
NASA

1
00:00:11,830 --> 00:00:10,070
good morning thank you for joining us

2
00:00:15,190 --> 00:00:11,840
here at nasa kennedy space center's

3
00:00:16,230 --> 00:00:15,200
launch pad 39a the sts-130 crew is here

4
00:00:17,670 --> 00:00:16,240
for their terminal countdown

5
00:00:19,910 --> 00:00:17,680
demonstration test and would like to

6
00:00:21,590 --> 00:00:19,920
answer a few questions it's my pleasure

7
00:00:25,750 --> 00:00:21,600
to introduce the commander of space

8
00:00:26,950 --> 00:00:25,760
shuttle endeavor commander george zamka

9
00:00:28,870 --> 00:00:26,960
thanks andrea

10
00:00:30,470 --> 00:00:28,880
boy good morning great to see you all

11
00:00:31,990 --> 00:00:30,480
another great morning here at the

12
00:00:33,510 --> 00:00:32,000
kennedy space center we've had a great

13
00:00:36,150 --> 00:00:33,520

trip so far

14
00:00:37,590 --> 00:00:36,160
today as you can see we're here

15
00:00:39,750 --> 00:00:37,600
at the

16
00:00:41,990 --> 00:00:39,760
launch pad and we're going to do some

17
00:00:43,510 --> 00:00:42,000
emergency drill training today just so

18
00:00:44,630 --> 00:00:43,520
we don't have to worry about things on

19
00:00:46,549 --> 00:00:44,640
launch day

20
00:00:49,910 --> 00:00:46,559
and we're ready to take any questions

21
00:00:54,069 --> 00:00:51,590
hi good morning i'm james dean from

22
00:00:56,389 --> 00:00:54,079
florida today

23
00:00:57,990 --> 00:00:56,399
good morning you guys are are kicking

24
00:01:00,790 --> 00:00:58,000
off what obviously could be a historic

25
00:01:03,670 --> 00:01:00,800
year for the program um first of the

26
00:01:05,590 --> 00:01:03,680
last five flights if uh things fly out

27
00:01:07,670 --> 00:01:05,600
on time this year and finishing station

28
00:01:09,750 --> 00:01:07,680
assembly so i'm just wondering how much

29
00:01:11,270 --> 00:01:09,760
for colonel zamka or whomever would like

30
00:01:14,550 --> 00:01:11,280
to comment how much is that on your mind

31
00:01:16,149 --> 00:01:14,560
as you prepare for your final flight and

32
00:01:17,990 --> 00:01:16,159
um one of the last

33
00:01:19,590 --> 00:01:18,000
uh major construction missions for the

34
00:01:22,149 --> 00:01:19,600
station james i think i'm going to give

35
00:01:25,350 --> 00:01:22,159
that to our senior veteran flyer steve

36
00:01:25,360 --> 00:01:29,749
thanks i think

37
00:01:34,149 --> 00:01:30,950
you know we're we're thinking about

38
00:01:35,990 --> 00:01:34,159

sts-130 every minute of every day but it

39
00:01:37,670 --> 00:01:36,000
occurs to me having worked on the space

40
00:01:38,789 --> 00:01:37,680
shuttle a really long time

41
00:01:41,030 --> 00:01:38,799
um

42
00:01:42,789 --> 00:01:41,040
that when we come back

43
00:01:44,789 --> 00:01:42,799
the reality of what this year really

44
00:01:45,910 --> 00:01:44,799
means to the space shuttle program is

45
00:01:47,270 --> 00:01:45,920
going to kind of set in and it's

46
00:01:48,950 --> 00:01:47,280
bittersweet you know we all love the

47
00:01:50,710 --> 00:01:48,960
shuttle look at that grand thing look

48
00:01:51,910 --> 00:01:50,720
what human beings can do

49
00:01:53,749 --> 00:01:51,920
and uh

50
00:01:56,069 --> 00:01:53,759
but you know what

51
00:01:58,230 --> 00:01:56,079
the history of space travel has shown

52
00:02:00,230 --> 00:01:58,240
that when one program ends the next

53
00:02:02,630 --> 00:02:00,240
program is even more exciting and more

54
00:02:04,389 --> 00:02:02,640
motivating and more compelling to go

55
00:02:05,270 --> 00:02:04,399
into the future than the one before it

