
NASA

1
00:00:31,880 --> 00:01:03,270
[Music]

2
00:01:07,750 --> 00:01:05,270
good afternoon and welcome to nasa's

3
00:01:10,070 --> 00:01:07,760
kennedy space center i'm nasa press

4
00:01:11,670 --> 00:01:10,080
secretary jackie mcginnis and today

5
00:01:13,270 --> 00:01:11,680
you'll hear an update from nasa

6
00:01:15,670 --> 00:01:13,280
leadership following the scrub of the

7
00:01:17,190 --> 00:01:15,680
artemis one launched this morning after

8
00:01:19,990 --> 00:01:17,200
the team encountered an issue getting

9
00:01:22,070 --> 00:01:20,000
one of the four rs-25 engines to the

10
00:01:23,830 --> 00:01:22,080
proper temperature for liftoff

11
00:01:25,429 --> 00:01:23,840
earlier in the countdown teams were able

12
00:01:27,749 --> 00:01:25,439
to troubleshoot an issue related to a

13
00:01:30,149 --> 00:01:27,759

hydrogen spike while filling the core

14
00:01:33,590 --> 00:01:30,159
stage tanks and the rocket remains in a

15
00:01:35,429 --> 00:01:33,600
safe configuration as teams next steps

16
00:01:38,149 --> 00:01:35,439
here to talk with us today about today's

17
00:01:40,469 --> 00:01:38,159
operations and the path forward our nasa

18
00:01:43,270 --> 00:01:40,479
administrator bill nelson

19
00:01:44,950 --> 00:01:43,280
artemis mission manager mike serafin

20
00:01:46,870 --> 00:01:44,960
and associate administrator for the

21
00:01:49,109 --> 00:01:46,880
exploration systems development mission

22
00:01:50,870 --> 00:01:49,119
directorate jim free

23
00:01:53,030 --> 00:01:50,880
after the mission management team meets

24
00:01:55,030 --> 00:01:53,040
tomorrow to review data and discuss a

25
00:01:57,350 --> 00:01:55,040
path forward we'll also hold a

26
00:01:58,870 --> 00:01:57,360
teleconference to keep you updated

27
00:02:00,870 --> 00:01:58,880
we'll take questions from those of you

28
00:02:02,469 --> 00:02:00,880
in the room and over the phone and if

29
00:02:05,030 --> 00:02:02,479
you're joining us on the phone please

30
00:02:06,469 --> 00:02:05,040
press star one to enter the queue first

31
00:02:08,150 --> 00:02:06,479
i'll hand it over to administrator

32
00:02:12,630 --> 00:02:08,160
nelson

33
00:02:15,670 --> 00:02:12,640
i am very proud of this launch team

34
00:02:16,869 --> 00:02:15,680
they have solved several problems along

35
00:02:20,070 --> 00:02:16,879
the way

36
00:02:20,830 --> 00:02:20,080
and they got to one that needed time to

37
00:02:24,229 --> 00:02:20,840
be

38
00:02:26,309 --> 00:02:24,239

solved i am very grateful to you all for

39
00:02:29,190 --> 00:02:26,319
your patience

40
00:02:32,790 --> 00:02:29,200
this is a brand new rocket

41
00:02:35,910 --> 00:02:32,800
it's not going to fly until it's ready

42
00:02:38,949 --> 00:02:35,920
there are millions of components of this

43
00:02:43,670 --> 00:02:38,959
rocket and its systems

44
00:02:47,110 --> 00:02:43,680
and needless to say the complexity

45
00:02:48,550 --> 00:02:47,120
is daunting when you bring it all into

46
00:02:51,830 --> 00:02:48,560
the focus

47
00:02:53,270 --> 00:02:51,840
of a countdown

48
00:02:55,190 --> 00:02:53,280
you all

49
00:02:57,830 --> 00:02:55,200
no doubt have been up

50
00:03:00,470 --> 00:02:57,840
for some period of time our remarks are

51
00:03:02,229 --> 00:03:00,480
going to be short and we will open it up

52
00:03:04,070 --> 00:03:02,239
for your questions

53
00:03:05,910 --> 00:03:04,080
i want to say that the vice president

54
00:03:07,990 --> 00:03:05,920
was here

55
00:03:10,470 --> 00:03:08,000
she was pumped

56
00:03:13,589 --> 00:03:10,480
the entire time

57
00:03:17,270 --> 00:03:13,599
she is very bullish

58
00:03:19,110 --> 00:03:17,280
on our space program and on

59
00:03:21,750 --> 00:03:19,120
this particular

60
00:03:24,550 --> 00:03:21,760
program of going back to the moon and

61
00:03:25,910 --> 00:03:24,560
going to mars

62
00:03:27,509 --> 00:03:25,920
we had her

63
00:03:33,670 --> 00:03:27,519

meet with

64
00:03:38,949 --> 00:03:33,680
members of congress that were here

65
00:03:41,670 --> 00:03:38,959
she toured the onc building and saw the

66
00:03:43,430 --> 00:03:41,680
artemis hardware there

67
00:03:44,470 --> 00:03:43,440
for the future

68
00:03:46,149 --> 00:03:44,480
and

69
00:03:47,589 --> 00:03:46,159
overall

70
00:03:50,869 --> 00:03:47,599
she

71
00:03:55,110 --> 00:03:50,879
had a very productive visit

72
00:03:58,470 --> 00:03:55,120
and i would expect that you will see her

73
00:04:01,030 --> 00:03:58,480
at a future launch

74
00:04:02,390 --> 00:04:01,040
i want to say that uh understand that

75
00:04:04,710 --> 00:04:02,400
scrubs

76
00:04:07,509 --> 00:04:04,720
are just a part

77
00:04:10,470 --> 00:04:07,519
of this program

78
00:04:11,589 --> 00:04:10,480
on the space flight that i participated

79
00:04:15,429 --> 00:04:11,599
in

80
00:04:19,349 --> 00:04:15,439
uh hoot gibson the commander 36 and a

81
00:04:20,949 --> 00:04:19,359
half years ago we scrubbed four times on

82
00:04:24,310 --> 00:04:20,959
the pad

83
00:04:25,749 --> 00:04:24,320
it was the better part of a month

84
00:04:26,870 --> 00:04:25,759
in looking back

85
00:04:30,710 --> 00:04:26,880
had we

86
00:04:32,390 --> 00:04:30,720
after the fifth try got off to a perfect

87
00:04:34,870 --> 00:04:32,400
mission

88
00:04:38,150 --> 00:04:34,880

it would have not been a good day had we

89
00:04:40,469 --> 00:04:38,160
launched on any one of those four scrubs

90
00:04:43,830 --> 00:04:40,479
so when you're dealing in a high risk

91
00:04:45,830 --> 00:04:43,840
business and space flight is risky

92
00:04:48,150 --> 00:04:45,840
that's what you do

93
00:04:50,870 --> 00:04:48,160
you buy down that risk

94
00:04:51,909 --> 00:04:50,880
you make it as safe as possible and of

95
00:04:53,990 --> 00:04:51,919
course

96
00:04:56,390 --> 00:04:54,000
that is

97
00:04:59,590 --> 00:04:56,400
the whole reason for this test flight

98
00:05:02,710 --> 00:04:59,600
to stress it and to test it

99
00:05:05,590 --> 00:05:02,720
to make sure it's as safe as possible

100
00:05:07,350 --> 00:05:05,600
when artemis ii when we put

101
00:05:09,590 --> 00:05:07,360
humans

102
00:05:12,230 --> 00:05:09,600
in the spacecraft

103
00:05:14,550 --> 00:05:12,240
so for the details let me turn it over

104
00:05:17,110 --> 00:05:14,560
to mike sarafin

105
00:05:20,790 --> 00:05:17,120
well good afternoon it's been a very

106
00:05:22,629 --> 00:05:20,800
dynamic 48 hours since i was last here

107
00:05:24,790 --> 00:05:22,639
to talk to you

108
00:05:26,629 --> 00:05:24,800
the technical issues that the team has

109
00:05:28,870 --> 00:05:26,639
worked through they've they've overcome

110
00:05:30,550 --> 00:05:28,880
a number of them but we ran into one

111
00:05:31,350 --> 00:05:30,560
that we need a little more time to look

112
00:05:33,670 --> 00:05:31,360
at

113
00:05:36,230 --> 00:05:33,680

but the spaceport america's spaceport

114
00:05:39,110 --> 00:05:36,240
has been very dynamic we watched a

115
00:05:41,110 --> 00:05:39,120
launch control center a new spacecraft

116
00:05:43,909 --> 00:05:41,120
and a new rocket come to life and we

117
00:05:46,150 --> 00:05:43,919
watched the media show up we watched

118
00:05:47,110 --> 00:05:46,160
thousands of visitors show up in america

119
00:05:49,110 --> 00:05:47,120
watch

120
00:05:52,550 --> 00:05:49,120
this at this new activity so it's been a

121
00:05:54,469 --> 00:05:52,560
very dynamic 48 hours

122
00:05:57,110 --> 00:05:54,479
since we had our launch minus two day

123
00:05:58,710 --> 00:05:57,120
mission management team meeting the

124
00:06:00,230 --> 00:05:58,720
operations team out of the launch

125
00:06:01,590 --> 00:06:00,240
control center entered their launch

126
00:06:03,510 --> 00:06:01,600
countdown

127
00:06:05,350 --> 00:06:03,520
saturday morning and then saturday

128
00:06:07,350 --> 00:06:05,360
afternoon we had a couple of lightning

129
00:06:09,830 --> 00:06:07,360
strikes on at the pad we have a 32-story

130
00:06:12,309 --> 00:06:09,840
tall rocket out there and there were

131
00:06:15,350 --> 00:06:12,319
lightning strikes on towers one and two

132
00:06:17,510 --> 00:06:15,360
and our technical teams very quickly

133
00:06:18,790 --> 00:06:17,520
resolved that there were no issues with

134
00:06:21,270 --> 00:06:18,800
the vehicle

135
00:06:22,870 --> 00:06:21,280
through timely analysis and timely data

136
00:06:25,510 --> 00:06:22,880
assessment

137
00:06:30,790 --> 00:06:28,070
saturday afternoon we also

138
00:06:32,870 --> 00:06:30,800

closed out an action from the launch

139
00:06:36,150 --> 00:06:32,880
minus two day mission management team

140
00:06:38,070 --> 00:06:36,160
which was to re-verify our

141
00:06:40,309 --> 00:06:38,080
communications coverage associated with

142
00:06:43,510 --> 00:06:40,319
