

READY FOR FLIGHT

ARTEMIS

1
00:00:03,083 --> 00:00:05,625
[MUSIC]

2
00:00:05,625 --> 00:00:07,291
>> I THINK EVERY PERSON

3
00:00:07,291 --> 00:00:08,625
WHO COMES TO WORK FOR NASA

4
00:00:08,625 --> 00:00:10,666
DREAMS OF BEING PART OF

5
00:00:10,666 --> 00:00:12,000
THAT SPACECRAFT

6
00:00:12,000 --> 00:00:13,708
DEVELOPMENT PROGRAM.

7
00:00:13,708 --> 00:00:15,333
THAT YOU GET TO SEE IT LAUNCH

8
00:00:15,333 --> 00:00:16,208
AND YOU GET TO SEE IT

9
00:00:16,208 --> 00:00:19,708
SEND HUMANS TO THE NEXT STEP

10
00:00:19,708 --> 00:00:22,125
IN THE FRONTIER OF SPACE, RIGHT?

11
00:00:22,125 --> 00:00:24,375
AND I THINK EVERY ONE OF US

12
00:00:24,375 --> 00:00:25,125
STARTED AT NASA

13
00:00:25,125 --> 00:00:27,416

WITH THAT DREAM.

14

00:00:33,208 --> 00:00:35,250

>> OKAY, UH, TO START, FIRST,

15

00:00:35,250 --> 00:00:36,291

TELL US A LITTLE BIT ABOUT

16

00:00:36,291 --> 00:00:38,458

HOW YOU GOT HERE.

17

00:00:38,458 --> 00:00:40,250

UM, THEN, IF YOU COULD,

18

00:00:40,250 --> 00:00:41,708

SHARE WITH US, UH,

19

00:00:41,708 --> 00:00:43,666

WHO-WHO MONICA IS.

20

00:00:43,666 --> 00:00:45,166

>> OKAY, UH, WELL,

21

00:00:45,166 --> 00:00:46,541

I'VE BEEN OUT HERE 12 YEARS.

22

00:00:46,541 --> 00:00:47,166

I'M A RESEARCH

23

00:00:47,166 --> 00:00:48,333

LABORATORY MECHANIC.

24

00:00:48,333 --> 00:00:49,000

THEY HIRED ME ON,

25

00:00:49,000 --> 00:00:50,791

ACTUALLY AS GENERAL LABOR.

26

00:00:50,791 --> 00:00:52,666

AND SAID, IF I DID REALLY WELL,

27

00:00:52,666 --> 00:00:53,625

I HAD A CHANCE TO GET INTO THE,

28

00:00:53,625 --> 00:00:55,250

UH, NASA APPRENTICE PROGRAM.

29

00:00:55,250 --> 00:00:56,916

SO, I DID REALLY WELL

30

00:00:56,916 --> 00:00:58,666

AND I GOT INTO THE PROGRAM.

31

00:00:58,666 --> 00:00:59,875

THEY SENT ME TO SCHOOL AND

32

00:00:59,875 --> 00:01:01,166

THEN ON THE JOB TRAINING HOURS

33

00:01:01,166 --> 00:01:02,041

TO LEARN THE SKILLS

34

00:01:02,041 --> 00:01:03,541

THAT I NEEDED FOR HERE.

35

00:01:03,541 --> 00:01:04,625

AND, UM, I GUESS

36

00:01:04,625 --> 00:01:06,416

THE REST OF HISTORY.

37

00:01:06,416 --> 00:01:07,458

>> I'M CALE YEAGER,

38

00:01:07,458 --> 00:01:09,375

PART OF THE RESEARCH LABORATORY

39
00:01:09,375 --> 00:01:12,166
MECHANIC APPRENTICESHIP PROGRAM.

40
00:01:12,166 --> 00:01:13,791
>> OKAY, MY NAME IS STEVE WEST.

41
00:01:13,791 --> 00:01:14,666
I'M THE TEST FACILITY

42
00:01:14,666 --> 00:01:17,291
COORDINATOR HERE AS SEC.

43
00:01:17,291 --> 00:01:18,708
UH, BEEN HERE A LONG TIME.

44
00:01:18,708 --> 00:01:20,333
I THINK I'M ON MY --

45
00:01:20,333 --> 00:01:23,500
STARTING MY 37TH YEAR.

46
00:01:23,500 --> 00:01:25,416
IF YOU WANNA DO THE MATH,

47
00:01:25,416 --> 00:01:27,333
IT'S PRETTY CLOSE TO THAT.

48
00:01:27,333 --> 00:01:28,833
>> MY NAME'S ERIN REED.

49
00:01:28,833 --> 00:01:30,833
UM, I'M A TEST ENGINEER

50
00:01:30,833 --> 00:01:32,666
HERE AT SEC.

51
00:01:32,666 --> 00:01:33,708
>> I'M NICOLE SMITH,

52
00:01:33,708 --> 00:01:34,875
I'M THE PROJECT MANAGER

53
00:01:34,875 --> 00:01:35,875
FOR ORION TESTING,

54
00:01:35,875 --> 00:01:36,958
HERE AT NASA'S

55
00:01:36,958 --> 00:01:40,833
PLUM BROOK STATION.

56
00:01:43,291 --> 00:01:44,083
FOR THE BETTER PART OF

57
00:01:44,083 --> 00:01:45,125
THE LAST 12 YEARS,

58
00:01:45,125 --> 00:01:46,208
I'VE BEEN WORKING ON

59
00:01:46,208 --> 00:01:48,708
SOME FORM OF ORION, UM,

60
00:01:48,708 --> 00:01:50,125
WITH A SLIGHT DETOUR, UM,

61
00:01:50,125 --> 00:01:51,458
TO BE A LEGISLATIVE FELLOW

62
00:01:51,458 --> 00:01:52,333
ON THE HILL FOR

63
00:01:52,333 --> 00:01:54,791

THE SENIOR SENATOR FROM OHIO.

