

NEW HORIZONS

REGIONAL EDUCATION CENTER



1
00:00:04,789 --> 00:00:02,960
hi I'm NASA public affairs officer

2
00:00:06,800 --> 00:00:04,799
brandy dean here at Lockheed Martin's

3
00:00:09,200 --> 00:00:06,810
exploration development lab in Houston

4
00:00:11,660 --> 00:00:09,210
Texas and behind me we have a mock-up of

5
00:00:13,129 --> 00:00:11,670
Orion the new spacecraft that NASA's

6
00:00:15,829 --> 00:00:13,139
building to take humans farther into

7
00:00:17,359 --> 00:00:15,839
space than we've ever gone before we're

8
00:00:19,000 --> 00:00:17,369
here today to give you the latest update

9
00:00:22,130 --> 00:00:19,010
on NASA's exploration design challenge

10
00:00:24,050 --> 00:00:22,140
more than 125,000 students from 81

11
00:00:25,519 --> 00:00:24,060
countries around the world join this

12
00:00:28,730 --> 00:00:25,529
challenge to become part of Orion's

13
00:00:30,439 --> 00:00:28,740

first spaceflight this year today we've

14

00:00:32,209 --> 00:00:30,449

got exciting news for the u.s. high

15

00:00:34,310 --> 00:00:32,219

school teams that submitted designs for

16

00:00:35,870 --> 00:00:34,320

radiation shield experiments for Orion's

17

00:00:38,180 --> 00:00:35,880

flight we're going to be announcing the

18

00:00:41,090 --> 00:00:38,190

top five teams that will advance to the

19

00:00:42,470 --> 00:00:41,100

next level of the challenge to share the

20

00:00:44,869 --> 00:00:42,480

news with you I have to spaceflight

21

00:00:47,450 --> 00:00:44,879

experts here with me today NASA

22

00:00:49,850 --> 00:00:47,460

astronaut Rex Walheim serves as the

23

00:00:51,709 --> 00:00:49,860

Orion program astronaut representative

24

00:00:53,479 --> 00:00:51,719

and we'll tell you how the astronauts

25

00:00:56,540 --> 00:00:53,489

will work and live on board the Orion

26

00:00:58,580 --> 00:00:56,550

spacecraft and Heather McCain isn't a

27

00:01:00,830 --> 00:00:58,590

Ryan engineer for Lockheed Martin yes

28

00:01:02,660 --> 00:01:00,840

she is actually a rocket scientist has

29

00:01:03,950 --> 00:01:02,670

been involved in the design and build of

30

00:01:06,469 --> 00:01:03,960

the spacecraft for the past several

31

00:01:07,880 --> 00:01:06,479

years now I'm going to turn it over to

32

00:01:10,070 --> 00:01:07,890

them to tell you a little more about

33

00:01:13,490 --> 00:01:10,080

Orion and introduce our five finalists

34

00:01:15,050 --> 00:01:13,500

teams hi everyone I'm Heather McKay and

35

00:01:18,140 --> 00:01:15,060

I'm excited to be a part of the team

36

00:01:19,850 --> 00:01:18,150

building the Orion spacecraft over 3,000

37

00:01:21,649 --> 00:01:19,860

people across America helped to build

38

00:01:24,530 --> 00:01:21,659

NASA's new spacecraft that will carry

39

00:01:26,270 --> 00:01:24,540

astronauts far beyond our moon all of

40

00:01:28,580 --> 00:01:26,280

their work is coming together at Kennedy

41

00:01:30,590 --> 00:01:28,590

Space Center in Florida much like this

42

00:01:33,590 --> 00:01:30,600

broadcast our team works virtually and

43

00:01:35,300 --> 00:01:33,600

in person to build a spacecraft nASA has

44

00:01:37,249 --> 00:01:35,310

partnered with Lockheed Martin and the

45

00:01:39,080 --> 00:01:37,259

National Institute of aerospace to give

46