some late changes that we had

143
00:06:45,350 --> 00:06:43,520
with the rocket and the spacecraft and

144
00:06:47,590 --> 00:06:45,360
and the team got comfortable with the

145
00:06:48,710 --> 00:06:47,600
communications coverage plan

146
00:06:50,550 --> 00:06:48,720
and then

147
00:06:52,469 --> 00:06:50,560
sunday was largely a day of rest and a

148
00:06:54,870 --> 00:06:52,479
day of preparation for the team

149
00:06:56,950 --> 00:06:54,880
and late sunday evening

150
00:06:58,469 --> 00:06:56,960
a subset of the team came in for the

151
00:07:00,230 --> 00:06:58,479
tanking meeting

152
00:07:02,150 --> 00:07:00,240
myself and our launch director charlie

153
00:07:06,150 --> 00:07:02,160
blackwell thompson and our propulsive

154
00:07:09,510 --> 00:07:06,160
elements came in at 10 50

155
00:07:12,469 --> 00:07:09,520
this evening or the prior evening and we

156
00:07:14,950 --> 00:07:12,479
reassessed the readiness to

157
00:07:17,110 --> 00:07:14,960
load the vehicle with cryo cryogenic

158
00:07:19,670 --> 00:07:17,120
oxygen cryogenic fuel

159
00:07:21,670 --> 00:07:19,680
and we were go for that we had a go

160
00:07:23,909 --> 00:07:21,680
weather forecast which was 20 percent

161
00:07:26,390 --> 00:07:23,919
chance of lightning 40 chance of

162
00:07:27,990 --> 00:07:26,400
precipitation throughout the

163
00:07:28,870 --> 00:07:28,000

crowd loading period

164
00:07:30,629 --> 00:07:28,880
and

165
00:07:32,629 --> 00:07:30,639
right around that same time frame the

166
00:07:34,710 --> 00:07:32,639
team encountered a uh

167
00:07:36,629 --> 00:07:34,720
an issue verif with the verification of

168
00:07:38,950 --> 00:07:36,639
the orion flight software

169
00:07:41,749 --> 00:07:38,960
um it took about 11 minutes

170
00:07:44,550 --> 00:07:41,759
to have a command acknowledged to help

171
00:07:47,110 --> 00:07:44,560
verify the flight software and it was a

172
00:07:49,350 --> 00:07:47,120
simple misconfiguration one of the

173
00:07:50,950 --> 00:07:49,360
command and control modules was not

174
00:07:53,749 --> 00:07:50,960
activated

175
00:07:55,510 --> 00:07:53,759
and the team quickly resolved that

176
00:07:57,430 --> 00:07:55,520
and then once they configured it they

177
00:07:59,430 --> 00:07:57,440
quickly worked through the

178
00:08:01,510 --> 00:07:59,440
through the software verification and

179
00:08:04,550 --> 00:08:01,520
there were no concerns at that point

180
00:08:06,469 --> 00:08:04,560
with the orion uh software verification

181
00:08:08,790 --> 00:08:06,479
uh the tanking meeting itself was very

182
00:08:10,790 --> 00:08:08,800
clean uh we were done in 30 minutes and

183
00:08:12,950 --> 00:08:10,800
and we gave the go for tanking

184
00:08:14,790 --> 00:08:12,960
shortly thereafter the the

185
00:08:17,189 --> 00:08:14,800
the kennedy space center went into a

186
00:08:18,869 --> 00:08:17,199
lightning alert and the tanking was

187
00:08:21,749 --> 00:08:18,879
delayed for about an hour

188
00:08:23,510 --> 00:08:21,759

and then once the crowd loading started

189
00:08:26,309 --> 00:08:23,520
we started the

190
00:08:28,230 --> 00:08:26,319
loading of the hydrogen the team quickly

191
00:08:30,550 --> 00:08:28,240
encountered a

192
00:08:32,870 --> 00:08:30,560
hydrogen leak at the eight inch quick

193
00:08:33,909 --> 00:08:32,880
disconnect which is our fill and drain

194
00:08:36,790 --> 00:08:33,919
and

195
00:08:37,990 --> 00:08:36,800
the fast fill

196
00:08:39,670 --> 00:08:38,000
phase

197
00:08:41,509 --> 00:08:39,680
so they had to slow down the loading

198
00:08:43,430 --> 00:08:41,519
operation they chilled down that

199
00:08:45,509 --> 00:08:43,440
interface and and they managed to work

200
00:08:48,070 --> 00:08:45,519
their way through the full crowd loading

201
00:08:51,030 --> 00:08:48,080
operation of both the core stage as well

202
00:08:54,389 --> 00:08:51,040
as the upper stage successfully

203
00:08:55,350 --> 00:08:54,399
um once we got through the

204
00:09:03,350 --> 00:08:55,360
the

205
00:09:04,870 --> 00:09:03,360
we talked at our flight readiness review

206
00:09:06,949 --> 00:09:04,880
about the engine bleed we knew that that

207
00:09:09,110 --> 00:09:06,959
was a risk headed into this launch

208
00:09:11,430 --> 00:09:09,120
campaign and it would be the first time

209
00:09:14,389 --> 00:09:11,440
demonstrating that successfully

210
00:09:16,310 --> 00:09:14,399
we did encounter an issue

211
00:09:17,910 --> 00:09:16,320
chilling down engine number three we

212
00:09:20,310 --> 00:09:17,920
need the engine to be

213
00:09:21,910 --> 00:09:20,320

at the cryogenically cool temperature

214
00:09:27,430 --> 00:09:21,920
such that when it starts it's not

215
00:09:31,990 --> 00:09:30,070
the cold fuel that flows through it so

216
00:09:33,670 --> 00:09:32,000
we needed a little extra time to to

217
00:09:35,509 --> 00:09:33,680
assess that

218
00:09:38,070 --> 00:09:35,519
when the team started working through

219
00:09:39,350 --> 00:09:38,080
that they also saw an issue with a vent

220
00:09:41,750 --> 00:09:39,360
valve

221
00:09:43,269 --> 00:09:41,760
at the inner tank so the combination of

222
00:09:45,910 --> 00:09:43,279
not being able to

223
00:09:48,550 --> 00:09:45,920
get the engine three chilled down and

224
00:09:50,630 --> 00:09:48,560
then the vent valve issue that they saw

225
00:09:52,550 --> 00:09:50,640
at the inner tank really caused us to

226
00:09:55,670 --> 00:09:52,560
pause today and and we felt like we

227
00:09:58,070 --> 00:09:55,680
needed a little more time

228
00:09:59,430 --> 00:09:58,080
there was also a series of weather

229
00:10:00,949 --> 00:09:59,440
issues throughout the window we would

230
00:10:02,069 --> 00:10:00,959
have been no go for weather at the

231
00:10:04,630 --> 00:10:02,079
beginning of the window due to

232
00:10:06,069 --> 00:10:04,640
precipitation and later on in the window

233
00:10:08,069 --> 00:10:06,079
we would have been no go for lightning

234
00:10:09,350 --> 00:10:08,079
within the uh within the launch pad area

235
00:10:10,870 --> 00:10:09,360
so

236
00:10:12,389 --> 00:10:10,880
the team worked through a number of

237
00:10:15,350 --> 00:10:12,399
issues today

238
00:10:17,430 --> 00:10:15,360

the team was tired at the end of the day

239
00:10:20,150 --> 00:10:17,440
and we just decided that it was the best

240
00:10:21,990 --> 00:10:20,160
to knock it off and to reconvene

241
00:10:25,509 --> 00:10:22,000
tomorrow so we've got a mission

242
00:10:27,670 --> 00:10:25,519
management team meeting at 3 pm eastern

243
00:10:29,670 --> 00:10:27,680
we're going to give the team time to

244
00:10:32,550 --> 00:10:29,680
rest first of all and then come back

245
00:10:35,670 --> 00:10:32,560
fresh tomorrow and reassess what we

246
00:10:37,509 --> 00:10:35,680
learned today and then develop a series

247
00:10:38,870 --> 00:10:37,519
of options it's too early to say what

248
00:10:39,829 --> 00:10:38,880
the options are

249
00:10:42,710 --> 00:10:39,839
and then

250
00:10:44,310 --> 00:10:42,720
as as jackie said earlier

251
00:10:47,030 --> 00:10:44,320
we will

252
00:10:49,670 --> 00:10:47,040
come back and talk about where we stand

253
00:10:50,870 --> 00:10:49,680
tomorrow evening with all of you

254
00:10:52,710 --> 00:10:50,880
um

255
00:10:55,030 --> 00:10:52,720
again it's it's an incredibly hard

256
00:10:56,790 --> 00:10:55,040
business that we have um

257
00:10:58,829 --> 00:10:56,800
in spite of in spite of the challenges

258
00:11:01,430 --> 00:10:58,839
that we had as well as some other

259
00:11:03,430 --> 00:11:01,440
um constraints that the team had to work

260
00:11:05,670 --> 00:11:03,440
through and set up for uh for example we

261
00:11:08,710 --> 00:11:05,680
had 42 collision avoidance cutouts that

262
00:11:10,550 --> 00:11:08,720
we had to manage over the course of the

263
00:11:12,069 --> 00:11:10,560

of the two hour window most of those

264
00:11:13,190 --> 00:11:12,079
were only a couple of seconds long but

265
00:11:14,949 --> 00:11:13,200
there were a few that were about a

266
00:11:16,389 --> 00:11:14,959
minute long

267
00:11:18,550 --> 00:11:16,399
you know when you start thinking about

268
00:11:20,790 --> 00:11:18,560
the type of mission that we're flying it

269
00:11:23,110 --> 00:11:20,800
it really helps you understand just how

270
00:11:25,430 --> 00:11:23,120
unique and how complex uh the space

271
00:11:27,190 --> 00:11:25,440
launch system is and the orion and and

272
00:11:29,590 --> 00:11:27,200
the artemis program is

273
00:11:32,550 --> 00:11:29,600
we we have this upper stage the interim

274
00:11:35,190 --> 00:11:32,560
crowd propulsion stage that lofts the um

275
00:11:37,910 --> 00:11:35,200
the spacecraft to a 975 nautical mile

276
00:11:39,670 --> 00:11:37,920