56
00:02:06,230 --> 00:02:05,280
and we

57
00:02:07,429 --> 00:02:06,240
don't know exactly what's going to

58
00:02:13,190 --> 00:02:07,439
happen after the shuttle but we do

59
00:02:16,070 --> 00:02:14,550
for for kay

60
00:02:17,589 --> 00:02:16,080
you have

61
00:02:19,030 --> 00:02:17,599
strong ties to this community as you

62
00:02:21,110 --> 00:02:19,040
said when you arrived

63
00:02:22,630 --> 00:02:21,120

still considering merritt island one of

64
00:02:24,070 --> 00:02:22,640
your homes so just wondering if you

65
00:02:26,229 --> 00:02:24,080
could talk about

66
00:02:28,229 --> 00:02:26,239
the excitement of returning again as an

67
00:02:30,309 --> 00:02:28,239
astronaut preparing to fly into space

68
00:02:32,070 --> 00:02:30,319
and but also at

69
00:02:33,670 --> 00:02:32,080
a fairly difficult time as you know for

70
00:02:35,670 --> 00:02:33,680
the center in the community

71
00:02:37,509 --> 00:02:35,680
where i imagine many people that that

72
00:02:38,390 --> 00:02:37,519
you may know many of people who work

73
00:02:40,949 --> 00:02:38,400
here

74
00:02:43,110 --> 00:02:40,959
could face layoffs as the program winds

75
00:02:46,309 --> 00:02:43,120
down

76
00:02:48,309 --> 00:02:46,319
oh yeah it is great to be back it feels

77
00:02:51,430 --> 00:02:48,319
like i'm coming home i see so many

78
00:02:54,309 --> 00:02:51,440
familiar faces and i just feel so

79
00:02:55,910 --> 00:02:54,319
fortunate to have this experience to

80
00:02:58,309 --> 00:02:55,920
come from the workforce at the kennedy

81
00:03:00,630 --> 00:02:58,319
space center and knowing the people that

82
00:03:03,190 --> 00:03:00,640
work here and also just what it takes to

83
00:03:04,790 --> 00:03:03,200
process this fantastic vehicle to be

84
00:03:07,030 --> 00:03:04,800
able to put it into space and conduct

85
00:03:09,030 --> 00:03:07,040
the complicated missions that that were

86
00:03:12,710 --> 00:03:09,040
able to perform with this

87
00:03:15,750 --> 00:03:12,720
so it's just such a

88
00:03:18,149 --> 00:03:15,760

fantastic experience for me to be able

89
00:03:19,670 --> 00:03:18,159
to see the other end of it the

90
00:03:20,790 --> 00:03:19,680
portion of being able to fly this

91
00:03:21,670 --> 00:03:20,800
vehicle

92
00:03:23,910 --> 00:03:21,680
and

93
00:03:26,149 --> 00:03:23,920
yeah we know there's obviously changes

94
00:03:29,030 --> 00:03:26,159
coming and i know there are a lot of

95
00:03:31,110 --> 00:03:29,040
concerns among the workforce but these

96
00:03:33,990 --> 00:03:31,120
folks are strong and they believe in

97
00:03:35,509 --> 00:03:34,000
space and space exploration and they're

98
00:03:38,710 --> 00:03:35,519
going to be here to support whatever

99
00:03:41,270 --> 00:03:38,720
programs are are going to follow on so

100
00:03:43,110 --> 00:03:41,280
i know a lot of folks are concerned but

101
00:03:46,309 --> 00:03:43,120
i think that everything will work out

102
00:03:47,630 --> 00:03:46,319
just fine

103
00:03:49,430 --> 00:03:47,640
justin ray with

104
00:03:51,190 --> 00:03:49,440
spaceflightnow.com i guess for the

105
00:03:52,949 --> 00:03:51,200
commander what is your confidence level

106
00:03:54,949 --> 00:03:52,959
if the new ammonia hoses are going to be

107
00:03:57,350 --> 00:03:54,959
ready in time for you guys to to go

108
00:03:59,429 --> 00:03:57,360
launch on february 7th and and and to do

109
00:04:01,429 --> 00:03:59,439
a full duration flight wow great

110
00:04:08,869 --> 00:04:01,439
question uh let me hand that to our lead

111
00:04:12,149 --> 00:04:10,630