00:01:40,940 --> 00:01:39,090

students like you an opportunity to

47

00:01:43,870 --> 00:01:40,950

become part of Orion's first flight

48

00:01:46,730 --> 00:01:43,880

through the exploration design challenge

49

00:01:48,499 --> 00:01:46,740

our team agreed that radiation shielding

50

00:01:50,840 --> 00:01:48,509

would be the best challenge for Orion's

51
00:01:52,490 --> 00:01:50,850
first spaceflight because the spacecraft

52
00:01:55,639 --> 00:01:52,500
will travel through the Van Allen belt a

53
00:01:58,060 --> 00:01:55,649
large intense radiation field in space

54
00:02:00,499 --> 00:01:58,070
that could be very harmful to humans

55
00:02:02,719 --> 00:02:00,509
designing new ways to shield humans from

56
00:02:04,490 --> 00:02:02,729
radiation during spaceflight is critical

57
00:02:06,530 --> 00:02:04,500
to deep space missions beyond the moon

58
00:02:10,400 --> 00:02:06,540
as we venture out to explore asteroids

59
00:02:12,080 --> 00:02:10,410
and eventually Mars Rex can you tell us

60
00:02:13,760 --> 00:02:12,090
a little more about the Orion spacecraft

61
00:02:15,440 --> 00:02:13,770
and explain why radiation

62
00:02:18,740 --> 00:02:15,450
is so important for us to study when

63
00:02:20,300 --> 00:02:18,750

planning our missions sure Heather I can

64

00:02:22,280 --> 00:02:20,310

tell you firsthand that building a

65

00:02:23,900 --> 00:02:22,290

spacecraft of deep space missions is an

66

00:02:26,270 --> 00:02:23,910

extremely challenging and difficult task

67

00:02:27,740 --> 00:02:26,280

it takes a great team to develop the

68

00:02:30,410 --> 00:02:27,750

systems to make sure that we can have a

69

00:02:32,750 --> 00:02:30,420

safe or mission first let me tell you a

70

00:02:34,280 --> 00:02:32,760

little bit about the spacecraft Orion is

71

00:02:36,950 --> 00:02:34,290

really actually made up of three major

72

00:02:39,440 --> 00:02:36,960

parts the crew module the service module

73

00:02:41,990 --> 00:02:39,450

and the launch abort system the crew

74

00:02:43,970 --> 00:02:42,000

module which I'm in here is what keeps

75

00:02:45,410 --> 00:02:43,980

the astronauts think is the living

76
00:02:47,510 --> 00:02:45,420
quarters and the place where we do our

77
00:02:50,300 --> 00:02:47,520
work during the mission and it's about

78
00:02:52,460 --> 00:02:50,310
the size o of the bathroom master

79
00:02:53,870 --> 00:02:52,470
bathroom in the house so it's not a lot

80
00:02:54,920 --> 00:02:53,880
of volume so you really have to like

81
00:02:56,390 --> 00:02:54,930
your crew members because you're going

82
00:02:58,910 --> 00:02:56,400
to be in a confined space with them for

83
00:03:00,980 --> 00:02:58,920
weeks or maybe even months now below the

84
00:03:02,810 --> 00:03:00,990
crew module sits the service module this

85
00:03:04,880 --> 00:03:02,820
is what we call the powerhouse for the

86
00:03:06,830 --> 00:03:04,890
for the crew module the service module

87
00:03:08,870 --> 00:03:06,840
has our propulsion our power and our

88
00:03:10,220 --> 00:03:08,880

life-support systems it stays attached

89

00:03:12,290 --> 00:03:10,230

to the crew module for the whole mission

90

00:03:13,880 --> 00:03:12,300

until just before we enter we re-enter

91

00:03:19,210 --> 00:03:13,890

and then it separates and we come home

92

