
PAO
ISS DL 1 LOS

1
00:00:09,990 --> 00:00:07,430
now the move of the permanent

2
00:00:11,749 --> 00:00:10,000
multi-purpose module from the unity

3
00:00:14,150 --> 00:00:11,759
where it is now to the tranquility

4
00:00:15,990 --> 00:00:14,160
module where it will be is the next step

5
00:00:17,910 --> 00:00:16,000
in a series of tasks that will leave the

6
00:00:20,150 --> 00:00:17,920
international space station able to

7
00:00:21,429 --> 00:00:20,160
accommodate more visiting vehicles in

8
00:00:23,029 --> 00:00:21,439
the coming years

9
00:00:25,109 --> 00:00:23,039
this morning we're going to talk about

10
00:00:27,109 --> 00:00:25,119
the thinking behind that plan with the

11
00:00:29,429 --> 00:00:27,119
station's operations integration manager

12
00:00:31,269 --> 00:00:29,439
kenny thomp good morning good morning uh

13
00:00:32,950 --> 00:00:31,279

you chaired a mission management team

14
00:00:35,110 --> 00:00:32,960
this morning is everything still go for

15
00:00:37,190 --> 00:00:35,120
the pmm move tomorrow

16
00:00:39,430 --> 00:00:37,200
everything's in uh really good shape uh

17
00:00:41,430 --> 00:00:39,440
we uh over the weekend got the arm moved

18
00:00:43,030 --> 00:00:41,440
uh to its uh location in order to

19
00:00:46,310 --> 00:00:43,040
accomplish this work so everything still

20
00:00:49,190 --> 00:00:46,320
looks very good the the canon arm 2 is

21
00:00:51,110 --> 00:00:49,200
the main mover here to to move this

22
00:00:53,750 --> 00:00:51,120
pretty big module from one to another is

23
00:00:56,470 --> 00:00:53,760
it a particularly difficult robotic

24
00:00:57,350 --> 00:00:56,480
operation to to move into that space

25
00:00:58,950 --> 00:00:57,360
well

26
00:01:01,430 --> 00:00:58,960
robotics in general is a little bit

27
00:01:03,270 --> 00:01:01,440
complicated lots of angles uh lots of

28
00:01:05,189 --> 00:01:03,280
lots of arm movements uh individual

29
00:01:07,510 --> 00:01:05,199
joint movements but uh you know it's

30
00:01:09,030 --> 00:01:07,520
something we know how to do um you know

31
00:01:12,469 --> 00:01:09,040
years ago when we were still flying

32
00:01:14,390 --> 00:01:12,479
shuttles we used to to birth the mplm's

33
00:01:15,910 --> 00:01:14,400
uh you know for several missions and so

34
00:01:17,990 --> 00:01:15,920
we know how to do that

35
00:01:19,350 --> 00:01:18,000
uh this particular uh operation is a

36
00:01:21,190 --> 00:01:19,360
little bit complicated because we have

37
00:01:23,510 --> 00:01:21,200
some pretty tight clearances but uh it's

38
00:01:26,149 --> 00:01:23,520

clearances we've we've operated when

39
00:01:27,830 --> 00:01:26,159
with them before so uh very confident

40
00:01:29,510 --> 00:01:27,840
that we can get this done successfully

41
00:01:31,510 --> 00:01:29,520
that's the thing that i noticed too

42
00:01:34,550 --> 00:01:31,520
that's in moving it into this position

43
00:01:37,030 --> 00:01:34,560
on the front side of uh tranquility

44
00:01:39,030 --> 00:01:37,040
there's there's stuff that's close to

45
00:01:40,950 --> 00:01:39,040
the back end of it that you usually

46
00:01:42,789 --> 00:01:40,960
don't have in these kind of movements

47
00:01:44,870 --> 00:01:42,799
yeah no doubt and in fact uh the

48
00:01:46,389 --> 00:01:44,880
clearances were so tight that we we had

49
00:01:48,469 --> 00:01:46,399
to go in and move some stuff on some

50
00:01:50,630 --> 00:01:48,479
previous evas just to ensure that we

51
00:01:52,789 --> 00:01:50,640
opened up up the clearances that that we

52
00:01:55,510 --> 00:01:52,799
felt like we needed in order to

53
00:01:57,510 --> 00:01:55,520
to safely accomplish the task but

54
00:01:59,910 --> 00:01:57,520
again in talking with the robotics folks

55
00:02:01,350 --> 00:01:59,920
last week at our readiness review they

56
00:02:03,990 --> 00:02:01,360
assured me that they have all the

57
00:02:06,149 --> 00:02:04,000
clearances they need and in fact extra

58
00:02:08,550 --> 00:02:06,159
margin on what they would typically

59
00:02:10,790 --> 00:02:08,560
