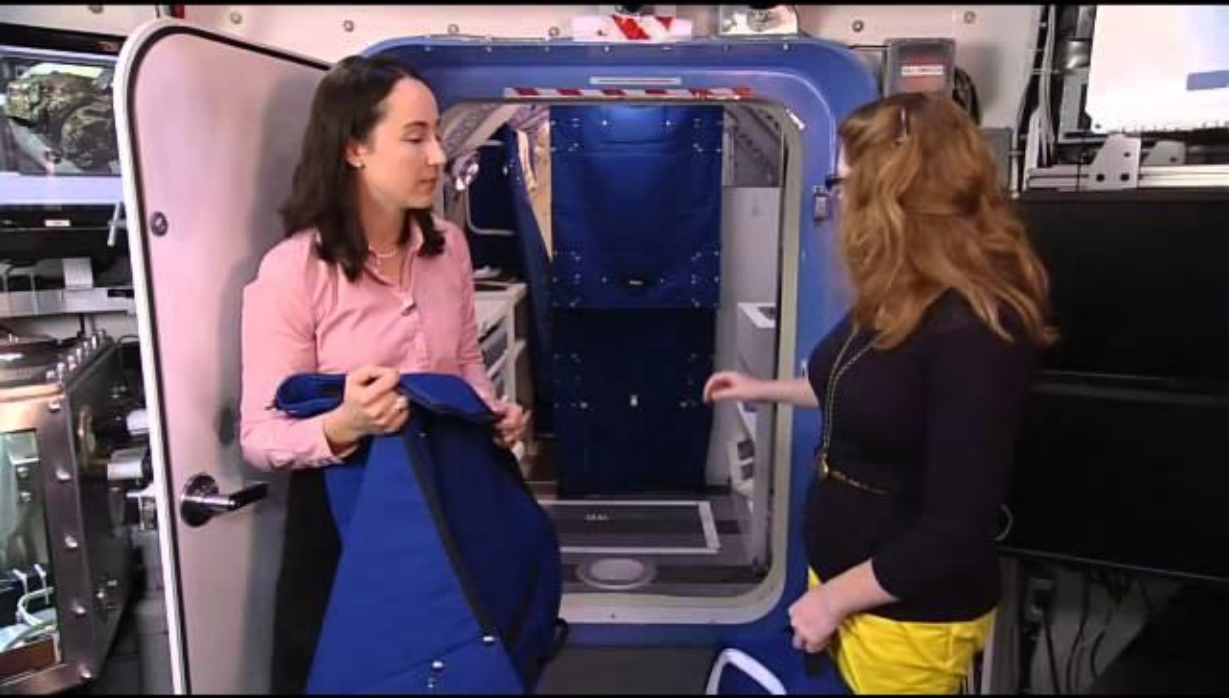

1
00:00:01,396 --> 00:00:04,466
>> We're here today in the
Deep Space Habitat mockup

2
00:00:04,686 --> 00:00:07,236
with Sarah Shull, who's
the Deputy Project Manager

3
00:00:07,286 --> 00:00:11,226
for the Logistics Reduction
and Repurposing Group

4
00:00:11,226 --> 00:00:14,316
with the Advanced Exploration
Project that you mentioned.

5
00:00:14,586 --> 00:00:16,586
And she's got a couple
of projects she's going

6
00:00:16,586 --> 00:00:19,246
to show us starting out
with some cargo bags.

7
00:00:20,006 --> 00:00:22,516
Tell us -- I guess let's start
-- back up a little bit though

8
00:00:22,516 --> 00:00:25,216
and say what is Logistics
Reduction and Repurposing?

9
00:00:26,016 --> 00:00:29,376
>> So Logistics Reduction and
Repurposing is a AES project,

10
00:00:29,376 --> 00:00:32,256
as you mentioned, Advanced
Exploration System.

11
00:00:32,256 --> 00:00:34,766
We like to say it's kind
of NASA's reduce, reuse,

12
00:00:34,806 --> 00:00:37,676
recycle project --
the "green" mentality.

13
00:00:37,676 --> 00:00:41,086
And so what we're looking
at is items that you fly

14
00:00:41,196 --> 00:00:44,556
for logistical needs and trash
as well, what can you do with it

15
00:00:44,556 --> 00:00:46,866
after it's served
their primary purpose?

16
00:00:46,946 --> 00:00:48,266
So is there a secondary purpose?

