1
00:00:22,790 --> 00:00:21,349
good afternoon my name is tim hughes and

2
00:00:24,470 --> 00:00:22,800
i'm a member of the senior executive

3
00:00:26,550 --> 00:00:24,480
team at spacex

4
00:00:28,550 --> 00:00:26,560
on behalf of the nearly 5 000 employees

5
00:00:30,150 --> 00:00:28,560
at spacex

6
00:00:33,990 --> 00:00:30,160
we're honored and humbled to be with you

7
00:00:35,830 --> 00:00:34,000
here today at this historic site pad 39a

8
00:00:37,830 --> 00:00:35,840
and we look forward to making history at

9
00:00:39,910 --> 00:00:37,840
this launch site once again

10
00:00:43,350 --> 00:00:39,920
and to that end it's my pleasure today

11
00:00:45,430 --> 00:00:43,360
to introduce bob bob cabana legendary

12
00:00:46,630 --> 00:00:45,440
astronaut and director of the kennedy

13
00:00:49,110 --> 00:00:46,640

space center

14
00:00:51,590 --> 00:00:49,120
and gwen shotwell president and chief

15
00:00:52,950 --> 00:00:51,600
operating officer of spacex

16
00:00:54,549 --> 00:00:52,960
gwen and bob will make some brief

17
00:00:57,189 --> 00:00:54,559
opening remarks and then they'd be

18
00:00:59,990 --> 00:00:57,199
pleased to take questions from you

19
00:01:03,910 --> 00:01:00,000
please join me and welcome welcoming bob

20
00:01:08,149 --> 00:01:05,429
thanks tim

21
00:01:09,670 --> 00:01:08,159
i can't tell you how excited i am to be

22
00:01:11,429 --> 00:01:09,680
here today it was a little less than

23
00:01:13,670 --> 00:01:11,439
three years ago that gwen and charlie

24
00:01:17,749 --> 00:01:13,680
bolden and i were out here talking about

25
00:01:19,749 --> 00:01:17,759
turning pad 39a over to spacex you know

26
00:01:22,550 --> 00:01:19,759
this pad would have just sat here and

27
00:01:24,950 --> 00:01:22,560
rusted away in assault error had we not

28
00:01:26,710 --> 00:01:24,960
had the use agreement with spacex

29
00:01:29,030 --> 00:01:26,720
to continue to enable commercial

30
00:01:30,950 --> 00:01:29,040
operations for our nation

31
00:01:33,109 --> 00:01:30,960
this is the pad that commercial crew is

32
00:01:34,870 --> 00:01:33,119
going to launch from the falcon 9 heavy

33
00:01:37,030 --> 00:01:34,880
and tomorrow we're going to see cargo

34
00:01:39,429 --> 00:01:37,040
going to the international space station

35
00:01:41,030 --> 00:01:39,439
what an awesome use of a great american

36
00:01:43,109 --> 00:01:41,040
asset and i gotta admit

37
00:01:45,590 --> 00:01:43,119
i'm a little bit partial to pad a all

38
00:01:47,510 --> 00:01:45,600

four of my flights went off this pad so

39
00:01:50,789 --> 00:01:47,520
i think this is an absolutely

40
00:01:53,190 --> 00:01:50,799
outstanding exciting time for our nation

41
00:01:55,670 --> 00:01:53,200
for commercial space for space flight in

42
00:01:58,310 --> 00:01:55,680
general this is absolutely the right

43
00:02:01,030 --> 00:01:58,320
thing to do and spacex is a great

44
00:02:03,109 --> 00:02:01,040
partner in making this happen gwen

45
00:02:06,389 --> 00:02:03,119
thanks bob

46
00:02:10,949 --> 00:02:08,869
hi everybody um for those of you that

47
00:02:12,390 --> 00:02:10,959
were here i think it was april 15th

48
00:02:14,949 --> 00:02:12,400
2014.

49
00:02:17,430 --> 00:02:14,959
my first remark was uh for one of the

50
00:02:18,550 --> 00:02:17,440
first few times in my life i uh was

51
00:02:20,390 --> 00:02:18,560
speechless

52
00:02:22,710 --> 00:02:20,400
and i'm feeling a little bit that way

53
00:02:24,390 --> 00:02:22,720
again today

54
00:02:27,990 --> 00:02:24,400
the

55
00:02:30,150 --> 00:02:28,000
tomorrow's event and spacex being here

56
00:02:32,949 --> 00:02:30,160
side by side with nasa

57
00:02:35,270 --> 00:02:32,959
is extraordinary for the space industry

58
00:02:36,869 --> 00:02:35,280
it's extraordinary for spacex and i

59
00:02:38,150 --> 00:02:36,879
think it's great for the united states

60
00:02:40,229 --> 00:02:38,160
as well

61
00:02:41,430 --> 00:02:40,239
crs 10 should launch tomorrow morning

62
00:02:44,309 --> 00:02:41,440
1001.