say is a good clearance the big question

60
00:02:13,190 --> 00:02:10,800
though is is why pmm has been in that

61
00:02:14,309 --> 00:02:13,200
spot for over four years and doing its

62
00:02:16,550 --> 00:02:14,319
job fine

63
00:02:17,830 --> 00:02:16,560

why do we want to move it to this new

64
00:02:19,910 --> 00:02:17,840
location

65
00:02:21,750 --> 00:02:19,920
well as a program once we made the

66
00:02:25,030 --> 00:02:21,760
decision that we wanted to

67
00:02:27,270 --> 00:02:25,040
to have commercial crew vehicles

68
00:02:29,270 --> 00:02:27,280
we have commercial cargo vehicles

69
00:02:31,670 --> 00:02:29,280
ensuring that we have enough places for

70
00:02:33,430 --> 00:02:31,680
for birthing and docking those vehicles

71
00:02:35,750 --> 00:02:33,440
is something that became a priority here

72
00:02:36,949 --> 00:02:35,760
several years ago and so we've been

73
00:02:38,470 --> 00:02:36,959
we've been moving forward with this

74
00:02:39,990 --> 00:02:38,480
project over the last several years

75
00:02:42,309 --> 00:02:40,000
building some additional hardware to

76
00:02:44,390 --> 00:02:42,319
ensure that that we'll have two

77
00:02:45,670 --> 00:02:44,400
ports for birthing commercial crew

78
00:02:47,910 --> 00:02:45,680
vehicles

79
00:02:50,550 --> 00:02:47,920
and also have two ports where we can

80
00:02:51,910 --> 00:02:50,560
service cargo vehicles as well and so

81
00:02:52,869 --> 00:02:51,920
that's really what this has been all

82
00:02:54,869 --> 00:02:52,879
about

83
00:02:57,589 --> 00:02:54,879
can you talk us through where

84
00:02:59,190 --> 00:02:57,599
those uh new ports are they are they

85
00:03:01,750 --> 00:02:59,200
places that don't exist now or we just

86
00:03:02,949 --> 00:03:01,760
don't recognize them you bet um

87
00:03:04,390 --> 00:03:02,959
if you if you just look at the

88
00:03:07,190 --> 00:03:04,400

commercial crew

89
00:03:09,910 --> 00:03:07,200
vehicles at this point what we've got

90
00:03:11,910 --> 00:03:09,920
in place is a plan to have

91
00:03:14,550 --> 00:03:11,920
a commercial vehicle they can the crew

92
00:03:18,229 --> 00:03:14,560
vehicle that is capable of docking at

93
00:03:19,430 --> 00:03:18,239
the pma2 location that's

94
00:03:20,949 --> 00:03:19,440
correct at the very front end of the

95
00:03:23,910 --> 00:03:20,959
station and all we need to do there is

96
00:03:26,070 --> 00:03:23,920
we need to attach a docking assembly to

97
00:03:28,390 --> 00:03:26,080
that pma too and so that's what we're

98
00:03:30,229 --> 00:03:28,400
going to do when we get spacex seven up

99
00:03:31,589 --> 00:03:30,239
here in a few weeks

100
00:03:33,430 --> 00:03:31,599
it'll bring the hardware that'll allow

101
00:03:35,589 --> 00:03:33,440
us to do that and we'll do that on a on

102
00:03:37,030 --> 00:03:35,599
an eba hopefully towards the end of the

103
00:03:39,830 --> 00:03:37,040
summer and that's the thing we we here

104
00:03:42,470 --> 00:03:39,840
refer to as an ida correct the iss

105
00:03:44,070 --> 00:03:42,480
docking assembly uh that's correct and

106
00:03:46,229 --> 00:03:44,080
and then from there on it gets a little

107
00:03:48,309 --> 00:03:46,239
more creative when you go to look for

108
00:03:50,869 --> 00:03:48,319
that second commercial

109
00:03:54,070 --> 00:03:50,879
crew vehicle location what we decided to

110
00:03:55,270 --> 00:03:54,080
do was use the the node 2 zenith

111
00:03:57,030 --> 00:03:55,280
port

112
00:03:58,309 --> 00:03:57,040
but it wasn't ready for a docking

113
00:04:00,309 --> 00:03:58,319

assembly the way it's currently

114
00:04:02,470 --> 00:04:00,319
configured what we need to do is we need

115
00:04:04,070 --> 00:04:02,480
to move the pressurized mating adapter

116
00:04:06,789 --> 00:04:04,080
number three which is currently on the

117
00:04:08,550 --> 00:04:06,799
starboard side or the port side of node

118
00:04:10,710 --> 00:04:08,560
three we'll need to robotically move

119
00:04:13,270 --> 00:04:10,720
that over to the to the node two zenith

