
PAO

1
00:00:04,950 --> 00:00:02,629
joining me here on console is quincy

2
00:00:06,950 --> 00:00:04,960
harp who is the mission designer for the

3
00:00:08,870 --> 00:00:06,960
htv activities thanks for joining us

4
00:00:10,470 --> 00:00:08,880
quincy ah thanks for having me here so

5
00:00:12,470 --> 00:00:10,480
first of all i think this is the first

6
00:00:14,070 --> 00:00:12,480
time i've heard of a mission designer it

7
00:00:15,669 --> 00:00:14,080
sounds very glamorous can you explain to

8
00:00:17,670 --> 00:00:15,679
us just a little bit about what that job

9
00:00:19,510 --> 00:00:17,680
entails sure thing well in robotics

10
00:00:21,429 --> 00:00:19,520
we've kind of got uh two kind of

11
00:00:23,750 --> 00:00:21,439
positions we've got our lead robotics

12
00:00:25,109 --> 00:00:23,760
officer and his primary job is to

13
00:00:26,390 --> 00:00:25,119

integrate with the rest of the team and

14
00:00:28,710 --> 00:00:26,400
for this mission his name is john

15
00:00:30,470 --> 00:00:28,720
bellingham he's actually canadian and he

16
00:00:33,110 --> 00:00:30,480
works with us through this canadian

17
00:00:35,270 --> 00:00:33,120
space agency and my job is the mission

18
00:00:36,549 --> 00:00:35,280
designer and in that position we

19
00:00:38,709 --> 00:00:36,559
basically look at the requirements of

20
00:00:40,630 --> 00:00:38,719
where hardware comes up or where entire

21
00:00:42,470 --> 00:00:40,640
vehicles come up and where they need to

22
00:00:45,030 --> 00:00:42,480
be installed and we design the path in

23
00:00:46,310 --> 00:00:45,040
between those two those two spots and

24
00:00:48,549 --> 00:00:46,320
you were explaining to me this this

25
00:00:49,910 --> 00:00:48,559
process started at least a year ago the

26
00:00:51,590 --> 00:00:49,920
two of you were working together on this

27
00:00:53,189 --> 00:00:51,600
uh missions typically start being

28
00:00:54,950 --> 00:00:53,199
planned about a year ahead i was not

29
00:00:57,110 --> 00:00:54,960
assigned to this one until about eight

30
00:00:58,869 --> 00:00:57,120
months ago but typically there's about a

31
00:01:00,389 --> 00:00:58,879
year-long process with looking at the

32
00:01:02,709 --> 00:01:00,399
information and getting ready to go and

33
00:01:04,630 --> 00:01:02,719
going forward you hit the ground running

34
00:01:06,149 --> 00:01:04,640
very quickly very quickly and how how

35
00:01:08,149 --> 00:01:06,159
big of a team does it take to support

36
00:01:09,750 --> 00:01:08,159
these types of activities uh it varies

37
00:01:11,510 --> 00:01:09,760
from time to time uh typically you'll

38
00:01:13,030 --> 00:01:11,520

have about a three-person team that

39
00:01:14,310 --> 00:01:13,040
follows the entire mission the whole way

40
00:01:16,149 --> 00:01:14,320
through

41
00:01:18,230 --> 00:01:16,159
but when it comes down to the actual

42
00:01:19,670 --> 00:01:18,240
execution you have

43
00:01:21,429 --> 00:01:19,680
largely as many people as you need

44
00:01:23,429 --> 00:01:21,439
whether it's the three people that are

45
00:01:24,710 --> 00:01:23,439
on console actually executing or the

46
00:01:26,390 --> 00:01:24,720
next three people that are coming on

47
00:01:28,469 --> 00:01:26,400
after that team

48
00:01:29,910 --> 00:01:28,479
so bring us up to speed a lot's gone on

49
00:01:31,429 --> 00:01:29,920
everything's gone really smoothly but

50
00:01:33,109 --> 00:01:31,439
can you talk to us a little bit about

51
00:01:35,429 --> 00:01:33,119
especially the things that occurred over

52
00:01:37,350 --> 00:01:35,439
the weekend sure thing it's been a great

53
00:01:39,830 --> 00:01:37,360
last weekend so far

54
00:01:41,910 --> 00:01:39,840
we actually captured the vehicle on a