insertion orbit along with the uh the

277
00:11:41,590 --> 00:11:39,680
sls core stage

278
00:11:43,190 --> 00:11:41,600
and with that

279
00:11:44,870 --> 00:11:43,200
we need we need the performance from it

280
00:11:46,550 --> 00:11:44,880
but we fly through part of the orbital

281
00:11:49,030 --> 00:11:46,560
debris field the micrometeoroid in

282
00:11:50,790 --> 00:11:49,040
orbital debris field and then

283
00:11:52,470 --> 00:11:50,800
uh one orbit later we commit to the

284
00:11:54,629 --> 00:11:52,480
point of transwinder injection so as we

285
00:11:56,550 --> 00:11:54,639
fly up through this orbital debris and

286
00:11:58,150 --> 00:11:56,560
then back down to low earth orbit and

287
00:11:59,590 --> 00:11:58,160
then out through the point of translator

288
00:12:01,750 --> 00:11:59,600

injection we have to know where all

289
00:12:03,829 --> 00:12:01,760
these objects are and that explains

290
00:12:05,670 --> 00:12:03,839
those 42 cutouts and and that is

291
00:12:07,670 --> 00:12:05,680
something that our operations teams were

292
00:12:10,389 --> 00:12:07,680
prepared to do today we just didn't get

293
00:12:12,389 --> 00:12:10,399
to the launch window so um a number of

294
00:12:14,629 --> 00:12:12,399
challenges we were ready for some of

295
00:12:16,629 --> 00:12:14,639
them and and the technical challenges we

296
00:12:18,150 --> 00:12:16,639
encountered on the um on the engine

297
00:12:19,430 --> 00:12:18,160
bleed and the vent valve are just some

298
00:12:21,430 --> 00:12:19,440
things we're gonna have to go look at

299
00:12:25,030 --> 00:12:21,440
today uh look at tomorrow after we get a

300
00:12:27,269 --> 00:12:25,040
little smarter and get get rested so um

301
00:12:28,550 --> 00:12:27,279
with that i'll pass it to jim

302
00:12:30,389 --> 00:12:28,560
yeah so good afternoon so the

303
00:12:31,990 --> 00:12:30,399
administrator and mike uh covered

304
00:12:33,910 --> 00:12:32,000
covered a great deal of things i'll just

305
00:12:36,230 --> 00:12:33,920
highlight a few things for me you know i

306
00:12:38,710 --> 00:12:36,240
said in a different vantage point uh

307
00:12:41,990 --> 00:12:38,720
than than mike does his is a lot more

308
00:12:45,590 --> 00:12:42,000
fun by the way uh but but we you know

309
00:12:47,590 --> 00:12:45,600
we're we're in the uh lcc and and i'm i

310
00:12:49,350 --> 00:12:47,600
i found some things in the team today

311
00:12:51,430 --> 00:12:49,360
this was a really important attempt for

312
00:12:53,350 --> 00:12:51,440
us we talked about that after wet dress

313
00:12:55,269 --> 00:12:53,360

four there were a lot of questions of

314
00:12:57,110 --> 00:12:55,279
you know should we have rolled back

315
00:12:59,750 --> 00:12:57,120
tried to do another test

316
00:13:02,230 --> 00:12:59,760
we we felt and and still feel like going

317
00:13:03,110 --> 00:13:02,240
for today was the right thing to do

318
00:13:05,829 --> 00:13:03,120
um

319
00:13:08,310 --> 00:13:05,839
and that that comes in a few a few ways

320
00:13:10,470 --> 00:13:08,320
our launch team was really i'll say

321
00:13:11,910 --> 00:13:10,480
pushed today they were working a lot of

322
00:13:14,710 --> 00:13:11,920
issues they were looking at the

323
00:13:16,949 --> 00:13:14,720
compressed timeline uh with uh with that

324
00:13:20,550 --> 00:13:16,959
hold at the beginning and we were

325
00:13:23,509 --> 00:13:20,560
filling all four uh tanks

326
00:13:25,590 --> 00:13:23,519
at the same time at one point

327
00:13:26,790 --> 00:13:25,600
really pushing our team through a

328
00:13:28,949 --> 00:13:26,800
timeline

329
00:13:30,389 --> 00:13:28,959
weather you know mike talked about some

330
00:13:31,990 --> 00:13:30,399
of the weather we talked about lightning

331
00:13:34,069 --> 00:13:32,000
weather was coming in and out we were

332
00:13:37,430 --> 00:13:34,079
actually not able to go at the beginning

333
00:13:39,110 --> 00:13:37,440
of the window like we thought

334
00:13:41,509 --> 00:13:39,120
there was a lot of comms from the launch

335
00:13:44,230 --> 00:13:41,519
weather officer

336
00:13:45,910 --> 00:13:44,240
the the hydrogen out of spec that mike

337
00:13:48,470 --> 00:13:45,920
talked about when we went to manual

338
00:13:49,910 --> 00:13:48,480

control that's something we did on the

339
00:13:52,150 --> 00:13:49,920
locks when we

340
00:13:54,389 --> 00:13:52,160
we had some issues loading locks the

341
00:13:56,550 --> 00:13:54,399
first time going that manual control to

342
00:13:58,150 --> 00:13:56,560
me is learning

343
00:14:00,310 --> 00:13:58,160
and and getting through the first

344
00:14:02,790 --> 00:14:00,320
hydrogen leak that we had that was the

345
00:14:04,389 --> 00:14:02,800
same leak we had on the same line to the

346
00:14:06,949 --> 00:14:04,399
same level

347
00:14:08,389 --> 00:14:06,959
and when we started to do the manual

348
00:14:10,069 --> 00:14:08,399
fast fill

349
00:14:11,430 --> 00:14:10,079
honestly it kept climbing and i thought

350
00:14:14,310 --> 00:14:11,440
there's no way we're going to get out of

351
00:14:17,189 --> 00:14:14,320
this and that got us out of it

352
00:14:18,629 --> 00:14:17,199
so so to me what we push the team

353
00:14:21,110 --> 00:14:18,639
through and i know we always get a lot

354
00:14:22,870 --> 00:14:21,120
of talking about the team too much but

355
00:14:24,710 --> 00:14:22,880
we continue to learn

356
00:14:26,230 --> 00:14:24,720
that's what we're doing we're testing i

357
00:14:27,990 --> 00:14:26,240
think um

358
00:14:30,470 --> 00:14:28,000
bob cabana said it we're testing the

359
00:14:32,550 --> 00:14:30,480
people and the processes so we put

360
00:14:33,910 --> 00:14:32,560
ourselves through a compressed timeline

361
00:14:35,829 --> 00:14:33,920
we're going to get some shorter launch

362
00:14:38,790 --> 00:14:35,839
windows we'll have to deal with where

363
00:14:40,710 --> 00:14:38,800

these skills will help us

364
00:14:44,230 --> 00:14:40,720
i know you've heard from charlie about

365
00:14:46,389 --> 00:14:44,240
extending our timeline about an hour

366
00:14:49,030 --> 00:14:46,399
earlier to give us time to work things i

367
00:14:51,509 --> 00:14:49,040
think that helped us today to work

368
00:14:53,269 --> 00:14:51,519
things um and frankly engine three that

369
00:14:55,350 --> 00:14:53,279
mike talked about we definitely didn't

370
00:14:57,189 --> 00:14:55,360
get down to the temperature we wanted

371
00:14:58,550 --> 00:14:57,199
but the other four weren't as low as we

372
00:15:02,150 --> 00:14:58,560
would like to

373
00:15:03,430 --> 00:15:02,160
so so there's some things going on that

374
00:15:05,430 --> 00:15:03,440
the teams

375
00:15:07,990 --> 00:15:05,440
were the team needs to go off and look

376
00:15:10,069 --> 00:15:08,000
at the data and understand

377
00:15:13,269 --> 00:15:10,079
how this is different from what we did

378
00:15:14,870 --> 00:15:13,279
during the green run at stennis

379
00:15:17,110 --> 00:15:14,880
and then figure out a path forward which

380
00:15:18,790 --> 00:15:17,120
is ultimately where we want to go we're

381
00:15:21,670 --> 00:15:18,800
not going to have all the data and the

382
00:15:23,910 --> 00:15:21,680
implications today i'll reiterate that

383
00:15:26,310 --> 00:15:23,920
what what mike said

384
00:15:27,910 --> 00:15:26,320
but we we felt we owed it to you to to

385
00:15:29,590 --> 00:15:27,920
share everything that

386
00:15:32,389 --> 00:15:29,600
that we know so

387
00:15:34,790 --> 00:15:32,399
um and i can assure you there was no

388
00:15:37,110 --> 00:15:34,800

other group of folks not just the folks

389
00:15:38,470 --> 00:15:37,120
that worked last night

390
00:15:39,910 --> 00:15:38,480
but the folks that started this

391
00:15:42,310 --> 00:15:39,920
countdown there's no other group that

392
00:15:46,550 --> 00:15:42,320
wanted to get through this successfully

393
00:15:48,710 --> 00:15:46,560
then than that those people

394
00:15:49,350 --> 00:15:48,720
so with that i'll turn it back to jackie

395
00:15:50,710 --> 00:15:49,360
and

396
00:15:52,150 --> 00:15:50,720
thanks jim

397
00:15:53,749 --> 00:15:52,160
just a reminder for folks joining us on

398
00:15:54,870 --> 00:15:53,759
the phone you can press star one to get

399
00:15:56,389 --> 00:15:54,880
into the queue

400
00:16:00,870 --> 00:15:56,399
but first we'll take some questions from

401
00:16:04,949 --> 00:16:02,870
marcia done associated press probably

402
00:16:06,230 --> 00:16:04,959
for you mike um

403
00:16:08,550 --> 00:16:06,240
or jim

404
00:16:09,990 --> 00:16:08,560
is there is friday or monday even

405
00:16:11,460 --> 00:16:10,000
feasible since you're dealing with an

406
00:16:13,269 --> 00:16:11,470
engine and um

407
00:16:14,870 --> 00:16:13,279
[Music]

