
SPACEX
NASA
SPACEX

1
00:00:07,510 --> 00:00:05,829
good morning everyone this is our post

2
00:00:09,190 --> 00:00:07,520
scrub briefing for the cots

3
00:00:11,270 --> 00:00:09,200
demonstration flight

4
00:00:13,030 --> 00:00:11,280
and here to talk about what happened

5
00:00:14,230 --> 00:00:13,040
during the last part of the countdown

6
00:00:18,950 --> 00:00:14,240
this morning

7
00:00:21,990 --> 00:00:18,960
is gwen shotwell the president of spacex

8
00:00:24,150 --> 00:00:22,000
and alan london-moyer the manager for

9
00:00:27,029 --> 00:00:24,160
the nasa commercial crew and cargo

10
00:00:28,550 --> 00:00:27,039
program and the cuts program manager

11
00:00:31,029 --> 00:00:28,560
so we'll begin first with a statement

12
00:00:31,990 --> 00:00:31,039
from spacex and gwen shawwal gwen thanks

13
00:00:34,549 --> 00:00:32,000

george

14
00:00:37,030 --> 00:00:34,559
so we had a uh a nominal countdown right

15
00:00:39,670 --> 00:00:37,040
until about t minus 0.5 seconds uh

16
00:00:42,790 --> 00:00:39,680
engine controller noted uh high chamber

17
00:00:45,029 --> 00:00:42,800
pressure in engine five uh software did

18
00:00:46,069 --> 00:00:45,039
what it was supposed to do aborted

19
00:00:47,430 --> 00:00:46,079
aborted

20
00:00:49,750 --> 00:00:47,440
engine 5 then we went through the

21
00:00:51,110 --> 00:00:49,760
remaining engine shutdown

22
00:00:52,709 --> 00:00:51,120
so

23
00:00:54,389 --> 00:00:52,719
what we're doing now is we are

24
00:00:57,430 --> 00:00:54,399
de-tanking the vehicle

25
00:00:59,349 --> 00:00:57,440
safing the flight termination system

26
00:01:01,990 --> 00:00:59,359
doing what we call a t-tep

27
00:01:04,469 --> 00:01:02,000
sweeps which basically clears the

28
00:01:06,310 --> 00:01:04,479
ignition fluid and we should have some

29
00:01:07,990 --> 00:01:06,320
technicians up into that engine about

30
00:01:10,390 --> 00:01:08,000
noon today

31
00:01:12,789 --> 00:01:10,400
we'll be out there looking for

32
00:01:16,070 --> 00:01:12,799
whatever we can find and we'll put out a

33
00:01:18,789 --> 00:01:16,080
statement as soon as we find root cause

34
00:01:22,149 --> 00:01:18,799
the attempt next attempt assuming uh

35
00:01:24,870 --> 00:01:22,159
whatever we see is uh is repairable

36
00:01:27,030 --> 00:01:24,880
we will go in and try another

37
00:01:29,429 --> 00:01:27,040
another day on the 22nd we're looking at

38
00:01:31,270 --> 00:01:29,439

a backup day on the 23rd as well nasa

39
00:01:33,350 --> 00:01:31,280
has already taken a look at that day and

40
00:01:34,630 --> 00:01:33,360
is is go we need to make sure the range

41
00:01:37,670 --> 00:01:34,640
is available though we don't currently

42
00:01:39,670 --> 00:01:37,680
have the 23rd with the range

43
00:01:42,230 --> 00:01:39,680
all right thanks gwen

44
00:01:47,429 --> 00:01:44,710
right so we're looking at the additional

45
00:01:49,190 --> 00:01:47,439
launch opportunities this 22nd of course

46
00:01:51,030 --> 00:01:49,200
was looks good that was pre-planned the

47
00:01:52,830 --> 00:01:51,040
23rd

48
00:01:55,350 --> 00:01:52,840
looks like it's a good date from the

49
00:01:56,950 --> 00:01:55,360
trajectory and

50
00:01:58,630 --> 00:01:56,960
the station crew says they're ready to

51
00:02:00,469 --> 00:01:58,640
support so

52
00:02:01,990 --> 00:02:00,479
we believe we'll have a good day on the

53
00:02:03,749 --> 00:02:02,000
23rd and then there's a couple days

54
00:02:06,709 --> 00:02:03,759
after that that look like