55
00:01:44,310 --> 00:01:41,920
friday the crew used the space station

56
00:01:45,670 --> 00:01:44,320
robotic arm or cannon arm 2 to capture

57
00:01:47,350 --> 00:01:45,680
the vehicle and

58
00:01:48,950 --> 00:01:47,360
then from that point on the ground took

59
00:01:50,870 --> 00:01:48,960
control of it in order to help save the

60
00:01:53,190 --> 00:01:50,880
crew time give them their time back and

61
00:01:55,109 --> 00:01:53,200
we were able to maneuver the htv vehicle

62
00:01:57,109 --> 00:01:55,119
all the way to its install location and

63
00:01:59,109 --> 00:01:57,119

install it thereby giving the crew back

64
00:02:00,789 --> 00:01:59,119
all the time that they needed

65
00:02:02,389 --> 00:02:00,799
after that was completed we had kind of

66
00:02:05,190 --> 00:02:02,399
one day off before we came back on

67
00:02:06,469 --> 00:02:05,200
yesterday sunday and then continued on

68
00:02:09,190 --> 00:02:06,479
with a lot of our ground commanded

69
00:02:11,589 --> 00:02:09,200
activities to extract the exposed pallet

70
00:02:14,309 --> 00:02:11,599
from the htv and it's coming up carrying

71
00:02:16,790 --> 00:02:14,319
a couple different experiments for us as

72
00:02:18,630 --> 00:02:16,800
well as a couple different replacement

73
00:02:21,430 --> 00:02:18,640
pieces of hardware for the space station

74
00:02:23,830 --> 00:02:21,440
we extracted that then we maneuvered it

75
00:02:25,589 --> 00:02:23,840
to position handed off to the japanese

76
00:02:27,589 --> 00:02:25,599
robotic arm which they also controlled

77
00:02:29,750 --> 00:02:27,599
from the ground and from that point they

78
00:02:31,830 --> 00:02:29,760
took it and installed it on their back

79
00:02:33,509 --> 00:02:31,840
porch kind of their exposed facility is

80
00:02:34,550 --> 00:02:33,519
what it's actually called and once it

81
00:02:36,630 --> 00:02:34,560
was there

82
00:02:38,550 --> 00:02:36,640
it's ready for its transfers now

83
00:02:39,670 --> 00:02:38,560
so this was a lot of teamwork with the

84
00:02:41,110 --> 00:02:39,680
crew

85
00:02:43,270 --> 00:02:41,120
a lot of things that you guys were

86
00:02:44,630 --> 00:02:43,280
taking versus parts that you know they

87
00:02:45,830 --> 00:02:44,640
were picking up and operating from the

88
00:02:47,589 --> 00:02:45,840

space station

89
00:02:48,949 --> 00:02:47,599
so it really exemplifies kind of the

90
00:02:50,869 --> 00:02:48,959
ultimate teamwork if you will ground

91
00:02:52,710 --> 00:02:50,879
control teams and honorable members

92
00:02:55,110 --> 00:02:52,720
absolutely and very international too

93
00:02:57,910 --> 00:02:55,120
we've got u.s and european crew members

94
00:03:00,390 --> 00:02:57,920
on orbit executing steps as well as both

95
00:03:02,149 --> 00:03:00,400
canadian and american robotics experts

96
00:03:03,110 --> 00:03:02,159
executing their steps and japanese

97
00:03:04,869 --> 00:03:03,120
experts

98
00:03:06,710 --> 00:03:04,879
executing their steps so it's truly

99
00:03:07,509 --> 00:03:06,720
showing the international space station

100
00:03:09,110 --> 00:03:07,519
so

101
00:03:11,270 --> 00:03:09,120
everything that's that happened starting

102
00:03:13,110 --> 00:03:11,280
friday and over the weekend uh sounds

103
00:03:14,390 --> 00:03:13,120
really critical but you were telling me

104
00:03:16,229 --> 00:03:14,400
that really you guys have some of your

105
00:03:18,470 --> 00:03:16,239
biggest milestones are yet to come

106
00:03:20,229 --> 00:03:18,480
absolutely a lot of the dynamic parts

107
00:03:22,550 --> 00:03:20,239
happen on friday but when it comes to a

108
00:03:24,070 --> 00:03:22,560
lot of the the down and dirty kind of uh

109
00:03:25,589 --> 00:03:24,080
