
PAO

1
00:00:00,506 --> 00:00:02,236
>> Welcome to the International
Space Station Flight

2
00:00:02,236 --> 00:00:02,926
Control Room.

3
00:00:03,356 --> 00:00:06,786
I am here today, we were
talking about some of the work

4
00:00:07,176 --> 00:00:09,466
that Koichi Wakata
is working on today

5
00:00:09,816 --> 00:00:13,066
to install what is called
the CubeSat Deployer,

6
00:00:13,766 --> 00:00:15,276
so the NanoRacks.

7
00:00:15,356 --> 00:00:18,226
And so here with me
today is Mike Johnson.

8
00:00:18,606 --> 00:00:21,886
Mike is the NanoRacks
Chief Technology Officer.

9
00:00:21,886 --> 00:00:25,426
Thank you for coming out to
talk with us about CubeSat

10
00:00:25,426 --> 00:00:27,986
and its deployer and what is
going on in space right now

11
00:00:27,986 --> 00:00:29,106

and some of the other
[multiple speakers]

12
00:00:29,216 --> 00:00:30,896
that have arrived on the Cygnus.

13
00:00:31,356 --> 00:00:32,066
>> Yes, thank you.

14
00:00:32,806 --> 00:00:37,086
Yeah, just to briefly
explain what NanoRacks does,

15
00:00:37,736 --> 00:00:39,236
we started out with
flying payloads

16
00:00:39,236 --> 00:00:40,856
on the inside of
the Space Station.

17
00:00:41,436 --> 00:00:45,436
And to date we've flown
approximately 120 payloads

18
00:00:45,436 --> 00:00:48,006
since 2010.

19
00:00:48,006 --> 00:00:53,686
And they range in spectrum
from say biological experiments

20
00:00:53,686 --> 00:00:55,946
to little fluid experiments.

21
00:00:56,566 --> 00:01:00,406
We've flown a lot of high school
and university experiments too,

22

00:01:00,406 --> 00:01:03,946
so we're, as a company
we're trying

23
00:01:03,946 --> 00:01:07,426
to get say the normal person
into space, if you will.

24
00:01:08,136 --> 00:01:11,906
And one of the things that
happened last year, JAXA,

25
00:01:12,156 --> 00:01:15,016
the Japanese space program
gave us the opportunity

26
00:01:15,516 --> 00:01:19,526
to launch a CubeSat, which is
a little small satellite It's

27
00:01:19,526 --> 00:01:22,836
about four inches square
cube, four by four.

28
00:01:23,576 --> 00:01:25,596
>> What I'd imagine.

29
00:01:25,596 --> 00:01:26,046
Much smaller.

30
00:01:26,086 --> 00:01:28,176
>> Yeah. They're just, they're
really small satellites.

31
00:01:28,176 --> 00:01:29,006
They are little cubes.

32
00:01:29,006 --> 00:01:33,276
It was a standard that
was devised about 2000.

33
00:01:33,456 --> 00:01:36,216
We haven't flown
a lot of CubeSats

34
00:01:36,216 --> 00:01:37,866
yet because they're
kind of hard to fly on.

35
00:01:37,866 --> 00:01:39,936
>> I think we're actually
getting some video.

36
00:01:39,936 --> 00:01:42,116
This is from the small
satellite deployment.

37
00:01:42,306 --> 00:01:43,076
>> Yes, there you go.

38
00:01:43,076 --> 00:01:44,206
>> This happened
back in November.

39
00:01:44,456 --> 00:01:44,756
>> Yes.

40
00:01:44,756 --> 00:01:46,116
>> So it is very similar to
that one [multiple speakers].

41
00:01:46,116 --> 00:01:46,766
>> Yes, exactly.

42
00:01:46,796 --> 00:01:50,126
And that was actually our
second launch of CubeSats.

43
00:01:50,126 --> 00:01:53,426

The first launch occurred
in October of 2012.

44
00:01:53,466 --> 00:01:53,666
>> Sure.

45
00:01:54,066 --> 00:01:57,816
>> And so it happened at the
company we were originally going

46
00:01:57,816 --> 00:02:00,426
to use the Japanese
J-SSOD deployer,

47
00:02:00,836 --> 00:02:06,266
which is a very fine system, but
we realized that, we started,

48
00:02:06,396 --> 00:02:08,116
the phones started
ringing off the hook.

49
00:02:08,526 --> 00:02:11,896
Everybody wanted to fly
CubeSats on the Space Station.

50
00:02:12,276 --> 00:02:13,736
Launch them off the
Space Station.

51
00:02:14,306 --> 00:02:16,936
So because of this
high demand we decided

52
00:02:16,936 --> 00:02:19,626
to fabricate these deployers.

53
00:02:19,626 --> 00:02:21,286
>> OK. And so you brought
actually, this is the deployer.

54
00:02:21,286 --> 00:02:24,586
So this is what Wakata is
working to install now.