that is a great question and we've been

112
00:04:13,910 --> 00:04:12,159
kind of following these ammonia lines

113
00:04:15,910 --> 00:04:13,920

and the story associated with them for

114
00:04:17,590 --> 00:04:15,920
13 months i think

115
00:04:19,270 --> 00:04:17,600
folks who are paying close attention

116
00:04:20,870 --> 00:04:19,280
right now haven't really heard the

117
00:04:22,790 --> 00:04:20,880
entire story so we've been we've been

118
00:04:23,749 --> 00:04:22,800
watching them closely for a long time

119
00:04:25,749 --> 00:04:23,759
now

120
00:04:26,950 --> 00:04:25,759
last weekend our crew was up to

121
00:04:28,870 --> 00:04:26,960
huntsville

122
00:04:31,350 --> 00:04:28,880
at marshall actually getting a chance to

123
00:04:33,030 --> 00:04:31,360
see the first line as it was coming

124
00:04:34,950 --> 00:04:33,040
together and actually put it on a test

125
00:04:36,950 --> 00:04:34,960
rig to make sure that it was going to do

126
00:04:38,710 --> 00:04:36,960
the job that it was intended we're

127
00:04:40,950 --> 00:04:38,720
expecting this saturday to fly up and

128
00:04:42,310 --> 00:04:40,960
see all four lines in a pretty good

129
00:04:44,950 --> 00:04:42,320
configuration pretty flight

130
00:04:46,390 --> 00:04:44,960
representative i mean those lines after

131
00:04:49,030 --> 00:04:46,400
that will actually come down here to the

132
00:04:50,790 --> 00:04:49,040
case ksc space center for uh for

133
00:04:52,870 --> 00:04:50,800
processing and installation into the

134
00:04:54,710 --> 00:04:52,880
orbiter and so right now the schedule

135
00:04:57,189 --> 00:04:54,720
appears for that set of lines to be a

136
00:04:58,950 --> 00:04:57,199
couple of days ahead our original plan

137
00:05:00,710 --> 00:04:58,960
was to do our fit check and our

138
00:05:02,070 --> 00:05:00,720

opportunity with them next weekend but

139
00:05:03,830 --> 00:05:02,080
they're they're ahead now and we'll be

140
00:05:06,150 --> 00:05:03,840
able to do that this saturday which is a

141
00:05:08,390 --> 00:05:06,160
great news as you you may know the

142
00:05:11,029 --> 00:05:08,400
program's also pursuing a second set of

143
00:05:13,430 --> 00:05:11,039
lines that would allow us to

144
00:05:15,909 --> 00:05:13,440
launch at a slightly slightly delayed

145
00:05:17,830 --> 00:05:15,919
launch date with a full full capability

146
00:05:19,990 --> 00:05:17,840
for node three so the program's pursuing

147
00:05:21,350 --> 00:05:20,000
two courses but plan one that we're

148
00:05:23,270 --> 00:05:21,360
moving forward with right now is

149
00:05:24,870 --> 00:05:23,280
actually ahead of schedule like i said

150
00:05:27,189 --> 00:05:24,880
giving us that chance to do a fit check

151
00:05:29,830 --> 00:05:27,199
a week early and that's really good news

152
00:05:31,430 --> 00:05:29,840
as we move forward to flight

153
00:05:33,830 --> 00:05:31,440
the microphone can you just sort of give

154
00:05:36,710 --> 00:05:33,840
us a snapshot of each of your three evas

155
00:05:38,629 --> 00:05:36,720
and and also as part of that as any of

156
00:05:41,029 --> 00:05:38,639
your content changed given the the

157
00:05:43,430 --> 00:05:41,039
changes in the and the ammonia jumpers

158
00:05:45,270 --> 00:05:43,440
yeah those are both uh good good

159
00:05:47,029 --> 00:05:45,280
questions to ask the the first one kind

160
00:05:49,270 --> 00:05:47,039
of the official content for our flight

161
00:05:50,950 --> 00:05:49,280
has been relatively fixed that's one of

162
00:05:53,350 --> 00:05:50,960