408
00:16:15,670 --> 00:16:14,880
might you need to replace this engine

409
00:16:17,910 --> 00:16:15,680
could

410
00:16:19,509 --> 00:16:17,920
this be a problem unique to this but i

411
00:16:21,350 --> 00:16:19,519
guess not since you said that you didn't

412
00:16:23,350 --> 00:16:21,360
get the temperatures on any of them that

413
00:16:26,470 --> 00:16:23,360

you were looking for i'm just wondering

414
00:16:28,310 --> 00:16:26,480
what could be the worst case here

415
00:16:31,509 --> 00:16:28,320
yeah it might go ahead okay

416
00:16:33,110 --> 00:16:31,519
yeah friday is definitely in play um

417
00:16:34,629 --> 00:16:33,120
we just need a little bit of time to

418
00:16:38,470 --> 00:16:34,639
look at the data but the team is setting

419
00:16:39,749 --> 00:16:38,480
up for for a 90 96 hour recycle so

420
00:16:41,670 --> 00:16:39,759
they're still holding in the launch

421
00:16:43,430 --> 00:16:41,680
countdown configuration and we're

422
00:16:45,670 --> 00:16:43,440
preserving the option for friday they're

423
00:16:47,910 --> 00:16:45,680
replenishing the commodities out at the

424
00:16:49,670 --> 00:16:47,920
audit launch complex 39b you'll see some

425
00:16:51,509 --> 00:16:49,680
of those activities tomorrow

426
00:16:53,749 --> 00:16:51,519
and right now

427
00:16:56,150 --> 00:16:53,759
the indications don't point to an engine

428
00:16:57,910 --> 00:16:56,160
problem it's it's in the the bleed

429
00:16:59,829 --> 00:16:57,920
system the thermally thermally

430
00:17:03,110 --> 00:16:59,839
conditions the engines

431
00:17:04,390 --> 00:17:03,120
we did change the diameter of that from

432
00:17:06,069 --> 00:17:04,400
stennis

433
00:17:06,949 --> 00:17:06,079
where we did the green run testing to

434
00:17:08,789 --> 00:17:06,959
here

435
00:17:11,429 --> 00:17:08,799
and we never

436
00:17:13,350 --> 00:17:11,439
fully got into the engine bleed

437
00:17:15,270 --> 00:17:13,360
configuration

438
00:17:16,630 --> 00:17:15,280

through the prior wet dress attempts and

439
00:17:18,150 --> 00:17:16,640
again that was something that we talked

440
00:17:21,350 --> 00:17:18,160
about at the agency flight readiness

441
00:17:23,510 --> 00:17:21,360
review as a as a known risk to our

442
00:17:26,470 --> 00:17:23,520
launch campaign and at that time we said

443
00:17:28,309 --> 00:17:26,480
we would not launch unless we

444
00:17:30,310 --> 00:17:28,319
we got through the

445
00:17:32,630 --> 00:17:30,320
demonstration of our ability to

446
00:17:33,750 --> 00:17:32,640
thermally condition the engines we need

447
00:17:35,909 --> 00:17:33,760
that

448
00:17:38,390 --> 00:17:35,919
in order to start the engines and and

449
00:17:40,950 --> 00:17:38,400
run them successfully so

450
00:17:42,549 --> 00:17:40,960
we just didn't get there today and and

451
00:17:44,830 --> 00:17:42,559
again this really points towards an

452
00:17:47,830 --> 00:17:44,840
engine bleed um

453
00:17:49,990 --> 00:17:47,840
uh issue on the on the core stage side

454
00:17:51,190 --> 00:17:50,000
not on the not on the engine interface

455
00:17:53,029 --> 00:17:51,200
side so i don't know jim if you have

456
00:17:54,710 --> 00:17:53,039
anything to add to that yeah i just add

457
00:17:55,510 --> 00:17:54,720
we actually stayed

458
00:17:58,390 --> 00:17:55,520
uh

459
00:18:01,430 --> 00:17:58,400
loaded longer to try and figure it out

460
00:18:04,630 --> 00:18:01,440
um so that we were trying to save

461
00:18:07,350 --> 00:18:04,640
uh as much so as many cycles on the on

462
00:18:10,230 --> 00:18:07,360
the tank as we can as we could so i

463
00:18:12,390 --> 00:18:10,240

think we tried to i'll say

464
00:18:13,110 --> 00:18:12,400
run it to ground as fast as we could and

465
00:18:14,630 --> 00:18:13,120
then

466
00:18:16,950 --> 00:18:14,640
once we were outside

467
00:18:19,270 --> 00:18:16,960
seeing we could launch and and uh the

468
00:18:20,789 --> 00:18:19,280
way the pressure in the tank was going

469
00:18:23,990 --> 00:18:20,799
it's like hey it's better just to stop

470
00:18:28,230 --> 00:18:24,000
and regroup and stay in the 96 hour that

471
00:18:31,669 --> 00:18:28,240
mike talked about and figure it out

472
00:18:33,270 --> 00:18:31,679
or smaller when you made the change

473
00:18:35,750 --> 00:18:33,280
so you didn't make it bigger

474
00:18:38,150 --> 00:18:35,760
and we also did it um and you'll hear

475
00:18:40,310 --> 00:18:38,160
more from john hunnicutt on this uh

476
00:18:43,270 --> 00:18:40,320
probably tomorrow as we also where we

477
00:18:44,150 --> 00:18:43,280
did the test in the flow is a little bit

478
00:18:46,070 --> 00:18:44,160
different

479
00:18:48,870 --> 00:18:46,080
than we did at stennis all of those

480
00:18:51,190 --> 00:18:48,880
decisions were made

481
00:18:53,350 --> 00:18:51,200
hoping for the the benefit of physics

482
00:18:55,350 --> 00:18:53,360
that went with all that from from the

483
00:18:59,590 --> 00:18:55,360
experts opinion so that's what we have

484
00:18:59,600 --> 00:19:05,430
joey roulette with reuters

485
00:19:09,430 --> 00:19:07,830
uh thanks a question for mike or jim i

486
00:19:10,390 --> 00:19:09,440
know you said friday isn't play but

487
00:19:12,310 --> 00:19:10,400
given the

488
00:19:14,150 --> 00:19:12,320

magnitude of the issues and the combo of

489
00:19:16,070 --> 00:19:14,160
things that you guys have to look at is

490
00:19:17,830 --> 00:19:16,080
it likely you guys launch on friday or

491
00:19:19,350 --> 00:19:17,840
is it unlikely could you kind of assess

492
00:19:20,630 --> 00:19:19,360
that and

493
00:19:22,150 --> 00:19:20,640
can you give some clarification on

494
00:19:24,230 --> 00:19:22,160
whether you think this is related to the

495
00:19:28,549 --> 00:19:24,240
quick disconnect issue you guys found in

496
00:19:30,310 --> 00:19:28,559
the uh wet dress rehearsals uh thanks

497
00:19:32,230 --> 00:19:30,320
so you're asking you're asking about the

498
00:19:33,990 --> 00:19:32,240
likelihood of friday do you think it's

499
00:19:35,669 --> 00:19:34,000
it's maybe likely that we go on on

500
00:19:37,510 --> 00:19:35,679
friday or

501
00:19:42,070 --> 00:19:37,520
there's a non-zero chance we'll have a

502
00:19:45,909 --> 00:19:43,909
but we we need time we we really need

503
00:19:47,430 --> 00:19:45,919
time to look at all the all the

504
00:19:48,870 --> 00:19:47,440
information all the data

505
00:19:50,230 --> 00:19:48,880
and um

506
00:19:51,669 --> 00:19:50,240
you know

507
00:19:53,909 --> 00:19:51,679
we're gonna we're gonna play all nine

508
00:19:56,710 --> 00:19:53,919
innings here you know and and we're not

509
00:19:58,230 --> 00:19:56,720
ready to give up yet

510
00:20:00,230 --> 00:19:58,240
kind of clarify a little bit whether

511
00:20:02,230 --> 00:20:00,240
this is related to what you guys were

512
00:20:05,190 --> 00:20:02,240
looking at in the wet dress rehearsals

513
00:20:06,950 --> 00:20:05,200

with the quick disconnect leak issue

514
00:20:09,270 --> 00:20:06,960
how related might it be or if it's

515
00:20:10,310 --> 00:20:09,280
independent maybe i don't know i would

516
00:20:12,549 --> 00:20:10,320
say

517
00:20:14,230 --> 00:20:12,559
and again this is probably a question

518
00:20:15,110 --> 00:20:14,240
that's better answered by john hunnicutt

519
00:20:16,789 --> 00:20:15,120
but

520
00:20:19,669 --> 00:20:16,799
you know during the wet dress rehearsal

521
00:20:22,710 --> 00:20:19,679
we saw issues at both the 4-inch and the

522
00:20:23,909 --> 00:20:22,720
eight inch qd in terms of our ability to

523
00:20:25,430 --> 00:20:23,919
retain

524
00:20:27,350 --> 00:20:25,440
enough

525
00:20:29,270 --> 00:20:27,360
pressure to properly seal those such

526
00:20:30,070 --> 00:20:29,280
that we didn't have a hydrogen leak

527
00:20:34,789 --> 00:20:30,080
and

528
00:20:39,830 --> 00:20:34,799
itself

529
00:20:43,110 --> 00:20:42,070
so the qd problems that we saw during

530
00:20:45,750 --> 00:20:43,120
wet dress

531
00:20:49,190 --> 00:20:45,760
have have largely been mitigated

532
00:20:50,070 --> 00:20:49,200
and and in fact the the eight inch today

533
00:20:51,990 --> 00:20:50,080
um

534
00:20:54,470 --> 00:20:52,000
was was the issue

535
00:20:56,070 --> 00:20:54,480
that we had a little bit of leakage on

536
00:20:57,110 --> 00:20:56,080
that they managed to work their way

537
00:20:59,750 --> 00:20:57,120
through

538
00:21:02,310 --> 00:20:59,760

by slowing the fill and chilling it down

539
00:21:03,590 --> 00:21:02,320
and then that properly sealed and we got

540
00:21:06,789 --> 00:21:03,600
a full load

541
00:21:09,350 --> 00:21:06,799
there in our first three wet dress

542
00:21:14,230 --> 00:21:11,669
the four-inch qd that we previously had

543
00:21:16,230 --> 00:21:14,240
problems with on i think was wet dress

544
00:21:18,549 --> 00:21:16,240
four

545
00:21:21,510 --> 00:21:18,559
worked just fine today so

546
00:21:25,350 --> 00:21:21,520
i would say that the qd's really

547
00:21:28,950 --> 00:21:25,360
had no material impact on the

548
00:21:31,190 --> 00:21:28,960
on this on this hydrogen bleed

549
00:21:32,470 --> 00:21:31,200
uh set up and and i don't know jim if

550
00:21:33,909 --> 00:21:32,480
you have anything that no i think you're

551
00:21:35,110 --> 00:21:33,919
exactly right yeah that's what i was

552
00:21:37,350 --> 00:21:35,120