ground control work a lot of that's

110
00:03:28,710 --> 00:03:25,599
coming up in about two weeks where we're

111
00:03:31,030 --> 00:03:28,720
going to use again canadarm2 along with

112
00:03:33,430 --> 00:03:31,040
dexter the small dexterous robot that we

113
00:03:34,949 --> 00:03:33,440

have to transfer those

114
00:03:36,470 --> 00:03:34,959
pieces of hardware that came up on that

115
00:03:38,309 --> 00:03:36,480
exposed pallet and get those to their

116
00:03:40,229 --> 00:03:38,319
final locations on the space station

117
00:03:42,070 --> 00:03:40,239
that's going to take about six days of

118
00:03:43,750 --> 00:03:42,080
ground control operations

119
00:03:45,350 --> 00:03:43,760
but we're looking forward to that it's a

120
00:03:47,430 --> 00:03:45,360
significant amount of work to do but we

121
00:03:48,949 --> 00:03:47,440
expect it to go well so i'm curious

122
00:03:50,470 --> 00:03:48,959
what's been

123
00:03:52,390 --> 00:03:50,480
which of all these activities is the

124
00:03:54,789 --> 00:03:52,400
most challenging

125
00:03:57,030 --> 00:03:54,799
uh typically the capture and the release

126
00:03:59,030 --> 00:03:57,040
of htv itself is the most challenging

127
00:04:01,429 --> 00:03:59,040
just because you've got two vehicles

128
00:04:02,470 --> 00:04:01,439
flying in space at extreme amounts of

129
00:04:03,990 --> 00:04:02,480
speed

130
00:04:05,589 --> 00:04:04,000
and they've got to come together you've

131
00:04:07,110 --> 00:04:05,599
got a lot of integration that has to go

132
00:04:09,589 --> 00:04:07,120
on with the entire team to make sure

133
00:04:12,390 --> 00:04:09,599
that those things turn out well

134
00:04:14,390 --> 00:04:12,400
while robotically those are complex

135
00:04:15,830 --> 00:04:14,400
probably the most complex for us is

136
00:04:16,949 --> 00:04:15,840
those upcoming operations we have in

137
00:04:19,030 --> 00:04:16,959
about two weeks

138
00:04:21,990 --> 00:04:19,040

and that's just because there's so much

139
00:04:22,790 --> 00:04:22,000
to happen exactly so you said six days

140
00:04:23,830 --> 00:04:22,800
worth

141
00:04:26,230 --> 00:04:23,840
of weeks

142
00:04:28,070 --> 00:04:26,240
yeah we're expecting pretty full days uh

143
00:04:30,390 --> 00:04:28,080
six solid days of those operations to

144
00:04:31,749 --> 00:04:30,400
get all those things going and uh it's

145
00:04:34,310 --> 00:04:31,759
pretty small interfaces that you're

146
00:04:37,110 --> 00:04:34,320
operating from the ground here uh up to

147
00:04:38,790 --> 00:04:37,120
a robot in space so it's it's a cool

148
00:04:41,270 --> 00:04:38,800
factor to the job but it is a

149
00:04:43,110 --> 00:04:41,280
complication yeah i think sometimes we

150
00:04:45,110 --> 00:04:43,120
make things look so easy because they

151
00:04:47,270 --> 00:04:45,120
they go well but so much time and effort

152
00:04:49,350 --> 00:04:47,280
goes into that that pre-planning can you

153
00:04:51,510 --> 00:04:49,360
tell us a little you know you mentioned

154
00:04:53,749 --> 00:04:51,520
the two vehicles traveling and those

155
00:04:55,830 --> 00:04:53,759
dynamic operations can you maybe explain

156
00:04:58,070 --> 00:04:55,840
for some some folks who can't really

157
00:04:59,830 --> 00:04:58,080
appreciate how challenging that might be

158
00:05:01,350 --> 00:04:59,840
what really goes into that and when do

159
00:05:04,070 --> 00:05:01,360
you guys really get to breathe a sigh of

160
00:05:05,590 --> 00:05:04,080
relief oh yeah um

161
00:05:07,749 --> 00:05:05,600
from the overall perspective it's

162
00:05:09,189 --> 00:05:07,759
definitely a significant rendezvous

163
00:05:11,590 --> 00:05:09,199

problem if nothing else to put these two

164
00:05:13,350 --> 00:05:11,600