64

00:01:54,791 --> 00:01:55,416

>> AT THE END OF

65

00:01:55,416 --> 00:01:56,458

THE FOUR YEARS THAT

66

00:01:56,458 --> 00:01:57,041

THIS APPRENTICESHIP'S

67

00:01:57,041 --> 00:01:57,750

SUPPOSED TO TAKE,

68

00:01:57,750 --> 00:01:58,750

I'LL COME OUT AS

69

00:01:58,750 --> 00:02:00,750

A RESEARCH LABORATORY MECHANIC,

70

00:02:00,750 --> 00:02:02,208

HAVE MY JOURNEYMAN'S CARD,

71

00:02:02,208 --> 00:02:03,500

AND GO FROM THERE.

72

00:02:03,500 --> 00:02:04,625

WELL, I'VE ALWAYS BEEN

73

00:02:04,625 --> 00:02:05,791

A BIG SPACE NERD.

74

00:02:05,791 --> 00:02:07,125

UH, ALWAYS BEEN A FAN

75

00:02:07,125 --> 00:02:08,416

OF OUTER SPACE

76

00:02:08,416 --> 00:02:09,250
AND SPACE TRAVEL

77

00:02:09,250 --> 00:02:10,250
AND THE BIG QUESTION

78

00:02:10,250 --> 00:02:11,583
OF HOW DID WE GET HERE?

79

00:02:11,583 --> 00:02:13,750
UM, JUST ALWAYS BEEN

80

00:02:13,750 --> 00:02:15,333
VERY INTRIGUED BY SPACE.

81

00:02:15,333 --> 00:02:16,916
I'M INCLINED, MECHANICALLY.

82

00:02:16,916 --> 00:02:18,291
I'M GOOD WITH MY HANDS.

83

00:02:18,291 --> 00:02:20,625
I LIKE BUILDING STUFF,

84

00:02:20,625 --> 00:02:22,666
TROUBLESHOOTING.

85

00:02:22,666 --> 00:02:23,541
SO, IT KINDA WORKED OUT

86

00:02:23,541 --> 00:02:25,750
THAT I GOT TO PARTNER MY SKILLS

87

00:02:25,750 --> 00:02:29,958
WITH MY DESIRES AND MY, UM--

88

00:02:29,958 --> 00:02:31,000

WHAT I ENJOY.

89

00:02:31,000 --> 00:02:31,666

>> I WOULD SAY

90

00:02:31,666 --> 00:02:33,166

MY MAIN ROLE OUT HERE

91

00:02:33,166 --> 00:02:35,208

IS AN OPERATOR,

92

00:02:35,208 --> 00:02:37,291

ESPECIALLY DURING TEST TIME.

93

00:02:37,291 --> 00:02:38,625

I RUN THE COMPRESSORS

94

00:02:38,625 --> 00:02:39,875

FOR THE CRYO TRIAL,

95

00:02:39,875 --> 00:02:40,791

THAT CHANGES THE TEMPERATURES

96

00:02:40,791 --> 00:02:42,375

OF THE VACUUM CHAMBER.

97

00:02:42,375 --> 00:02:43,791

SO, UH, AND OFFLOADS

98

00:02:43,791 --> 00:02:44,625

OF LIQUID NITROGEN

99

00:02:44,625 --> 00:02:46,166

AND GASEOUS NITROGEN.

100

00:02:46,166 --> 00:02:47,500

>> I'M THE CONTAMINATION

101
00:02:47,500 --> 00:02:48,791
ENGINEER HERE.

102
00:02:48,791 --> 00:02:51,250
SO, WHEN I FIRST GOT HERE, UM,

103
00:02:51,250 --> 00:02:52,416
THE FACILITY HAS GENERALLY

104
00:02:52,416 --> 00:02:53,833
ONLY BEEN USED FOR

105
00:02:53,833 --> 00:02:56,291
LARGE-SCALE DEPLOYMENTS.

106
00:02:56,291 --> 00:02:56,916
AND SO,

107
00:02:56,916 --> 00:02:58,250
THEY'RE NOT REALLY CLEAN.

108
00:02:58,250 --> 00:02:59,791
THEY'RE NOT MEANT TO BE

109
00:02:59,791 --> 00:03:01,083
IN A CLEAN ENVIRONMENT.

110
00:03:01,083 --> 00:03:01,916
SO, THE VACUUM CHAMBER

111
00:03:01,916 --> 00:03:02,583
THAT WE'VE USED

112
00:03:02,583 --> 00:03:04,666
HAS ALWAYS BEEN SORT OF DIRTY.

113
00:03:04,666 --> 00:03:06,416

AND SO, WHEN I CAME HERE,

114

00:03:06,416 --> 00:03:07,625

THERE WAS A BIG PUSH TO

115

00:03:07,625 --> 00:03:08,458

TRY TO FIGURE OUT

116

00:03:08,458 --> 00:03:10,208

HOW TO CLEAN THE CHAMBER

117

00:03:10,208 --> 00:03:10,916

AND HOW TO MAKE

118

00:03:10,916 --> 00:03:12,083

THE FACILITY CLEAN ENOUGH

119

00:03:12,083 --> 00:03:12,708

SO THAT,

120

00:03:12,708 --> 00:03:14,375

WHEN WE GOT A FLIGHT VEHICLE,

121

00:03:14,375 --> 00:03:15,375

WE WOULDN'T CONTAMINATE

122

00:03:15,375 --> 00:03:16,583

THE VEHICLE.

123

00:03:17,666 --> 00:03:24,791

[MUSIC]

124

00:03:24,791 --> 00:03:27,291

>> WE ARE STANDING VERY HIGH UP

125

00:03:27,291 --> 00:03:28,750

IN THE ASSEMBLY HIGH BAY

126
00:03:28,750 --> 00:03:30,333
AT THE SPACE ENVIRONMENTS

127
00:03:30,333 --> 00:03:32,000
COMPLEX AT NASA'S

128
00:03:32,000 --> 00:03:32,916
PLUM BROOK STATION.

129
00:03:32,916 --> 00:03:35,833
>> WE HAVE A-A VACUUM CHAMBER--

130
00:03:35,833 --> 00:03:36,666
ENVIRONMENTAL CHAMBER

131
00:03:36,666 --> 00:03:37,791
THAT WE PROVIDE THE ENVIRONMENT

132
00:03:37,791 --> 00:03:39,000
FOR SPACE.