55
00:02:24,586 --> 00:02:27,136
>> Yes. He's installing actually
eight of these deployers.

56
00:02:27,166 --> 00:02:28,856
To give you an idea,
we have a totally

57
00:02:28,976 --> 00:02:34,256
of 33 separate satellites
that we flew up on Orbital 1.

58
00:02:34,256 --> 00:02:36,716
In fact, we believe this will
be a world record deployment

59
00:02:36,716 --> 00:02:39,106
of a number of satellites
in one deployment.

60
00:02:39,106 --> 00:02:41,116
It will take a few days.

61
00:02:41,116 --> 00:02:43,096
It will take probably
a couple of weeks

62
00:02:43,096 --> 00:02:45,186
to deploy all the satellites
from the Space Station.

63
00:02:45,256 --> 00:02:46,376
>> And so how many
is he going to have?

64
00:02:46,556 --> 00:02:49,816
>> Well, today he's installing
eight of these deployers.

65
00:02:49,816 --> 00:02:50,226
>> OK.

66
00:02:50,256 --> 00:02:52,836
>> It will take two
experiment air lock openings

67
00:02:52,836 --> 00:02:55,506
to actually deploy
all the satellites.

68
00:02:55,506 --> 00:02:56,146
So the first.

69
00:02:56,146 --> 00:02:57,686
>> OK. And we're getting
some downlink right now.

70
00:02:57,686 --> 00:02:57,806
>> Right [multiple speakers].

71
00:02:57,916 --> 00:03:00,956
And what Koichi-san is
installing here is the control

72
00:03:00,956 --> 00:03:05,926
box for the deployers and
then he later installed eight

73
00:03:06,036 --> 00:03:06,986
of the deployers.

74
00:03:06,986 --> 00:03:10,136
And eight is the maximum we
could fit in the air lock.

75
00:03:10,136 --> 00:03:10,286
>> Wow.

76
00:03:10,536 --> 00:03:11,096
>> And so we're trying

77
00:03:11,096 --> 00:03:12,746
to maximize the air
lock utilization.

78
00:03:12,746 --> 00:03:14,906
The air lock is just
behind Koichi-san right now.

79
00:03:15,566 --> 00:03:19,876
And so once he's loaded all of
the deployers onto this pallet,

80
00:03:19,876 --> 00:03:23,276
the MPAP pallet it will go
out through the air lock,

81
00:03:23,636 --> 00:03:29,116
and then the Japanese robotic
arm will grab the pallet

82
00:03:29,116 --> 00:03:31,036
that he was putting
the deployers on.

83
00:03:31,196 --> 00:03:34,326
>> And so this here, this end, I
don't know if you can show this.

84
00:03:34,416 --> 00:03:35,276
>> Sure. I can show this.

85
00:03:35,276 --> 00:03:36,016

>> Is this where
they're launched?

86
00:03:36,296 --> 00:03:37,246
>> This is a little door.

87
00:03:37,246 --> 00:03:38,846
It's like a little barn
door that opens up.

88
00:03:39,296 --> 00:03:41,056
We've got the CubeSats are,

89
00:03:41,496 --> 00:03:44,306
there are typically two
satellites that are arranged

90
00:03:44,306 --> 00:03:46,846
in here, and they have a
little spring on the back.

91
00:03:47,196 --> 00:03:50,536
And so this little actuator
in the side here goes,

92
00:03:50,816 --> 00:03:54,316
connects to the control box, and
from a Japanese control center

93
00:03:54,316 --> 00:03:57,916
on the ground, the command to
fire the satellites once the arm

94
00:03:57,916 --> 00:04:00,756
and everything is in position,
they press the button,

95
00:04:00,756 --> 00:04:01,856
and that's what happens.

96
00:04:01,916 --> 00:04:03,366
The CubeSat deploys.

97
00:04:03,366 --> 00:04:05,176
>> They just kind of
shoot up into space.

98
00:04:05,176 --> 00:04:06,466
>> And they actually
go a little bit,

99
00:04:06,526 --> 00:04:08,476
the CubeSats are deployed
a little bit below

100
00:04:08,916 --> 00:04:09,886
and then they go in front

101
00:04:10,036 --> 00:04:12,606
of the International
Space Station due

102
00:04:12,606 --> 00:04:13,846
to orbital mechanics.

103
00:04:14,466 --> 00:04:18,136
And so they get out of the
way, say of the Space Station,

104
00:04:18,136 --> 00:04:19,576
so they won't collide
with the Space Station.

105
00:04:19,666 --> 00:04:19,756
>> Sure.

106
00:04:19,756 --> 00:04:21,536
>> And they begin
their operations.

107
00:04:21,786 --> 00:04:26,066
So to give you an idea of what
CubeSats actually do we have,

108
00:04:26,456 --> 00:04:30,226
the majority of our CubeSats
on this flight right now are

109
00:04:30,226 --> 00:04:35,396
from a commercial company
that is doing imagery work.