vehicles in the same space is amazing

165
00:05:15,189 --> 00:05:13,360
and i don't know rendezvous very well

166
00:05:17,189 --> 00:05:15,199
but i've heard it described as trying to

167
00:05:18,710 --> 00:05:17,199
stand in the backyard and throw a tennis

168
00:05:19,990 --> 00:05:18,720
ball while somebody in the front yard

169
00:05:21,749 --> 00:05:20,000
tries to throw a tennis ball and make

170
00:05:24,629 --> 00:05:21,759
them touch just slightly on the way

171
00:05:26,950 --> 00:05:24,639
across so that's always very complicated

172
00:05:28,629 --> 00:05:26,960
um as well as doing the constant

173
00:05:30,310 --> 00:05:28,639
robotics that we're doing

174
00:05:31,830 --> 00:05:30,320
we've built a lot of good techniques

175
00:05:33,510 --> 00:05:31,840
over the years with a lot of the ground

176
00:05:35,110 --> 00:05:33,520
control and everything else to make

177
00:05:37,350 --> 00:05:35,120
things better but it still is very

178
00:05:38,870 --> 00:05:37,360
complicated but in the end we really

179
00:05:41,029 --> 00:05:38,880
aren't comfortable until we finally get

180
00:05:42,629 --> 00:05:41,039
to that final release day on htv and we

181
00:05:44,629 --> 00:05:42,639
see the vehicle departing and

182
00:05:45,990 --> 00:05:44,639
everything's completed well at that

183
00:05:47,189 --> 00:05:46,000
point then we'll be able to relax a

184
00:05:48,710 --> 00:05:47,199
little bit

185
00:05:50,469 --> 00:05:48,720
well we hope that everything continues

186
00:05:51,670 --> 00:05:50,479
to go well and why we have you can you

187
00:05:53,189 --> 00:05:51,680
just tell us a little bit about your

188
00:05:54,629 --> 00:05:53,199

background and what

189
00:05:56,870 --> 00:05:54,639
led you to this position that you have

190
00:05:59,029 --> 00:05:56,880
now oh it's a bit of a long story but

191
00:06:00,870 --> 00:05:59,039
i'll shorten it up uh i've lived in the

192
00:06:02,550 --> 00:06:00,880
area in high school and i always kind of

193
00:06:05,029 --> 00:06:02,560
wanted to work at nasa so i started in

194
00:06:06,550 --> 00:06:05,039
some early student programs uh an actual

195
00:06:08,550 --> 00:06:06,560
high school program and i transitioned

196
00:06:09,830 --> 00:06:08,560
that into what's called a co-op program

197
00:06:11,990 --> 00:06:09,840
when i was in college and even

198
00:06:13,510 --> 00:06:12,000
transitioned into graduate co-op so i

199
00:06:15,270 --> 00:06:13,520
got a lot of time to see a lot of things

200
00:06:16,950 --> 00:06:15,280
going on at johnson space center and

201
00:06:18,950 --> 00:06:16,960
ended up liking working in robotics and

202
00:06:20,950 --> 00:06:18,960
robotics flight control and have been

203
00:06:23,830 --> 00:06:20,960
doing that job for the most part ever

204
00:06:25,189 --> 00:06:23,840
since i did a brief stint in a russian

205
00:06:26,790 --> 00:06:25,199
support group so i spent some time in

206
00:06:28,710 --> 00:06:26,800
moscow but

207
00:06:30,070 --> 00:06:28,720
otherwise it's been great being in

208
00:06:31,830 --> 00:06:30,080
robotics

209
00:06:33,749 --> 00:06:31,840
well again congratulations on all the

210
00:06:35,270 --> 00:06:33,759
activities this weekend and we will all

211
00:06:37,430 --> 00:06:35,280
continue to watch and look forward to

212
00:06:39,909 --> 00:06:37,440
the upcoming activities and um hope that

213
00:06:41,830 --> 00:06:39,919

we can have that same relief with you

214
00:06:43,350 --> 00:06:41,840
whenever the release happens and all

215
00:06:45,590 --> 00:06:43,360
that goes well so thanks so much for

216
00:06:47,909 --> 00:06:45,600
joining us thank you again quincy harp

217
00:06:50,469 --> 00:06:47,919
the mission designer as it were for the