trying to say earlier we worked the

553
00:21:39,510 --> 00:21:37,360
eight inch problem the first time

554
00:21:40,710 --> 00:21:39,520
you know rolled back figured that out

555
00:21:43,190 --> 00:21:40,720
four inch

556
00:21:45,430 --> 00:21:43,200
we couldn't pressurize because that was

557
00:21:51,110 --> 00:21:45,440
leaking today we did that so i think

558
00:21:51,120 --> 00:21:57,669
michael sheet to cnbc

559
00:22:02,149 --> 00:21:59,590
michael sheets to cnbc my question is

560
00:22:03,430 --> 00:22:02,159
for mike i'm curious to get a little

561
00:22:05,590 --> 00:22:03,440
more learnings on the other side of

562
00:22:08,230 --> 00:22:05,600
things which is the possibility of a

563
00:22:11,190 --> 00:22:08,240

rollback um given the data that you've

564
00:22:13,750 --> 00:22:11,200
seen so far how likely does that seem

565
00:22:16,630 --> 00:22:13,760
and if you were to roll it back to the

566
00:22:18,950 --> 00:22:16,640
pad where does that reset the timeline

567
00:22:20,789 --> 00:22:18,960
in terms of you your guys's next launch

568
00:22:23,350 --> 00:22:20,799
opportunity

569
00:22:26,630 --> 00:22:23,360
i'd say that's getting ahead of

570
00:22:28,789 --> 00:22:26,640
our data reviews and we we need the team

571
00:22:31,990 --> 00:22:28,799
to get rested and come back tomorrow and

572
00:22:33,750 --> 00:22:32,000
we'll see what the data tells us

573
00:22:36,470 --> 00:22:33,760
i'll recycle a line from earlier there's

574
00:22:38,950 --> 00:22:36,480
a non-zero chance but we're going to do

575
00:22:41,990 --> 00:22:38,960
our best to

576
00:22:44,230 --> 00:22:42,000
see see where the data leads us and

577
00:22:46,310 --> 00:22:44,240
and if we can resolve this operationally

578
00:22:48,070 --> 00:22:46,320
out the pad there won't be any need for

579
00:22:49,750 --> 00:22:48,080
that and and if we can resolve this

580
00:22:51,110 --> 00:22:49,760
operationally out at the pad

581
00:22:53,590 --> 00:22:51,120
in the next

582
00:22:54,950 --> 00:22:53,600
48 hours 72 hours friday is definitely

583
00:22:56,390 --> 00:22:54,960
in play so

584
00:22:57,510 --> 00:22:56,400
we just need to see

585
00:22:59,830 --> 00:22:57,520
we need to see what the art of the

586
00:23:00,710 --> 00:22:59,840
possible is we need the team to digest

587
00:23:04,310 --> 00:23:00,720
what

588
00:23:05,510 --> 00:23:04,320

from there

589
00:23:10,470 --> 00:23:05,520
thanks mike

590
00:23:14,710 --> 00:23:12,710
yeah hi um this is for mr seraphin i

591
00:23:16,390 --> 00:23:14,720
just wanted to give us a quick primer

592
00:23:18,149 --> 00:23:16,400
about how the hydrogen bleed system

593
00:23:20,630 --> 00:23:18,159
works sounds like it's a plumbing from

594
00:23:22,390 --> 00:23:20,640
the hydrogen tank to the engines

595
00:23:25,430 --> 00:23:22,400
um

596
00:23:27,270 --> 00:23:25,440
what was changed and why and

597
00:23:29,669 --> 00:23:27,280
did anything like to occur during green

598
00:23:31,590 --> 00:23:29,679
run at stennis

599
00:23:33,750 --> 00:23:31,600
yeah

600
00:23:35,510 --> 00:23:33,760
i will i will defer that one to john

601
00:23:37,830 --> 00:23:35,520
hunnicutt tomorrow i know we increased

602
00:23:40,870 --> 00:23:37,840
the diameter of the

603
00:23:43,110 --> 00:23:40,880
of the bleed um

604
00:23:45,190 --> 00:23:43,120
that that is used to increase the flow

605
00:23:46,149 --> 00:23:45,200
of the engines but beyond that

606
00:23:47,669 --> 00:23:46,159
it would

607
00:23:49,909 --> 00:23:47,679
be kind of getting out of my experience

608
00:23:51,750 --> 00:23:49,919
base to talk about about what other what

609
00:23:55,350 --> 00:23:51,760
other changes there were so if you could

610
00:23:55,360 --> 00:24:07,830
jeff faust with space news

611
00:24:11,669 --> 00:24:09,269
jeff falcon space news for uh mike

612
00:24:13,190 --> 00:24:11,679
sarafin you also mentioned an inner tank

613
00:24:14,950 --> 00:24:13,200

vent valve issue i wonder if you provide

614
00:24:17,909 --> 00:24:14,960
some more details about exactly what

615
00:24:20,230 --> 00:24:17,919
that issue is and if you hadn't had the

616
00:24:22,149 --> 00:24:20,240
problem with the engine bleed on engine

617
00:24:25,269 --> 00:24:22,159
three um would that have been a

618
00:24:27,510 --> 00:24:25,279
constraint to launch alone

619
00:24:28,870 --> 00:24:27,520
yeah um we're still trying to understand

620
00:24:30,310 --> 00:24:28,880
what happened with the inner tank vent

621
00:24:32,470 --> 00:24:30,320
but it was

622
00:24:34,390 --> 00:24:32,480
clear that there was a leak

623
00:24:35,269 --> 00:24:34,400
at that vent valve

624
00:24:38,549 --> 00:24:35,279
and

625
00:24:40,470 --> 00:24:38,559
the challenge that that created was

626
00:24:42,230 --> 00:24:40,480
we want to increase the pressure in the

627
00:24:43,669 --> 00:24:42,240
tank in order to establish the hydrogen

628
00:24:46,070 --> 00:24:43,679
bleed and the vent valve wasn't

629
00:24:48,630 --> 00:24:46,080
cooperating with us so it was it was

630
00:24:50,149 --> 00:24:48,640
this delicate balance of of maintaining

631
00:24:53,590 --> 00:24:50,159
the pressure

632
00:24:56,149 --> 00:24:53,600
uh to establish the bleed on on all four

633
00:24:58,070 --> 00:24:56,159
engines and and engine three was not

634
00:25:00,070 --> 00:24:58,080
seeing the temperatures that it needed

635
00:25:01,590 --> 00:25:00,080
and the vent valve complicated that and

636
00:25:03,029 --> 00:25:01,600
that's that's at the point where the

637
00:25:04,789 --> 00:25:03,039
team decided that it did it was

638
00:25:08,310 --> 00:25:04,799

appropriate um

639
00:25:10,390 --> 00:25:08,320
to uh to declare the scrub um because

640
00:25:11,430 --> 00:25:10,400
we just weren't gonna make the two hour

641
00:25:12,830 --> 00:25:11,440
window

642
00:25:15,750 --> 00:25:12,840
and then

643
00:25:17,110 --> 00:25:15,760
um it just it just um

644
00:25:21,909 --> 00:25:17,120
was one of those situations where we

645
00:25:32,630 --> 00:25:23,830
thanks mike they're keeping you busy

646
00:25:37,750 --> 00:25:35,430
rachel crane the cnn um mike you

647
00:25:40,230 --> 00:25:37,760
mentioned earlier that you didn't see

648
00:25:41,830 --> 00:25:40,240
temperatures for all four engines that

649
00:25:43,430 --> 00:25:41,840
you were anticipating we just heard a

650
00:25:45,510 --> 00:25:43,440
lot about engine three can you tell us a

651
00:25:46,630 --> 00:25:45,520
little bit about uh the temperatures you

652
00:25:48,310 --> 00:25:46,640
were seeing with the other engines and

653
00:25:49,909 --> 00:25:48,320
what the issue was

654
00:25:52,470 --> 00:25:49,919
the other the other three engines were

655
00:25:55,350 --> 00:25:52,480
meeting uh the the temperature range or

656
00:25:56,710 --> 00:25:55,360
were on trend to achieve what we would

657
00:25:58,390 --> 00:25:56,720
need to

658
00:26:00,549 --> 00:25:58,400
have a proper start

659
00:26:02,950 --> 00:26:00,559
it was just engine 3 that was was just

660
00:26:08,870 --> 00:26:02,960
for some reason not getting to the

661
00:26:13,430 --> 00:26:10,470
on the phone we have chris davenport

662
00:26:17,590 --> 00:26:15,669
hi uh thanks so much i guess for for

663
00:26:20,789 --> 00:26:17,600

mike what what is the temperature that

664
00:26:22,310 --> 00:26:20,799
you need the rs25 to be at in order

665
00:26:24,950 --> 00:26:22,320
to launch just wondering what the

666
00:26:27,029 --> 00:26:24,960
criteria is for that and how far away

667
00:26:28,950 --> 00:26:27,039
you were on that third engine

668
00:26:30,710 --> 00:26:28,960
uh i'm also wondering how you ended up

669
00:26:32,390 --> 00:26:30,720
being able to fix that hydrogen leak it

670
00:26:35,430 --> 00:26:32,400
just sort of seemed to go away during

671
00:26:40,470 --> 00:26:36,830
okay so

672
00:26:41,750 --> 00:26:40,480
um as i as i recall and again

673
00:26:43,430 --> 00:26:41,760
it would be good

674
00:26:45,590 --> 00:26:43,440
a good question for john honeycutt

675
00:26:48,390 --> 00:26:45,600
tomorrow the the temperatures on the

676
00:26:51,269 --> 00:26:48,400
engines it's about 500

677
00:26:54,149 --> 00:26:51,279
rankin that we're looking for

678
00:26:56,310 --> 00:26:54,159
on the on the engines before they're

679
00:26:59,110 --> 00:26:56,320
they're thermally conditioned

680
00:27:00,870 --> 00:26:59,120
i don't recall exactly where where the

681
00:27:02,710 --> 00:27:00,880
engines were but

682
00:27:04,870 --> 00:27:02,720
engines one two and four were pretty

683
00:27:06,870 --> 00:27:04,880
close to that and then three was was

684
00:27:10,310 --> 00:27:06,880
just not getting there

685
00:27:13,029 --> 00:27:10,320
and then the hydrogen leak in terms of

686
00:27:15,269 --> 00:27:13,039
resolving that

687
00:27:17,110 --> 00:27:15,279
you know hydrogen is is an incredibly

688
00:27:18,470 --> 00:27:17,120

small molecule it's the smallest on the

689
00:27:20,950 --> 00:27:18,480
atomic chart

690
00:27:22,470 --> 00:27:20,960
and it doesn't take much of a gap in

691
00:27:24,870 --> 00:27:22,480
order to have a leak

692
00:27:26,789 --> 00:27:24,880
in in a quick disconnect and and there

693
00:27:28,470 --> 00:27:26,799
are soft goods in there between between

694
00:27:31,190 --> 00:27:28,480
the mechanical plates

695
00:27:33,190 --> 00:27:31,200