110
00:04:38,256 --> 00:04:35,516
>> OK.

111
00:04:38,256 --> 00:04:41,646
And they are basically
these small telescopes.

112
00:04:41,916 --> 00:04:46,186
They're three cube units
long, so about 300 millimeters

113
00:04:46,186 --> 00:04:47,566
by 100 by 100 millimeters.

114
00:04:48,176 --> 00:04:50,696
And they look down at the Earth
and take pictures of the Earth.

115
00:04:50,696 --> 00:04:50,926
>> Wow.

116
00:04:50,996 --> 00:04:54,876
>> And eventually I think the
goal is to send these images

117
00:04:54,876 --> 00:04:56,646

to people like Google Earth.

118
00:04:57,276 --> 00:05:00,006
So, you know, from a, I guess

119
00:05:00,006 --> 00:05:02,546
from a user standpoint
this is probably one

120
00:05:02,546 --> 00:05:05,406
of the fastest links
from space to Earth.

121
00:05:05,596 --> 00:05:05,746
>> Yeah.

122
00:05:05,926 --> 00:05:07,286
>> You know, you'll be
able to look at your house

123
00:05:07,286 --> 00:05:09,116
on Google Earth from
these satellites.

124
00:05:09,116 --> 00:05:10,026
>> Well, that is exciting.

125
00:05:10,286 --> 00:05:13,406
>> Now, we also have a couple
other really exciting payloads

126
00:05:13,406 --> 00:05:14,856
on board too or CubeSats.

127
00:05:15,376 --> 00:05:18,216
We have two Lithuanian
satellites

128
00:05:18,216 --> 00:05:19,616

and one Peruvian satellite.

129
00:05:20,046 --> 00:05:22,186
These satellites will
turn these countries

130
00:05:22,186 --> 00:05:23,336
into space faring nations.

131
00:05:23,336 --> 00:05:26,086
They are the first
satellites to be deployed

132
00:05:26,086 --> 00:05:27,496
in space from these nations.

133
00:05:28,026 --> 00:05:32,086
We also have a couple
other commercial CubeSats

134
00:05:32,086 --> 00:05:33,346
that we've flown on board too.

135
00:05:33,446 --> 00:05:36,666
But, as I said, it will
take two air lock openings.

136
00:05:36,666 --> 00:05:40,256
So we'll be going probably
throughout the better part

137
00:05:40,256 --> 00:05:41,896
of February deploying
these satellites.

138
00:05:41,896 --> 00:05:42,936
>> Well, that is very exciting.

139
00:05:42,936 --> 00:05:44,166

Thank you so much for coming.

140
00:05:44,166 --> 00:05:46,066
We're just about
out of time here,

141
00:05:46,356 --> 00:05:48,646
but real quick can you tell
me about when are these

142
00:05:49,286 --> 00:05:51,686
to be deployed, the ones
that he is installing now?

143
00:05:51,806 --> 00:05:55,456
>> The first set would be
February 6 I believe we're going

144
00:05:55,456 --> 00:05:56,666
to start the deployments.

145
00:05:56,666 --> 00:05:58,746
And then the second set
hasn't scheduled yet,

146
00:05:58,746 --> 00:06:00,426
but it will probably be
a couple weeks later.

147
00:06:00,426 --> 00:06:00,516
>> OK.

148
00:06:00,516 --> 00:06:02,556
>> So just a quick
shout out too,

149
00:06:02,556 --> 00:06:04,616
I have to say this
is all Texas built.

150
00:06:04,736 --> 00:06:06,016
>> Texas built.

151
00:06:06,016 --> 00:06:08,816
>> For our Texans
in the room here.

152
00:06:09,506 --> 00:06:09,706
>> Sure.

153
00:06:09,706 --> 00:06:15,056
>> But Quad-M, a local
manufacturer just outside

154
00:06:15,056 --> 00:06:18,326
of Austin, McDade,
Texas made most of this,

155
00:06:18,326 --> 00:06:19,646
and we're just really happy

156
00:06:20,116 --> 00:06:22,866
to put the Texas
folks to work on this.

157
00:06:22,866 --> 00:06:23,196
>> Very good.

158
00:06:23,196 --> 00:06:25,156
Well, we are all proud
of Texas here in Texas.

159
00:06:25,226 --> 00:06:25,646
>> Thank you.

160
00:06:25,926 --> 00:06:27,146
>> Thanks so much
for coming out again.

161
00:06:27,196 --> 00:06:27,636
>> I appreciate it.

162
00:06:27,636 --> 00:06:30,826
>> This is all very exciting
and fascinating to hear about,

163
00:06:30,876 --> 00:06:31,896
and we'll be watching.

164
00:06:32,096 --> 00:06:32,676
>> Thank you so much.