00:03:24,220 --> 00:03:21,940

finally the launch abort system which is

93

00:03:26,500 --> 00:03:24,230

the system i worked on most it sits atop

94

00:03:28,780 --> 00:03:26,510

the Orion crew module and operates using

95

00:03:30,670 --> 00:03:28,790

three solid rocket motors to propel the

96

00:03:32,470 --> 00:03:30,680

crew module to safety in the event of an

97

00:03:34,960 --> 00:03:32,480

emergency on a launch pad or during

98

00:03:37,930 --> 00:03:34,970

initial ascent the powerful abort motor

99

00:03:40,300 --> 00:03:37,940

fires 500,000 pounds of thrust going

100

00:03:43,000 --> 00:03:40,310

from zero to nearly 500 miles per hour

101
00:03:45,190 --> 00:03:43,010
in a matter of seconds all of these

102
00:03:47,170 --> 00:03:45,200
parts are coming together now at Kennedy

103
00:03:49,390 --> 00:03:47,180
Space Center as we get ready for Orion's

104
00:03:51,550 --> 00:03:49,400
first spaceflight called exploration

105
00:03:54,310 --> 00:03:51,560
flight test-1 which launches later this

106
00:03:56,350 --> 00:03:54,320
year during exploration flight test-1

107
00:03:58,710 --> 00:03:56,360
Orion will make two orbits around the

108
00:04:01,449 --> 00:03:58,720
earth to reach a high out food orbit of

109
00:04:04,030 --> 00:04:01,459
3,600 miles above the earth traveling a

110
00:04:06,820 --> 00:04:04,040
total mission distance of 60,000 statute

111
00:04:08,560 --> 00:04:06,830
miles and only four hours this is when

112
00:04:10,570 --> 00:04:08,570
the student experiment onboard will be

113
00:04:12,340 --> 00:04:10,580

put to the test to see if the radiation

114

00:04:15,070 --> 00:04:12,350

shield protects the sensors inside

115

00:04:16,840 --> 00:04:15,080

called a dosimeter from being blasted

116

00:04:19,390 --> 00:04:16,850

with radiation as Orion travels through

117

00:04:21,159 --> 00:04:19,400

the Van Allen radiation belts gaining

118

00:04:22,870 --> 00:04:21,169

speed and momentum on the second orbit a

119

00:04:25,630 --> 00:04:22,880

line will return to earth that nearly

120

00:04:27,430 --> 00:04:25,640

20,000 miles per hour at this speed

121

00:04:29,740 --> 00:04:27,440

Orion's heat shield will have to shed

122

00:04:30,790 --> 00:04:29,750

nearly 4,000 degrees of heat generated

123

00:04:33,400 --> 00:04:30,800

from the friction of the spacecraft

124

00:04:35,350 --> 00:04:33,410

moving through the Earth's atmosphere as

125

00:04:36,640 --> 00:04:35,360

a lion reaches a safe altitude the

126

00:04:38,440 --> 00:04:36,650

parachutes will deploy and the

127

00:04:41,020 --> 00:04:38,450

spacecraft gently splashes down in the

128

00:04:42,730 --> 00:04:41,030

Pacific Ocean this is a very exciting

129

00:04:44,740 --> 00:04:42,740

mission for NASA and we're honored to

130

00:04:47,350 --> 00:04:44,750

have all of you as part of our virtual

131

00:04:49,240 --> 00:04:47,360

crew on this flight test congratulations

132

00:04:50,890 --> 00:04:49,250

to all 46 teams that submitted

133

00:04:52,659 --> 00:04:50,900

experiment designs this was a very

134

00:04:54,820 --> 00:04:52,669

difficult challenge and all of you

135

00:04:56,920 --> 00:04:54,830

should be very proud of your work all

136

00:04:59,140 --> 00:04:56,930

students who participated in phase 1 and

137

00:05:00,760 --> 00:04:59,150