63
00:02:45,990 --> 00:02:44,319

just keep in mind it's a new pad for us

64
00:02:47,910 --> 00:02:46,000
vehicle

65
00:02:49,509 --> 00:02:47,920
and so let's uh we're going to try to

66
00:02:50,869 --> 00:02:49,519
lift off tomorrow

67
00:02:53,110 --> 00:02:50,879
and have a very exciting day but we've

68
00:02:55,110 --> 00:02:53,120
got opportunities in follow-on days as

69
00:02:57,750 --> 00:02:55,120
well

70
00:02:59,750 --> 00:02:57,760
but back to 39a

71
00:03:01,990 --> 00:02:59,760
it's a historic pad

72
00:03:04,470 --> 00:03:02,000
we've taken good care of this pad during

73
00:03:06,390 --> 00:03:04,480
the refurbishment and the rebuild

74
00:03:09,190 --> 00:03:06,400
we've saved precious things that needed

75
00:03:11,270 --> 00:03:09,200
to be saved we've upgraded things to

76
00:03:14,149 --> 00:03:11,280
make them usable in the in the

77
00:03:16,710 --> 00:03:14,159
contemporary era here today and i i

78
00:03:20,229 --> 00:03:16,720
can't really it's hard to express how

79
00:03:21,990 --> 00:03:20,239
excited i am to be here uh just two and

80
00:03:23,110 --> 00:03:22,000
a half or so years after we got the

81
00:03:25,670 --> 00:03:23,120
lease

82
00:03:28,309 --> 00:03:25,680
being ready standing on the precipice of

83
00:03:29,589 --> 00:03:28,319
uh of a launch here tomorrow so thanks

84
00:03:32,309 --> 00:03:29,599
very much i look forward to your

85
00:03:36,470 --> 00:03:32,319
questions and uh yeah i'm so glad to be

86
00:03:38,949 --> 00:03:37,990
so if we could we'll take questions to

87
00:03:40,550 --> 00:03:38,959
the left and the right there are

88
00:03:45,030 --> 00:03:40,560

microphones on either side and we'll

89
00:03:45,040 --> 00:03:48,390
by name and your please

90
00:03:53,110 --> 00:03:50,550
marcia done associated press for miss

91
00:03:55,750 --> 00:03:53,120
shotwell um this will be your first

92
00:03:57,589 --> 00:03:55,760
launch from here since september 1st and

93
00:03:58,869 --> 00:03:57,599
going from paddy does that give you a

94
00:04:01,110 --> 00:03:58,879
psychological

95
00:04:03,030 --> 00:04:01,120
extra boost and

96
00:04:05,190 --> 00:04:03,040
talk about the comeback at least locally

97
00:04:06,229 --> 00:04:05,200
for getting back in flight

98
00:04:08,789 --> 00:04:06,239
you know it would have been great to

99
00:04:11,350 --> 00:04:08,799
have flown from 39a in our return to

100
00:04:14,550 --> 00:04:11,360
flight but we were ready uh for the

101
00:04:16,310 --> 00:04:14,560
iridium launch at vandenberg sooner um

102
00:04:18,310 --> 00:04:16,320
you know every launch for me is a

103
00:04:20,949 --> 00:04:18,320
significant emotional event there's not

104
00:04:23,350 --> 00:04:20,959
one launch that i feel

105
00:04:25,830 --> 00:04:23,360
comfortable and calm they're already

106
00:04:27,430 --> 00:04:25,840
always nerve-wracking

107
00:04:29,990 --> 00:04:27,440
i can tell you it's an extra special

108
00:04:34,310 --> 00:04:30,000
launch tomorrow for sure

109
00:04:38,950 --> 00:04:36,950
hi gwen irene oh sorry

110
00:04:41,270 --> 00:04:38,960
we've got another hi ken kramer universe

111
00:04:42,550 --> 00:04:41,280
today my question is for gwen um you

112
00:04:44,790 --> 00:04:42,560
talked a little bit about commercial

113
00:04:46,710 --> 00:04:44,800

crew can you tell us um give us an

114
00:04:48,870 --> 00:04:46,720
update on on how you are doing with the

115
00:04:50,870 --> 00:04:48,880
dragon constructing it building it what

116
00:04:52,870 --> 00:04:50,880
milestones have you achieved when you

117
00:04:55,350 --> 00:04:52,880
expect to do the unmanned demand test

118
00:04:57,590 --> 00:04:55,360
flight and uh what's the status of the

119
00:04:59,270 --> 00:04:57,600
manufacturing of the of the uh

120
00:05:01,830 --> 00:04:59,280
spacecraft thank you so we're in the

121
00:05:04,629 --> 00:05:01,840
process of building a number of dragon

122
00:05:05,909 --> 00:05:04,639
two spacecraft um and uh we are

123
00:05:08,230 --> 00:05:05,919
targeting to launch that first

124
00:05:10,469 --> 00:05:08,240
demonstration flight late this year uh

125
00:05:12,550 --> 00:05:10,479
from this pad actually and there's still

126
00:05:15,029 --> 00:05:12,560
more work to do on the pad by the way to

127
00:05:16,950 --> 00:05:15,039
prepare for crew we've got a crew arm to

128
00:05:19,670 --> 00:05:16,960
put in and we've got some other upgrades

129
00:05:21,430 --> 00:05:19,680
as well um that we'll work on in between

130
00:05:24,710 --> 00:05:21,440
the launches that we execute here from

131
00:05:27,749 --> 00:05:24,720
39a the program is going well it's never

132
00:05:29,510 --> 00:05:27,759
uh going as fast as you want it to go um

133
00:05:31,430 --> 00:05:29,520
but we're we're comfortable with our

134
00:05:33,430 --> 00:05:31,440
with our program and we're certainly

135
00:05:35,189 --> 00:05:33,440
looking forward to

136
00:05:37,909 --> 00:05:35,199
uh flying crew

137
00:05:39,590 --> 00:05:37,919
on this pad and just at spacex in the

138
00:05:42,550 --> 00:05:39,600

united states generally

139
00:05:45,270 --> 00:05:42,560
thank you and good luck thank you

140
00:05:46,790 --> 00:05:45,280
hi i'm ryan klotz with reuters hi gwen

141
00:05:47,510 --> 00:05:46,800
hey irene um

142
00:05:54,629 --> 00:05:47,520
the

143
00:05:58,950 --> 00:05:54,639