133
00:03:39,000 --> 00:03:40,000
WE HAVE THE WORLD'S LARGEST

134
00:03:40,000 --> 00:03:41,750
SHAKER TABLE.

135
00:03:41,750 --> 00:03:43,958
WE HAVE THE MOST POWERFUL

136
00:03:43,958 --> 00:03:45,791
REVERBERATION CHAMBER,

137
00:03:45,791 --> 00:03:46,666
WHICH IS CAPABLE OF

138
00:03:46,666 --> 00:03:48,750

PRODUCING 163 DB.

139

00:03:48,750 --> 00:03:51,708
THE SHAKER TABLE, THAT IS FOR,

140

00:03:51,708 --> 00:03:53,666
UH, THE SOUND, UH,

141

00:03:53,666 --> 00:03:55,416
WHEN YOU-YOU TAKE A ROCKET

142

00:03:55,416 --> 00:03:56,250
AND YOU POUND IT WITH

143

00:03:56,250 --> 00:03:57,208
THE SOUND IT MAKES

144

00:03:57,208 --> 00:03:59,083
WHEN IT-- AT LIFTOFF.

145

00:03:59,083 --> 00:03:59,750
SO, THERE'S A LOT OF

146

00:03:59,750 --> 00:04:00,541
CAPABILITIES THAT

147

00:04:00,541 --> 00:04:03,041
THIS TEST FACILITY NOW HAS.

148

00:04:03,041 --> 00:04:04,833
AT ONE TIME, IT WAS JUST

149

00:04:04,833 --> 00:04:05,666
THE WORLD'S LARGEST

150

00:04:05,666 --> 00:04:06,541
VACUUM CHAMBER WITH

151
00:04:06,541 --> 00:04:09,333
THE WORLD'S LARGEST COLD WALL.

152
00:04:09,333 --> 00:04:11,416
SO, IT'S MUCH MORE, NOW.

153
00:04:12,500 --> 00:04:19,833
[MUSIC]

154
00:04:19,833 --> 00:04:21,041
>> A LOT OF THE TECHNICIANS

155
00:04:21,041 --> 00:04:22,083
AND ENGINEERS HERE

156
00:04:22,083 --> 00:04:23,916
ARE VERY HANDS-ON AND

157
00:04:23,916 --> 00:04:24,708
WE HAVE VERY DIVERSE

158
00:04:24,708 --> 00:04:25,541
BACKGROUNDS.

159
00:04:25,541 --> 00:04:26,458
AND IT'S REALLY IMPORTANT

160
00:04:26,458 --> 00:04:27,666
TO BE ABLE TO TAKE

161
00:04:27,666 --> 00:04:29,500
THAT DIVERSITY OF EXPERIENCE

162
00:04:29,500 --> 00:04:30,333
AND BRING IT HERE

163
00:04:30,333 --> 00:04:31,500

TO SOLVE PROBLEMS.

164

00:04:31,500 --> 00:04:32,875

LIKE, YOU'LL HAVE MONICA

165

00:04:32,875 --> 00:04:34,333

OUT HELPING OFFLOAD

166

00:04:34,333 --> 00:04:35,750

ALL OF THE NITROGEN TRUCKS.

167

00:04:35,750 --> 00:04:37,666

WE'LL GO THROUGH ABOUT 12

168

00:04:37,666 --> 00:04:39,708

TO 14 NITROGEN TRUCKS A DAY

169

00:04:39,708 --> 00:04:40,208

WHEN WE'RE RUNNING

170

00:04:40,208 --> 00:04:41,583

THE THERMAL VACUUM CHAMBER.

171

00:04:41,583 --> 00:04:42,666

YOU'LL HAVE CALE OVER,

172

00:04:42,666 --> 00:04:43,875

DRIVING THE DOOR.

173

00:04:43,875 --> 00:04:44,833

I THINK HE'S DOWN THERE

174

00:04:44,833 --> 00:04:46,208

CLEANING THE FLOOR RIGHT NOW.

175

00:04:46,208 --> 00:04:47,500

EVERYBODY IS HANDS-ON AND

176
00:04:47,500 --> 00:04:49,000
DOES A TON OF DIFFERENT STUFF.

177
00:04:49,000 --> 00:04:50,291
ERIN REED IS AN EXAMPLE OF

178
00:04:50,291 --> 00:04:50,875
ONE OF OUR

179
00:04:50,875 --> 00:04:51,958
TEST CONDUCTORS, RIGHT?

180
00:04:51,958 --> 00:04:52,875
SO, SHE'S GOING TO BE

181
00:04:52,875 --> 00:04:54,083
THAT POINT OF CONTACT

182
00:04:54,083 --> 00:04:55,750
BETWEEN THE FACILITY TEAM

183
00:04:55,750 --> 00:04:56,416
THAT'S RUNNING

184
00:04:56,416 --> 00:04:57,583
THE VACUUM CHAMBER

185
00:04:57,583 --> 00:04:59,291
AND THE VEHICLE TEAM.

186
00:04:59,291 --> 00:05:00,583
AND THEN YOU'VE GOT THE PEOPLE

187
00:05:00,583 --> 00:05:01,375
WHO HAVE BEEN HERE

188
00:05:01,375 --> 00:05:02,583

FOR A REALLY LONG TIME,

189

00:05:02,583 --> 00:05:03,750

WHO MANAGE A LOT OF STUFF

190

00:05:03,750 --> 00:05:04,958

AND MAKE SURE THAT

191

00:05:04,958 --> 00:05:06,333

ALL THE GEARS KEEP GOING.

192

00:05:06,333 --> 00:05:07,666

SO, LIKE, STEVE WEST WILL BE

193

00:05:07,666 --> 00:05:09,625

MANAGING ALL THE TECHNICIANS,

194

00:05:09,625 --> 00:05:10,791

WHERE THEY'RE DEPLOYED,

195

00:05:10,791 --> 00:05:12,583

HELPING WITH ALL THE OPERATIONS.

196

00:05:12,583 --> 00:05:13,458

SOMETIMES YOU'LL SEE HIM

197

00:05:13,458 --> 00:05:15,000

DOWN HERE ON THE CRANE LIFTS.

