
PAO
NASA

1
00:00:03,669 --> 00:00:02,310
hi everybody josh byerly here inside

2
00:00:05,269 --> 00:00:03,679
mission control houston i'm joined by

3
00:00:07,349 --> 00:00:05,279
rose flores who is the orion crew and

4
00:00:08,870 --> 00:00:07,359
service module chief engineer let's talk

5
00:00:11,350 --> 00:00:08,880
about orion for a little bit we've got

6
00:00:13,430 --> 00:00:11,360
eft one which is exploration flight test

7
00:00:14,789 --> 00:00:13,440
number one coming up next year in 2014.

8
00:00:16,150 --> 00:00:14,799
a big day right now because the heat

9
00:00:18,070 --> 00:00:16,160
shield just arrived at the kennedy space

10
00:00:20,310 --> 00:00:18,080
center last night and is being unpacked

11
00:00:21,990 --> 00:00:20,320
today right it is it certainly is um it

12
00:00:24,470 --> 00:00:22,000
came in from boston

13
00:00:26,310 --> 00:00:24,480

and flew on the guppy and landed uh

14
00:00:27,509 --> 00:00:26,320
yesterday evening so how exciting is it

15
00:00:29,109 --> 00:00:27,519
to actually see real hard we're seeing

16
00:00:30,870 --> 00:00:29,119
it getting packed right here i guess

17
00:00:32,229 --> 00:00:30,880
before that's a big box that is a big

18
00:00:33,670 --> 00:00:32,239
heat shield talk about the size of it a

19
00:00:35,030 --> 00:00:33,680
little bit it is a very large heat

20
00:00:37,990 --> 00:00:35,040
shield you know we've spent a lot of

21
00:00:39,990 --> 00:00:38,000
time developing it and testing it and

22
00:00:41,590 --> 00:00:40,000
transporting it um

23
00:00:43,430 --> 00:00:41,600
really the guppy kind of made sense

24
00:00:44,470 --> 00:00:43,440
because it's as large as it is let's

25
00:00:45,750 --> 00:00:44,480
talk about the you know we talk about

26
00:00:49,190 --> 00:00:45,760
it's the biggest

27
00:00:50,389 --> 00:00:49,200
now why is it well first of all why does

28
00:00:52,069 --> 00:00:50,399
it have to be so big and second of all

29
00:00:53,189 --> 00:00:52,079
why do we have to do so much testing

30
00:00:54,389 --> 00:00:53,199
we're seeing the

31
00:00:55,750 --> 00:00:54,399
you know the actual engineering process

32
00:00:57,830 --> 00:00:55,760
of building it here now but you know

33
00:01:00,389 --> 00:00:57,840
people look back and go okay you did

34
00:01:01,830 --> 00:01:00,399
heat shields back in apollo you know why

35
00:01:03,189 --> 00:01:01,840
does it take so much to build a new one

36
00:01:05,270 --> 00:01:03,199
like talk about the technology that goes

37
00:01:06,149 --> 00:01:05,280
into it well so

38
00:01:11,109 --> 00:01:06,159

for

39
00:01:12,550 --> 00:01:11,119
is a lot larger than our apollo capsule

40
00:01:15,429 --> 00:01:12,560
so that drives the size of the heat

41
00:01:17,429 --> 00:01:15,439
shield um for eft one specifically this

42
00:01:18,950 --> 00:01:17,439
particular heat shield is designed for

43
00:01:21,670 --> 00:01:18,960
the mission that we're doing

44
00:01:23,030 --> 00:01:21,680
so for later missions it'll you know the

45
00:01:24,789 --> 00:01:23,040
size of the heat shield will change at

46
00:01:26,310 --> 00:01:24,799
least the out the ablative surface will

47
00:01:28,469 --> 00:01:26,320
well

48
00:01:30,149 --> 00:01:28,479
but but the technology itself we

49
00:01:32,230 --> 00:01:30,159
actually ended up using the same

50
00:01:35,190 --> 00:01:32,240
manufacturer for the av coat material as

51
00:01:37,749 --> 00:01:35,200
we did for the apollo um for the apollo

52
00:01:39,350 --> 00:01:37,759
vehicle so is it closer to the apollo

53
00:01:41,109 --> 00:01:39,360
kind of without getting too technical

54
00:01:42,310 --> 00:01:41,119
sort of apollo composition versus what

55
00:01:43,749 --> 00:01:42,320
the space shuttle you know the spatial

56
00:01:45,910 --> 00:01:43,759
had those famous tiles on the bottom so

57
00:01:47,670 --> 00:01:45,920
it's more it is it is more apollo like

58
00:01:50,389 --> 00:01:47,680
um the structure itself yes it's

59
00:01:51,350 --> 00:01:50,399
ablative so the the structure itself um

60
00:01:56,550 --> 00:01:51,360
the

61
00:01:58,950 --> 00:01:56,560
with a composite laminate over it and

62
00:02:01,030 --> 00:01:58,960
then we've got the uh honeycomb that you

63
00:02:02,310 --> 00:02:01,040

can kind of see a little bit in the

64