the nice things about bringing a new

163
00:05:55,270 --> 00:05:53,360

module and a big construction flight to

164
00:05:57,189 --> 00:05:55,280
the space station if we're bringing node

165
00:05:58,950 --> 00:05:57,199
three our evas are probably going to

166
00:06:00,629 --> 00:05:58,960
entail taking care of node three and

167
00:06:03,189 --> 00:06:00,639
getting it on board the uh the space

168
00:06:05,350 --> 00:06:03,199
station so our first spacewalk will uh

169
00:06:07,749 --> 00:06:05,360
involve nick patrick and i heading out

170
00:06:09,749 --> 00:06:07,759
to the shuttle payload bay and basically

171
00:06:11,670 --> 00:06:09,759
unhooking node 3 and getting it

172
00:06:13,110 --> 00:06:11,680
configured so it'll be ready to attach

173
00:06:15,590 --> 00:06:13,120
to the space station so that's what

174
00:06:17,590 --> 00:06:15,600
we'll focus on for our the beginning of

175
00:06:19,990 --> 00:06:17,600
our first spacewalk the end of the first

176
00:06:21,909 --> 00:06:20,000
spacewalk will entail hooking up power

177
00:06:24,230 --> 00:06:21,919
to that module so that it will be able

178
00:06:25,430 --> 00:06:24,240
to you know have heaters and things

179
00:06:27,430 --> 00:06:25,440
those are the same things that we'll be

180
00:06:28,950 --> 00:06:27,440
disconnecting from the payload bay we'll

181
00:06:30,469 --> 00:06:28,960
be hooking up when it actually gets on

182
00:06:32,710 --> 00:06:30,479
board the space station for the first

183
00:06:34,469 --> 00:06:32,720
spacewalk the second spacewalk is going

184
00:06:36,550 --> 00:06:34,479
to focus on getting the cooling system

185
00:06:38,550 --> 00:06:36,560
those ammonia lines that you referred to

186
00:06:40,870 --> 00:06:38,560
in your previous question hooked up onto

187
00:06:43,350 --> 00:06:40,880
node 3 and connecting it into the the

188
00:06:44,870 --> 00:06:43,360

lab thermal control system so that we'll

189
00:06:47,189 --> 00:06:44,880
will actually have cooling and allow

190
00:06:48,710 --> 00:06:47,199
node 3 to be activated

191
00:06:52,309 --> 00:06:48,720
and come all the way up to full

192
00:06:54,070 --> 00:06:52,319
operation at the end of eva2 for eva 3

193
00:06:56,390 --> 00:06:54,080
we're going to focus on a little bit

194
00:06:58,629 --> 00:06:56,400
more outfitting on node 3 get the second

195
00:07:00,950 --> 00:06:58,639
cooling loop for redundancy squared away

196
00:07:04,629 --> 00:07:00,960
on it and nick will actually release the

197
00:07:06,390 --> 00:07:04,639
launch locks on the cupola windows so we

198
00:07:09,110 --> 00:07:06,400
we hope to have the cupola relocated

199
00:07:11,270 --> 00:07:09,120
between evas 2 and eva3 and then on eva

200
00:07:12,950 --> 00:07:11,280
3 when nick opens those launch locks be

201
00:07:15,110 --> 00:07:12,960
able to open the windows and complete

202
00:07:19,189 --> 00:07:15,120
the outfitting of all three of those

203
00:07:22,309 --> 00:07:20,390
steve wood

204
00:07:23,830 --> 00:07:22,319
online aviation magazine aviate

205
00:07:25,909 --> 00:07:23,840
magazine.com

206
00:07:28,230 --> 00:07:25,919
a question regarding the

207
00:07:29,990 --> 00:07:28,240
shuttle itself a little bit basic how

208
00:07:31,749 --> 00:07:30,000
many of you are trained to fly the

209
00:07:37,110 --> 00:07:31,759
shuttle and what sort of training did

210
00:07:41,430 --> 00:07:39,830
i think uh let me give that to terry

211
00:07:43,909 --> 00:07:41,440
it's a good question

212
00:07:45,270 --> 00:07:43,919
um well if for flying the shuttle uh

213
00:07:46,790 --> 00:07:45,280