55
00:02:08,949 --> 00:02:06,719
it's a good phasing period so

56
00:02:11,270 --> 00:02:08,959
we're ready to support when spacex is

57
00:02:12,550 --> 00:02:11,280
ready to go

58
00:02:14,309 --> 00:02:12,560
all right

59
00:02:15,990 --> 00:02:14,319
we'll take some questions now please be

60
00:02:17,990 --> 00:02:16,000
sure to give your name an affiliation

61
00:02:20,229 --> 00:02:18,000
when you get the microphone

62
00:02:22,550 --> 00:02:20,239
and we'll start here in the front with

63
00:02:24,229 --> 00:02:22,560

marcia

64
00:02:25,430 --> 00:02:24,239
marsha done associated press from his

65
00:02:27,430 --> 00:02:25,440
shot well i think you said in your

66
00:02:29,910 --> 00:02:27,440
opening remark but when did the clock

67
00:02:31,270 --> 00:02:29,920
actually start to stop when was the

68
00:02:33,110 --> 00:02:31,280
aboard actually

69
00:02:36,229 --> 00:02:33,120
called precisely

70
00:02:39,509 --> 00:02:36,239
sorry t-minus 0.5 seconds

71
00:02:41,750 --> 00:02:39,519
0.5 half a second left and at that up

72
00:02:43,910 --> 00:02:41,760
until that point all the all nine

73
00:02:45,030 --> 00:02:43,920
engines were firing as they were

74
00:02:48,229 --> 00:02:45,040
supposed to

75
00:02:51,589 --> 00:02:48,239
engine 5 was increasingly uh engine 5

76
00:02:54,390 --> 00:02:51,599
was trending uh high okay but it hit the

77
00:02:58,309 --> 00:02:54,400
abort limit t minus 0.5 okay great all

78
00:03:01,190 --> 00:03:00,309
we've compared this data to the static

79
00:03:02,869 --> 00:03:01,200
fighter

80
00:03:04,470 --> 00:03:02,879
fire data as well and that's one of the

81
00:03:06,550 --> 00:03:04,480
reasons why we aborted it was out of

82
00:03:08,070 --> 00:03:06,560
family from static fire was there any

83
00:03:12,390 --> 00:03:08,080
money seen on number five during the

84
00:03:12,400 --> 00:03:18,390
all right right here

85
00:03:23,509 --> 00:03:21,350
um are you can you use your name sorry

86
00:03:26,229 --> 00:03:23,519
this is clara moskowitz with space.com

87
00:03:28,229 --> 00:03:26,239
um is it still possible that it was a

88
00:03:30,789 --> 00:03:28,239

sensor failure or was it definitely an

89
00:03:33,030 --> 00:03:30,799
over high pressure in that engine this

90
00:03:35,110 --> 00:03:33,040
does not look like a sensor failure

91
00:03:37,190 --> 00:03:35,120
and and is this at all similar to any of

92
00:03:40,149 --> 00:03:37,200
the other glitches you've experienced in

93
00:03:42,229 --> 00:03:40,159
other countdowns before

94
00:03:43,990 --> 00:03:42,239
i'm sure we've seen this in uh in engine

95
00:03:46,789 --> 00:03:44,000
testing i don't recall whether we saw

96
00:03:49,509 --> 00:03:46,799
this during a static fire or or on the

97
00:03:51,750 --> 00:03:49,519
pad for flight

98
00:03:54,309 --> 00:03:51,760
okay right here

99
00:03:56,149 --> 00:03:54,319
uh sawyer rosenstein for talking space i

100
00:03:57,990 --> 00:03:56,159
was wondering if it if this were to

101
00:04:00,390 --> 00:03:58,000
occur during launch how many engines can

102
00:04:02,710 --> 00:04:00,400
fail for it to still achieve success

103
00:04:04,390 --> 00:04:02,720
and um yes

104
00:04:06,070 --> 00:04:04,400
it depends on the phase of flight we

105
00:04:08,550 --> 00:04:06,080
need to lift off with all nine which is

106
00:04:10,390 --> 00:04:08,560
why we aborted uh you can lose uh i

107
00:04:12,149 --> 00:04:10,400
believe up to two flights or excuse me

108
00:04:14,789 --> 00:04:12,159