and what's your options for that and

144
00:06:01,270 --> 00:05:58,960
also on about for 39a um how much taller

145
00:06:02,950 --> 00:06:01,280
are you expecting to need to build the

146
00:06:05,189 --> 00:06:02,960
fixed service structure

147
00:06:07,430 --> 00:06:05,199
for a crew dragon thanks

148
00:06:09,430 --> 00:06:07,440
okay let me take the easy one first

149
00:06:12,150 --> 00:06:09,440
we've not added any height to the fixed

150
00:06:13,430 --> 00:06:12,160
service structure it's i think it's 305

151
00:06:15,830 --> 00:06:13,440
feet tall

152
00:06:17,350 --> 00:06:15,840
we work at some or we do to add some

153
00:06:19,350 --> 00:06:17,360
height if we were to add vertical

154
00:06:21,189 --> 00:06:19,360
integration capability here for national

155
00:06:23,350 --> 00:06:21,199
security space launches so that's the

156
00:06:25,270 --> 00:06:23,360
reason why we would go taller on uh on

157
00:06:26,790 --> 00:06:25,280
the fixed service structure but for crew

158
00:06:27,670 --> 00:06:26,800
we're good where we are

159
00:06:29,749 --> 00:06:27,680
um

160
00:06:31,909 --> 00:06:29,759
and then as far as the the the leak we

161
00:06:34,550 --> 00:06:31,919
have a we have found a helium leak in

162
00:06:37,110 --> 00:06:34,560
the uh the the spin system on the second

163
00:06:39,670 --> 00:06:37,120

stage i believe we've found it um we'll

164
00:06:41,749 --> 00:06:39,680
continue to work root cause today and

165
00:06:44,790 --> 00:06:41,759
make sure we're back on track for a 1001

166
00:06:47,270 --> 00:06:44,800
liftoff uh tomorrow um

167
00:06:48,309 --> 00:06:47,280
i think uh we'll get we're gonna as far

168
00:06:50,230 --> 00:06:48,319
as i know right now we're going to

169
00:06:54,710 --> 00:06:50,240
proceed with the count and and go into

170
00:06:59,830 --> 00:06:56,710
hi uh robin c mango with the new york

171
00:07:02,230 --> 00:06:59,840
observer um my question is does spacex

172
00:07:04,309 --> 00:07:02,240
spacex have an updated timeline for the

173
00:07:05,830 --> 00:07:04,319
first launch of the falcon heavy and

174
00:07:07,589 --> 00:07:05,840
have you guys decided whether or not

175
00:07:09,110 --> 00:07:07,599
you're going to put a customer payload

176
00:07:10,309 --> 00:07:09,120
on that first launch

177
00:07:11,270 --> 00:07:10,319
so we're going to launch heavy this

178
00:07:13,670 --> 00:07:11,280
summer

179
00:07:15,430 --> 00:07:13,680
as soon as we get pad 40 back up and

180
00:07:18,070 --> 00:07:15,440
running for single stick falcon 9

181
00:07:21,510 --> 00:07:18,080
launches we'll move the falcon 9 program

182
00:07:23,350 --> 00:07:21,520
over there and uh and lift off falcon

183
00:07:24,790 --> 00:07:23,360
heavy over here so we're still working

184
00:07:27,749 --> 00:07:24,800
through the details on that but it's

185
00:07:30,629 --> 00:07:27,759
mid-year it's still planned for mid-year

186
00:07:33,350 --> 00:07:30,639
obviously i said earlier schedules never

187
00:07:34,710 --> 00:07:33,360
stick the way other things do but we're

188
00:07:36,150 --> 00:07:34,720

still targeting mid year for sure for

189
00:07:37,909 --> 00:07:36,160
that but again we need pad 40

190
00:07:39,430 --> 00:07:37,919
operational before we bring heavy here

191
00:07:41,350 --> 00:07:39,440
we've got a bunch of customers stacked

192
00:07:42,710 --> 00:07:41,360
up and i don't currently have a payload

193
00:07:44,629 --> 00:07:42,720
on falcon heavy there's a bunch of guys

194
00:07:45,990 --> 00:07:44,639
that want to fly i think we're feeling

195
00:07:48,230 --> 00:07:46,000
like this is a mission that we really

196
00:07:51,430 --> 00:07:48,240
want to do ourselves you know kind of on

197
00:07:53,189 --> 00:07:51,440
our timelines uh and in our pace um so

198
00:07:55,909 --> 00:07:53,199
we don't currently have a customer thank

199
00:08:00,390 --> 00:07:57,510
hey glenn it's chris davenport from the

200
00:08:02,150 --> 00:08:00,400
washington post um a quick red dragon

201
00:08:03,589 --> 00:08:02,160
question then i have a follow if that's

202
00:08:06,150 --> 00:08:03,599
okay um

203
00:08:08,070 --> 00:08:06,160
you know here we are at 39a which

204
00:08:09,990 --> 00:08:08,080
launched astronauts to the moon and

205
00:08:11,430 --> 00:08:10,000
obviously with the shuttle looking

206
00:08:13,830 --> 00:08:11,440
forward you know you've talked about

207
00:08:15,270 --> 00:08:13,840
launching to mars in 2018 i haven't

208
00:08:16,710 --> 00:08:15,280
heard a lot about that since i wonder if

209
00:08:18,950 --> 00:08:16,720
you could update us and where that

210
00:08:20,869 --> 00:08:18,960
stands yeah so the red program a red

211
00:08:23,430 --> 00:08:20,879
dragon program is really exciting what

212
00:08:25,270 --> 00:08:23,440
we want to do is take uh dragons that

213
00:08:27,589 --> 00:08:25,280

we've previously flown put them on a

214
00:08:29,830 --> 00:08:27,599
falcon heavy and send them to mars

215
00:08:31,990 --> 00:08:29,840
really a great uh

216
00:08:34,630 --> 00:08:32,000
great system to to look forward to we

217
00:08:36,550 --> 00:08:34,640
were focused on 2018 but we felt like we

218
00:08:39,029 --> 00:08:36,560
needed to put more resources and focus

219
00:08:40,870 --> 00:08:39,039
more heavily on our crew program and our

220
00:08:42,949 --> 00:08:40,880