there's several different phases of

214
00:07:49,670 --> 00:07:46,800
flight the shuttle starts out as a

215
00:07:51,430 --> 00:07:49,680
rocket and uh during the launch phase uh

216
00:07:53,749 --> 00:07:51,440
the commander colonel zamka and myself

217
00:07:55,350 --> 00:07:53,759
are both trained to fly it manually

218
00:07:57,270 --> 00:07:55,360
normally the computers fly it for the

219
00:07:58,869 --> 00:07:57,280
ascent but but we can take over and fly

220
00:08:00,390 --> 00:07:58,879
it if something went wrong

221
00:08:02,390 --> 00:08:00,400
and then there's the orbital phase when

222
00:08:03,909 --> 00:08:02,400
the shuttle turns into a spaceship

223
00:08:05,510 --> 00:08:03,919
and again

224
00:08:07,990 --> 00:08:05,520
colonel zamka and i will both be doing

225
00:08:09,110 --> 00:08:08,000
different maneuvering burns we call them

226
00:08:11,350 --> 00:08:09,120
in space

227
00:08:13,189 --> 00:08:11,360
to speed up or slow down to do a

228
00:08:14,710 --> 00:08:13,199
rendezvous with the station

229
00:08:16,150 --> 00:08:14,720
or to point the shuttle in different

230
00:08:18,230 --> 00:08:16,160
attitudes

231
00:08:19,670 --> 00:08:18,240
to keep the sun at the right angle or

232
00:08:21,990 --> 00:08:19,680
there's different needs that we have for

233
00:08:24,309 --> 00:08:22,000
different maneuvering in space so we we

234
00:08:26,469 --> 00:08:24,319
both do those and actually all the

235
00:08:27,589 --> 00:08:26,479
mission specialists on the flight

236
00:08:29,510 --> 00:08:27,599
at times will get involved in

237
00:08:31,670 --> 00:08:29,520
maneuvering the shuttle too so we're all

238
00:08:33,269 --> 00:08:31,680

familiar with that and then the third

239
00:08:35,670 --> 00:08:33,279
phase the shuttle turns into an airplane

240
00:08:38,149 --> 00:08:35,680
for landing and again the commander and

241
00:08:39,670 --> 00:08:38,159
pilot both do a lot of training for that

242
00:08:41,430 --> 00:08:39,680
the last two nights we've been

243
00:08:42,949 --> 00:08:41,440
practicing landing here at the shuttle

244
00:08:45,350 --> 00:08:42,959
landing facility

245
00:08:47,030 --> 00:08:45,360
in the shuttle training aircraft and so

246
00:08:48,949 --> 00:08:47,040
we've gotten lots and lots of practice

247
00:08:50,230 --> 00:08:48,959
dives to get ready for the landing day

248
00:08:51,990 --> 00:08:50,240
so there's kind of three different ways

249
00:08:52,710 --> 00:08:52,000
of flying and that's how that's broken

250
00:08:54,949 --> 00:08:52,720
down

251
00:08:56,630 --> 00:08:54,959
okay talking about landing

252
00:08:58,150 --> 00:08:56,640
it's a long runway in terms of a

253
00:08:59,990 --> 00:08:58,160
conventional aircraft but it's pretty

254
00:09:01,829 --> 00:09:00,000
short i guess in terms of the shuttle

255
00:09:02,949 --> 00:09:01,839
what sort of aircraft do you use for

256
00:09:05,509 --> 00:09:02,959
training

257
00:09:07,269 --> 00:09:05,519
the airplane that we have is a modified

258
00:09:09,190 --> 00:09:07,279
gulfstream too it's a about a

259
00:09:10,470 --> 00:09:09,200
medium-sized business jet

260
00:09:12,870 --> 00:09:10,480
and it has

261
00:09:14,949 --> 00:09:12,880
special thrust reversers

262
00:09:16,870 --> 00:09:14,959
on the engines that allow

263
00:09:18,310 --> 00:09:16,880

them to deploy in flight so the engines

264
00:09:20,070 --> 00:09:18,320
are actually running in reverse to

265
00:09:21,829 --> 00:09:20,080
provide a lot of drag because the

266
00:09:24,070 --> 00:09:21,839
shuttle dives at a very steep angle

267
00:09:25,509 --> 00:09:24,080