120
00:04:15,750 --> 00:04:13,280
location and at that point then we'll

121
00:04:18,710 --> 00:04:15,760
fly up another iss docking assembly and

122
00:04:20,229 --> 00:04:18,720
we will install it on that pressurized

123
00:04:23,830 --> 00:04:20,239
mating adapter number three which will

124
00:04:26,070 --> 00:04:23,840
be now on on node 2 zenith and that puts

125
00:04:29,189 --> 00:04:26,080
the places for commercial crew vehicles

126
00:04:31,670 --> 00:04:29,199
on the front and the bottom of node two

127
00:04:33,909 --> 00:04:31,680
on the top we'll have it on it'll be on

128
00:04:35,510 --> 00:04:33,919
the top of the yes on the zenith side so

129
00:04:37,270 --> 00:04:35,520
we'll have the front and then we'll have

130
00:04:39,670 --> 00:04:37,280
the top of node two that will be able to

131
00:04:42,230 --> 00:04:39,680
put commercial crew vehicles there

132
00:04:42,950 --> 00:04:42,240
um and then and then in order to ensure

133
00:04:48,469 --> 00:04:42,960
that

134
00:04:51,350 --> 00:04:48,479
vehicle ports uh we we decided we wanted

135
00:04:53,749 --> 00:04:51,360
to open up node one nader because uh our

136
00:04:57,110 --> 00:04:53,759
backup previously for the commercial

137
00:04:59,670 --> 00:04:57,120
cargo uh and htv and at

138
00:05:01,590 --> 00:04:59,680

htv was to use that node 2 zenith

139
00:05:02,390 --> 00:05:01,600
location but since we've now covered it

140
00:05:04,150 --> 00:05:02,400
up

141
00:05:06,550 --> 00:05:04,160
with a commercial

142
00:05:09,430 --> 00:05:06,560
crew vehicle location we needed another

143
00:05:11,830 --> 00:05:09,440
commercial cargo vehicle location and so

144
00:05:13,909 --> 00:05:11,840
so we elected to move the pressure

145
00:05:16,790 --> 00:05:13,919
permanent multi-purpose module the pmm

146
00:05:19,830 --> 00:05:16,800
that's currently on node 1 nader and and

147
00:05:21,749 --> 00:05:19,840
open up that location in order to have a

148
00:05:23,350 --> 00:05:21,759
backup location for commercial cargo

149
00:05:27,189 --> 00:05:23,360
vehicles and then

150
00:05:29,510 --> 00:05:27,199
still have the node two nader uh port

151
00:05:31,189 --> 00:05:29,520
that's being used for cargo vehicles now

152
00:05:33,510 --> 00:05:31,199
correct that's gonna continue to be our

153
00:05:36,070 --> 00:05:33,520
primary location uh that's the one where

154
00:05:37,830 --> 00:05:36,080
we're most experienced with our we know

155
00:05:38,790 --> 00:05:37,840
how to operate the arm at that location

156
00:05:40,629 --> 00:05:38,800
and so

157
00:05:41,590 --> 00:05:40,639
we're very comfortable with that over

158
00:05:43,189 --> 00:05:41,600
time

159
00:05:44,629 --> 00:05:43,199
we'll we'll probably get to the point

160
00:05:46,790 --> 00:05:44,639
where we're using node 1 nader in the

161
00:05:47,510 --> 00:05:46,800
same same fashion

162
00:05:52,150 --> 00:05:47,520
but

163
00:05:54,230 --> 00:05:52,160

nader available to us so pmm relocation

164
00:05:56,309 --> 00:05:54,240
is the first or actually the next step

165
00:05:59,350 --> 00:05:56,319
because this is been underway

166
00:06:01,430 --> 00:05:59,360
for some time what comes after the pm

167
00:06:03,830 --> 00:06:01,440
relocation what will we see

168
00:06:05,670 --> 00:06:03,840
sure once uh once we get the pm

169
00:06:07,270 --> 00:06:05,680
relocated that really enables us to do

170
00:06:09,830 --> 00:06:07,280
quite a bit of work on the inside of

171
00:06:11,990 --> 00:06:09,840
station to start to run some ventilation

172
00:06:14,150 --> 00:06:12,000
lines some power lines

173
00:06:16,790 --> 00:06:14,160
some data lines some cables that allow

174
00:06:18,550 --> 00:06:16,800
us to be able to talk to them to the pmm

175
00:06:20,390 --> 00:06:18,560
and its new location

176
00:06:22,230 --> 00:06:20,400
we'll also be able to do some work down

177
00:06:24,550 --> 00:06:22,240
on the node one nader to to get it

178
00:06:26,710 --> 00:06:24,560
configured to start receiving vehicles

179
00:06:28,870 --> 00:06:26,720