198

00:05:15,000 --> 00:05:15,666

AND THEN YOU HAVE

199

00:05:15,666 --> 00:05:16,250

SOMEONE LIKE ME,

200

00:05:16,250 --> 00:05:17,333

WHO'S THE PROJECT MANAGER,

201
00:05:17,333 --> 00:05:18,500
WHO MAKES SURE THAT

202
00:05:18,500 --> 00:05:19,708
ALL THESE PEOPLE HAVE

203
00:05:19,708 --> 00:05:21,458
ALL THE RESOURCES THEY NEED.

204
00:05:21,458 --> 00:05:22,708
I'LL MAKE SURE THAT EVERYBODY

205
00:05:22,708 --> 00:05:23,583
WORKING ON THE TEAM

206
00:05:23,583 --> 00:05:24,875
KNOWS ALL THE INFORMATION

207
00:05:24,875 --> 00:05:26,208
THAT THEY NEED TO KNOW.

208
00:05:26,208 --> 00:05:27,208
SO, WE'RE JUST TRYIN' TO

209
00:05:27,208 --> 00:05:28,083
TIE IT ALL TOGETHER

210
00:05:28,083 --> 00:05:28,916
AND KEEP EVERYONE MOVING

211
00:05:28,916 --> 00:05:30,250
IN THE SAME DIRECTION.

212
00:05:30,250 --> 00:05:32,375
>> WE ARE ALL VERY, UH, DIVERSE,

213
00:05:32,375 --> 00:05:34,541

UH, AS FAR AS OUR PERSONALITIES.

214

00:05:34,541 --> 00:05:36,250

AND WE'RE ALL VERY ACCEPTING.

215

00:05:36,250 --> 00:05:37,791

WE ALL LOVE TO JUST HAVE FUN.

216

00:05:37,791 --> 00:05:39,125

I THINK-I THINK THAT'S PROBABLY

217

00:05:39,125 --> 00:05:39,958

THE BIGGEST PART OF

218

00:05:39,958 --> 00:05:41,291

WHAT MAKES THIS TEAM WORK,

219

00:05:41,291 --> 00:05:42,958

IS THAT,

220

00:05:42,958 --> 00:05:44,208

NO MATTER WHAT TYPE OF DAY

221

00:05:44,208 --> 00:05:45,291

YOU'RE HAVING,

222

00:05:45,291 --> 00:05:46,333

NO MATTER WHAT TYPE OF WORK

223

00:05:46,333 --> 00:05:47,708

WE HAVE TO DO,

224

00:05:47,708 --> 00:05:48,666

WE'RE ALWAYS JOKIN' AROUND,

225

00:05:48,666 --> 00:05:49,750

WE'RE ALWAYS HAVING A GOOD TIME

226

00:05:49,750 --> 00:05:50,500

WITH ONE ANOTHER.

227

00:05:50,500 --> 00:05:52,416

>> IT'S A TIGHT-KNIT GROUP THAT,

228

00:05:52,416 --> 00:05:53,458

YOU KNOW, I WORK WITH.

229

00:05:53,458 --> 00:05:55,041

UH, AND EVERYBODY'S

230

00:05:55,041 --> 00:05:57,750

PRETTY ACCEPTING HERE.

231

00:05:57,750 --> 00:05:58,750

I DO THINK IT'S COOL

232

00:05:58,750 --> 00:06:00,208

FOR WOMEN TO SEE

233

00:06:00,208 --> 00:06:01,666

THEY CAN BREAK OUT OF

234

00:06:01,666 --> 00:06:04,583

MAYBE A TRADITIONAL JOB.

235

00:06:04,583 --> 00:06:06,458

T-THAT'S A GOOD THING.

236

00:06:06,458 --> 00:06:07,541

>> I REALLY LIKE THE PEOPLE

237

00:06:07,541 --> 00:06:08,583

I WORK WITH,

238

00:06:08,583 --> 00:06:10,750

EVERYBODY I WORK WITH.

239

00:06:10,750 --> 00:06:15,166

UM, WE-WE ALL WORK REALLY HARD.

240

00:06:15,166 --> 00:06:16,041

AND IT'S REALLY NICE

241

00:06:16,041 --> 00:06:19,125

TO KNOW THAT WHEN YOU'RE FEELING

242

00:06:19,125 --> 00:06:20,333

OVERLOADED WITH WORK

243

00:06:20,333 --> 00:06:21,375

THAT THE PEOPLE NEXT TO YOU

244

00:06:21,375 --> 00:06:23,000

ARE JUST AS OVERLOADED.

245

00:06:23,000 --> 00:06:24,500

MISERY LOVES COMPANY.

246

00:06:24,500 --> 00:06:25,500

UM, BUT MORE THAN THAT,

247

00:06:25,500 --> 00:06:27,125

WE'RE ALL WORKING TOGETHER

248

00:06:27,125 --> 00:06:29,750

TO-TOWARDS A COMMON GOAL.

249

00:06:29,750 --> 00:06:31,208

SO, THERE ARE LOTS OF

250

00:06:31,208 --> 00:06:32,750

DISAGREEMENTS WE HAVE --

251
00:06:32,750 --> 00:06:34,291
TECHNICAL DISAGREEMENTS --

252
00:06:34,291 --> 00:06:35,291
AND WE MAY SEE THINGS

253
00:06:35,291 --> 00:06:36,625
WITH A DIFFERENT PERSPECTIVE,

254
00:06:36,625 --> 00:06:37,583
BUT WE ALL KNOW THAT

255
00:06:37,583 --> 00:06:39,250
IT'S BECAUSE WE'RE TRYING TO

256
00:06:39,250 --> 00:06:41,000
CREATE THE BEST SOLUTION

257
00:06:41,000 --> 00:06:42,541
FOR WHAT WE'RE TRYING TO DO.

258
00:06:42,541 --> 00:06:43,625
>> I MEAN, DATA'S OUR PRODUCT.

259
00:06:43,625 --> 00:06:45,125
WE DON'T MAKE ANY WIDGETS,

260
00:06:45,125 --> 00:06:46,125
OR ANYTHING.