and um sometimes it just takes a little

696
00:27:34,630 --> 00:27:33,200
bit of a

697
00:27:37,190 --> 00:27:34,640
a cold soak

698
00:27:39,110 --> 00:27:37,200
on on both sides of that interface or if

699
00:27:41,190 --> 00:27:39,120
there's a little bit of differential

700
00:27:43,669 --> 00:27:41,200
heating on either side of that it can

701
00:27:44,870 --> 00:27:43,679
actually cause a little bit of a gap

702
00:27:47,190 --> 00:27:44,880
so

703
00:27:49,110 --> 00:27:47,200
the team the team has experience with

704
00:27:52,230 --> 00:27:49,120
this our cryo team

705
00:27:54,389 --> 00:27:52,240
is is very good at understanding the

706
00:27:55,110 --> 00:27:54,399
thermodynamics going on as well as the

707
00:28:06,870 --> 00:27:55,120
the

708
00:28:08,230 --> 00:28:06,880
8-inch qd to stop flow because

709
00:28:10,389 --> 00:28:08,240
when you have hydrogen leaking it

710
00:28:11,909 --> 00:28:10,399
creates a flammability hazard so they

711
00:28:14,950 --> 00:28:11,919
stopped flow and then they slowly

712
00:28:17,990 --> 00:28:14,960
increased it as jim described

713
00:28:19,510 --> 00:28:18,000

through some manual uh flow procedures

714
00:28:21,909 --> 00:28:19,520
and they just kind of

715
00:28:23,990 --> 00:28:21,919
slowly let the fluid through

716
00:28:27,110 --> 00:28:24,000
slowly let it through to chill both

717
00:28:30,870 --> 00:28:27,120
sides of that interface and some in some

718
00:28:33,190 --> 00:28:30,880
cases uh you can actually uh thermally

719
00:28:35,350 --> 00:28:33,200
condition both sides of that such that

720
00:28:37,190 --> 00:28:35,360
they'll still seal up and seat properly

721
00:28:40,149 --> 00:28:37,200
and and that's what the team did today

722
00:28:42,389 --> 00:28:40,159
and it's it's kind of a delicate balance

723
00:28:44,950 --> 00:28:42,399
you wanna you wanna fill this thing as

724
00:28:46,470 --> 00:28:44,960
fast as you can to achieve your launch

725
00:28:48,310 --> 00:28:46,480
window but when you run into a problem

726
00:28:50,470 --> 00:28:48,320
like that you need to slow it down and

727
00:28:51,350 --> 00:28:50,480
when you slow it down uh you can achieve

728
00:28:56,149 --> 00:28:51,360
the

729
00:28:59,669 --> 00:28:56,159
it was it was

730
00:29:01,190 --> 00:28:59,679
again a little bit of a little bit of uh

731
00:29:03,110 --> 00:29:01,200
science and a little bit of art that

732
00:29:04,630 --> 00:29:03,120
that our that our

733
00:29:09,590 --> 00:29:04,640
team worked through today by healing

734
00:29:15,669 --> 00:29:13,269
wearing grass with bloomberg

735
00:29:17,350 --> 00:29:15,679
hi this question's for jim earlier said

736
00:29:19,110 --> 00:29:17,360
you were confident about the decision to

737
00:29:20,870 --> 00:29:19,120
go for a full countdown today instead of

738
00:29:22,630 --> 00:29:20,880

another wet dress rehearsal i'm

739
00:29:24,230 --> 00:29:22,640
wondering if there are any risks

740
00:29:26,149 --> 00:29:24,240
extra risks involved with going for a

741
00:29:28,310 --> 00:29:26,159
full countdown apart from the launch

742
00:29:29,750 --> 00:29:28,320
itself rather than doing a wet dress

743
00:29:32,789 --> 00:29:29,760
rehearsal

744
00:29:35,909 --> 00:29:32,799
i i think you know we we just rolling

745
00:29:37,350 --> 00:29:35,919
out for another wet truss has some

746
00:29:39,110 --> 00:29:37,360
cycles on

747
00:29:40,870 --> 00:29:39,120
on how many times we roll out so you

748
00:29:42,630 --> 00:29:40,880
introduce risk that way

749
00:29:44,470 --> 00:29:42,640
we felt like we understood that four

750
00:29:46,470 --> 00:29:44,480
inch

751
00:29:48,230 --> 00:29:46,480
leak that we had during what what dress

752
00:29:49,750 --> 00:29:48,240
4 which today we proved that we

753
00:29:52,950 --> 00:29:49,760
understood it

754
00:29:54,789 --> 00:29:52,960
we understood how to operate with a

755
00:29:57,190 --> 00:29:54,799
leak on the eight inch line

756
00:29:59,350 --> 00:29:57,200
so from my perspective it that's where

757
00:30:01,510 --> 00:29:59,360
i'm kind of basing our fact to make a

758
00:30:04,789 --> 00:30:01,520
run for launch in this launch period was

759
00:30:09,909 --> 00:30:06,310
we have another question on the phone

760
00:30:13,510 --> 00:30:11,830
yeah hi just uh just to follow up with

761
00:30:14,389 --> 00:30:13,520
lauren's question there

762
00:30:16,789 --> 00:30:14,399
jim

763
00:30:19,190 --> 00:30:16,799

you know you have done four

764
00:30:20,870 --> 00:30:19,200
effectively five wet dress tests now at

765
00:30:22,630 --> 00:30:20,880
kennedy

766
00:30:24,710 --> 00:30:22,640
and you haven't gone all the way through

767
00:30:26,230 --> 00:30:24,720
on any of them can you just talk maybe a

768
00:30:27,830 --> 00:30:26,240
little bit more about

769
00:30:29,909 --> 00:30:27,840
why you don't think it's prudent to

770
00:30:31,750 --> 00:30:29,919
complete a wet dress test which would

771
00:30:34,470 --> 00:30:31,760
have identified i think this

772
00:30:36,950 --> 00:30:34,480
this rs25 chilling issue today um if you

773
00:30:40,149 --> 00:30:36,960
had gone through the wet dress thanks

774
00:30:42,630 --> 00:30:40,159
yeah so i i i guess two things eric i'd

775
00:30:45,110 --> 00:30:42,640
answer it the the same way because we

776
00:30:47,350 --> 00:30:45,120
still would have taken another uh

777
00:30:49,029 --> 00:30:47,360
cycle of rolling out and back

778
00:30:51,750 --> 00:30:49,039
and uh and

779
00:30:53,269 --> 00:30:51,760
and we're we're going to learn every

780
00:30:56,149 --> 00:30:53,279
time we come out here if you go back in

781
00:30:58,230 --> 00:30:56,159
history at uh how many times the apollo

782
00:30:59,909 --> 00:30:58,240
uh different apollo vehicles came out

783
00:31:01,590 --> 00:30:59,919
and tested

784
00:31:03,110 --> 00:31:01,600
prior to launch how many times they

785
00:31:04,950 --> 00:31:03,120
scrubbed

786
00:31:07,590 --> 00:31:04,960
the administrator talked about how many

787
00:31:09,509 --> 00:31:07,600
times he scrubbed on on a vehicle that

788
00:31:12,789 --> 00:31:09,519

had flown multiple times so we're going

789
00:31:14,950 --> 00:31:12,799
to run into these issues and it's

790
00:31:16,549 --> 00:31:14,960
we'll figure them out as we go

791
00:31:18,549 --> 00:31:16,559
but until we

792
00:31:19,909 --> 00:31:18,559
put the whole vehicle together had we

793
00:31:22,149 --> 00:31:19,919
come out for another wet dress the

794
00:31:25,190 --> 00:31:22,159
vehicle would not have been the complete

795
00:31:27,269 --> 00:31:25,200
that's ready to go out there today with

796
00:31:29,269 --> 00:31:27,279
all the closeouts

797
00:31:30,789 --> 00:31:29,279
fts installed everything we learned

798
00:31:32,470 --> 00:31:30,799
about the flow everything we learned

799
00:31:35,509 --> 00:31:32,480
about fts

800
00:31:38,710 --> 00:31:35,519
working with the range to get a 25 day

801
00:31:41,350 --> 00:31:38,720
time period before we have to retest so

802
00:31:43,990 --> 00:31:41,360
so yeah i agree we won't know until we

803
00:31:44,789 --> 00:31:44,000
know but we also won't know until we try

804
00:31:46,470 --> 00:31:44,799
and

805
00:31:50,310 --> 00:31:46,480
we felt like we're in the best position

806
00:31:57,830 --> 00:31:53,830
marina corn with the atlantic

807
00:31:59,669 --> 00:31:57,840
is for mike uh and jim

808
00:32:01,190 --> 00:31:59,679
after the scrubs stan love came to the

809
00:32:03,590 --> 00:32:01,200
press site to talk to the reporters and

810
00:32:05,029 --> 00:32:03,600
they asked him how he felt he said that

811
00:32:06,870 --> 00:32:05,039
he was a little disappointed but he was

812
00:32:08,950 --> 00:32:06,880
not at all surprised it really sounded

813
00:32:10,870 --> 00:32:08,960

like he didn't expect sls to get off the

814
00:32:12,549 --> 00:32:10,880
ground today i'm wondering if you were

815
00:32:15,509 --> 00:32:12,559
surprised or unsurprised with the way

816
00:32:17,990 --> 00:32:15,519
things unfolded today

817
00:32:20,310 --> 00:32:18,000
yeah i mean i'll start i'll say what our

818
00:32:22,470 --> 00:32:20,320
deputy administrator told her family

819
00:32:24,870 --> 00:32:22,480
when they were coming for her launch

820
00:32:28,149 --> 00:32:24,880
plan a week trip to florida for a

821
00:32:30,950 --> 00:32:28,159
vacation and you might see a launch uh

822
00:32:32,710 --> 00:32:30,960
which is exactly what i told my family

823
00:32:34,950 --> 00:32:32,720
we're gonna and the administrator said

824
00:32:37,350 --> 00:32:34,960
it we're gonna launch when we're ready

825
00:32:41,669 --> 00:32:37,360
um and that's our approach

826
00:32:44,070 --> 00:32:41,679
um i'm i i said there's nobody that came

827
00:32:45,269 --> 00:32:44,080
wanting more for that vehicle to launch

828
00:32:47,350 --> 00:32:45,279
than our

829
00:32:49,590 --> 00:32:47,360
team that has worked on this not just

830
00:32:51,029 --> 00:32:49,600
our team the launch team there are a lot

831
00:32:53,509 --> 00:32:51,039
of folks that have put their careers

832
00:32:56,470 --> 00:32:53,519
into this but everybody wants it to be

833
00:32:58,710 --> 00:32:56,480
successful and ultimately our job is to

834
00:33:00,630 --> 00:32:58,720
make it as successful as we can and we

835
00:33:02,470 --> 00:33:00,640
might get to another one where

836