phase 2 of the challenge will have their

138

00:05:03,100 --> 00:05:00,770

names flown on Orion during exploration

139

00:05:05,110 --> 00:05:03,110

flight test-1 making them a part of

140

00:05:07,420 --> 00:05:05,120

NASA's next historic step in space

141

00:05:09,430 --> 00:05:07,430

exploration now for the moment we've all

142

00:05:12,130 --> 00:05:09,440

been waiting for Heather and I will

143

00:05:13,210 --> 00:05:12,140

announce the five top finalists note

144

00:05:17,380 --> 00:05:13,220

that these are not in any particular

145

00:05:19,650 --> 00:05:17,390

order congratulations are in order for

146

00:05:22,030 --> 00:05:19,660

team Aries in the governor's school for

147

00:05:24,370 --> 00:05:22,040

science and technology in Hampton

148

00:05:30,400 --> 00:05:27,670

this five-member team was sponsored by

149

00:05:33,010 --> 00:05:30,410

mr. Gregory House the governor's school

150

00:05:35,590 --> 00:05:33,020

is owned and operated by six peninsula

151
00:05:38,920 --> 00:05:35,600
school divisions Gloucester Hampton

152
00:05:41,980 --> 00:05:38,930
Newport News picasa williamsburg james

153
00:05:43,330 --> 00:05:41,990
city county and york students who attend

154
00:05:45,370 --> 00:05:43,340
the governor's school go to classes

155
00:05:46,840 --> 00:05:45,380
there in the morning and mature their

156
00:05:48,820 --> 00:05:46,850
homes high school for coursework in the

157
00:05:50,950 --> 00:05:48,830
afternoon this team worked well together

158
00:05:52,950 --> 00:05:50,960
in school and virtually in order to

159
00:05:55,140 --> 00:05:52,960
complete the project on time

160
00:05:58,390 --> 00:05:55,150
congratulations to augment pagana

161
00:06:01,840 --> 00:05:58,400
Christopher Danny sagent on a job well

162
00:06:04,030 --> 00:06:01,850
done our next team is Titan chillin

163
00:06:06,240 --> 00:06:04,040

systems from the Illinois mathematics

164

00:06:09,040 --> 00:06:06,250

and science academy in Aurora Illinois

165

00:06:11,410 --> 00:06:09,050

sponsored by mr. Eric Hawker this team

166

00:06:13,570 --> 00:06:11,420

had six members graduation Virginia

167

00:06:15,340 --> 00:06:13,580

residential high school for 650

168

00:06:25,030 --> 00:06:15,350

qualified students from across the state

169

00:06:27,340 --> 00:06:25,040

of Illinois body epic representational

170

00:06:29,200 --> 00:06:27,350

genius students are accepted into the

171

00:06:30,630 --> 00:06:29,210

program at pence graders and live in

172

00:06:33,250 --> 00:06:30,640

residential halls during the school year

173

00:06:38,680 --> 00:06:33,260

team titanmen members actually come from

174

00:06:41,410 --> 00:06:38,690

the cities of Freeport Woodbridge and

175

00:06:43,990 --> 00:06:41,420

Glen Ellen Illinois congratulations to

176
00:06:48,460 --> 00:06:44,000
the team Titan members Alec Alonso

177
00:06:49,660 --> 00:06:48,470
Cassandra Clare Michael and Ryan well

178
00:06:52,120 --> 00:06:49,670
you ready for another another school

179
00:06:54,430 --> 00:06:52,130
can't wait all the way from Utah is team

180
00:06:57,520 --> 00:06:54,440
aegis from Herriman high school and

181
00:06:59,740 --> 00:06:57,530
Harriman Utah congratulations this

182
00:07:02,110 --> 00:06:59,750
two-person team was sponsored by mr.

