
PAO

1
00:00:04,470 --> 00:00:02,790
and you're back inside of mission

2
00:00:06,869 --> 00:00:04,480
control houston dan hewitt here and i'm

3
00:00:08,549 --> 00:00:06,879
joined now by ray bigenus uh one of our

4
00:00:11,509 --> 00:00:08,559
visiting vehicle officers with the

5
00:00:13,350 --> 00:00:11,519
flight team here uh we're doing um kind

6
00:00:14,709 --> 00:00:13,360
of we've been talking to a few people as

7
00:00:16,870 --> 00:00:14,719
we're getting ready for the first

8
00:00:18,790 --> 00:00:16,880
orbital launch of cygnus scheduled to

9
00:00:20,310 --> 00:00:18,800
launch uh next week on

10
00:00:21,990 --> 00:00:20,320
september 17th docking with the

11
00:00:23,189 --> 00:00:22,000
international space station on september

12
00:00:24,470 --> 00:00:23,199
22nd

13
00:00:26,070 --> 00:00:24,480

now ray

14
00:00:28,150 --> 00:00:26,080
you're a visiting vehicle officer real

15
00:00:31,029 --> 00:00:28,160
quick what is that what is your role

16
00:00:33,270 --> 00:00:31,039
here in mission control yep um i am a

17
00:00:34,950 --> 00:00:33,280
visiting vehicle officer vvo uh we're a

18
00:00:36,470 --> 00:00:34,960
space station flight controller that's

19
00:00:38,549 --> 00:00:36,480
responsible for

20
00:00:40,150 --> 00:00:38,559
the dynamic flight of any visiting

21
00:00:42,709 --> 00:00:40,160
vehicle coming up to the space station

22
00:00:45,670 --> 00:00:42,719
so we look at um

23
00:00:49,110 --> 00:00:45,680
cygnus which is coming up next week uh

24
00:00:50,790 --> 00:00:49,120
the spacex dragon vehicle jax's htv

25
00:00:52,709 --> 00:00:50,800
esa's atv

26
00:00:54,229 --> 00:00:52,719
and there were all the russian vehicles

27
00:00:55,750 --> 00:00:54,239
so uh we kind of have our hands full

28
00:00:58,950 --> 00:00:55,760
it's a lot of traffic going to and from

29
00:01:00,389 --> 00:00:58,960
the space station these days absolutely

30
00:01:01,910 --> 00:01:00,399
so we look at the dynamic flight of the

31
00:01:04,710 --> 00:01:01,920
vehicles we make sure that

32
00:01:07,510 --> 00:01:04,720
the vehicle's on a safe trajectory as

33
00:01:09,270 --> 00:01:07,520
intended and we make sure that

34
00:01:11,350 --> 00:01:09,280
they're following the timeline that the

35
00:01:13,910 --> 00:01:11,360
crew is involved in the right way

36
00:01:16,630 --> 00:01:13,920
and everything's proceeding safely

37
00:01:18,870 --> 00:01:16,640
now this is going to be the very first

38
00:01:20,230 --> 00:01:18,880

cygnus to ever get to travel to the

39
00:01:21,670 --> 00:01:20,240
international space station is there

40
00:01:23,270 --> 00:01:21,680
anything special you guys are doing for

41
00:01:25,109 --> 00:01:23,280
this flight any preparation you're going

42
00:01:27,030 --> 00:01:25,119
through yeah this is this has been a

43
00:01:30,149 --> 00:01:27,040
work in progress for the last three to

44
00:01:31,590 --> 00:01:30,159
four years for for me uh some of us in

45
00:01:34,390 --> 00:01:31,600
mission operations have been working on

46
00:01:35,749 --> 00:01:34,400
cygnus for five six seven years i know

47
00:01:37,590 --> 00:01:35,759
orbital's been working on it for a long

48
00:01:39,429 --> 00:01:37,600
time too so it's a long time coming oh

49
00:01:41,109 --> 00:01:39,439
yeah absolutely this is a

50
00:01:42,310 --> 00:01:41,119
this is a huge milestone for us this

51
00:01:44,870 --> 00:01:42,320
first flight

52
00:01:46,950 --> 00:01:44,880
we've had to

53
00:01:48,069 --> 00:01:46,960
watch as orbital designs of the vehicle

54
00:01:50,870 --> 00:01:48,079
make sure that it meets all of our

55
00:01:53,109 --> 00:01:50,880
requirements for safety and for the the

56
00:01:54,789 --> 00:01:53,119
prudent flight of the vehicle

57
00:01:56,789 --> 00:01:54,799
we've had to

58
00:01:58,149 --> 00:01:56,799
generate all the new ops products all

59
00:02:00,709 --> 00:01:58,159
the timelines

60
00:02:03,429 --> 00:02:00,719