00:33:04,149 --> 00:33:02,480
there's another issue and we decide not

837
00:33:06,310 --> 00:33:04,159
to fly that's the most important

838
00:33:08,149 --> 00:33:06,320

decision we can make because

839
00:33:10,389 --> 00:33:08,159
we are building

840
00:33:12,710 --> 00:33:10,399
kathy leaders gave a great speech at

841
00:33:14,549 --> 00:33:12,720
awards event the other night and and i

842
00:33:15,990 --> 00:33:14,559
was talking about artemis one artemis

843
00:33:18,549 --> 00:33:16,000
one and then she got up behind me and

844
00:33:20,310 --> 00:33:18,559
said this is just the beginning so we

845
00:33:23,269 --> 00:33:20,320
need to make sure we do this do this

846
00:33:24,950 --> 00:33:23,279
right and prudently yeah yeah

847
00:33:27,590 --> 00:33:24,960
i think we all want to see that next

848
00:33:30,389 --> 00:33:27,600
milestone that next step and

849
00:33:32,070 --> 00:33:30,399
seeing smoke and fire is something that

850
00:33:34,149 --> 00:33:32,080
everybody enjoys

851
00:33:36,870 --> 00:33:34,159
um but we're not going to let another

852
00:33:39,750 --> 00:33:36,880
hurdle deter us from

853
00:33:40,789 --> 00:33:39,760
trying to achieve that next step and um

854
00:33:42,710 --> 00:33:40,799
yeah

855
00:33:43,669 --> 00:33:42,720
you know this this is an incredibly hard

856
00:33:45,590 --> 00:33:43,679
business

857
00:33:47,750 --> 00:33:45,600
we're trying to do something that hasn't

858
00:33:49,909 --> 00:33:47,760
been done in over 50 years and we're

859
00:33:51,990 --> 00:33:49,919
doing it with new technology we're doing

860
00:33:54,389 --> 00:33:52,000
with new operators and new teams and new

861
00:33:56,070 --> 00:33:54,399
command and control and new software

862
00:34:00,470 --> 00:33:56,080
and as jim said

863
00:34:03,430 --> 00:34:01,909

this this is

864
00:34:05,269 --> 00:34:03,440
one of the things that we love about the

865
00:34:07,750 --> 00:34:05,279
agency is it's a learning organization

866
00:34:09,109 --> 00:34:07,760
and we we take pride in lessons learned

867
00:34:11,669 --> 00:34:09,119
in applying them

868
00:34:13,349 --> 00:34:11,679
and i think the fact that we went from

869
00:34:15,190 --> 00:34:13,359
having issues just loading the core

870
00:34:19,510 --> 00:34:15,200
stage to getting all the way through

871
00:34:21,669 --> 00:34:19,520
cryoloading and and having a fully

872
00:34:23,909 --> 00:34:21,679
configured vehicle and just

873
00:34:25,829 --> 00:34:23,919
not quite getting to this engine bleed

874
00:34:28,230 --> 00:34:25,839
is is a sign that we've applied a lot of

875
00:34:30,230 --> 00:34:28,240
lessons learned and and we are trying to

876
00:34:32,629 --> 00:34:30,240
to get to that next step and that's that

877
00:34:37,349 --> 00:34:32,639
again is not going to deter us from from

878
00:34:37,359 --> 00:34:44,550
here in the third row

879
00:34:49,510 --> 00:34:47,510
uh hi there tim fernholtz from reports i

880
00:34:51,349 --> 00:34:49,520
was curious we heard on the commentary

881
00:34:53,430 --> 00:34:51,359
that the flight controllers came up with

882
00:34:55,589 --> 00:34:53,440
a couple plans to try and fix the engine

883
00:34:57,589 --> 00:34:55,599
issue during that hold can you tell us

884
00:34:59,109 --> 00:34:57,599
what was tried and maybe give us some

885
00:35:00,950 --> 00:34:59,119
insight into the scene in the control

886
00:35:03,910 --> 00:35:00,960
room when those decisions were being

887
00:35:08,710 --> 00:35:07,430
yeah i'll um i'll take a crack at that

888
00:35:11,190 --> 00:35:08,720

you know there are

889
00:35:13,510 --> 00:35:11,200
what we call pre-planned procedures that

890
00:35:15,750 --> 00:35:13,520
that the team has and and the team

891
00:35:17,990 --> 00:35:15,760
worked through those like

892
00:35:21,589 --> 00:35:18,000
doing when we had the the initial

893
00:35:23,670 --> 00:35:21,599
hydrogen leak on the um on the 8-inch qd

894
00:35:26,470 --> 00:35:23,680
you you do what they call a stop flow

895
00:35:28,950 --> 00:35:26,480
and revert and then you try again and

896
00:35:30,470 --> 00:35:28,960
and those things the team worked through

897
00:35:31,510 --> 00:35:30,480
very efficiently

898
00:35:33,430 --> 00:35:31,520
and

899
00:35:35,109 --> 00:35:33,440
you know it was very methodical

900
00:35:36,390 --> 00:35:35,119
and

901
00:35:38,870 --> 00:35:36,400
they

902
00:35:40,390 --> 00:35:38,880
had again to kind of have this delicate

903
00:35:42,630 --> 00:35:40,400
balance of

904
00:35:44,230 --> 00:35:42,640
wanting to to increase the flow rate as

905
00:35:46,710 --> 00:35:44,240
quickly as we could to get that tank

906
00:35:47,910 --> 00:35:46,720
full so we could meet our launch window

907
00:35:50,390 --> 00:35:47,920
but

908
00:35:51,270 --> 00:35:50,400
do it at a slow enough pace

909
00:35:53,109 --> 00:35:51,280
that

910
00:35:54,470 --> 00:35:53,119
the

911
00:35:56,470 --> 00:35:54,480
that we didn't spring in a spring

912
00:35:57,910 --> 00:35:56,480
another leak and and that the

913
00:35:59,750 --> 00:35:57,920

interface could get thermally

914
00:36:01,109 --> 00:35:59,760
conditioned and seal up

915
00:36:03,109 --> 00:36:01,119
and

916
00:36:04,550 --> 00:36:03,119
they work through it very methodically

917
00:36:05,589 --> 00:36:04,560
and

918
00:36:07,910 --> 00:36:05,599
when

919
00:36:09,829 --> 00:36:07,920
we ran into the

920
00:36:18,790 --> 00:36:09,839
the

921
00:36:20,870 --> 00:36:18,800
engines looked pretty good in terms of

922
00:36:22,630 --> 00:36:20,880
the thermal conditioning in this engine

923
00:36:24,069 --> 00:36:22,640
three was the outlier

924
00:36:26,470 --> 00:36:24,079
they tried a couple of steps they

925
00:36:28,630 --> 00:36:26,480
consulted with the engineering teams

926
00:36:30,630 --> 00:36:28,640
that that provide technical support from

927
00:36:32,790 --> 00:36:30,640
the from the design center in the in

928
00:36:35,190 --> 00:36:32,800
this case it's uh boeing and aerojet

929
00:36:36,870 --> 00:36:35,200
rocketdyne are the are the technical

930
00:36:39,270 --> 00:36:36,880
experts whether it's on the on the core

931
00:36:41,190 --> 00:36:39,280
stage or the um or the liquid engine

932
00:36:43,829 --> 00:36:41,200
side and they work together very

933
00:36:45,829 --> 00:36:43,839
efficiently as a team uh there was quite

934
00:36:47,990 --> 00:36:45,839
a bit of chatter when we got outside of

935
00:36:50,790 --> 00:36:48,000
the pre-planned uh

936
00:36:53,589 --> 00:36:50,800
contingency and then they brought back a

937
00:36:55,910 --> 00:36:53,599
strategy on how to re-establish

938
00:36:57,990 --> 00:36:55,920

the the engine bleed and and we just

939
00:37:00,150 --> 00:36:58,000
weren't successful when we ran into this

940
00:37:01,829 --> 00:37:00,160
uh inner tank vent valve issue

941
00:37:03,829 --> 00:37:01,839
that that complicated our ability to

942
00:37:06,950 --> 00:37:03,839
maintain pressure there and it was at

943
00:37:09,270 --> 00:37:06,960
that point that um the team just focused

944
00:37:10,950 --> 00:37:09,280
solely on managing the pressure of the

945
00:37:13,430 --> 00:37:10,960
tank because you're preserving the

946
00:37:15,990 --> 00:37:13,440
flight hardware within its design limits

947
00:37:17,510 --> 00:37:16,000
and then um once once they did that it

948
00:37:18,790 --> 00:37:17,520
we decided that it was time to knock it

949
00:37:20,630 --> 00:37:18,800
off

950
00:37:23,109 --> 00:37:20,640
there's also a process i mean the team

951
00:37:24,790 --> 00:37:23,119
goes over to an anomaly loop

952
00:37:27,190 --> 00:37:24,800
that where they're where they're working

953
00:37:28,310 --> 00:37:27,200
things that particular non-conformance

954
00:37:30,710 --> 00:37:28,320
or issue

955
00:37:32,630 --> 00:37:30,720
and uh and they're getting and they come

956
00:37:34,069 --> 00:37:32,640
back and say here's our plan can you

957
00:37:35,990 --> 00:37:34,079
give us

958
00:37:38,550 --> 00:37:36,000
some time to work it and i'll sometimes

959
00:37:40,230 --> 00:37:38,560
talk about a time and go off and

960
00:37:41,910 --> 00:37:40,240
play it against a software model in

961
00:37:44,390 --> 00:37:41,920
another firing room or back in the

962
00:37:46,870 --> 00:37:44,400
design center in huntsville or or out at

963
00:37:49,190 --> 00:37:46,880

aerojet rocketdyne and and then come

964
00:37:50,470 --> 00:37:49,200
back with that data and the

965
00:37:53,109 --> 00:37:50,480
the uh

966
00:37:54,310 --> 00:37:53,119
nasa test director and and the launch

967
00:37:57,030 --> 00:37:54,320
director are

968
00:37:59,190 --> 00:37:57,040
encouraging them to hey we haven't heard

969
00:38:00,950 --> 00:37:59,200
from you in the time frame right because

970
00:38:02,870 --> 00:38:00,960
they're trying to get all the data but

971
00:38:04,550 --> 00:38:02,880
those two are trying to manage the flow

972
00:38:06,630 --> 00:38:04,560
and what we have left in the launch

973
00:38:08,470 --> 00:38:06,640
window so

974
00:38:10,950 --> 00:38:08,480
that's kind of the process that's always

975
00:38:13,270 --> 00:38:10,960
going on across all anomalies not just

976
00:38:18,150 --> 00:38:13,280
not just that one

977
00:38:21,750 --> 00:38:19,990
hi good afternoon uh

978
00:38:23,349 --> 00:38:21,760
you all are probably exhausted so thank

979