17
00:00:48,426 --> 00:00:51,556
You know you've paid a lot of
money and spent a lot of effort

18
00:00:51,556 --> 00:00:53,836
to fly this stuff to space
and what can you use it

19
00:00:53,916 --> 00:00:55,446
for as a secondary purpose?

20
00:00:55,676 --> 00:00:56,876
>> Right and I know
that's one thing

21
00:00:56,876 --> 00:00:59,116

that if you've watched
NASA TV very often

22
00:00:59,116 --> 00:01:03,866
at all you see the astronauts
unloading things that have come

23
00:01:03,866 --> 00:01:06,296
up on progress and then
repacking it with trash.

24
00:01:06,296 --> 00:01:09,116
And it's just, I know, kind of
an ongoing problem of what to do

25
00:01:09,116 --> 00:01:10,636
with all the trash that --

26
00:01:11,086 --> 00:01:11,326
>> Right. Right --

27
00:01:11,326 --> 00:01:11,826
>> They're looking at.

28
00:01:11,826 --> 00:01:12,376
>> The space station makes.

29
00:01:12,376 --> 00:01:12,686
.

30
00:01:12,686 --> 00:01:14,556
>> Yeah we're looking at what
we can do to help with that

31
00:01:14,616 --> 00:01:16,676
for the next, you know,
deep space missions.

32
00:01:16,776 --> 00:01:18,606

>> Right. And it's complicated
when you go further, right?

33
00:01:18,676 --> 00:01:19,376
>> Yes. Yeah.

34
00:01:19,376 --> 00:01:20,526
It gets even more complicated.

35
00:01:20,526 --> 00:01:24,246
You - we don't envision having
quite as many resupply missions,

36
00:01:24,306 --> 00:01:27,466
so your capability to both bring
supplies up and take supplies --

37
00:01:27,596 --> 00:01:29,546
take trash away will be limited.

38
00:01:29,866 --> 00:01:32,046
>> Okay. Well, so I think
you've got one of the projects

39
00:01:32,046 --> 00:01:34,126
that you've been working on
this year here to show us.

40
00:01:34,716 --> 00:01:35,626
One of the cargo bags?

41
00:01:35,966 --> 00:01:37,086
>> Yeah. So what this is,

42
00:01:37,146 --> 00:01:39,656
on station they use what are
called cargo transfer bags --

43
00:01:39,736 --> 00:01:40,006

CTB's.

44
00:01:40,006 --> 00:01:41,516
You've probably seen
them in the video

45
00:01:41,516 --> 00:01:42,386
and photos -- they're white --

46
00:01:42,436 --> 00:01:42,586
>> Right.

47
00:01:42,586 --> 00:01:44,016
>> Actually on station
they're white nomex.

48
00:01:44,496 --> 00:01:47,226
Same dimensions -- this is the
same dimensions as a single one.

49
00:01:47,406 --> 00:01:49,956
So what we've done is look
at this and say, you know,

50
00:01:49,986 --> 00:01:52,646
we envisioned for a crew
of four on a year mission,

51
00:01:52,646 --> 00:01:56,136
you may need 150
approximately of these bags just

52
00:01:56,136 --> 00:01:57,176
to carry all the supplies.

53
00:01:57,686 --> 00:01:58,296
So what can you --

54
00:01:58,296 --> 00:01:59,546

>> It [inaudible] of
clothes, or food or --

55
00:01:59,546 --> 00:02:00,526
>> Right. Clothes --

56
00:02:00,646 --> 00:02:00,976
>> Equipment.

57
00:02:01,156 --> 00:02:03,086
>> Equipment, yeah anything.

58
00:02:03,086 --> 00:02:04,896
And they actually do
come in various sizes;

59
00:02:04,896 --> 00:02:06,136
this is the most common size.

60
00:02:06,136 --> 00:02:06,316
>> Okay.

61
00:02:06,536 --> 00:02:07,626
>> So we looked at
what could you --

62
00:02:07,626 --> 00:02:08,956
how could you redesign this bag

63
00:02:09,016 --> 00:02:11,186
such that you could have
a secondary purpose.

64
00:02:11,746 --> 00:02:14,496
So this is our MCTB, modified

65
00:02:14,496 --> 00:02:16,806
or multi-purpose actually,
cargo transfer bag.

66
00:02:17,266 --> 00:02:19,826
And I'll show you, this is
it in its bag configuration.

67
00:02:20,236 --> 00:02:23,276
And then what it can do -- oh
yeah, if you'll hold that --

68
00:02:23,766 --> 00:02:27,476
is it actually unfolds
into a rectangle of fabric.