uh cargo vehicles at that at that

180
00:06:31,110 --> 00:06:28,880
location so we've got quite a bit to do

181
00:06:32,309 --> 00:06:31,120
on the inside uh when we get out into

182
00:06:33,909 --> 00:06:32,319
the fall you're gonna hear us start

183
00:06:35,430 --> 00:06:33,919
talking about moving moving the

184
00:06:37,350 --> 00:06:35,440
pressurized emitting adapter number

185
00:06:39,830 --> 00:06:37,360
three off of the port side of node three

186
00:06:41,110 --> 00:06:39,840
and move it over to node two zena so

187
00:06:43,830 --> 00:06:41,120
that will be

188
00:06:47,270 --> 00:06:43,840

probably the next big robotic operation

189
00:06:48,790 --> 00:06:47,280
that we'll do relative to a module

190
00:06:50,870 --> 00:06:48,800
probably towards the end of the summer

191
00:06:53,430 --> 00:06:50,880
is when we're gonna try to get the the

192
00:06:55,830 --> 00:06:53,440
docking assembly installed on pma number

193
00:06:57,589 --> 00:06:55,840
two and at that point then we'll uh we

194
00:07:00,390 --> 00:06:57,599
will have a port that's available and

195
00:07:02,150 --> 00:07:00,400
ready to to service a commercial crew

196
00:07:04,469 --> 00:07:02,160
vehicle for whenever they're ready to

197
00:07:06,629 --> 00:07:04,479
fly you bet

198
00:07:09,029 --> 00:07:06,639
long term though this is going to be

199
00:07:11,430 --> 00:07:09,039
into next year or longer before all of

200
00:07:13,430 --> 00:07:11,440
this reconfiguration is done

201
00:07:15,510 --> 00:07:13,440
well at this point you know we'd like to

202
00:07:16,710 --> 00:07:15,520
have all the modules moved by the end of

203
00:07:18,790 --> 00:07:16,720
the year

204
00:07:21,029 --> 00:07:18,800
and if we can get the docking assemblies

205
00:07:22,710 --> 00:07:21,039
on on board both of them we would like

206
00:07:23,670 --> 00:07:22,720
to have both of those installed as well

207
00:07:25,350 --> 00:07:23,680
so

208
00:07:27,990 --> 00:07:25,360
our goal is hopefully by the end of the

209
00:07:29,830 --> 00:07:28,000
year to do that but a lot of that's

210
00:07:32,230 --> 00:07:29,840
related to when we can fly flights and

211
00:07:33,350 --> 00:07:32,240
get the hardware on board and so uh

212
00:07:34,629 --> 00:07:33,360
we're uh

213
00:07:36,629 --> 00:07:34,639

that you know that's gonna be a limiting

214
00:07:38,550 --> 00:07:36,639
factor for us but certainly by the end

215
00:07:41,189 --> 00:07:38,560
of the year our goal is to at least have

216
00:07:43,430 --> 00:07:41,199
one of the one of the docking ports up

217
00:07:44,629 --> 00:07:43,440
and running as far as the commercial

218
00:07:47,029 --> 00:07:44,639
cargo

219
00:07:49,430 --> 00:07:47,039
vehicles we feel like that

220
00:07:51,430 --> 00:07:49,440
we'll have node two uh

221
00:07:53,350 --> 00:07:51,440
nader uh again we'll we'll be

222
00:07:55,350 --> 00:07:53,360
operational and ready to go node one

223
00:07:57,830 --> 00:07:55,360
nader uh we're hoping by the fault will

224
00:07:59,589 --> 00:07:57,840
be operational and and ready to accept

225
00:08:01,990 --> 00:07:59,599
vehicles at that location as well let's

226
00:08:03,990 --> 00:08:02,000
say and all this pending the arrival of

227
00:08:06,469 --> 00:08:04,000
some other hardware that's required

228
00:08:08,469 --> 00:08:06,479
you bet yeah that's uh i mean that's you

229
00:08:09,909 --> 00:08:08,479
know a lot of this hardware is still

230
00:08:11,909 --> 00:08:09,919
still going through its finish up in

231
00:08:13,830 --> 00:08:11,919
terms of its building and and needs to

232
00:08:15,749 --> 00:08:13,840
get on a vehicle and get up there but i

233
00:08:17,189 --> 00:08:15,759
think all the all the right hardware is

234
00:08:18,629 --> 00:08:17,199
slotted for the right vehicles just

235
00:08:20,869 --> 00:08:18,639
getting them off the ground very

236
00:08:23,029 --> 00:08:20,879
exciting to see some changes oh yeah

237
00:08:25,029 --> 00:08:23,039
that's great thanks very much

238
00:08:26,869 --> 00:08:25,039

international space station