falcon heavy program so we're looking

221
00:08:44,790 --> 00:08:42,959
more in the 2020 time frame for that

222
00:08:47,350 --> 00:08:44,800
basically the next mars opportunity for

223
00:08:49,509 --> 00:08:47,360
red dragon

224
00:08:51,110 --> 00:08:49,519
so you had said you're speechless about

225
00:08:53,590 --> 00:08:51,120
being here today but i wonder if you

226
00:08:55,430 --> 00:08:53,600
could at least attempt to put into words

227
00:08:57,430 --> 00:08:55,440
you know what this means to launch

228
00:08:59,350 --> 00:08:57,440
tomorrow you know from this pad it means

229
00:09:01,269 --> 00:08:59,360
a lot to a lot of people and uh i wonder

230
00:09:04,790 --> 00:09:01,279
if you could just you know give us your

231
00:09:07,110 --> 00:09:04,800
best shot give us okay so um by the way

232
00:09:09,829 --> 00:09:07,120
i never get nervous speaking in front of

233
00:09:11,350 --> 00:09:09,839
a crowd and my heart is pounding

234
00:09:13,430 --> 00:09:11,360
to come out here today not because you

235
00:09:15,590 --> 00:09:13,440
guys make me nervous but because i've

236
00:09:17,509 --> 00:09:15,600
got a vehicle on this extraordinary pad

237
00:09:20,550 --> 00:09:17,519
behind me that that hopefully we're

238
00:09:21,910 --> 00:09:20,560

going to lift off tomorrow

239
00:09:25,110 --> 00:09:21,920
you know i've been in this business for

240
00:09:25,910 --> 00:09:25,120
almost 30 years i remember watching

241
00:09:28,630 --> 00:09:25,920
um

242
00:09:31,430 --> 00:09:28,640
the lunar landing sitting in front of a

243
00:09:34,870 --> 00:09:31,440
tv screen really crappy

244
00:09:37,750 --> 00:09:34,880
crappy visual um the screen was all

245
00:09:40,150 --> 00:09:37,760
black and white and jaggedy

246
00:09:42,389 --> 00:09:40,160
and i remember my dad telling me at that

247
00:09:44,870 --> 00:09:42,399
time this is really important

248
00:09:47,670 --> 00:09:44,880
and you should pay attention to this and

249
00:09:50,070 --> 00:09:47,680
and i remembered that actually and

250
00:09:51,750 --> 00:09:50,080
have been an avid fan of space ever

251
00:09:52,949 --> 00:09:51,760
since and

252
00:09:54,630 --> 00:09:52,959
i mean

253
00:09:56,949 --> 00:09:54,640
this is probably this is probably the

254
00:09:59,190 --> 00:09:56,959
most exciting launch for me actually

255
00:10:01,670 --> 00:09:59,200
since it's at spacex

256
00:10:03,829 --> 00:10:01,680
both because it's with nasa who's been

257
00:10:06,069 --> 00:10:03,839
such an extraordinary partner for us in

258
00:10:09,269 --> 00:10:06,079
our journey here and because of where

259
00:10:11,030 --> 00:10:09,279
we're launching from tomorrow

260
00:10:15,670 --> 00:10:11,040
was did that was that good does that

261
00:10:19,750 --> 00:10:18,310
hi brendan byrne with wmfp and npr um

262
00:10:21,670 --> 00:10:19,760
can you talk about the the landing

263
00:10:23,269 --> 00:10:21,680

attempt of the booster and has this

264
00:10:25,350 --> 00:10:23,279
become routine to you or are you still

265
00:10:26,710 --> 00:10:25,360
nervous every time

266
00:10:28,310 --> 00:10:26,720
you know i get more nervous for launch

267
00:10:30,550 --> 00:10:28,320
than landing

268
00:10:32,069 --> 00:10:30,560
um

269
00:10:34,470 --> 00:10:32,079
launch is critical it's for the customer

270
00:10:36,870 --> 00:10:34,480
it's the primary mission uh landing is

271
00:10:38,470 --> 00:10:36,880
really to increase our knowledge base

272
00:10:41,030 --> 00:10:38,480
and kind of bolster

273
00:10:42,470 --> 00:10:41,040
our technology for ultimately taking

274
00:10:44,790 --> 00:10:42,480
people to other planets you've got to be

275
00:10:46,550 --> 00:10:44,800
able to land and re-fly otherwise it's a

276
00:10:48,790 --> 00:10:46,560
one-way trip which we're not interested

277
00:10:51,590 --> 00:10:48,800
in of course um so yeah tomorrow's a

278
00:10:54,069 --> 00:10:51,600
tent uh launch attempt um

279
00:10:56,790 --> 00:10:54,079
take dragon to orbit and bring the

280
00:10:59,750 --> 00:10:56,800
booster back to landing zone one

281
00:11:03,190 --> 00:10:59,760
um and uh it will be the third land

282
00:11:06,069 --> 00:11:03,200
landing second one knock on wood

283
00:11:07,910 --> 00:11:06,079
for uh for nasa flight so that's also

284
00:11:09,430 --> 00:11:07,920
very exciting although i i always forget

285
00:11:13,590 --> 00:11:09,440
about the landing part i'm always so

286
00:11:17,990 --> 00:11:16,470
uh hi gwen tim fernholtz from quartz i

287
00:11:19,910 --> 00:11:18,000
wanted to ask about commercial crew as

288
00:11:21,990 --> 00:11:19,920

well in light of the gao report

289
00:11:23,910 --> 00:11:22,000
yesterday on the schedule delays

290
00:11:25,670 --> 00:11:23,920
in particular i guess the engine is

291
00:11:27,350 --> 00:11:25,680
going to have to be redesigned for human

292
00:11:28,949 --> 00:11:27,360
rating can you talk about what

293
00:11:31,269 --> 00:11:28,959
specifically you'll have to do for that

294
00:11:33,910 --> 00:11:31,279
and how long it will take thank you

295
00:11:35,670 --> 00:11:33,920
yeah so the news that came out a number

296
00:11:37,590 --> 00:11:35,680
of weeks ago in the wall street journal

297
00:11:38,160 --> 00:11:37,600
was not news

298
00:11:40,310 --> 00:11:38,170
that

299
00:11:42,630 --> 00:11:40,320
[Music]