69
00:02:28,156 --> 00:02:30,316
So we designed it so that
it makes a, you know,

70
00:02:30,316 --> 00:02:33,836
a perfect rectangle and then you
can repurpose this rectangle.

71
00:02:33,836 --> 00:02:34,086
>> Right.

72
00:02:34,276 --> 00:02:35,546
>> And I guess the
shape is important --

73
00:02:35,546 --> 00:02:35,856
>> Yeah.

74
00:02:36,116 --> 00:02:38,146
>> Usually when you unfold a box
it doesn't make a rectangle --

75
00:02:38,146 --> 00:02:38,366
>> Right.

76
00:02:38,366 --> 00:02:39,966

>> When you -- if you
look at just -- we --

77
00:02:39,966 --> 00:02:42,116
when we brainstormed how to
unfold it we came up with a lot

78
00:02:42,116 --> 00:02:44,726
of more like T-shapes
or cross shape

79
00:02:44,726 --> 00:02:46,556
and that is awkward to try to --

80
00:02:46,736 --> 00:02:46,966
>> Right.

81
00:02:46,966 --> 00:02:47,486
>> Repurpose.

82
00:02:47,536 --> 00:02:49,546
So we thought, okay,
how can we make it?

83
00:02:49,546 --> 00:02:51,016
And working with our
soft goods lab here

84
00:02:51,016 --> 00:02:52,726
at JC we came up
with this concept.

85
00:02:52,906 --> 00:02:54,746
>> Okay. And so this
unfolds into this

86
00:02:54,746 --> 00:02:56,846
and then what do you do with
it once it is a rectangle?

87
00:02:57,176 --> 00:03:00,446
>> So we actually, as a team,
brainstormed use cases for it

88
00:03:00,446 --> 00:03:02,436
and we came up with
about 50 use cases.

89
00:03:02,916 --> 00:03:05,056
Some were very obvious
and those are some

90
00:03:05,056 --> 00:03:08,516
of the ones we demonstrated
here in the Deep Space Hab.

91
00:03:08,516 --> 00:03:09,206
Things like partitions --

92
00:03:09,206 --> 00:03:12,576
you can actually see behind
us there's two of these bags.

93
00:03:12,826 --> 00:03:15,616
You're looking actually
into the hygiene module

94
00:03:15,616 --> 00:03:18,026
on the deep space habitat and
we've had people living here

95
00:03:18,026 --> 00:03:21,216
for several days of a time,
over a course of different tests

96
00:03:21,276 --> 00:03:22,216
over the past few years.

97
00:03:22,216 --> 00:03:24,496

And behind is basically
the restroom,

98
00:03:24,496 --> 00:03:26,906
and you want a little privacy
in there so [chuckles] --

99
00:03:26,906 --> 00:03:27,566
>> I would think so.

100
00:03:27,566 --> 00:03:28,796
>> Basically made some curtains.

101
00:03:29,146 --> 00:03:29,296
>> Yeah.

102
00:03:29,606 --> 00:03:31,696
>> So what we did is we
gave the crew the bags

103
00:03:31,966 --> 00:03:33,626
in the bag configuration
that Brandy has --

104
00:03:33,776 --> 00:03:34,906
>> The -- full of
things probably?

105
00:03:35,026 --> 00:03:37,666
>> Packed with, you know, toilet
paper and hand soap and stuff

106
00:03:37,666 --> 00:03:39,916
and said, you know,
unpack it on your first day

107
00:03:39,916 --> 00:03:42,406
and then unfold them -- and
they were given procedures.

108
00:03:43,006 --> 00:03:46,006
And then join a couple together
and make this partition.

109
00:03:46,006 --> 00:03:48,606
So you could see behind
us there's actually two.

110
00:03:48,666 --> 00:03:49,996
They're zipped end-to-end.

111
00:03:49,996 --> 00:03:52,986
So the bags have zippers along
the edge as well as some snaps

112
00:03:53,136 --> 00:03:55,476
so you can join them, you
know, short end to short end

113
00:03:55,476 --> 00:03:58,346
or long end to long end
and make a chain of these.

114
00:03:58,586 --> 00:03:58,816
>> Okay.

115
00:03:58,816 --> 00:04:00,296
>> And so that's what
they were able to use.

116
00:04:00,296 --> 00:04:03,226
And they used them as their
privacy partitions during the

117
00:04:03,226 --> 00:04:04,296
Deep Space Hab testing.

