
NASA
Expedition 35

1
00:00:07,430 --> 00:00:05,829
there have been hundreds of

2
00:00:09,110 --> 00:00:07,440
investigations performed onboard the

3
00:00:10,470 --> 00:00:09,120
space station and while the astronauts

4
00:00:12,310 --> 00:00:10,480
are living there it's part of their job

5
00:00:13,990 --> 00:00:12,320
to ensure that researchers on the ground

6
00:00:15,430 --> 00:00:14,000
get the scientific results on the

7
00:00:16,950 --> 00:00:15,440
experiments that many of them have

8
00:00:18,550 --> 00:00:16,960
worked years on

9
00:00:20,150 --> 00:00:18,560
lori meigs is joining us now from

10
00:00:21,590 --> 00:00:20,160
marshall space flight center where those

11
00:00:24,710 --> 00:00:21,600
experiments or payloads as they're

12
00:00:26,230 --> 00:00:24,720
called are planned mori it's kind of

13
00:00:28,310 --> 00:00:26,240

mind-boggling when you think about all

14
00:00:30,470 --> 00:00:28,320
the things that go into training for one

15
00:00:32,069 --> 00:00:30,480
expedition add on top of that all of the

16
00:00:34,310 --> 00:00:32,079
science experiments these astronauts

17
00:00:37,030 --> 00:00:34,320
have to learn how to perform we recently

18
00:00:38,790 --> 00:00:37,040
caught up with expedition 3435 astronaut

19
00:00:40,869 --> 00:00:38,800
tom marshburn while he was here at

20
00:00:43,510 --> 00:00:40,879
marshall speaking with researchers about

21
00:00:47,029 --> 00:00:43,520
payloads processes and procedures we're

22
00:00:49,270 --> 00:00:47,039
up to nearly 300 per expedition 300

23
00:00:51,270 --> 00:00:49,280
experiments payloads

24
00:00:52,630 --> 00:00:51,280
how do you keep that all straight

25
00:00:54,389 --> 00:00:52,640
really it's the the job of the ground

26
00:00:56,470 --> 00:00:54,399
control team they do a wonderful job of

27
00:00:58,709 --> 00:00:56,480
keeping that straight every five minutes

28
00:01:01,510 --> 00:00:58,719
on board is blocked out for an astronaut

29
00:01:03,430 --> 00:01:01,520
so we are do as directed we go from from

30
00:01:06,070 --> 00:01:03,440
payload to payload the challenge of

31
00:01:07,750 --> 00:01:06,080
being an astronaut is is to switch gears

32
00:01:09,350 --> 00:01:07,760
in between payloads

33
00:01:11,350 --> 00:01:09,360
to remember what's special about this

34
00:01:13,109 --> 00:01:11,360
one based on work we've done maybe the

35
00:01:15,109 --> 00:01:13,119
day before or so and otherwise we just

36
00:01:17,109 --> 00:01:15,119
have to rely on the procedures

37
00:01:18,550 --> 00:01:17,119
what's helpful to you in procedures i

38
00:01:20,149 --> 00:01:18,560

know you you came to this meeting to

39
00:01:22,630 --> 00:01:20,159
talk about uh some of the things that

40
00:01:23,749 --> 00:01:22,640
might help another crew member out

41
00:01:25,350 --> 00:01:23,759
the uh

42
00:01:27,270 --> 00:01:25,360
things that are most helpful about it

43
00:01:29,270 --> 00:01:27,280
since the astronauts are a checklist

44
00:01:30,469 --> 00:01:29,280
driven group of people

45
00:01:32,950 --> 00:01:30,479
we survive

46
00:01:35,270 --> 00:01:32,960
and train on our spacecraft launching

47
00:01:36,870 --> 00:01:35,280
and landing using checklists so we're

48
00:01:39,670 --> 00:01:36,880
very used to that we find they're very

49
00:01:41,510 --> 00:01:39,680
efficient and time efficient and often

50
00:01:43,910 --> 00:01:41,520
very accurate so we

51
00:01:46,710 --> 00:01:43,920
rely on those or to the extent a

52
00:01:50,550 --> 00:01:46,720
procedure can match a checklist we love

53
00:01:53,030 --> 00:01:50,560
that now if narration is required so

54
00:01:55,109 --> 00:01:53,040
hopefully the people or developers can

55
00:01:57,270 --> 00:01:55,119
keep the narration short in a procedure

56
00:01:58,950 --> 00:01:57,280
and if not then a video is a wonderful

57
00:02:02,230 --> 00:01:58,960
way to get through those those tricky

58
00:02:03,590 --> 00:02:02,240
sticky parts of payloads procedures

59
00:02:05,510 --> 00:02:03,600
what stood out to you what was your

60
00:02:07,270 --> 00:02:05,520
favorite to work on

61
00:02:09,430 --> 00:02:07,280
one of my favorites was the capillary

62
00:02:10,949 --> 00:02:09,440
flow experiment part of that

63
00:02:13,110 --> 00:02:10,959

because very visual

64
00:02:15,510 --> 00:02:13,120
