

1391
00:50:42,309 --> 00:50:40,880
normal type rendezvous approach and then

1392
00:50:44,549 --> 00:50:42,319
the progress vehicle will be approaching

1393
00:50:46,470 --> 00:50:44,559
from in front and above the station it

1394
00:50:49,190 --> 00:50:46,480
will transition to behind the station

1395
00:50:51,030 --> 00:50:49,200
for the rendezvous but i'm not certain

1396
00:50:52,470 --> 00:50:51,040
uh where it will be relative to the

1397
00:50:54,630 --> 00:50:52,480
station when they activate the core

1398
00:50:55,589 --> 00:50:54,640
system

1399
00:50:58,309 --> 00:50:55,599
robert

1400
00:51:01,109 --> 00:50:58,319
uh virtually um you mentioned 198

1401
00:51:03,430 --> 00:51:01,119
experiments or investigations going on

1402
00:51:04,549 --> 00:51:03,440
is that full capacity for a space

1403
00:51:07,670 --> 00:51:04,559
station or

1404
00:51:09,829 --> 00:51:07,680
can you give some sense of

1405
00:51:11,829 --> 00:51:09,839
percentage or

1406
00:51:14,630 --> 00:51:11,839
are they are you half full do you have a

1407
00:51:16,309 --> 00:51:14,640
waiting list of science science when you

1408
00:51:18,069 --> 00:51:16,319
go up or

1409
00:51:20,630 --> 00:51:18,079
are you soliciting

1410
00:51:22,150 --> 00:51:20,640
right so you can measure the capacity of

1411
00:51:24,470 --> 00:51:22,160
the laboratory in a couple of different

1412
00:51:26,309 --> 00:51:24,480
ways basically our crew time is full you

1413
00:51:28,309 --> 00:51:26,319

heard dan mentioned that for the u.s

1414
00:51:29,910 --> 00:51:28,319
operating segment that 35 hours a week

1415
00:51:32,069 --> 00:51:29,920
for our three out of the six crew

1416
00:51:34,150 --> 00:51:32,079
members is our full capacity and that's

1417
00:51:36,230 --> 00:51:34,160
totally booked so experiments that are

1418
00:51:39,910 --> 00:51:36,240
crew time intensive there's a there is

1419
00:51:41,349 --> 00:51:39,920
starting to be a slight weight now we we

1420
00:51:42,950 --> 00:51:41,359
during assembly for example we had

1421
00:51:44,309 --> 00:51:42,960
weights for up mass where experiments

1422
00:51:46,549 --> 00:51:44,319
waited on the ground that's completely

1423
00:51:47,510 --> 00:51:46,559
gone so our up mass is not limiting at

1424
00:51:49,589 --> 00:51:47,520
all

1425
00:51:51,990 --> 00:51:49,599
we can also look at our capacity in

1426
00:51:54,630 --> 00:51:52,000
terms of the on orbit real estate you

1427
00:51:56,309 --> 00:51:54,640
know is there a place to put your

1428
00:51:58,150 --> 00:51:56,319
facility or the thing the hardware that

1429
00:52:00,230 --> 00:51:58,160
you need to do the experiment and when

1430
00:52:03,670 --> 00:52:00,240
we measure the capacity that way we're

1431
00:52:05,270 --> 00:52:03,680
at about 73 capacity so there is some

1432
00:52:07,670 --> 00:52:05,280
room and that's really important to

1433
00:52:09,430 --> 00:52:07,680
ensure the success of iss as a national

1434
00:52:11,349 --> 00:52:09,440
laboratory is to have some space for new

1435
00:52:15,109 --> 00:52:11,359
experiments to come in with all of the

1436
00:52:19,430 --> 00:52:16,950
okay i think that wraps up all of the

1437
00:52:21,430 --> 00:52:19,440
questions a couple of programming notes

1438
00:52:22,710 --> 00:52:21,440

before we close in this busy period for

1439
00:52:25,030 --> 00:52:22,720
the station

1440
00:52:26,710 --> 00:52:25,040
tomorrow morning we'll provide live

1441
00:52:28,950 --> 00:52:26,720
coverage and two broadcasts of the

1442
00:52:31,589 --> 00:52:28,960
grapple and birthing of the japanese htv

1443
00:52:34,549 --> 00:52:31,599
cargo craft our grapple coverage on nasa

1444
00:52:37,349 --> 00:52:34,559
tv will begin at 6 a.m central time

1445
00:52:39,109 --> 00:52:37,359
followed by birthing coverage at 9 30

1446
00:52:41,109 --> 00:52:39,119
a.m central time

1447
00:52:43,190 --> 00:52:41,119
on saturday night we'll return to the

1448
00:52:45,430 --> 00:52:43,200
airwaves on nasa tv for coverage of the

1449
00:52:47,990 --> 00:52:45,440
next docking attempt for the progress 47

1450
00:52:51,190 --> 00:52:48,000
cargo craft coverage will begin actually

1451
00:52:54,230 --> 00:52:51,200
in the late afternoon saturday at 4 p.m

1452
00:52:56,710 --> 00:52:54,240
central time 5 pm eastern time assuming

1453
00:52:58,630 --> 00:52:56,720
progress 47 docks to the station our

1454
00:53:00,630 --> 00:52:58,640
coverage of its final undocking will

1455
00:53:02,710 --> 00:53:00,640
take place on monday the exact time of

1456
00:53:05,270 --> 00:53:02,720
that final undocking is currently being

1457
00:53:06,470 --> 00:53:05,280
discussed by the program and russian

1458
00:53:08,870 --> 00:53:06,480
managers

1459
00:53:10,230 --> 00:53:08,880
and finally next wednesday august 1st

1460
00:53:12,549 --> 00:53:10,240
we'll provide live coverage of the

1461
00:53:15,430 --> 00:53:12,559
launch and docking of the iss progress

1462
00:53:18,630 --> 00:53:15,440
48 cargo craft launch coverage beginning

1463
00:53:21,910 --> 00:53:18,640

at 2 15 pm central time and docking

1464
00:53:24,790 --> 00:53:21,920
coverage that same day beginning at 7 45

1465
00:53:26,470 --> 00:53:24,800
pm central time on wednesday evening so

1466
00:53:28,710 --> 00:53:26,480
it's a busy period of the international

1467
00:53:31,829 --> 00:53:28,720
space station you can follow all of it

1468
00:53:34,950 --> 00:53:31,839
with us here on nasa tv and on the web

1469
00:53:37,829 --> 00:53:34,960
at www.nasa.gov

1470
00:53:39,349 --> 00:53:37,839
next up the expedition 3334 crew news

1471
00:53:42,630 --> 00:53:39,359
conference with ford novitskiy and

1472
00:53:43,990 --> 00:53:42,640
tarelkin at 1pm central time until then