two engines and still make your mission

109
00:04:17,030 --> 00:04:14,799
just not at liftoff and the software all

110
00:04:18,550 --> 00:04:17,040
worked according to plan for the cutoff

111
00:04:22,870 --> 00:04:18,560
we cannot blame the software guys for

112
00:04:33,590 --> 00:04:24,390
all right let's come over here and go to

113
00:04:38,150 --> 00:04:35,590

brenda mcgary bloomberg news how many

114
00:04:39,830 --> 00:04:38,160
times have you aborted at this at this

115
00:04:41,749 --> 00:04:39,840
moment or this juncture i know this is

116
00:04:43,749 --> 00:04:41,759
obviously this was the third attempted

117
00:04:46,550 --> 00:04:43,759
launch the falcon 9 did the one and two

118
00:04:48,790 --> 00:04:46,560
also have a similar abort

119
00:04:51,590 --> 00:04:48,800
i believe we aborted with pc pressure

120
00:04:54,070 --> 00:04:51,600
high on engine five during flight one

121
00:04:58,230 --> 00:04:54,080
actually but uh we had the time the

122
00:05:02,550 --> 00:04:59,670
this time because of the window that's

123
00:05:06,950 --> 00:05:02,560
correct that's correct

124
00:05:11,430 --> 00:05:09,670
david hirsch with nhk a quick yes no and

125
00:05:14,550 --> 00:05:11,440
then a follow-up substantive question

126
00:05:16,629 --> 00:05:14,560
the on the may 22 possible may 23rd date

127
00:05:18,230 --> 00:05:16,639
you're giving that's pending the text

128
00:05:20,230 --> 00:05:18,240
going to the pad and finding out what

129
00:05:23,110 --> 00:05:20,240
happened i'm assuming correct uh there's

130
00:05:24,870 --> 00:05:23,120
a note from elon earlier that says

131
00:05:27,430 --> 00:05:24,880
slightly high combustion chamber

132
00:05:29,189 --> 00:05:27,440
pressure engine five we'll adjust limits

133
00:05:30,790 --> 00:05:29,199
for a countdown in a few days how do we

134
00:05:33,430 --> 00:05:30,800
reconcile that information with what

135
00:05:36,070 --> 00:05:33,440
you're saying well that was early data

136
00:05:37,749 --> 00:05:36,080
uh a further uh analysis of the data

137
00:05:39,189 --> 00:05:37,759
that we were able to snatch and take a

138
00:05:41,029 --> 00:05:39,199

look at looks like it's something we

139
00:05:43,270 --> 00:05:41,039
want to go in and expect okay and and

140
00:05:44,469 --> 00:05:43,280
finally obviously to you know today or

141
00:05:46,070 --> 00:05:44,479
maybe tomorrow we'll wake up and

142
00:05:48,150 --> 00:05:46,080
there'll be a lot of characterization of

143
00:05:50,230 --> 00:05:48,160
this as being potentially even a failure

144
00:05:53,029 --> 00:05:50,240
and i wonder as someone who's kind of

145
00:05:54,310 --> 00:05:53,039
leading the trend here for commercial

146
00:05:55,749 --> 00:05:54,320
commercial cargo and potentially

147
00:05:57,270 --> 00:05:55,759
commercial crew how would you react to

148
00:06:00,629 --> 00:05:57,280
those sorts of statements yeah this is

149
00:06:02,390 --> 00:06:00,639
not a failure we aborted with purpose

150
00:06:03,990 --> 00:06:02,400
it would be a failure if we were to have

151
00:06:07,670 --> 00:06:04,000
lifted off with an engine trending in

152
00:06:14,150 --> 00:06:09,350
ken

153
00:06:15,830 --> 00:06:14,160
gwen um if you had to change the engine

154
00:06:16,790 --> 00:06:15,840
how long would that take what would that

155
00:06:18,790 --> 00:06:16,800
involve

156
00:06:20,550 --> 00:06:18,800
that would take a couple of days we are

157
00:06:23,189 --> 00:06:20,560
looking at that operation however we do