00:02:03,270 --> 00:02:02,320
in the video that you're playing right

65
00:02:05,590 --> 00:02:03,280
now

66
00:02:07,350 --> 00:02:05,600
you see a little diamond honeycomb and

67
00:02:09,350 --> 00:02:07,360
we actually place the

68
00:02:11,270 --> 00:02:09,360
the av coat inside that honeycomb

69
00:02:13,750 --> 00:02:11,280
surface so that is essentially what

70
00:02:15,510 --> 00:02:13,760
burns off as we re-enter whereas the

71
00:02:18,150 --> 00:02:15,520
structure itself it's titanium it's a

72
00:02:20,390 --> 00:02:18,160
titanium skeleton with a composite

73
00:02:22,470 --> 00:02:20,400
laminate structure over it

74
00:02:24,630 --> 00:02:22,480
and then we've got the honeycomb and uh

75
00:02:26,229 --> 00:02:24,640
filled in with the ablative material so

76
00:02:27,430 --> 00:02:26,239
let's talk about eft one the purpose is

77
00:02:29,270 --> 00:02:27,440
to basically send this out several

78
00:02:30,949 --> 00:02:29,280
thousand miles out of space

79
00:02:32,309 --> 00:02:30,959
and then bring it back in at a speed and

80
00:02:34,470 --> 00:02:32,319
velocity that sort of mimics what you

81
00:02:35,670 --> 00:02:34,480
would see at either a lunar return or

82
00:02:36,949 --> 00:02:35,680
one from deep space right there's

83
00:02:39,830 --> 00:02:36,959
there's sort of the mock-up of whatever

84
00:02:41,670 --> 00:02:39,840
right so it's a it's a high altitude um

85
00:02:44,150 --> 00:02:41,680
re-entry profile that we're running so

86
00:02:45,990 --> 00:02:44,160
it's a high energy re-entry profile and

87
00:02:47,589 --> 00:02:46,000
essentially we're trying to get at some

88
00:02:50,150 --> 00:02:47,599

of the heat

89
00:02:52,630 --> 00:02:50,160
rates and heat loads that we would have

90
00:02:54,070 --> 00:02:52,640
for a for a high energy entry because it

91
00:02:57,990 --> 00:02:54,080
is different coming back

92
00:03:00,229 --> 00:02:58,000
right it's a it's a different approach

93
00:03:02,710 --> 00:03:00,239
and what we're expecting to see on this

94
00:03:04,309 --> 00:03:02,720
flight is you know try to capture data

95
00:03:05,589 --> 00:03:04,319
that's going to help us evaluate and

96
00:03:07,030 --> 00:03:05,599
design

97
00:03:09,190 --> 00:03:07,040
the next heat shield that we use for

98
00:03:11,190 --> 00:03:09,200
each for each additional mission so it's

99
00:03:12,630 --> 00:03:11,200
really gathering additional data that's

100
00:03:14,630 --> 00:03:12,640
going to help us

101
00:03:15,910 --> 00:03:14,640
better design the next version of this

102
00:03:17,670 --> 00:03:15,920
heat shield talk about your personal

103
00:03:19,190 --> 00:03:17,680
experience i mean you know you worked on

104
00:03:20,550 --> 00:03:19,200
shuttle for a while and then and then

105
00:03:22,550 --> 00:03:20,560
you're doing this you know how different

106
00:03:23,589 --> 00:03:22,560
is it to work on a brand new program

107
00:03:25,190 --> 00:03:23,599
that you know we've been talking about

108
00:03:26,229 --> 00:03:25,200
orion for a while you know for a number

109
00:03:28,070 --> 00:03:26,239
of years it was you know part of

110
00:03:30,630 --> 00:03:28,080
constellation now it's part of now we

111
00:03:31,990 --> 00:03:30,640
call it the multi-purpose crew module um

112
00:03:33,430 --> 00:03:32,000
you know is it awesome to finally see

113
00:03:34,869 --> 00:03:33,440

this stuff becoming real that you know

114
00:03:35,910 --> 00:03:34,879
real pieces of hardware are being built

115
00:03:37,589 --> 00:03:35,920
and down there at the kennedy space

116
00:03:38,710 --> 00:03:37,599
center and we're in almost a year or

117
00:03:41,910 --> 00:03:38,720
less than a year out from actually

118
00:03:43,190 --> 00:03:41,920
flying now it is it's um it's completely

119
00:03:45,670 --> 00:03:43,200
different actually because i was not

120
00:03:47,589 --> 00:03:45,680
around when we did the dvt of the space

121
00:03:50,070 --> 00:03:47,599
shuttle the actual design yeah so i came

122
00:03:52,710 --> 00:03:50,080
on board for i think it was sts-26 was

123
00:03:55,509 --> 00:03:52,720
my first shuttle mission so coming into

124
00:03:56,630 --> 00:03:55,519
orion as we're designing the vehicle

125
00:03:58,789 --> 00:03:56,640
and then

126
00:04:01,429 --> 00:03:58,799