about 20 degrees as compared to the

268
00:09:27,350 --> 00:09:25,519
conventional airliner is only three

269
00:09:29,110 --> 00:09:27,360
degrees so it's a much steeper it's more

270
00:09:30,710 --> 00:09:29,120
like a dive bombing pattern in a fighter

271
00:09:31,670 --> 00:09:30,720
jet than it is a normal airplane

272
00:09:33,350 --> 00:09:31,680
approach

273
00:09:35,670 --> 00:09:33,360
and the airplane also has a computer

274
00:09:37,509 --> 00:09:35,680
controlled system that makes it fly like

275
00:09:39,990 --> 00:09:37,519
a shuttle which is a lot different than

276
00:09:41,430 --> 00:09:40,000
a normal airplane so that's the airplane

277
00:09:43,110 --> 00:09:41,440
and the training that we use and the

278
00:09:45,269 --> 00:09:43,120
runway is very long it's about three

279
00:09:47,670 --> 00:09:45,279
miles long even longer with that with

280
00:09:49,590 --> 00:09:47,680
overruns here but we do land a lot

281
00:09:51,350 --> 00:09:49,600
faster than normal airliners so it's

282
00:09:53,110 --> 00:09:51,360
nice to have that long piece of concrete

283
00:09:55,030 --> 00:09:53,120
in front of us just a quick one for

284
00:09:56,870 --> 00:09:55,040
nicholas i notice you're interested in

285
00:09:58,230 --> 00:09:56,880
flying yourself what do you fly in the

286
00:10:00,550 --> 00:09:58,240
in the uk

287
00:10:02,470 --> 00:10:00,560
i uh i learned to fly in the royal air

288
00:10:04,230 --> 00:10:02,480

force volunteer reserve at university a

289
00:10:07,509 --> 00:10:04,240
british aerospace british aerospace

290
00:10:09,750 --> 00:10:07,519
bulldog team arc one um i came back to

291
00:10:11,110 --> 00:10:09,760
the states uh to grad school and uh

292
00:10:12,230 --> 00:10:11,120
obviously i've stayed here ever since

293
00:10:14,230 --> 00:10:12,240
and uh

294
00:10:15,430 --> 00:10:14,240
before i got assigned to this flight i

295
00:10:18,150 --> 00:10:15,440
used to spend time as a flight

296
00:10:19,670 --> 00:10:18,160
instructor and i like to fly uh all

297
00:10:22,710 --> 00:10:19,680
kinds of light aircraft and helicopters

298
00:10:26,150 --> 00:10:23,949
um chris gebhardt with

299
00:10:28,150 --> 00:10:26,160
nasaspaceflight.com with uh one for

300
00:10:30,069 --> 00:10:28,160
terry i believe um could you describe

301
00:10:31,269 --> 00:10:30,079
some of the robotics operations that are

302
00:10:33,030 --> 00:10:31,279
going to be used on this mission in

303
00:10:34,790 --> 00:10:33,040
terms of getting the node and cupola

304
00:10:36,470 --> 00:10:34,800
into their correct positions sure

305
00:10:38,069 --> 00:10:36,480
there's a lot of robotics going on in

306
00:10:39,590 --> 00:10:38,079
the flight and actually everybody on the

307
00:10:40,790 --> 00:10:39,600
crew will be doing parts of them at

308
00:10:42,310 --> 00:10:40,800
times

309
00:10:44,550 --> 00:10:42,320
we use the shuttle arm mainly for

310
00:10:46,230 --> 00:10:44,560
inspection so we'll grab the the boom

311
00:10:49,030 --> 00:10:46,240
and use that to inspect the shuttle

312
00:10:51,110 --> 00:10:49,040
before we dock and after we undock the

313
00:10:52,710 --> 00:10:51,120

the main meat of the robotics once we

314
00:10:55,509 --> 00:10:52,720
once we are docked we'll be using the

315
00:10:57,509 --> 00:10:55,519
station arm the ssrms

316
00:10:59,190 --> 00:10:57,519
first of all to grab node three during

317
00:11:01,509 --> 00:10:59,200
the first spacewalk

318
00:11:03,269 --> 00:11:01,519
kay and i are doing a lot of the station

319
00:11:04,630 --> 00:11:03,279
arm work together we're going to grab