300
00:11:44,310 --> 00:11:42,640
we've known about we've we've flown with

301
00:11:46,949 --> 00:11:44,320
cracks in our turbine wheel from the

302
00:11:48,790 --> 00:11:46,959
beginning of the falcon 9 program um

303
00:11:50,790 --> 00:11:48,800
they're cracks that we are qualified to

304
00:11:53,509 --> 00:11:50,800
fly with we are we were comfortable with

305
00:11:55,350 --> 00:11:53,519
it um for our commercial launches the

306
00:11:58,150 --> 00:11:55,360
crs program was comfortable with it as

307
00:12:01,030 --> 00:11:58,160
well however we do want to get rid of

308
00:12:02,310 --> 00:12:01,040
them when we're flying crew

309
00:12:04,550 --> 00:12:02,320
the

310
00:12:06,069 --> 00:12:04,560
redesign has been in works for quite

311
00:12:07,590 --> 00:12:06,079
some time

312
00:12:09,829 --> 00:12:07,600
and

313
00:12:11,829 --> 00:12:09,839

the final spin on that engine design we

314
00:12:18,870 --> 00:12:11,839
should we'll fly this year

315
00:12:22,470 --> 00:12:20,790
all right that is cesari with the utica

316
00:12:24,790 --> 00:12:22,480
phoenix and i was hoping to get some

317
00:12:28,389 --> 00:12:24,800
additional information on reusability of

318
00:12:30,790 --> 00:12:28,399
second stage and also payload fairings

319
00:12:32,710 --> 00:12:30,800
so second stage is harder to recover

320
00:12:34,870 --> 00:12:32,720
because it's going in orbital velocity

321
00:12:36,870 --> 00:12:34,880
you know the first stage isn't quite

322
00:12:38,389 --> 00:12:36,880
going orbital velocity so it's a little

323
00:12:39,910 --> 00:12:38,399
easier to slow down

324
00:12:41,350 --> 00:12:39,920
and bring back second stage will be

325
00:12:42,870 --> 00:12:41,360
harder

326
00:12:44,629 --> 00:12:42,880
but uh

327
00:12:46,470 --> 00:12:44,639
i mean we've learned how to bring dragon

328
00:12:48,150 --> 00:12:46,480
back which is kind of a third stage

329
00:12:50,389 --> 00:12:48,160
actually um

330
00:12:52,230 --> 00:12:50,399
so as far as recovering second stage

331
00:12:55,829 --> 00:12:52,240
that will be kind of an evolution for

332
00:12:57,590 --> 00:12:55,839
our next uh our next launch system um

333
00:12:59,430 --> 00:12:57,600
uh but we're not i don't think we're

334
00:13:01,829 --> 00:12:59,440
gonna look at recovering second stage on

335
00:13:02,949 --> 00:13:01,839
the on the falcon program

336
00:13:05,110 --> 00:13:02,959
and then you had a follow-up which i

337
00:13:07,829 --> 00:13:05,120
forgot sorry payload fairings payload

338
00:13:09,910 --> 00:13:07,839

fairings yeah we're gonna um

339
00:13:11,509 --> 00:13:09,920
we're gonna try to bring them back um we

340
00:13:13,269 --> 00:13:11,519
have i mean we've recovered payload

341
00:13:15,030 --> 00:13:13,279
fairings um i'm not sure any of them

342
00:13:16,629 --> 00:13:15,040
have survived in one piece

343
00:13:18,310 --> 00:13:16,639
but we do want to recover them both to

344
00:13:20,710 --> 00:13:18,320
be a good steward you want to you know

345
00:13:23,430 --> 00:13:20,720
you don't want them floating around like

346
00:13:25,670 --> 00:13:23,440
ships um and then also because we would

347
00:13:28,150 --> 00:13:25,680
eventually love to re to reuse them so

348
00:13:29,750 --> 00:13:28,160
you got to land them not in the water so

349
00:13:31,670 --> 00:13:29,760
we're working on that maybe this year

350
00:13:33,350 --> 00:13:31,680
you'll see that

351
00:13:35,670 --> 00:13:33,360
we want to save everything it's such a

352
00:13:37,430 --> 00:13:35,680
shame this hardware is so expensive you

353
00:13:39,030 --> 00:13:37,440
want to save everything instead of

354
00:13:42,629 --> 00:13:39,040
throwing it away or having it become

355
00:13:45,990 --> 00:13:44,470
like when james dean florida today

356
00:13:47,430 --> 00:13:46,000
you've talked a little bit about the

357
00:13:49,030 --> 00:13:47,440
history of the pad

358
00:13:50,949 --> 00:13:49,040
to what extent do you feel like you are

359
00:13:52,629 --> 00:13:50,959
making history tomorrow with this being

360
00:13:54,550 --> 00:13:52,639
a commercial vehicle and obviously more

361
00:13:56,710 --> 00:13:54,560
commercial launches to come off this pad

362
00:13:58,150 --> 00:13:56,720
how significant do you think that is

363
00:13:59,829 --> 00:13:58,160

that we're sort of changing the paradigm

364
00:14:01,509 --> 00:13:59,839
here and having a privately developed

365
00:14:02,790 --> 00:14:01,519
commercial vehicle

366
00:14:04,310 --> 00:14:02,800
flying this mission then could you just

367
00:14:05,110 --> 00:14:04,320
speak a little as well to

368
00:14:06,870 --> 00:14:05,120
you know

369
00:14:09,110 --> 00:14:06,880
long term

370
00:14:10,550 --> 00:14:09,120
you expect to make history in in more

371
00:14:13,030 --> 00:14:10,560
important ways i guess with with these