seeing it go from paper to actual

127
00:04:03,589 --> 00:04:01,439
development units on into building the

128
00:04:06,070 --> 00:04:03,599
actual flight structure

129
00:04:07,670 --> 00:04:06,080
you know it's it's a very rewarding

130
00:04:08,949 --> 00:04:07,680
activity to be able to participate in

131
00:04:10,229 --> 00:04:08,959
that was kind of my reaction to one of

132
00:04:11,750 --> 00:04:10,239
our you know we've seen so many mock-ups

133
00:04:13,190 --> 00:04:11,760
here at jsc and some of the other places

134
00:04:15,350 --> 00:04:13,200
and the first time i saw a piece of real

135
00:04:16,390 --> 00:04:15,360
hardware of orion back when i was

136
00:04:18,069 --> 00:04:16,400
working on that and you know that

137
00:04:19,349 --> 00:04:18,079
particular program it was like this is

138
00:04:20,550 --> 00:04:19,359

real i mean this is real stuff that's

139
00:04:23,189 --> 00:04:20,560
actually going to fly in space you kind

140
00:04:24,390 --> 00:04:23,199
of get that sort of geeky cool vibe back

141
00:04:27,030 --> 00:04:24,400
you know whenever you see it for the

142
00:04:29,510 --> 00:04:27,040
first time you know in orion it has so

143
00:04:30,950 --> 00:04:29,520
many it's so compact whereas the shuttle

144
00:04:32,950 --> 00:04:30,960
was as large as it was you've got all

145
00:04:34,550 --> 00:04:32,960
these mechanisms and structural pieces

146
00:04:36,870 --> 00:04:34,560
but it's very large

147
00:04:37,990 --> 00:04:36,880
whereas orion is very compact so you've

148
00:04:40,870 --> 00:04:38,000
got

149
00:04:42,790 --> 00:04:40,880
numerous mechanisms and subsystems in a

150
00:04:45,510 --> 00:04:42,800
very small area even though it's a large

151
00:04:47,030 --> 00:04:45,520
vehicle yeah crew module so so does it

152
00:04:49,030 --> 00:04:47,040
seem real now that the flight's about a

153
00:04:50,550 --> 00:04:49,040
year about it does seem real it does

154
00:04:53,430 --> 00:04:50,560
seem real to see it coming together out

155
00:04:55,270 --> 00:04:53,440
in the o and c and and each piece each

156
00:04:57,350 --> 00:04:55,280
thruster that gets installed each

157
00:04:58,790 --> 00:04:57,360
parachute gets installed and now with

158
00:05:01,590 --> 00:04:58,800
the heat shield coming in that was it

159
00:05:03,110 --> 00:05:01,600
that's a major major milestone for us to

160
00:05:04,310 --> 00:05:03,120
have the heat shield delivered to the

161
00:05:06,950 --> 00:05:04,320
onc

162
00:05:08,870 --> 00:05:06,960
and get that ready to be attached to our

163
00:05:10,390 --> 00:05:08,880

a crew module primary structure well

164
00:05:11,670 --> 00:05:10,400
last question you know what's next now

165
00:05:12,790 --> 00:05:11,680
that the heat shield's down there at the

166
00:05:14,150 --> 00:05:12,800
kennedy space center now that it's going

167
00:05:16,390 --> 00:05:14,160
to be unloaded this morning what's the

168
00:05:18,150 --> 00:05:16,400
next step so the next step is heat

169
00:05:19,990 --> 00:05:18,160
shield will come in they'll start

170
00:05:22,070 --> 00:05:20,000
installing some of the additional

171
00:05:24,469 --> 00:05:22,080
instrumentation that we need

172
00:05:26,469 --> 00:05:24,479
from an orion perspective itself

173
00:05:28,070 --> 00:05:26,479
um we'll be doing some static loads

174
00:05:30,390 --> 00:05:28,080
testing on our service module we'll

175
00:05:32,230 --> 00:05:30,400
continue to install our parachutes um

176
00:05:34,629 --> 00:05:32,240
continue and install all the components

177
00:05:35,670 --> 00:05:34,639
that we've got on the vehicle okay

178
00:05:36,790 --> 00:05:35,680
rose flores thank you very much for

179
00:05:38,629 --> 00:05:36,800
joining us we look forward and it's

180
00:05:39,350 --> 00:05:38,639
going to be a cool flight next year i

181
00:05:40,550 --> 00:05:39,360
don't know when we take a look at this

182
00:05:41,749 --> 00:05:40,560
eft one it's gonna be it's gonna be

183
00:05:43,590 --> 00:05:41,759
pretty dramatic if you wanna follow

184
00:05:45,270 --> 00:05:43,600
along with the development of orion or

185
00:05:47,590 --> 00:05:45,280
take a look at what's ahead for eft one

186
00:05:48,870 --> 00:05:47,600
just log on to nasa.gov

187
00:05:50,390 --> 00:05:48,880
orion you can see all the different