all the procedures that the crew uses

61
00:02:04,870 --> 00:02:03,439
we've had to

62
00:02:07,190 --> 00:02:04,880
the biggest thing for the first flight

63
00:02:09,029 --> 00:02:07,200

is that we've had to design the

64
00:02:11,190 --> 00:02:09,039
demonstrations that the vehicle does to

65
00:02:12,550 --> 00:02:11,200
prove once it gets in orbit that it's

66
00:02:14,470 --> 00:02:12,560
it's viable

67
00:02:15,830 --> 00:02:14,480
what are some of those demonstrations

68
00:02:17,670 --> 00:02:15,840
well so it's not just flying up and

69
00:02:19,190 --> 00:02:17,680
docking no it doesn't go straight well

70
00:02:20,229 --> 00:02:19,200
it is kind of going straight to iss but

71
00:02:22,630 --> 00:02:20,239
along the way

72
00:02:24,390 --> 00:02:22,640
it's doing 10 demonstrations uh all the

73
00:02:26,630 --> 00:02:24,400
way from just you know proving that it

74
00:02:28,150 --> 00:02:26,640
can perform attitude control

75
00:02:30,070 --> 00:02:28,160
all the way to

76
00:02:32,150 --> 00:02:30,080
uh you know making sure that it's it's

77
00:02:34,309 --> 00:02:32,160
close in proximity sensors are

78
00:02:36,790 --> 00:02:34,319
working the way they should so there's

79
00:02:38,550 --> 00:02:36,800
ten demonstrations and we've had to

80
00:02:40,470 --> 00:02:38,560
uh you know develop the pass fail

81
00:02:42,229 --> 00:02:40,480
criteria for those we've had to work

82
00:02:43,990 --> 00:02:42,239
with very closely with orbital to make

83
00:02:46,390 --> 00:02:44,000
sure that you know here's the standards

84
00:02:47,990 --> 00:02:46,400
that we expect uh the vehicle to perform

85
00:02:50,869 --> 00:02:48,000
to and

86
00:02:52,710 --> 00:02:50,879
please show us along the way

87
00:02:53,750 --> 00:02:52,720
so it's going to be it's going to be an

88
00:02:56,150 --> 00:02:53,760

interesting

89
00:02:58,630 --> 00:02:56,160
a couple of days prior to the actual

90
00:03:00,390 --> 00:02:58,640
capture as they demonstrate the full

91
00:03:01,350 --> 00:03:00,400
capability of their vehicle is there any

92
00:03:03,110 --> 00:03:01,360
part of the flight that you're

93
00:03:05,110 --> 00:03:03,120
especially looking forward to that

94
00:03:07,509 --> 00:03:05,120
capture or anything

95
00:03:10,470 --> 00:03:07,519
the last 200 meters is is really where

96
00:03:12,309 --> 00:03:10,480
where we train for um

97
00:03:13,830 --> 00:03:12,319
the most dynamic part of the flight

98
00:03:16,710 --> 00:03:13,840
we're pulling up you know cygnus is

99
00:03:18,229 --> 00:03:16,720
pulling up right underneath iss

100
00:03:19,750 --> 00:03:18,239
it's inside what we call the keep out

101
00:03:21,750 --> 00:03:19,760
sphere we don't allow any vehicles

102
00:03:23,750 --> 00:03:21,760
inside the keep out sphere unless they

103
00:03:25,670 --> 00:03:23,760
have demonstrated that they can approach

104
00:03:29,030 --> 00:03:25,680
safely and have the proper fault

105
00:03:31,990 --> 00:03:29,040
tolerance so inside 200 meters is where

106
00:03:33,750 --> 00:03:32,000
the where my job really comes into play

107
00:03:35,910 --> 00:03:33,760
we give them a go to approach if

108
00:03:38,710 --> 00:03:35,920
everything's looking good and

109
00:03:40,710 --> 00:03:38,720
in particular inside 200 meters

110
00:03:42,869 --> 00:03:40,720
the the crew is involved quite a bit the

111
00:03:44,550 --> 00:03:42,879
iss crew they're looking out the window

112
00:03:45,910 --> 00:03:44,560
they're looking at their camera views

113
00:03:47,750 --> 00:03:45,920

they're looking at telemetry coming from

114
00:03:49,270 --> 00:03:47,760
cygnus and making sure that the vehicle

115
00:03:51,430 --> 00:03:49,280
is in the right place

116
00:03:53,190 --> 00:03:51,440
okay now

117
00:03:55,030 --> 00:03:53,200
cygnus makes it there it'll be the

118
00:03:56,470 --> 00:03:55,040
second u.s commercial company to be

119
00:03:58,550 --> 00:03:56,480
resupplying the international space