372
00:14:14,790 --> 00:14:13,040
mars missions i mean can you talk about

373
00:14:16,790 --> 00:14:14,800
what's coming down the line if all goes

374
00:14:19,269 --> 00:14:16,800
well from this bad

375
00:14:21,670 --> 00:14:19,279
yeah so i never look at what we're doing

376
00:14:23,350 --> 00:14:21,680
is making history i really just try to

377
00:14:25,509 --> 00:14:23,360
focus on the mission and do a good job

378
00:14:27,590 --> 00:14:25,519
for our customers so i don't i don't

379
00:14:28,829 --> 00:14:27,600
think about things in in that way

380
00:14:31,509 --> 00:14:28,839
generally

381
00:14:33,590 --> 00:14:31,519
um what i think it's important to note

382
00:14:35,910 --> 00:14:33,600
it might be a commercial vehicle

383
00:14:38,310 --> 00:14:35,920
but there's lots of government and

384
00:14:40,470 --> 00:14:38,320
private science on board as well and it

385
00:14:42,710 --> 00:14:40,480
was originally a government pad

386
00:14:44,949 --> 00:14:42,720
which you know spacex joined forces with

387
00:14:47,430 --> 00:14:44,959
and upgraded it so it's it's really a

388
00:14:49,670 --> 00:14:47,440

hybrid so tomorrow's launch is a hybrid

389
00:14:51,670 --> 00:14:49,680
launch we've got a government customer

390
00:14:55,030 --> 00:14:51,680
under a commercial launch authority

391
00:14:57,030 --> 00:14:55,040
commercially developed launch vehicle

392
00:14:58,710 --> 00:14:57,040
incredible amounts of science actually

393
00:15:01,030 --> 00:14:58,720
i'm pretty sure at the press conference

394
00:15:02,629 --> 00:15:01,040
the the science guys will go through it

395
00:15:05,350 --> 00:15:02,639
i was leafing through the

396
00:15:07,430 --> 00:15:05,360
the booklet and there's hundreds of

397
00:15:08,389 --> 00:15:07,440
experiments both taking up and coming

398
00:15:10,629 --> 00:15:08,399
down

399
00:15:12,870 --> 00:15:10,639
um really cool stuff

400
00:15:15,110 --> 00:15:12,880
and so i guess i'd rather look at this

401
00:15:17,590 --> 00:15:15,120
as a partnership kind of a hybrid it's a

402
00:15:19,509 --> 00:15:17,600
blend right it's a

403
00:15:20,870 --> 00:15:19,519
falcon 9 started out and dragon started

404
00:15:22,389 --> 00:15:20,880
out as a commercial

405
00:15:24,150 --> 00:15:22,399
excuse me a public-private partnership

406
00:15:25,269 --> 00:15:24,160
with nasa and i feel like all these

407
00:15:26,949 --> 00:15:25,279
launches

408
00:15:31,269 --> 00:15:26,959
continue to be along that vein and

409
00:15:34,949 --> 00:15:32,230
just

410
00:15:37,590 --> 00:15:34,959
talk about the mars activity that could

411
00:15:40,470 --> 00:15:37,600
you talk to red dragon already but

412
00:15:43,829 --> 00:15:40,480
for crude missions eventually

413
00:15:46,069 --> 00:15:43,839

we've not been shy about saying that uh

414
00:15:49,350 --> 00:15:46,079
really the reason why spacex was founded

415
00:15:51,269 --> 00:15:49,360
elon founded this company uh was to

416
00:15:53,030 --> 00:15:51,279
build space transportation systems that

417
00:15:56,150 --> 00:15:53,040
could ultimately take people to other

418
00:15:59,269 --> 00:15:56,160
planets we've got our site on mars

419
00:16:01,110 --> 00:15:59,279
for now frankly i think destinations

420
00:16:02,949 --> 00:16:01,120
outside of the solar system are more

421
00:16:04,949 --> 00:16:02,959
exciting than mars

422
00:16:06,470 --> 00:16:04,959
but but we got mars

423
00:16:07,670 --> 00:16:06,480
so we'll try we'll get try to get to

424
00:16:10,629 --> 00:16:07,680
mars

425
00:16:13,590 --> 00:16:10,639
very quickly actually we are

426
00:16:15,350 --> 00:16:13,600
we're very focused on

427
00:16:16,230 --> 00:16:15,360
accelerating that program as much as we

428
00:16:17,829 --> 00:16:16,240
can

429
00:16:19,670 --> 00:16:17,839
without losing sight of the important

430
00:16:21,990 --> 00:16:19,680
work that we're doing now

431
00:16:24,629 --> 00:16:22,000
for nasa and our commercial and other

432
00:16:26,629 --> 00:16:24,639
government customers

433
00:16:32,389 --> 00:16:26,639
i mean i i can't do a better speech than

434
00:16:36,870 --> 00:16:34,389
hi ken chang new york times another

435
00:16:38,629 --> 00:16:36,880
question about commercial crew and gao

436
00:16:40,870 --> 00:16:38,639
the report said that nasa needs to go

437
00:16:42,550 --> 00:16:40,880
look for contingency plans because it

438
00:16:44,470 --> 00:16:42,560

was worried that both

439
00:16:46,389 --> 00:16:44,480
contractors were going to slip into 2019

440
00:16:48,150 --> 00:16:46,399
i was wondering how confident you are

441
00:16:50,470 --> 00:16:48,160
that you as you can

442
00:16:51,910 --> 00:16:50,480
meet your 2018 schedule

443
00:16:54,069 --> 00:16:51,920
yeah i'm confident we'll fly crew in

444
00:16:56,790 --> 00:16:54,079
2018.