158
00:06:25,990 --> 00:06:23,199
have the next vehicle here at the cape

159
00:06:28,390 --> 00:06:26,000
in our hangar uh so we'll be looking at

160
00:06:30,070 --> 00:06:28,400
taking engine five off of that vehicle

161
00:06:31,670 --> 00:06:30,080
and looking at the op to put it on this

162
00:06:33,350 --> 00:06:31,680
one if necessary

163
00:06:35,270 --> 00:06:33,360

well that's still the same amount of

164
00:06:37,430 --> 00:06:35,280
time though isn't it

165
00:06:39,590 --> 00:06:37,440
if you took the engine off of one rocket

166
00:06:41,350 --> 00:06:39,600
and put it on the other or

167
00:06:43,670 --> 00:06:41,360
what are you saying i'm not sure

168
00:06:45,670 --> 00:06:43,680
that that's a more detailed operation

169
00:06:47,749 --> 00:06:45,680
than repairing or

170
00:06:49,110 --> 00:06:47,759
or just clearing this particular engine

171
00:06:50,390 --> 00:06:49,120
but we're looking at doing that if

172
00:06:52,550 --> 00:06:50,400
necessary

173
00:06:55,029 --> 00:06:52,560
thanks

174
00:06:56,550 --> 00:06:55,039
or let's uh go to the telephones i think

175
00:06:58,550 --> 00:06:56,560
we have one

176
00:07:02,950 --> 00:06:58,560
phone in question

177
00:07:06,150 --> 00:07:04,309
christmas really answered thank you very

178
00:07:08,070 --> 00:07:06,160
much all right thank you

179
00:07:11,990 --> 00:07:08,080
any further questions here all right

180
00:07:15,510 --> 00:07:12,000
let's go to here to uh jay barbary

181
00:07:18,950 --> 00:07:15,520
jay barbara nbc uh mrs shotwell

182
00:07:22,309 --> 00:07:18,960
is 23rd launch time would that be 3 21

183
00:07:25,029 --> 00:07:22,319
a.m and could you tell us at what time

184
00:07:27,589 --> 00:07:25,039
what part and after the launch how many

185
00:07:30,230 --> 00:07:27,599
plus seconds would it be that you could

186
00:07:33,670 --> 00:07:30,240
continue uh flying with say eight

187
00:07:35,270 --> 00:07:33,680
engines and then uh uh seven engines you

188
00:07:37,909 --> 00:07:35,280

say you have to have all nine to lift

189
00:07:39,670 --> 00:07:37,919
off but along somewhere along there you

190
00:07:41,350 --> 00:07:39,680
can get along with eight and then you

191
00:07:43,350 --> 00:07:41,360
can get along with seven can you tell us

192
00:07:44,710 --> 00:07:43,360
where that is you know i can't tell you

193
00:07:46,230 --> 00:07:44,720
right now jay but i'll i'll get back

194
00:07:48,629 --> 00:07:46,240
with you on that

195
00:07:50,950 --> 00:07:48,639
launch time for the 23rd it's about

196
00:07:54,710 --> 00:07:50,960
that's correct launch time on the 22nd

197
00:07:57,670 --> 00:07:54,720
is 3 44 and you we take off about 20

198
00:07:59,510 --> 00:07:57,680
minutes each day so 321 is that right

199
00:08:01,589 --> 00:07:59,520
three i think it's 23 is that correct

200
00:08:03,350 --> 00:08:01,599
321a do you have it i don't know i don't

201
00:08:05,670 --> 00:08:03,360
have it with me but it's approximately

202
00:08:07,430 --> 00:08:05,680
the right time frame all right thank you

203
00:08:09,909 --> 00:08:07,440
all right um

204
00:08:12,070 --> 00:08:09,919
james you have a question james

205
00:08:14,070 --> 00:08:12,080
okay all right right here jason power

206
00:08:16,710 --> 00:08:14,080
with wired can you just clarify again

207
00:08:18,309 --> 00:08:16,720
were all nine engines

208
00:08:20,710 --> 00:08:18,319
did the ignition begin for all nine

209
00:08:21,670 --> 00:08:20,720