261
00:06:46,125 --> 00:06:46,708
SO THAT'S OUR PRODUCT.

262
00:06:46,708 --> 00:06:48,625
SO, I BELIEVE THE ENGINEERING

263
00:06:48,625 --> 00:06:49,583

AND THE TECHS HERE

264

00:06:49,583 --> 00:06:50,833
ARE OUTSTANDING.

265

00:06:50,833 --> 00:06:51,708
I WOULD PUT THEM UP AGAINST

266

00:06:51,708 --> 00:06:53,083
ANYONE IN THE WORLD.

267

00:06:55,000 --> 00:07:01,916
[MUSIC]

268

00:07:01,916 --> 00:07:02,708
>> SO, THE THING

269

00:07:02,708 --> 00:07:03,250
THAT'S DIFFERENT ABOUT

270

00:07:03,250 --> 00:07:04,375
HAVING ARTEMIS HERE

271

00:07:04,375 --> 00:07:06,541
IS THAT IT'S A REAL PIECE

272

00:07:06,541 --> 00:07:07,958
OF SPACE FLIGHT HARDWARE

273

00:07:07,958 --> 00:07:09,833
THAT'S GOING TO BE LAUNCHED

274

00:07:09,833 --> 00:07:11,125
WHEN IT'S DONE HERE.

275

00:07:11,125 --> 00:07:12,083
SO, WE DO A LOT OF OTHER

276
00:07:12,083 --> 00:07:14,083
TEST ARTICLES TO PREPARE.

277
00:07:14,083 --> 00:07:15,375
ALL THE OTHER PRIOR

278
00:07:15,375 --> 00:07:18,125
ORION HARDWARE WAS DEVELOPMENT.

279
00:07:18,125 --> 00:07:19,875
SO, THIS ONE IS -- IT'S HUGE.

280
00:07:19,875 --> 00:07:20,708
AND IT'S GONNA GO

281
00:07:20,708 --> 00:07:21,791
AROUND THE MOON.

282
00:07:21,791 --> 00:07:22,666
AND WE'RE GONNA BE ABLE TO

283
00:07:22,666 --> 00:07:23,250
SIT THERE

284
00:07:23,250 --> 00:07:24,500
AND WATCH IT LAUNCH

285
00:07:24,500 --> 00:07:25,500
AND WATCH IT WHILE

286
00:07:25,500 --> 00:07:26,541
IT'S OUT ON ITS ORBIT

287
00:07:26,541 --> 00:07:28,250
AND SEE HOW IT'S-HOW IT'S DOING

288
00:07:28,250 --> 00:07:29,083

AND SAY, "YEAH,

289

00:07:29,083 --> 00:07:31,000

"WE HAD A HUGE HAND IN THAT."

290

00:07:31,000 --> 00:07:31,833

>> I'VE BEEN HERE SO LONG

291

00:07:31,833 --> 00:07:33,041

THAT I'VE SEEN THE TRANSITION.

292

00:07:33,041 --> 00:07:34,833

AND IT'S SO NEAT

293

00:07:34,833 --> 00:07:35,541

TO FINALLY SEE--

294

00:07:35,541 --> 00:07:37,208

I SPENT A LIFETIME

295

00:07:37,208 --> 00:07:39,833

GETTING IT TO WHERE IT IS.

296

00:07:39,833 --> 00:07:41,000

AND I'M REALLY PROUD

297

00:07:41,000 --> 00:07:41,583

THAT WE'RE TESTING

298

00:07:41,583 --> 00:07:42,250

FLIGHT HARDWARE NOW.

299

00:07:42,250 --> 00:07:43,916

I THINK IT'S-IT'S A CREDIT

300

00:07:43,916 --> 00:07:45,583

TO THE PEOPLE I WORK WITH.

301
00:07:45,583 --> 00:07:46,333
UH, I'VE WORKED WITH

302
00:07:46,333 --> 00:07:47,750
SOME GREAT ENGINEERS

303
00:07:47,750 --> 00:07:48,583
AND GREAT TECHNICIANS.

304
00:07:48,583 --> 00:07:50,250
SO, VERY PROUD OF

305
00:07:50,250 --> 00:07:51,875
WHAT WE'VE ACCOMPLISHED.

306
00:07:51,875 --> 00:07:53,125
>> WHEN IT'S A FLIGHT VEHICLE,

307
00:07:53,125 --> 00:07:54,125
YOU'RE NOT JUST CONCERNED ABOUT

308
00:07:54,125 --> 00:07:55,125
THE DATA FROM THE TEST,

309
00:07:55,125 --> 00:07:56,125
YOU'RE ACTUALLY CONCERNED

310
00:07:56,125 --> 00:07:57,125
ABOUT THE VEHICLE ITSELF.

311
00:07:57,125 --> 00:07:57,958
'CAUSE THAT'S THE THING

312
00:07:57,958 --> 00:07:59,125
THAT'S GOING TO BE DELIVERED

313
00:07:59,125 --> 00:08:00,333

TO SPACE.

314

00:08:00,333 --> 00:08:01,291
SO, THAT'S WHEN

315

00:08:01,291 --> 00:08:03,125
IT BECOMES A HIGHER RISK.

316

00:08:03,125 --> 00:08:03,833
>> DURING THE THERMAL

317

00:08:03,833 --> 00:08:05,166
VACUUM TEST,

318

00:08:05,166 --> 00:08:07,000
WE'LL PROVIDE A REALLY COLD

319

00:08:07,000 --> 00:08:08,375
BACKGROUND OF SPACE,

320

00:08:08,375 --> 00:08:10,125
WITH OUR CRYO WALL.

321

00:08:10,125 --> 00:08:11,125
AND THEN WE'LL BE ABLE TO

322

00:08:11,125 --> 00:08:13,541
DO DIFFERENT ZONES OF HEATING

323

00:08:13,541 --> 00:08:15,041
TO SIMULATE BEING IN

324

00:08:15,041 --> 00:08:16,791
A SPECIFIC PART OF ORBIT,

325

00:08:16,791 --> 00:08:18,083
WHERE ONE PART OF THE SPACECRAFT

326
00:08:18,083 --> 00:08:19,250
MIGHT BE IN THE SUN,

327
00:08:19,250 --> 00:08:20,083
AND THE OTHER PART

328
00:08:20,083 --> 00:08:21,583
IS IN THE SHADE.