183
00:07:04,360 --> 00:07:02,120
Matthew lung Harriman high schools in

184
00:07:05,650 --> 00:07:04,370
public schools serving over 2,100

185
00:07:08,860 --> 00:07:05,660
students from the cities of harriman

186
00:07:11,080 --> 00:07:08,870
south jordan and Riverton chairman is

187
00:07:12,940 --> 00:07:11,090
south of Salt Lake City and as a site

188
00:07:15,100 --> 00:07:12,950

where some Utah home building decide to

189

00:07:16,750 --> 00:07:15,110

bring movie magic to life by building an

190

00:07:18,610 --> 00:07:16,760

exact replica of the house and the

191

00:07:20,260 --> 00:07:18,620

Disney movie up just to remind people

192

00:07:22,330 --> 00:07:20,270

that Adventure is out there an

193

00:07:24,370 --> 00:07:22,340

appropriate model for this EDC finals

194

00:07:27,460 --> 00:07:24,380

team congratulations to Matthew and

195

00:07:29,770 --> 00:07:27,470

Christian moving back to a Midwest we

196

00:07:31,200 --> 00:07:29,780

have team arion from area high school p

197

00:07:33,840 --> 00:07:31,210

0 p physics and

198

00:07:35,969 --> 00:07:33,850

indus sponsor a Miss Virginia walkin

199

00:07:40,050 --> 00:07:35,979

this all-girls team includes ashlynn

200

00:07:42,059 --> 00:07:40,060

Lorena Madison and Sabrina very high is

201
00:07:44,790 --> 00:07:42,069
quite of a unified school district plus

202
00:07:51,330 --> 00:07:44,800
there was 544 students in pre-k through

203
00:07:53,730 --> 00:07:51,340
12th grade District students who live in

204
00:07:57,140 --> 00:07:53,740
a 450 square mile region around the

205
00:07:59,879 --> 00:07:57,150
school area is the first green school

206
00:08:01,650 --> 00:07:59,889
Green Team has promote environmentally

207
00:08:04,110 --> 00:08:01,660
friendly practices for the school and

208
00:08:08,120 --> 00:08:04,120
the community congratulations to team

209
00:08:10,830 --> 00:08:08,130
arion and finally from my home state of

210
00:08:12,420 --> 00:08:10,840
California team war from summit view

211
00:08:14,990 --> 00:08:12,430
school chemistry class in North

212
00:08:17,460 --> 00:08:15,000
Hollywood California congratulations

213
00:08:19,890 --> 00:08:17,470

this four-person team was sponsored by

214

00:08:22,230 --> 00:08:19,900

mrs. carol cow some of you as a unique

215

00:08:24,120 --> 00:08:22,240

school that individualizes college prep

216

00:08:26,520 --> 00:08:24,130

curriculum for students to significant

217

00:08:28,920 --> 00:08:26,530

learning challenges small class size and

218

00:08:30,330 --> 00:08:28,930

high teacher-student ratio enables

219

00:08:34,140 --> 00:08:30,340

summit view of the students to identify

220

00:08:35,830 --> 00:08:34,150

their position and experience

221

00:08:39,100 --> 00:08:35,840

schools lamp in the sample

222

00:08:40,510 --> 00:08:39,110

just outside Los Angeles this community

223

00:08:42,760 --> 00:08:40,520

was famous for a half mile long

224

00:08:44,820 --> 00:08:42,770

California history or painted on the

225

00:08:47,680 --> 00:08:44,830

side of a flood control channel

226
00:08:50,290 --> 00:08:47,690
congratulations to Cameron Ethan Greg

227
00:08:53,410 --> 00:08:50,300
and Tyson those are the five schools

228
00:08:54,630 --> 00:08:53,420
selected by evaluation team for NASA x16

229
00:08:57,700 --> 00:08:54,640
exploration design challenge

230
00:09:00,480 --> 00:08:57,710
congratulations all of you Wow Rex we