engines and that was the flash we saw

210
00:08:23,430 --> 00:08:21,680
and

211
00:08:25,350 --> 00:08:23,440
that is correct we had uh nominal

212
00:08:26,390 --> 00:08:25,360
ignition for all nine

213
00:08:28,790 --> 00:08:26,400

and all

214
00:08:29,749 --> 00:08:28,800
engines with the exception of engine

215
00:08:34,630 --> 00:08:29,759
five

216
00:08:39,350 --> 00:08:34,640
fine and then started trending high pc

217
00:08:43,509 --> 00:08:41,269
all right uh any further

218
00:08:46,389 --> 00:08:43,519
questions

219
00:08:48,070 --> 00:08:46,399
all right one right here in the front

220
00:08:49,750 --> 00:08:48,080
with a valencia voice i'm just curious

221
00:08:51,590 --> 00:08:49,760
since it came down to 0.5 seconds before

222
00:08:53,430 --> 00:08:51,600
the launch does the uh did the rocket

223
00:08:55,509 --> 00:08:53,440
lift off at all like did it raise it all

224
00:08:57,670 --> 00:08:55,519
or just stay down no

225
00:08:59,750 --> 00:08:57,680
we hold the vehicle down with purpose to

226
00:09:02,150 --> 00:08:59,760
watch for this exact

227
00:09:04,310 --> 00:09:02,160
uh this exact issue you want just like a

228
00:09:05,910 --> 00:09:04,320
pilot at the end of a runway revs the

229
00:09:07,350 --> 00:09:05,920
engines and looks at the gauges we were

230
00:09:10,389 --> 00:09:07,360
revving the engines we were looking at

231
00:09:11,750 --> 00:09:10,399
the gauges and we decided not to fly

232
00:09:15,590 --> 00:09:11,760
okay uh

233
00:09:20,550 --> 00:09:18,710
thanks um irene klotz with uh reuters

234
00:09:23,509 --> 00:09:20,560
for gwen i know it's kind of early for

235
00:09:25,750 --> 00:09:23,519
rocket school but typically what sorts

236
00:09:28,070 --> 00:09:25,760
of things might cause this kind of high

237
00:09:29,509 --> 00:09:28,080
pressure reading thanks

238
00:09:31,269 --> 00:09:29,519

high pressure coming from high

239
00:09:33,350 --> 00:09:31,279
temperatures which is like likely low

240
00:09:38,310 --> 00:09:33,360
fuel

241
00:09:41,350 --> 00:09:39,990
well the valve if the valve wasn't

242
00:09:42,790 --> 00:09:41,360
opened although we checked i was able to

243
00:09:45,110 --> 00:09:42,800
check that before i came over it looks

244
00:09:46,470 --> 00:09:45,120
like the pre-valve fuel pre-valve open

245
00:09:48,230 --> 00:09:46,480
was fully open

246
00:09:49,509 --> 00:09:48,240
um so now we're just going to have to go

247
00:09:54,710 --> 00:09:49,519
in and spend a little bit more time

248
00:09:58,470 --> 00:09:56,790
mark ratterman with talking space is the

249
00:10:02,230 --> 00:09:58,480
inspection you talk about doing later

250
00:10:04,310 --> 00:10:02,240
today is that a visual is that

251
00:10:06,470 --> 00:10:04,320
involved disassembly is how how

252
00:10:07,350 --> 00:10:06,480
complicated is that inspection of that

253
00:10:09,670 --> 00:10:07,360
engine

254
00:10:11,110 --> 00:10:09,680
we can we'll do a visual obviously up in

255
00:10:13,350 --> 00:10:11,120
the chamber look at the fuel ring in the

256
00:10:15,590 --> 00:10:13,360
penalties i believe we'll probably bore

257
00:10:19,590 --> 00:10:15,600
scope the pump as well

258
00:10:22,150 --> 00:10:19,600
we'll only disassemble if we have to

259
00:10:23,670 --> 00:10:22,160
okay another question right here

260
00:10:26,150 --> 00:10:23,680
yeah just because the it sounds like

261
00:10:28,630 --> 00:10:26,160
there was a similarity to to this on the

262
00:10:30,790 --> 00:10:28,640
first attempt of the falcon 9