445
00:16:58,710 --> 00:16:56,800
so the response uh to that report this

446
00:17:04,630 --> 00:16:58,720
morning was the hell we won't

447
00:17:08,870 --> 00:17:06,470
hi gwen stephen clark from space flight

448
00:17:11,750 --> 00:17:08,880
now i had a question about the future of

449
00:17:13,510 --> 00:17:11,760
uh falcon 9 i think elon has mentioned

450
00:17:16,069 --> 00:17:13,520
uh another upgrade coming down the line

451
00:17:18,069 --> 00:17:16,079
i think he's called it block five um

452
00:17:19,429 --> 00:17:18,079
when do you expect that to debut and

453
00:17:21,189 --> 00:17:19,439
what are some of the

454
00:17:22,470 --> 00:17:21,199
upgrades you're going to introduce

455
00:17:23,750 --> 00:17:22,480
you know what changes will we see on the

456
00:17:24,710 --> 00:17:23,760
vehicle when that flies and have a

457
00:17:26,549 --> 00:17:24,720
follow-up

458
00:17:30,230 --> 00:17:26,559
so block 5 is the last big spin on

459
00:17:32,390 --> 00:17:30,240
falcon 9 and it's largely driven by the

460
00:17:34,789 --> 00:17:32,400
upgrades that we needed to make for

461
00:17:36,310 --> 00:17:34,799
the commercial crew program as well as

462
00:17:38,549 --> 00:17:36,320
national security space launch

463
00:17:40,230 --> 00:17:38,559

requirements

464
00:17:43,590 --> 00:17:40,240
there there is a performance upgrade

465
00:17:45,430 --> 00:17:43,600
here as well largely to get more margins

466
00:17:48,630 --> 00:17:45,440
for these other for these other uh

467
00:17:49,990 --> 00:17:48,640
customers very demanding customers um

468
00:17:51,110 --> 00:17:50,000
so there's there's a performance

469
00:17:53,350 --> 00:17:51,120
increase

470
00:17:55,750 --> 00:17:53,360
there's some manufacturing

471
00:17:57,590 --> 00:17:55,760
improvements we've we've addressed the

472
00:17:59,270 --> 00:17:57,600
turbine wheel issue

473
00:18:00,789 --> 00:17:59,280
that we talked about earlier here today

474
00:18:03,510 --> 00:18:00,799
on that

475
00:18:08,789 --> 00:18:03,520
and probably a hundred or so

476
00:18:12,710 --> 00:18:10,470
and i think on this launch you're flying

477
00:18:15,350 --> 00:18:12,720
with the autonomous flight safety system

478
00:18:16,950 --> 00:18:15,360
for the first time um

479
00:18:18,710 --> 00:18:16,960
why why the switch from the manual

480
00:18:21,110 --> 00:18:18,720
system that's been in use for

481
00:18:23,190 --> 00:18:21,120
you know decades and what does that

482
00:18:24,710 --> 00:18:23,200
offer spacex in terms of you know

483
00:18:27,430 --> 00:18:24,720
independence from

484
00:18:29,190 --> 00:18:27,440
the conventional range assets yeah so we

485
00:18:30,870 --> 00:18:29,200
were told to fly this

486
00:18:32,390 --> 00:18:30,880
we would have done it anyhow

487
00:18:34,150 --> 00:18:32,400
it makes our operations here at the

488
00:18:36,310 --> 00:18:34,160

range uh much

489
00:18:39,270 --> 00:18:36,320
more streamlined but ultimately the air

490
00:18:41,110 --> 00:18:39,280
force wants to um kind of

491
00:18:42,630 --> 00:18:41,120
get rid of some of it the assets that

492
00:18:44,710 --> 00:18:42,640
they have here

493
00:18:47,110 --> 00:18:44,720
that are necessary for launch

494
00:18:48,710 --> 00:18:47,120
so they wanted

495
00:18:49,830 --> 00:18:48,720
and i believe nasa was driving it as

496
00:18:51,430 --> 00:18:49,840
well

497
00:18:53,110 --> 00:18:51,440
it's just a much more streamlined way to

498
00:18:55,190 --> 00:18:53,120
launch

499
00:19:00,390 --> 00:18:55,200
relying on newer technology for sure as

500
00:19:02,150 --> 00:19:00,400
well saves on o m for the big radars

501
00:19:04,070 --> 00:19:02,160
we've been flying this system in shadow

502
00:19:05,430 --> 00:19:04,080
mode for quite many many missions by the

503
00:19:07,029 --> 00:19:05,440
way this is not the first time we're

504
00:19:08,310 --> 00:19:07,039
flying it this is the first time it's

505
00:19:09,750 --> 00:19:08,320
primary

506
00:19:11,669 --> 00:19:09,760
which makes it

507
00:19:14,789 --> 00:19:11,679
yet another

508
00:19:14,799 --> 00:19:20,310
nervous about the flight

509
00:19:24,470 --> 00:19:22,390
yeah hi gwen bill harwood cbs news

510
00:19:26,230 --> 00:19:24,480
actually mr clark stole my first

511
00:19:27,350 --> 00:19:26,240
question about the

512
00:19:28,950 --> 00:19:27,360
flight termination system but my

513
00:19:31,110 --> 00:19:28,960

follow-up was to bob cabana and i was

514
00:19:33,110 --> 00:19:31,120
wondering when crew dragon starts flying

515
00:19:34,470 --> 00:19:33,120
with an automated uh flight termination

516
00:19:35,750 --> 00:19:34,480