118
00:04:04,296 --> 00:04:05,846
And we got -- we asked

the crew some feedback

119
00:04:05,846 --> 00:04:07,356
and we got good feedback;
they liked it.

120
00:04:07,486 --> 00:04:07,616
So --

121
00:04:07,616 --> 00:04:09,716
>> So that was a
successful text then?

122
00:04:09,886 --> 00:04:10,556
>> Very successful.

123
00:04:10,626 --> 00:04:12,776
>> What are some of the other
uses ya'll came up with?

124
00:04:13,056 --> 00:04:17,136
>> Oh, they ranged quite wildly
so we had some, you know,

125
00:04:17,196 --> 00:04:18,626
pretty innovative ones.

126
00:04:18,816 --> 00:04:21,586
You could, in desperation,
use this as clothing probably.

127
00:04:21,586 --> 00:04:23,536
I'm not sure we want to
baseline that concept.

128
00:04:23,636 --> 00:04:26,486
But some of the more
practical ones, sleeping bags,

129

00:04:26,526 --> 00:04:29,146
you could probably join several
of these and make a sleeping bag

130
00:04:29,146 --> 00:04:31,146
and then just swap
out maybe the liner,

131
00:04:31,146 --> 00:04:32,436
like we currently do on station.

132
00:04:32,436 --> 00:04:37,706
And I guess if nothing else,
if you're able to unfold it

133
00:04:37,706 --> 00:04:40,146
and make it flat, if
you've got 150 of them,

134
00:04:40,146 --> 00:04:41,976
just that much is
probably a good thing --

135
00:04:42,046 --> 00:04:42,246
>> Right.

136
00:04:42,246 --> 00:04:43,426
>> Rather than having
to stack them

137
00:04:43,546 --> 00:04:44,606
which takes up a lot more room.

138
00:04:44,696 --> 00:04:45,626
>> Right. Yeah, they're
squishable

139
00:04:45,626 --> 00:04:47,176
like that, but definitely flat.

140
00:04:47,246 --> 00:04:47,776
Like when we store them

141
00:04:47,776 --> 00:04:49,536
in our lab we store
them flat cause it takes

142
00:04:49,536 --> 00:04:50,346
up a lot less space.

143
00:04:50,666 --> 00:04:52,356
>> And you could, I mean
you could even just use them

144
00:04:52,356 --> 00:04:54,516
for towels, rags, stuff
like that, you know?

145
00:04:54,816 --> 00:04:56,496
At least it's a secondary
use made up.

146
00:04:56,496 --> 00:04:58,456
>> Okay. Well what are -
what's kind of the next step

147
00:04:58,456 --> 00:04:59,226
for your project then?

148
00:04:59,656 --> 00:05:02,426
>> So now we're looking at --
so we've got the crew feedback,

149
00:05:02,556 --> 00:05:03,816
so we'll look to see if
there's any, you know,

150
00:05:03,816 --> 00:05:06,336
modifications we need to make

to the bag from that feedback.

151
00:05:06,736 --> 00:05:08,706
We're also hoping
that we eventually get

152
00:05:08,706 --> 00:05:11,496
to fly this to station
as a test.

153
00:05:11,796 --> 00:05:13,816
So we're kind of asking
around and looking

154
00:05:13,856 --> 00:05:15,626
for a compelling
use case on station.

155
00:05:15,786 --> 00:05:18,346
We've identified a few
potential use cases

156
00:05:18,346 --> 00:05:19,146
where the crew has said,

157
00:05:19,146 --> 00:05:21,356
oh we really could use a
partition here, or not --

158
00:05:21,886 --> 00:05:23,326
so we are looking
more into that --

159
00:05:23,326 --> 00:05:23,656
>> Okay. So --

160
00:05:23,966 --> 00:05:24,366
>> Hopefully --

161

00:05:24,606 --> 00:05:25,906
>> More to come on
that then, right?

162
00:05:25,906 --> 00:05:26,076
>> Right. Yeah.

163
00:05:26,356 --> 00:05:28,076
>> Well thank you so much
for talking with us Sarah,

164
00:05:28,166 --> 00:05:29,926
and we're going to be back
in a few minutes to talk

165
00:05:29,926 --> 00:05:31,986
about another of the projects
that she's been working

166
00:05:31,986 --> 00:05:35,166
on together to melt
down some trash

167
00:05:35,166 --> 00:05:36,426
and make that useable as well.

168
00:05:36,476 --> 00:05:38,506
So we'll be back in just a
bit, but for now back to Pat

169
00:05:38,506 --> 00:05:39,826
in the Mission Control Center.