263
00:10:32,470 --> 00:10:30,800

do you get a sense that that there is

264
00:10:33,990 --> 00:10:32,480
that there's a pattern there that that

265
00:10:36,150 --> 00:10:34,000
it's it is the valve or that there's

266
00:10:37,990 --> 00:10:36,160
some kind of similarity between the

267
00:10:41,190 --> 00:10:38,000
what happened on an earlier mission we

268
00:10:42,949 --> 00:10:41,200
on flight one uh the uh

269
00:10:45,190 --> 00:10:42,959
i don't believe the engine was trending

270
00:10:48,710 --> 00:10:45,200
quite uh the way this one was we had a

271
00:10:51,190 --> 00:10:48,720
narrow correct we had a narrower abort

272
00:10:54,310 --> 00:10:51,200
on flight one

273
00:10:55,750 --> 00:10:54,320
okay marshall you have a follow-up

274
00:10:58,150 --> 00:10:55,760
we were told you were going to try every

275
00:11:00,150 --> 00:10:58,160
three days and so now you've got just a

276
00:11:02,470 --> 00:11:00,160
one-day difference between the 22nd and

277
00:11:03,990 --> 00:11:02,480
23rd could you explain why 23rd is

278
00:11:06,069 --> 00:11:04,000
possible now

279
00:11:07,670 --> 00:11:06,079
when it wasn't really in the mix before

280
00:11:10,630 --> 00:11:07,680
i did talk about the 23rd as an

281
00:11:12,550 --> 00:11:10,640
opportunity yesterday in general we have

282
00:11:14,230 --> 00:11:12,560
very good opportunities every three days

283
00:11:16,550 --> 00:11:14,240
but it really depends on the trajectory

284
00:11:18,230 --> 00:11:16,560
of the international space station

285
00:11:20,069 --> 00:11:18,240
i am not an orbit

286
00:11:21,829 --> 00:11:20,079
analyst so i can't help you much more

287
00:11:23,750 --> 00:11:21,839
than that but i'll try to follow up with

288
00:11:28,470 --> 00:11:23,760

you

289
00:11:32,150 --> 00:11:30,630
james dean with florida today is is the

290
00:11:33,670 --> 00:11:32,160
engine swap out if you determine that's

291
00:11:35,590 --> 00:11:33,680
necessarily the only thing that would

292
00:11:37,750 --> 00:11:35,600
force you to to

293
00:11:39,190 --> 00:11:37,760
roll back into the hangar

294
00:11:41,269 --> 00:11:39,200
or if you do have to roll into the

295
00:11:42,389 --> 00:11:41,279
hangar does that determine

296
00:11:44,630 --> 00:11:42,399
what's like does that determine your

297
00:11:46,870 --> 00:11:44,640
next earliest uh opportunity could you

298
00:11:48,630 --> 00:11:46,880
still get off on the 22nd or or would

299
00:11:49,990 --> 00:11:48,640
that push you to we should still number

300
00:11:51,750 --> 00:11:50,000
days we should be able to roll back into

301
00:11:53,110 --> 00:11:51,760
the hangar and get back to the 22nd i

302
00:11:54,870 --> 00:11:53,120
don't want to speculate on what would

303
00:11:56,470 --> 00:11:54,880
cause us to do that or not i just don't

304
00:11:58,150 --> 00:11:56,480
have enough data we wanted to come here

305
00:12:00,310 --> 00:11:58,160
as quickly as we can and get you what

306
00:12:02,870 --> 00:12:00,320
the information we had but no we could

307
00:12:06,310 --> 00:12:02,880
we roll back uh we can roll in and roll

308
00:12:10,870 --> 00:12:09,430
all right any more questions

309
00:12:14,310 --> 00:12:10,880
all right in that event we did get an

310
00:12:17,670 --> 00:12:14,320
update from houston if we launch on the

311
00:12:21,110 --> 00:12:17,680
23rd our launch time would be 3 22 so

312
00:12:23,509 --> 00:12:21,120
that means on the 22nd 344 on the 23rd

313
00:12:24,790 --> 00:12:23,519

322.