320
00:11:06,870 --> 00:11:04,640
node 3 pull it out of the shuttle

321
00:11:08,550 --> 00:11:06,880
payload bay and attach it to the

322
00:11:10,150 --> 00:11:08,560
side the left side or the port side of

323
00:11:12,949 --> 00:11:10,160
the station

324
00:11:14,949 --> 00:11:12,959
and then we're going to use the same arm

325
00:11:16,630 --> 00:11:14,959
on a different day to grab the cupola

326
00:11:18,310 --> 00:11:16,640
which is launched on the end of node

327
00:11:19,750 --> 00:11:18,320
three and it has to be launched there

328
00:11:21,509 --> 00:11:19,760
because that's the only way that it fits

329
00:11:23,190 --> 00:11:21,519
in the shuttle payload bay we're going

330
00:11:25,269 --> 00:11:23,200
to take it off the end of the node and

331
00:11:27,269 --> 00:11:25,279
then attach it to the bottom of the node

332
00:11:28,710 --> 00:11:27,279
so it'll be facing the earth and it'll

333
00:11:30,550 --> 00:11:28,720
also have a good view of most of the

334
00:11:32,150 --> 00:11:30,560
station

335
00:11:34,150 --> 00:11:32,160
and then later in the flight bob and

336
00:11:36,710 --> 00:11:34,160
nick are going to take that same arm the

337
00:11:40,310 --> 00:11:36,720
big station arm and grab what's called

338
00:11:42,389 --> 00:11:40,320

pma3 it's an uh an adapter that allows

339
00:11:44,150 --> 00:11:42,399
the shuttle to dock to the station it's

340
00:11:45,829 --> 00:11:44,160
one of our three pmas they're going to

341
00:11:47,670 --> 00:11:45,839
grab that and move it so those are the

342
00:11:48,790 --> 00:11:47,680
main station robotic operations that

343
00:11:50,790 --> 00:11:48,800
we're doing

344
00:11:51,990 --> 00:11:50,800
um and for the entire crew what sort of

345
00:11:54,310 --> 00:11:52,000
in-flight experiments are you going to

346
00:11:55,750 --> 00:11:54,320
be doing on this flight

347
00:11:59,670 --> 00:11:55,760
flight experiment said bobber nick

348
00:12:03,269 --> 00:12:01,670
uh we've got uh

349
00:12:08,470 --> 00:12:03,279
we've got the well let me give this to

350
00:12:11,910 --> 00:12:10,150
we actually have a limited number of

351
00:12:13,910 --> 00:12:11,920
payloads on this on this flight we

352
00:12:15,990 --> 00:12:13,920
actually have a cells and viruses

353
00:12:17,990 --> 00:12:16,000
experiment uh that will will launch in

354
00:12:19,590 --> 00:12:18,000
the middeck we actually won't have it

355
00:12:21,910 --> 00:12:19,600
powered so we won't be taking care of

356
00:12:24,230 --> 00:12:21,920
cells on on the way uphill we'll swap

357
00:12:25,829 --> 00:12:24,240
that apparatus out with one that's on

358
00:12:28,069 --> 00:12:25,839
board the space station nick's actually

359
00:12:29,990 --> 00:12:28,079
going to perform that swap out to

360
00:12:31,990 --> 00:12:30,000
provide them with a new

361
00:12:34,069 --> 00:12:32,000
incubator if you will to have on orbit

362
00:12:37,030 --> 00:12:34,079
on the on the space station we're also

363
00:12:38,949 --> 00:12:37,040

going to be flying a a freezer a a

364
00:12:40,470 --> 00:12:38,959
glacier is the payload name so as you

365
00:12:43,030 --> 00:12:40,480
can imagine it's probably pretty cold on

366
00:12:46,230 --> 00:12:43,040
the inside but we'll be flying that up

367
00:12:47,509 --> 00:12:46,240
with with some samples inside um in a uh

368
00:12:49,190 --> 00:12:47,519
also in a cold bag that will get

369
00:12:50,629 --> 00:12:49,200
transferred over to the space station

370
00:12:52,949 --> 00:12:50,639
then we'll bring back some frozen

371
00:12:55,509 --> 00:12:52,959