astronauts without being specialists in

65
00:02:17,430 --> 00:02:15,520
the area can make visual observations

66
00:02:19,910 --> 00:02:17,440
that are meaningful to the ground team

67
00:02:21,670 --> 00:02:19,920
and also we get to to talk to the

68
00:02:23,589 --> 00:02:21,680
principal investigators and the

69
00:02:25,270 --> 00:02:23,599
developers on the ground directly so we

70
00:02:26,470 --> 00:02:25,280
can all marvel at the same time of what

71
00:02:28,550 --> 00:02:26,480
we're seeing we can all make

72
00:02:30,309 --> 00:02:28,560
observations and contribute

73
00:02:32,390 --> 00:02:30,319
a lot of back and forth that's wonderful

74
00:02:34,150 --> 00:02:32,400
to the extent that we can talk to the

75
00:02:35,509 --> 00:02:34,160
lead scientists and the

76
00:02:36,790 --> 00:02:35,519
principal investigators that's what's

77
00:02:38,630 --> 00:02:36,800
the most fun and i think the most

78
00:02:40,229 --> 00:02:38,640
productive i love talking to them and

79
00:02:42,470 --> 00:02:40,239
then when we come back from flight any

80
00:02:44,869 --> 00:02:42,480
chance we get to have a personal contact

81
00:02:47,270 --> 00:02:44,879
say thank you and even talk more about

82
00:02:49,030 --> 00:02:47,280
their experiment we love that chance

83
00:02:50,309 --> 00:02:49,040
now a lot of them you're performing the

84
00:02:52,229 --> 00:02:50,319
experiment but a lot of them are being

85
00:02:53,830 --> 00:02:52,239
performed on you what's that like to be

86
00:02:56,150 --> 00:02:53,840
on the other side to be the subject yep

87
00:02:57,589 --> 00:02:56,160
so uh humans are definitely subjects in

88
00:02:58,390 --> 00:02:57,599

the experiments

89
00:03:00,550 --> 00:02:58,400
uh

90
00:03:02,710 --> 00:03:00,560
it ranges quite a bit in terms of the

91
00:03:03,990 --> 00:03:02,720
impact of our day-to-day life we

92
00:03:05,750 --> 00:03:04,000
understand that one of the reasons we're

93
00:03:08,309 --> 00:03:05,760
there is to learn about being in space

94
00:03:10,229 --> 00:03:08,319
so we take the hit in that regard

95
00:03:12,309 --> 00:03:10,239
sometimes you got stuff stuck all over

96
00:03:14,470 --> 00:03:12,319
your chest ekg electrodes sometimes you

97
00:03:16,229 --> 00:03:14,480
do a lot of blood draws collecting your

98
00:03:18,630 --> 00:03:16,239
own urine which in

99
00:03:21,750 --> 00:03:18,640
zero g can be a challenge

100
00:03:23,030 --> 00:03:21,760
so it it does impact your day

101
00:03:24,630 --> 00:03:23,040
quite a bit

102
00:03:27,110 --> 00:03:24,640
impacts the way you eat the way you go

103
00:03:28,550 --> 00:03:27,120
to the bathroom all of that but you know

104
00:03:30,309 --> 00:03:28,560
how important this is because there's no

105
00:03:32,869 --> 00:03:30,319
other way to get this information unless

106
00:03:34,309 --> 00:03:32,879
it's done on a person and i'm frankly

107
00:03:36,390 --> 00:03:34,319
very happy to be the person that's in

108
00:03:38,789 --> 00:03:36,400
space doing it why did you want to go to

109
00:03:41,190 --> 00:03:38,799
space i've cut my teeth on the apollo

110
00:03:43,190 --> 00:03:41,200
program seeing what had happened with

111
00:03:45,589 --> 00:03:43,200
going to the moon and

112
00:03:48,550 --> 00:03:45,599
figuring out how to go to the moon

113
00:03:50,550 --> 00:03:48,560

and just an intense uh curiosity and

114
00:03:51,910 --> 00:03:50,560
desire my whole life to know what's out

115
00:03:53,990 --> 00:03:51,920
there beyond the atmosphere and to

116
00:03:56,229 --> 00:03:54,000
understand better what's going on how

117
00:03:57,509 --> 00:03:56,239
people can live in space for as long as

118
00:03:58,390 --> 00:03:57,519
possible

119
00:04:00,229 --> 00:03:58,400
so

120
00:04:02,070 --> 00:04:00,239
that human element of space flight is

121
00:04:03,990 --> 00:04:02,080
what attracted me so i became a doctor

122
00:04:05,589 --> 00:04:04,000
and then a flight surgeon and and i was

123
00:04:07,110 --> 00:04:05,599
lucky enough to get a chance to

124
00:04:08,470 --> 00:04:07,120
experience it myself

125
00:04:10,630 --> 00:04:08,480
there's one thing you could tell people

126
00:04:13,030 --> 00:04:10,640
here on earth of why the space station

127
00:04:14,949 --> 00:04:13,040
is so important what would you tell them

128
00:04:16,550 --> 00:04:14,959