329
00:08:21,583 --> 00:08:22,250
WHEN WE'RE DONE WITH

330
00:08:22,250 --> 00:08:23,791
THE THERMAL VACUUM TEST,

331
00:08:23,791 --> 00:08:25,166
WE'LL BRING IT BACK OUT

332
00:08:25,166 --> 00:08:27,250
AND DO SOME RECONFIGURATION,

333
00:08:27,250 --> 00:08:28,125
AND THEN PUT IT BACK

334
00:08:28,125 --> 00:08:29,250
IN THAT CHAMBER.

335
00:08:29,250 --> 00:08:29,833
BUT INSTEAD OF

336
00:08:29,833 --> 00:08:31,458
PUMPING THE AIR OUT OF IT

337
00:08:31,458 --> 00:08:33,125
AND PUTTING THE COLD WALL IN,

338
00:08:33,125 --> 00:08:34,291

WE'LL ACTUALLY HIT IT

339

00:08:34,291 --> 00:08:36,250

WITH RADIO FREQUENCY WAVES

340

00:08:36,250 --> 00:08:39,500

TO DO ELECTRO-MAGNETIC TESTING.

341

00:08:39,500 --> 00:08:40,041

>> WHEN YOU GET

342

00:08:40,041 --> 00:08:41,000

IN THE TEST CONDITIONS

343

00:08:41,000 --> 00:08:41,583

AND YOU'VE GOT

344

00:08:41,583 --> 00:08:42,708

THE CHAMBER PUMP DOWN,

345

00:08:42,708 --> 00:08:43,708

AND THE CRYO TRIAL

346

00:08:43,708 --> 00:08:44,125

HAS THE TEMP

347

00:08:44,125 --> 00:08:46,000

WHERE IT'S SUPPOSED TO BE,

348

00:08:46,000 --> 00:08:47,541

IT CAN GET VERY BORING,

349

00:08:47,541 --> 00:08:48,208

BECAUSE EVERYTHING'S

350

00:08:48,208 --> 00:08:50,083

RUNNING PERFECTLY.

351
00:08:50,083 --> 00:08:51,250
BUT BORING IS GOOD AND,

352
00:08:51,250 --> 00:08:52,458
TO ME, IT'S EXCITING.

353
00:08:52,458 --> 00:08:53,583
YOU'RE PART OF THE CREW.

354
00:08:53,583 --> 00:08:54,875
YOU'RE PART OF HISTORY, REALLY.

355
00:08:54,875 --> 00:08:56,250
SO, I THINK THAT'S VERY NEAT.

356
00:08:57,583 --> 00:09:05,875
[MUSIC]

357
00:09:05,875 --> 00:09:06,833
>> WE FACE CHALLENGES

358
00:09:06,833 --> 00:09:08,000
ALMOST DAILY,

359
00:09:08,000 --> 00:09:09,500
WHICH IS PART OF WHY

360
00:09:09,500 --> 00:09:11,000
I LOVE THIS JOB.

361
00:09:11,000 --> 00:09:12,166
I MEAN, WE DON'T DO

362
00:09:12,166 --> 00:09:13,166
THE SAME THING EVERY DAY.

363
00:09:13,166 --> 00:09:13,958

WE DO SOMETHING DIFFERENT.

364

00:09:13,958 --> 00:09:17,041

WE-WE RESPOND TO CHANGES.

365

00:09:17,041 --> 00:09:17,708

EVERYTHING WE DO

366

00:09:17,708 --> 00:09:19,041

IS SCHEDULE-DRIVEN,

367

00:09:19,041 --> 00:09:19,708

FOR THE MOST PART.

368

00:09:19,708 --> 00:09:20,958

SO, WHEN SCHEDULE'S DELAY

369

00:09:20,958 --> 00:09:21,916

OR SCHEDULES--

370

00:09:21,916 --> 00:09:23,291

WE HAVE TO REDIRECT.

371

00:09:23,291 --> 00:09:24,083

AND THAT'S A CHALLENGE

372

00:09:24,083 --> 00:09:25,250

IN ITSELF.

373

00:09:25,250 --> 00:09:26,375

BUT THERE'S--

374

00:09:26,375 --> 00:09:27,416

WE KEEP OUR CREW

375

00:09:27,416 --> 00:09:29,916

WORKING VERY EFFECTIVELY, UH,

376
00:09:29,916 --> 00:09:30,750
ALL THE TIME,

377
00:09:30,750 --> 00:09:31,583
WHICH IS A CHALLENGE.

378
00:09:31,583 --> 00:09:33,208
AND I-I GET EXCITED

379
00:09:33,208 --> 00:09:35,375
ABOUT THOSE THINGS.

380
00:09:35,375 --> 00:09:36,458
>> I THINK THE BIGGEST RISKS

381
00:09:36,458 --> 00:09:37,625
ARE FOR YOUR SENSITIVE--

382
00:09:37,625 --> 00:09:38,958
YOUR OPTICAL COMPONENTS.

383
00:09:38,958 --> 00:09:39,541
FOR INSTANCE, WE HAVE

384
00:09:39,541 --> 00:09:41,250
A STAR TRACKER ON THE VEHICLE.

385
00:09:41,250 --> 00:09:42,083
SO, IF YOU COULD IMAGINE

386
00:09:42,083 --> 00:09:43,041
IF A PARTICLE OF DUST

387
00:09:43,041 --> 00:09:45,000
OR SOME BIT OF OIL

388
00:09:45,000 --> 00:09:46,791

GOT STUCK ON THE STAR TRACKER,

389

00:09:46,791 --> 00:09:48,291

AND THE COMPUTER SEES IT

390

00:09:48,291 --> 00:09:49,500

AS A STAR,

391

00:09:49,500 --> 00:09:50,541

BUT IT DOESN'T MOVE,

392

00:09:50,541 --> 00:09:52,500

NO MATTER HOW THE VEHICLE MOVES,

393

00:09:52,500 --> 00:09:53,583

THAT WOULD --

394

00:09:53,583 --> 00:09:54,291

THAT WOULD CHANGE

395

00:09:54,291 --> 00:09:56,083

HOW IT'S GONNA TRY TO NAVIGATE.