120
00:04:00,390 --> 00:03:58,560
station what are some of the differences

121
00:04:02,550 --> 00:04:00,400
between you know from your position

122
00:04:04,309 --> 00:04:02,560
monitoring these vehicles compared to

123
00:04:05,990 --> 00:04:04,319
these commercial vehicles compared to

124
00:04:09,110 --> 00:04:06,000
say the international partner of

125
00:04:11,670 --> 00:04:09,120
resupply ships like an htv or an atv or

126
00:04:12,869 --> 00:04:11,680
a uh progress yeah that's a really good

127
00:04:14,630 --> 00:04:12,879
question

128
00:04:16,949 --> 00:04:14,640
first and foremost it's different people

129
00:04:19,189 --> 00:04:16,959
from different countries

130
00:04:21,110 --> 00:04:19,199
the two american commercial vehicles are

131
00:04:22,310 --> 00:04:21,120
of course in america but

132
00:04:24,629 --> 00:04:22,320
you know they're two completely

133
00:04:26,550 --> 00:04:24,639
different companies that have different

134
00:04:27,749 --> 00:04:26,560
uh ways of doing things different

135
00:04:28,950 --> 00:04:27,759
personnel

136
00:04:30,790 --> 00:04:28,960
completely different procedures

137
00:04:32,150 --> 00:04:30,800
sometimes so

138
00:04:34,150 --> 00:04:32,160

in dealing with

139
00:04:35,830 --> 00:04:34,160
more than one at a time sometimes it's

140
00:04:37,830 --> 00:04:35,840
hard to keep track of you know the

141
00:04:39,510 --> 00:04:37,840
little subtle nuances of this one versus

142
00:04:41,189 --> 00:04:39,520
the other ones

143
00:04:44,870 --> 00:04:41,199
and of course when we start dealing with

144
00:04:46,390 --> 00:04:44,880
jaxa and isa and the russians

145
00:04:48,390 --> 00:04:46,400
you know there's of course

146
00:04:50,950 --> 00:04:48,400
the language differences are

147
00:04:52,310 --> 00:04:50,960
hard to overcome sometimes

148
00:04:54,390 --> 00:04:52,320
the vehicles are all completely

149
00:04:56,469 --> 00:04:54,400
different so

150
00:04:59,110 --> 00:04:56,479
we have to keep track of

151
00:05:03,029 --> 00:05:01,270
the design of of one versus the design

152
00:05:05,670 --> 00:05:03,039
of the other and then at the end of the

153
00:05:07,990 --> 00:05:05,680
day we have to tell the crew how each

154
00:05:09,590 --> 00:05:08,000
vehicle is different because they may

155
00:05:11,830 --> 00:05:09,600
have just

156
00:05:13,749 --> 00:05:11,840
grappled htv for last month and now

157
00:05:15,749 --> 00:05:13,759
they've got a cygnus coming up we don't

158
00:05:16,870 --> 00:05:15,759
want them thinking that they're the same

159
00:05:18,310 --> 00:05:16,880
because they're completely different

160
00:05:20,150 --> 00:05:18,320
vehicles

161
00:05:22,390 --> 00:05:20,160
okay well yeah like you're saying a lot

162
00:05:23,990 --> 00:05:22,400
a lot of preparation work goes into

163
00:05:25,430 --> 00:05:24,000

not only for the astronauts but the

164
00:05:27,270 --> 00:05:25,440
teams down here on the ground getting

165
00:05:29,749 --> 00:05:27,280
ready for these vehicles

166
00:05:31,350 --> 00:05:29,759
cygnus a fairly historical milestone

167
00:05:32,710 --> 00:05:31,360
will be the second commercial provider

168
00:05:34,790 --> 00:05:32,720
to come online resupplying the

169
00:05:36,469 --> 00:05:34,800
international space station right here

170
00:05:38,230 --> 00:05:36,479
will be our visiting vehicle officer

171
00:05:41,270 --> 00:05:38,240
inside mission control houston during

172
00:05:43,110 --> 00:05:41,280
that uh very historic moment for the

173
00:05:44,629 --> 00:05:43,120
station and uh human

174
00:05:46,310 --> 00:05:44,639
space flight in general

175
00:05:47,830 --> 00:05:46,320
ray thanks so much for joining me here

176
00:05:49,670 --> 00:05:47,840
today giving us a little insight into

177
00:05:50,390 --> 00:05:49,680
the inner workings of the team behind

178
00:05:52,469 --> 00:05:50,400
the

179
00:05:53,909 --> 00:05:52,479
upcoming demonstration i really