it's actually uh the space station is

129
00:04:19,270 --> 00:04:16,560
important on several levels number one

130
00:04:21,349 --> 00:04:19,280
we are finding out uh things that are

131
00:04:23,430 --> 00:04:21,359
groundbreaking uh for physiology and for

132
00:04:24,310 --> 00:04:23,440
physics you simply cannot do a lot of

133
00:04:26,790 --> 00:04:24,320
this

134
00:04:28,230 --> 00:04:26,800
or any of it really on earth taking

135
00:04:30,150 --> 00:04:28,240
advantage of the radiation environment

136
00:04:33,030 --> 00:04:30,160
the weightlessness the vacuum

137
00:04:34,790 --> 00:04:33,040
the earth based platform earth viewing a

138
00:04:36,950 --> 00:04:34,800

platform you get the astronomy platform

139
00:04:39,030 --> 00:04:36,960
you get from the space station

140
00:04:41,270 --> 00:04:39,040
has been opened up a lot of

141
00:04:43,270 --> 00:04:41,280
possibilities for not only launching

142
00:04:45,749 --> 00:04:43,280
many satellites but also getting

143
00:04:47,510 --> 00:04:45,759
continual real-time observations of our

144
00:04:49,670 --> 00:04:47,520
universe like the uh

145
00:04:51,830 --> 00:04:49,680
looking for dark matter can't do that

146
00:04:54,310 --> 00:04:51,840
anywhere else except the space station

147
00:04:55,510 --> 00:04:54,320
for me though the the prime benefit

148
00:04:57,030 --> 00:04:55,520
comes from

149
00:04:59,350 --> 00:04:57,040
nations coming together for one of the

150
00:05:01,830 --> 00:04:59,360
first times in history to

151
00:05:04,230 --> 00:05:01,840
to work together not for our survival

152
00:05:06,070 --> 00:05:04,240
not for our self-defense not even for

153
00:05:07,510 --> 00:05:06,080
commercial reasons but to do it because

154
00:05:09,510 --> 00:05:07,520
we want to know what's going on out

155
00:05:11,430 --> 00:05:09,520
there and i think it's a huge step

156
00:05:13,430 --> 00:05:11,440
forward in human evolution really

157
00:05:15,189 --> 00:05:13,440
what's next for you you going back would

158
00:05:16,469 --> 00:05:15,199
love to go back into space don't know if

159
00:05:18,790 --> 00:05:16,479
it's going to happen there's a lot of

160
00:05:20,230 --> 00:05:18,800
very good smart people that haven't gone

161
00:05:22,230 --> 00:05:20,240
yet that need to go

162
00:05:25,590 --> 00:05:22,240
so to the extent that i can help them go

163
00:05:27,749 --> 00:05:25,600

and and maybe uh help lead a group

164
00:05:29,909 --> 00:05:27,759
if ever that opportunity arises in any

165
00:05:31,430 --> 00:05:29,919
capacity i would love to go

166
00:05:33,110 --> 00:05:31,440
a little jealous of that scott kelly

167
00:05:35,270 --> 00:05:33,120
getting to stay for a year stay for a

168
00:05:36,790 --> 00:05:35,280
year uh he's he's going to be good as

169
00:05:39,590 --> 00:05:36,800
being the first to uh to break the

170
00:05:41,270 --> 00:05:39,600
barrier there it's been done before and

171
00:05:43,830 --> 00:05:41,280
yeah we're all a little jealous he's

172
00:05:46,310 --> 00:05:43,840
getting to do that

173
00:05:47,909 --> 00:05:46,320
we're all jealous now taking a live look

174
00:05:49,670 --> 00:05:47,919
into the payload operations integration

175
00:05:51,430 --> 00:05:49,680
center a busy day for the team here led

176
00:05:53,110 --> 00:05:51,440
by craig cruz and today

177
00:05:55,350 --> 00:05:53,120
they've been supporting the astronauts

178
00:05:57,110 --> 00:05:55,360
as they work on the fur ace and and

179
00:05:59,510 --> 00:05:57,120
delivered the first sample in there for

180
00:06:01,430 --> 00:05:59,520
a 72 hour run

181
00:06:03,350 --> 00:06:01,440
they've also performed helped perform

182
00:06:05,510 --> 00:06:03,360
the annual checkout of the microgravity

183
00:06:07,029 --> 00:06:05,520
science glove box and so good news it's

184
00:06:09,350 --> 00:06:07,039
good to go for another year everything

185
00:06:10,950 --> 00:06:09,360
checked out fine and the marshall pros

186
00:06:12,870 --> 00:06:10,960
the payload rack officers they've been

187
00:06:14,790 --> 00:06:12,880
loading updates to the elc's those are

188
00:06:16,950 --> 00:06:14,800

the outside payloads for new

189
00:06:18,469 --> 00:06:16,960
capabilities for new experiments and

190
00:06:20,309 --> 00:06:18,479
that'll do it for us here at the payload