396

00:09:56,083 --> 00:09:57,208

AND IT MIGHT EVEN MESS UP

397

00:09:57,208 --> 00:09:58,916

SOME OF THE ALGORITHMS.

398

00:09:58,916 --> 00:10:00,041

SO, THERE'S A LOT OF

399

00:10:00,041 --> 00:10:01,250

THOSE SENSITIVE SURFACES

400

00:10:01,250 --> 00:10:02,750

THAT WE'RE CONCERNED ABOUT.

401
00:10:02,750 --> 00:10:03,250
>> IF SOMETHING

402
00:10:03,250 --> 00:10:05,125
GETS CONTAMINATED

403
00:10:05,125 --> 00:10:06,625
WITH THE SPACE FLIGHT HARDWARE,

404
00:10:06,625 --> 00:10:07,958
IT CAN BE DETRIMENTAL

405
00:10:07,958 --> 00:10:09,500
WHEN THEY GO TO LAUNCH IT.

406
00:10:09,500 --> 00:10:10,458
IF THE OILS FROM YOUR HAND--

407
00:10:10,458 --> 00:10:11,458
ANYTHING CAN GAS OFF,

408
00:10:11,458 --> 00:10:12,958
GOING INTO SPACE.

409
00:10:12,958 --> 00:10:14,541
YOU'RE CONTAMINATING

410
00:10:14,541 --> 00:10:15,500
THE TEST OUTCOME

411
00:10:15,500 --> 00:10:16,166
IF YOU TOUCH IT

412
00:10:16,166 --> 00:10:17,500
WITH YOUR FINGERTIPS, EVEN.

413
00:10:17,500 --> 00:10:20,500

SO WE HAVE TO BE THAT CAREFUL,

414

00:10:20,500 --> 00:10:21,750

'CAUSE IT IS

415

00:10:21,750 --> 00:10:23,416

SPACE FLIGHT HARDWARE.

416

00:10:23,416 --> 00:10:24,708

>> OUTSIDE OF WORK,

417

00:10:24,708 --> 00:10:26,666

I HAVE A FOUR YEAR OLD SON

418

00:10:26,666 --> 00:10:29,666

AND TWO EIGHT MONTH OLD SONS.

419

00:10:29,666 --> 00:10:30,625

UH, WE HAD TWINS

420

00:10:30,625 --> 00:10:31,416

OVER THE FURLOUGH,

421

00:10:31,416 --> 00:10:32,666

SO THAT WAS EXCITING.

422

00:10:32,666 --> 00:10:34,875

I'M LUCKY, UH, MY GIRLFRIEND

423

00:10:34,875 --> 00:10:36,750

IS VERY SUPPORTIVE.

424

00:10:36,750 --> 00:10:37,750

SHE HELPS OUT A LOT.

425

00:10:37,750 --> 00:10:39,041

SHE MAKES IT EASY.

426

00:10:39,041 --> 00:10:42,166

UM, HAVIN' THE TWINS AT HOME

427

00:10:42,166 --> 00:10:43,208

IS VERY TOUGH,

428

00:10:43,208 --> 00:10:45,916

'CAUSE SHE GETS RUN RAGGED.

429

00:10:45,916 --> 00:10:46,958

I GET HOME JUST IN TIME

430

00:10:46,958 --> 00:10:48,041

FOR BED TIME.

431

00:10:48,041 --> 00:10:49,625

UM, LUCKILY, AS

432

00:10:49,625 --> 00:10:51,041

FAR AS SCHOOL GOES,

433

00:10:51,041 --> 00:10:52,291

I'M DOING ONLINE COURSES

434

00:10:52,291 --> 00:10:53,500

THIS TIME AROUND.

435

00:10:53,500 --> 00:10:54,750

UM, AND HOPEFULLY,

436

00:10:54,750 --> 00:10:56,000

WE'LL BE ABLE TO COMPLETE

437

00:10:56,000 --> 00:10:57,750

JUST THROUGH ONLINE COURSES.

438

00:10:57,750 --> 00:10:58,416

BUT, YEAH, IT'S DEFINITELY

439

00:10:58,416 --> 00:10:59,666

TOUGH TO BALANCE IT.

440

00:10:59,666 --> 00:11:02,791

UM, IT'S VERY TOUGH.

441

00:11:02,791 --> 00:11:04,708

>> SO, IT TAKES-IT TAKES SOMEONE

442

00:11:04,708 --> 00:11:05,583

THAT'S MOTIVATED

443

00:11:05,583 --> 00:11:08,416

TO TRY TO GET IT ALL-ALL DONE.

444

00:11:08,416 --> 00:11:09,250

AND SOMETIMES I HAVE TO

445

00:11:09,250 --> 00:11:10,166

SACRIFICE A LITTLE BIT,

446

00:11:10,166 --> 00:11:11,750

ONE WAY OR THE OTHER, YOU KNOW,

447

00:11:11,750 --> 00:11:13,458

BECAUSE I DO HAVE A FAMILY.

448

00:11:13,458 --> 00:11:16,958

BUT, I LOVE THIS JOB.

449

00:11:16,958 --> 00:11:18,291

MY KIDS ARE HAPPY I WORK HERE.

450

00:11:18,291 --> 00:11:19,333

IT'S A GOOD THING.

451
00:11:19,333 --> 00:11:22,666
AND IT'S VERY, VERY EXCITING.

452
00:11:23,500 --> 00:11:31,916
[MUSIC]

453
00:11:31,916 --> 00:11:32,916
>> IT'S HUGE FOR ME

454
00:11:32,916 --> 00:11:34,166
TO BE A PART OF IT

455
00:11:34,166 --> 00:11:35,333
AND SEE THE SPACECRAFT

456
00:11:35,333 --> 00:11:37,625
COME HERE TO OHIO

457
00:11:37,625 --> 00:11:39,625
AND BE TESTED FOR FOUR MONTHS

458
00:11:39,625 --> 00:11:41,166
AND THEN SEE IT LAUNCH.