biological samples from the the station

372
00:12:57,110 --> 00:12:55,519
crew primarily medical data that's been

373
00:13:00,790 --> 00:12:57,120
collected on the on the crew members

374
00:13:03,829 --> 00:13:02,069
hi i'm sandra frederick from the

375
00:13:06,230 --> 00:13:03,839
washington times this question is for

376
00:13:07,829 --> 00:13:06,240
terry

377
00:13:09,590 --> 00:13:07,839
you you mentioned you've spent a lot of

378
00:13:11,030 --> 00:13:09,600
time in training um but you haven't

379
00:13:12,310 --> 00:13:11,040
really seen the shuttle up close what

380
00:13:13,670 --> 00:13:12,320
was your first impression of the

381
00:13:14,790 --> 00:13:13,680
endeavor and are you flying anything

382
00:13:17,110 --> 00:13:14,800
from home

383
00:13:18,470 --> 00:13:17,120
this is a beautiful vehicle we have a

384
00:13:21,269 --> 00:13:18,480
great view here

385
00:13:23,030 --> 00:13:21,279
it's just amazing to to see the space

386
00:13:25,350 --> 00:13:23,040
shuttle i think what stands out to me is

387
00:13:27,190 --> 00:13:25,360
how big it is uh when you walk up to it

388
00:13:29,190 --> 00:13:27,200

it's just such a large

389
00:13:32,310 --> 00:13:29,200
vehicle the external tank the solid

390
00:13:34,389 --> 00:13:32,320
rocket boosters it's amazing to think of

391
00:13:37,509 --> 00:13:34,399
that vehicle weighing you know almost 4

392
00:13:39,189 --> 00:13:37,519
million pounds it's just impressive

393
00:13:40,470 --> 00:13:39,199
and yes i am flying a few things from

394
00:13:42,470 --> 00:13:40,480
maryland

395
00:13:44,230 --> 00:13:42,480
one of the things is from the aberdeen

396
00:13:45,750 --> 00:13:44,240
ironbirds

397
00:13:48,550 --> 00:13:45,760
i've got something from my high school

398
00:13:49,590 --> 00:13:48,560
oakland mills high school a banner from

399
00:13:51,590 --> 00:13:49,600
them

400
00:13:53,590 --> 00:13:51,600
and uh so a few momentum mementos from

401
00:13:55,189 --> 00:13:53,600
maryland

402
00:13:57,990 --> 00:13:55,199
the next question uh question is for

403
00:14:05,189 --> 00:14:00,069
hi there you're the veteran on the on

404
00:14:08,069 --> 00:14:06,629
the three flights that you've been on

405
00:14:09,990 --> 00:14:08,079
have been all on discovery so you're

406
00:14:11,509 --> 00:14:10,000
going on endeavor for the first time uh

407
00:14:13,430 --> 00:14:11,519
is she any different than

408
00:14:14,870 --> 00:14:13,440
than discovery yeah in a way i'm a i

409
00:14:17,509 --> 00:14:14,880
guess i'm a rookie aren't i'm an

410
00:14:19,910 --> 00:14:17,519
endeavor rookie

411
00:14:21,670 --> 00:14:19,920
yeah first time flyer on endeavor um

412
00:14:23,990 --> 00:14:21,680
yeah i'm all excited to uh to fly

413
00:14:26,310 --> 00:14:24,000

another space shuttle i haven't seen

414
00:14:27,189 --> 00:14:26,320
much of her tomorrow i get to climb in

415
00:14:28,710 --> 00:14:27,199
uh

416
00:14:30,710 --> 00:14:28,720
when she's pretty much in the flight

417
00:14:32,230 --> 00:14:30,720
config and take a look around and i'm

418
00:14:34,389 --> 00:14:32,240
kind of curious myself to see if i

419
00:14:36,069 --> 00:14:34,399
notice any differences between discovery

420
00:14:37,590 --> 00:14:36,079
and endeavor but

421
00:14:40,230 --> 00:14:37,600
it's amazing that we have even more than

422
00:14:41,350 --> 00:14:40,240
one of these things isn't it

423
00:14:43,030 --> 00:14:41,360
that's all the time we have for

424
00:14:44,389 --> 00:14:43,040
questions if we could have you stand

425
00:15:17,110 --> 00:14:44,399
just for a moment for a photo