231
00:09:03,130 --> 00:09:00,490
have some really rad teams that's true

232
00:09:05,680 --> 00:09:03,140
now each team will be assigned a mentor

233
00:09:07,240 --> 00:09:05,690
from NASA Langley Research Center with

234
00:09:09,160 --> 00:09:07,250
the help of their mentors the team's

235
00:09:11,650 --> 00:09:09,170
designs will be refined and uploaded

236
00:09:14,350 --> 00:09:11,660
into altiris the online tool for the

237
00:09:16,360 --> 00:09:14,360
assessment of radiation in space this

238
00:09:18,910 --> 00:09:16,370

set of integrated simulation tools is

239

00:09:20,800 --> 00:09:18,920

used by NASA scientists and engineers to

240

00:09:23,080 --> 00:09:20,810

study the effects of space radiation on

241

00:09:25,600 --> 00:09:23,090

shielding materials electronics and

242

00:09:27,640 --> 00:09:25,610

biological systems the results of this

243

00:09:29,290 --> 00:09:27,650

testing will help the NASA and Lockheed

244

00:09:32,350 --> 00:09:29,300

Martin team evaluate the effectiveness

245

00:09:34,210 --> 00:09:32,360

of each design after the old terrace

246

00:09:35,530 --> 00:09:34,220

results are tabulated one of these high

247

00:09:37,750 --> 00:09:35,540

school teams will be deemed the winner

248

00:09:39,370 --> 00:09:37,760

earning an honor to go to NASA Kennedy

249

00:09:41,800 --> 00:09:39,380

Space Center and watch their payload

250

00:09:44,350 --> 00:09:41,810

blast off into space as a Ryan launches

251
00:09:46,930 --> 00:09:44,360
on exploration flight test-1 from Cape

252
00:09:48,610 --> 00:09:46,940
Canaveral Air Force Base in Florida we

253
00:09:50,290 --> 00:09:48,620
want to whisk eat wish each team the

254
00:09:52,030 --> 00:09:50,300
best of luck as they begin the testing

255
00:09:54,220 --> 00:09:52,040
phase of this challenge and again

256
00:09:57,010 --> 00:09:54,230
congratulations to our five teams for a

257
00:09:58,990 --> 00:09:57,020
job well done you can add your own

258
00:10:00,460 --> 00:09:59,000
congratulations to these teams by

259
00:10:04,650 --> 00:10:00,470
sending them a Twitter message at

260
00:10:08,860 --> 00:10:04,660
hashtag red shield that's hashtag our ad

261
00:10:10,270 --> 00:10:08,870
s.h.i.e.l.d the announcement of the team

262
00:10:11,920 --> 00:10:10,280
earning the honor to fly their

263
00:10:14,140 --> 00:10:11,930

experiment and attend the inaugural

264

00:10:16,510 --> 00:10:14,150

launch of Orion will be made on April

265

00:10:17,950 --> 00:10:16,520

25th at the opening of the u.s. science

266

00:10:19,750 --> 00:10:17,960

and engineering festival in Washington

267

00:10:22,510 --> 00:10:19,760

DC so watch for that exciting

268

00:10:24,010 --> 00:10:22,520

announcement coming up soon meanwhile

269

00:10:26,080 --> 00:10:24,020

remember that students around the world

270

00:10:28,360 --> 00:10:26,090

can still participate in phase one of

271

00:10:33,250 --> 00:10:28,370

the exploration design challenge just

272

00:10:37,450 --> 00:10:33,260

log on to the website at [WWE gov ford /](http://WWE.gov/ford/)

273

00:10:39,070 --> 00:10:37,460

education /e DC complete the suggested

274

00:10:41,500 --> 00:10:39,080

activities and submit your names before

275

00:10:43,930 --> 00:10:41,510

june thirtieth to join the honorary crew

276

00:10:45,129 --> 00:10:43,940

for Orion's first flight thank you for

277

00:10:46,960 --> 00:10:45,139

joining us today