459
00:11:41,166 --> 00:11:43,416
AND I'M REALLY EXCITED ABOUT,

460
00:11:43,416 --> 00:11:44,958
UH, PEOPLE GOING BACK

461
00:11:44,958 --> 00:11:45,666
TO THE MOON.

462
00:11:45,666 --> 00:11:47,791
SO, THE IDEA OF THE FIRST WOMAN

463
00:11:47,791 --> 00:11:49,125

STEPPING FOOT ON THE MOON,

464

00:11:49,125 --> 00:11:50,333

AND ME GETTING AN OPPORTUNITY

465

00:11:50,333 --> 00:11:52,083

TO WORK ON THE SPACECRAFT HERE,

466

00:11:52,083 --> 00:11:53,250

IT-IT'S HUGE.

467

00:11:53,250 --> 00:11:54,750

SO, UH, I'M REALLY EXCITED

468

00:11:54,750 --> 00:11:56,166

FOR THAT.

469

00:11:56,166 --> 00:11:56,875

>> I'M LIKE, "WOW."

470

00:11:56,875 --> 00:11:57,500

YEAH, THIS IS REALLY

471

00:11:57,500 --> 00:11:58,333

COMING TO OUR FACILITY.

472

00:11:58,333 --> 00:11:59,458

THIS IS HISTORY.

473

00:11:59,458 --> 00:12:01,000

THIS IS PRETTY COOL.

474

00:12:01,000 --> 00:12:02,208

>> I THINK IT MEANS EVERYTHING.

475

00:12:02,208 --> 00:12:06,000

UM, I THINK THIS IS

476
00:12:06,000 --> 00:12:07,291
THE NEXT SMALL STEP

477
00:12:07,291 --> 00:12:10,041
IN-IN HUMANITY'S EXPLORATION

478
00:12:10,041 --> 00:12:11,416
OF THE UNIVERSE.

479
00:12:11,416 --> 00:12:12,750
UM, YOU KNOW,

480
00:12:12,750 --> 00:12:13,708
'CAUSE THIS IS GONNA HELP US

481
00:12:13,708 --> 00:12:15,666
NOT JUST GET TO THE MOON

482
00:12:15,666 --> 00:12:17,458
AND NOT JUST GET TO MARS,

483
00:12:17,458 --> 00:12:18,458
BUT THEN IT'S GONNA BE

484
00:12:18,458 --> 00:12:19,458
THE JUMP-OFF POINT

485
00:12:19,458 --> 00:12:20,625
TO THE NEXT PLACE WE GO.

486
00:12:20,625 --> 00:12:21,625
I REALLY FEEL IT'S --

487
00:12:21,625 --> 00:12:22,958
IT'S A REALLY AWESOME THING

488
00:12:22,958 --> 00:12:23,916

TO BE A PART OF.

489

00:12:23,916 --> 00:12:25,750

UM, WE ARE TAKING

490

00:12:25,750 --> 00:12:26,458

THAT NEXT STEP.

491

00:12:26,458 --> 00:12:27,458

WE ARE DOING

492

00:12:27,458 --> 00:12:28,833

THAT NEXT GREAT LEAP.

493

00:12:28,833 --> 00:12:31,333

>> I THINK ABOUT ALL OF

494

00:12:31,333 --> 00:12:33,458

THE THOUSANDS OF PEOPLE

495

00:12:33,458 --> 00:12:35,208

WHO WORKED ON THIS VEHICLE

496

00:12:35,208 --> 00:12:35,833

AND WORKED ON

497

00:12:35,833 --> 00:12:37,333

ALL OF ITS TESTING.

498

00:12:37,333 --> 00:12:38,333

I'M SUCH A SMALL PART

499

00:12:38,333 --> 00:12:39,958

OF THIS PROGRAM.

500

00:12:39,958 --> 00:12:43,041

I-I'M NOT EVEN A BLIP

501
00:12:43,041 --> 00:12:45,500
ON HOW THIS PROGRAM FUNCTIONS.

502
00:12:45,500 --> 00:12:48,125
BUT IT TAKES ALL OF THOSE PEOPLE

503
00:12:48,125 --> 00:12:50,125
TO MAKE SOMETHING LIKE

504
00:12:50,125 --> 00:12:50,875
THE ORION VEHICLE

505
00:12:50,875 --> 00:12:53,000
AND ARTEMIS SUCCESSFUL.

506
00:12:53,000 --> 00:12:54,958
AND SO I'M HAPPY TO BE A PART.

507
00:12:54,958 --> 00:12:55,791
IF THAT'S THE PART

508
00:12:55,791 --> 00:12:56,500
I NEED TO PLAY,

509
00:12:56,500 --> 00:12:58,125
I'M HAPPY TO BE A PART OF IT.

510
00:12:58,125 --> 00:13:02,125
SO, IT'S EXCITING.

511
00:13:03,166 --> 00:13:12,375
[MUSIC]

512
00:13:12,375 --> 00:13:13,708
>> WELL, I'M A REAL GO-GETTER.

513
00:13:13,708 --> 00:13:16,750

I LIKE TO GO, GO, GO,

514

00:13:16,750 --> 00:13:17,958

WHICH HELPS ME FOR THIS JOB,

515

00:13:17,958 --> 00:13:19,250

BECAUSE WE DO

516

00:13:19,250 --> 00:13:20,916

PUT A LOT OF HOURS IN.

517

00:13:20,916 --> 00:13:21,583

UM, I USED TO BE

518

00:13:21,583 --> 00:13:22,250

IN THE APPRENTICE PROGRAM.

519

00:13:22,250 --> 00:13:23,250

SO, I WAS GOING TO SCHOOL.

520

00:13:23,250 --> 00:13:23,708

AT THE TIME,

521

00:13:23,708 --> 00:13:26,833

I HAD THREE YOUNGER KIDS.

522

00:13:26,833 --> 00:13:28,791

[MACHINERY ECHOING LOUDLY]

523

00:13:28,791 --> 00:13:30,416

[LAUGHING]