00:38:24,710 --> 00:38:23,359
you for taking time to talk to us and

980
00:38:26,790 --> 00:38:24,720
talk through all of this

981
00:38:28,310 --> 00:38:26,800
i'm wondering as you do talk through all

982
00:38:30,390 --> 00:38:28,320
of these steps and you all have

983
00:38:32,630 --> 00:38:30,400
mentioned various

984
00:38:35,589 --> 00:38:32,640
experiences that the apollo crews and

985
00:38:37,990 --> 00:38:35,599
the apollo mission control uh also dealt

986
00:38:40,150 --> 00:38:38,000
with does it give you a new appreciation

987
00:38:41,670 --> 00:38:40,160
for or as you look at all of this do you

988
00:38:43,349 --> 00:38:41,680

hearken back to

989
00:38:45,270 --> 00:38:43,359
what your predecessors were doing

990
00:38:47,990 --> 00:38:45,280
50-plus years ago

991
00:38:50,790 --> 00:38:48,000
uh i'm just wondering how you how you

992
00:38:52,790 --> 00:38:50,800
think about where you are today and you

993
00:38:54,630 --> 00:38:52,800
juxtapose that against what your what

994
00:38:57,270 --> 00:38:54,640
the apollo folks went through 50 plus

995
00:39:01,750 --> 00:38:59,589
my pers randy bresnik said it best the

996
00:39:03,990 --> 00:39:01,760
other day right they they didn't know it

997
00:39:06,790 --> 00:39:04,000
could be done which is even more

998
00:39:09,030 --> 00:39:06,800
impressive right we we've seen it done

999
00:39:10,710 --> 00:39:09,040
we're trying this with a new vehicle so

1000
00:39:13,670 --> 00:39:10,720
it's more impre it's really impressing

1001
00:39:14,950 --> 00:39:13,680
me to think they they didn't even know

1002
00:39:17,109 --> 00:39:14,960
that it could be dense county you don't

1003
00:39:19,349 --> 00:39:17,119
know how hard it is because of what's

1004
00:39:21,829 --> 00:39:19,359
laid out in front of you so i think for

1005
00:39:24,310 --> 00:39:21,839
that the shuttle program the iss program

1006
00:39:26,150 --> 00:39:24,320
those are all programs we we learn from

1007
00:39:28,390 --> 00:39:26,160
and uh have an appreciation for the

1008
00:39:30,630 --> 00:39:28,400
challenges that go with it

1009
00:39:32,950 --> 00:39:30,640
so and that my faith in this team is

1010
00:39:34,710 --> 00:39:32,960
ongoing so i i know we'll get through it

1011
00:39:37,270 --> 00:39:34,720
because they've they've seen it done

1012
00:39:38,470 --> 00:39:37,280
before and they understand this vehicle

1013
00:39:39,990 --> 00:39:38,480

oh my god

1014
00:39:41,829 --> 00:39:40,000
one

1015
00:39:43,990 --> 00:39:41,839
thing that

1016
00:39:47,190 --> 00:39:44,000
will show you the difference between

1017
00:39:50,950 --> 00:39:47,200
apollo and artemis

1018
00:39:52,790 --> 00:39:50,960
they went step by step there was apollo

1019
00:39:55,349 --> 00:39:52,800
7

1020
00:39:59,109 --> 00:39:55,359
then 8 around the moon

1021
00:40:00,230 --> 00:39:59,119
then nine were back in low earth orbit

1022
00:40:02,550 --> 00:40:00,240
where they

1023
00:40:03,430 --> 00:40:02,560
separated the lunar lander and

1024
00:40:05,750 --> 00:40:03,440
and

1025
00:40:08,069 --> 00:40:05,760
prepared that docking again

1026
00:40:11,030 --> 00:40:08,079
you think about that seven eight nine

1027
00:40:14,550 --> 00:40:11,040
that's all wrapped up

1028
00:40:17,349 --> 00:40:14,560
in this artemis 1

1029
00:40:21,910 --> 00:40:19,109
they went on to

1030
00:40:24,309 --> 00:40:21,920
apollo 10

1031
00:40:26,630 --> 00:40:24,319
tom stafford who by the way was with us

1032
00:40:29,109 --> 00:40:26,640
today and got a standing ovation from

1033
00:40:30,630 --> 00:40:29,119
our guest

1034
00:40:34,230 --> 00:40:30,640
and then 11

1035
00:40:36,390 --> 00:40:34,240
and that was the part of

1036
00:40:39,270 --> 00:40:36,400
what is going to be artemis 2

1037
00:40:41,589 --> 00:40:39,280
and then artemis iii so it's uh it's

1038
00:40:43,510 --> 00:40:41,599

really a compression of a lot of the

1039
00:40:45,910 --> 00:40:43,520
things and we're standing on the

1040
00:40:48,069 --> 00:40:45,920
shoulders of those who had been there

1041
00:40:50,390 --> 00:40:48,079
before but with a completely different

1042
00:40:51,670 --> 00:40:50,400
vehicle

1043
00:40:53,829 --> 00:40:51,680
so we're running up on the end of our

1044
00:40:55,190 --> 00:40:53,839
time i think we have time for two more

1045
00:41:05,349 --> 00:40:55,200
micah maydenberg with wall street

1046
00:41:09,589 --> 00:41:07,430
thank you uh michael maynard wall street

1047
00:41:11,190 --> 00:41:09,599
journal hey mike you talked about the

1048
00:41:13,270 --> 00:41:11,200
issue being on the course side and not

1049
00:41:15,030 --> 00:41:13,280
on the the engine interface side could

1050
00:41:17,030 --> 00:41:15,040
you kind of elaborate on that and have

1051
00:41:18,630 --> 00:41:17,040
you had any conversations or anybody on

1052
00:41:20,309 --> 00:41:18,640
your team had any conversations

1053
00:41:21,510 --> 00:41:20,319
initially with the folks at boeing just

1054
00:41:25,510 --> 00:41:21,520
given their

1055
00:41:28,550 --> 00:41:25,520
role on the uh the core side

1056
00:41:30,150 --> 00:41:28,560
well we we certainly did discuss whether

1057
00:41:32,870 --> 00:41:30,160
or not

1058
00:41:35,190 --> 00:41:32,880
there was an engine problem

1059
00:41:37,829 --> 00:41:35,200
and and marsha's question earlier was

1060
00:41:39,910 --> 00:41:37,839
was kind of alluding to do we need to

1061
00:41:40,790 --> 00:41:39,920
remove and replace an engine and

1062
00:41:42,550 --> 00:41:40,800
and

1063
00:41:44,630 --> 00:41:42,560

there's no indication that that we're in

1064
00:41:47,510 --> 00:41:44,640
that type of scenario at this point

1065
00:41:49,430 --> 00:41:47,520
um boeing is a part of our engineering

1066
00:41:50,870 --> 00:41:49,440
team that is in the launch control

1067
00:41:52,230 --> 00:41:50,880
center boeing is on the mission

1068
00:41:55,109 --> 00:41:52,240
management team

1069
00:41:56,309 --> 00:41:55,119
and they're integral to the overall

1070
00:41:59,190 --> 00:41:56,319
operation

1071
00:42:01,990 --> 00:41:59,200
and we did tap their expertise and and

1072
00:42:03,270 --> 00:42:02,000
we have a whole host of technical

1073
00:42:05,750 --> 00:42:03,280
experts

1074
00:42:07,270 --> 00:42:05,760
aside from boeing our nasa engineering

1075
00:42:09,109 --> 00:42:07,280
and safety center

1076
00:42:11,829 --> 00:42:09,119
some of the tech fellows are involved

1077
00:42:14,150 --> 00:42:11,839
from from that organization as well as

1078
00:42:15,829 --> 00:42:14,160
our nasa chief engineers from from the

1079
00:42:18,069 --> 00:42:15,839
marshall space flight center folks like

1080
00:42:19,030 --> 00:42:18,079
dr john blevins and a number of other

1081
00:42:19,829 --> 00:42:19,040
folks

1082
00:42:21,109 --> 00:42:19,839
all

1083
00:42:23,510 --> 00:42:21,119
weighed in

1084
00:42:26,710 --> 00:42:23,520
and and helped troubleshoot the issue

1085
00:42:29,349 --> 00:42:26,720
today alongside our boeing and aerojet

1086
00:42:31,190 --> 00:42:29,359
rocketdyne partners and um that's you

1087
00:42:33,270 --> 00:42:31,200
know that's kind of where we got to

1088
00:42:35,750 --> 00:42:33,280

today was at the end of a long day we

1089
00:42:37,349 --> 00:42:35,760
ran into not one issue but kind of a

1090
00:42:39,270 --> 00:42:37,359
compounding issue

1091
00:42:41,670 --> 00:42:39,280
between the uh the bleed and the vent

1092
00:42:43,430 --> 00:42:41,680
valve uh that we that we just

1093
00:42:45,510 --> 00:42:43,440
again decided that we it was appropriate

1094
00:42:47,510 --> 00:42:45,520
to knock it off um given the

1095
00:42:48,470 --> 00:42:47,520
configuration that we're in so

1096
00:42:51,750 --> 00:42:48,480
um

1097
00:42:53,349 --> 00:42:51,760
yeah that's kind of where we got to

1098
00:42:54,870 --> 00:42:53,359
one last question irene klotz with

1099
00:42:56,710 --> 00:42:54,880
aviation week

1100
00:42:59,750 --> 00:42:56,720
thanks this is kind of a physics

1101
00:43:04,309 --> 00:42:59,760
question um is there something about the

1102
00:43:06,390 --> 00:43:04,319
position of the main engine 3 that is

1103
00:43:09,589 --> 00:43:06,400
makes it susceptible

1104
00:43:12,630 --> 00:43:09,599
to uh to this kind of situation or

1105
00:43:15,349 --> 00:43:12,640
could this have randomly occurred at one

1106
00:43:17,670 --> 00:43:15,359
of the other engine positions

1107
00:43:20,230 --> 00:43:17,680
only because i talked with hanika he

1108
00:43:22,390 --> 00:43:20,240
brought this up uh he asked his team to

1109
00:43:24,470 --> 00:43:22,400
go off and and look at that

1110
00:43:25,910 --> 00:43:24,480
and i think that's a that's he'll

1111
00:43:28,150 --> 00:43:25,920
probably bring that answer back to you

1112
00:43:30,870 --> 00:43:28,160
tomorrow he didn't anticipate there was

1113
00:43:32,309 --> 00:43:30,880

but they're not leaving anything

1114
00:43:35,750 --> 00:43:32,319
off the table

1115
00:43:39,430 --> 00:43:37,990
thanks that's all we have time for today

1116
00:43:41,190 --> 00:43:39,440
as i mentioned after the mission

1117
00:43:43,349 --> 00:43:41,200
management team meets tomorrow to review

1118
00:43:45,829 --> 00:43:43,359
the data and steps forward we'll hold a

1119
00:43:47,750 --> 00:43:45,839
teleconference in the evening

1120
00:43:49,829 --> 00:43:47,760
so thank you for joining us and tune in