system maybe what an astronaut's

517
00:19:37,270 --> 00:19:35,760
perspective is

518
00:19:39,830 --> 00:19:37,280
when there's no human being in the loop

519
00:19:41,830 --> 00:19:39,840
anymore for us and events that could go

520
00:19:42,630 --> 00:19:41,840
bad i'll give you my perspective bill

521
00:19:44,950 --> 00:19:42,640
and

522
00:19:47,590 --> 00:19:44,960
we still have to certify it for uh crew

523
00:19:50,150 --> 00:19:47,600
operations but i mean this is the future

524
00:19:53,350 --> 00:19:50,160
this is where the range is going

525
00:19:55,830 --> 00:19:53,360
it makes sense to me uh prior to shuttle

526
00:19:57,909 --> 00:19:55,840
launches we used to uh go visit the guys

527
00:19:59,350 --> 00:19:57,919
that sat on console that would push the

528
00:20:01,590 --> 00:19:59,360
button and show them pictures of our

529
00:20:04,230 --> 00:20:01,600
kids and get to know them

530
00:20:06,549 --> 00:20:04,240
but you know the truth is uh with a

531
00:20:07,510 --> 00:20:06,559
human in the loop if you've got a an

532
00:20:10,310 --> 00:20:07,520
envelope

533
00:20:12,230 --> 00:20:10,320
that that rocket is to remain within as

534
00:20:14,470 --> 00:20:12,240
it goes out over the ocean if it's

535
00:20:17,110 --> 00:20:14,480
approaching the edge of that envelope

536
00:20:19,190 --> 00:20:17,120
you know a human may terminate it uh

537
00:20:21,590 --> 00:20:19,200
when the system is actually correcting

538
00:20:23,190 --> 00:20:21,600

to get back towards the center

539
00:20:24,310 --> 00:20:23,200
whereas an automated system done

540
00:20:26,070 --> 00:20:24,320
correctly

541
00:20:27,990 --> 00:20:26,080
it can iterate fast enough that the

542
00:20:29,510 --> 00:20:28,000
system sees that the guidance system is

543
00:20:33,350 --> 00:20:29,520
taking it back before it's going to

544
00:20:35,270 --> 00:20:33,360
exceed that limit so in my opinion if

545
00:20:37,669 --> 00:20:35,280
done correctly an automated system is

546
00:20:39,510 --> 00:20:37,679
actually safer more reliable than having

547
00:20:41,110 --> 00:20:39,520
a human in the loop but we still got

548
00:20:43,110 --> 00:20:41,120
some work to do before you know

549
00:20:44,950 --> 00:20:43,120
commercial crew is going to certify uh

550
00:20:46,149 --> 00:20:44,960
that this is the way to go but this is

551
00:20:47,909 --> 00:20:46,159
the future

552
00:20:50,070 --> 00:20:47,919
thank you gwen just a real quick follow

553
00:20:52,070 --> 00:20:50,080
uh on the same question does this give

554
00:20:53,590 --> 00:20:52,080
you guys the ability to launch uh to

555
00:20:54,870 --> 00:20:53,600
meet your manifest in other words if you

556
00:20:56,149 --> 00:20:54,880
don't have to have the range in the loop

557
00:20:57,750 --> 00:20:56,159
does it help you

558
00:20:59,430 --> 00:20:57,760
in terms of how fast you can fly like

559
00:21:01,669 --> 00:20:59,440
could you fly on the same day ula is

560
00:21:03,830 --> 00:21:01,679
flying that sort of thing so it does

561
00:21:07,029 --> 00:21:03,840
streamline the operations here

562
00:21:09,029 --> 00:21:07,039
at uh at both ranges actually but it

563
00:21:10,070 --> 00:21:09,039

doesn't i mean we still need the air

564
00:21:12,630 --> 00:21:10,080
force

565
00:21:13,750 --> 00:21:12,640
and and nasa to fly and the faa to fly

566
00:21:15,510 --> 00:21:13,760
but it does

567
00:21:17,510 --> 00:21:15,520
tighten timelines for sure i think the

568
00:21:20,470 --> 00:21:17,520
turnover to go from a ula launch to a

569
00:21:22,470 --> 00:21:20,480
spacex launch or you know um

570
00:21:24,390 --> 00:21:22,480
it's my it should be much faster

571
00:21:28,470 --> 00:21:24,400
so yeah it'll be enormously helpful to

572
00:21:32,149 --> 00:21:30,630
jeff faust the space news uh question on

573
00:21:33,750 --> 00:21:32,159
future launch manifest i know you've

574
00:21:36,149 --> 00:21:33,760
talked about ramping up the flight rate

575
00:21:37,430 --> 00:21:36,159
to launch maybe every two weeks or so uh

576
00:21:38,789 --> 00:21:37,440
at the same time earlier this week

577
00:21:40,870 --> 00:21:38,799
iridium said they were pushing back

578
00:21:42,950 --> 00:21:40,880
their next launch from april to june

579
00:21:44,390 --> 00:21:42,960
because of a backlog of launches on your

580
00:21:46,149 --> 00:21:44,400
manifest can you talk about how you're

581
00:21:48,070 --> 00:21:46,159
going to get through that manifest over

582
00:21:51,350 --> 00:21:48,080
the the next few months and and get to

583
00:21:52,789 --> 00:21:51,360
that uh launch every two weeks right

584
00:21:54,789 --> 00:21:52,799
well we're pretty close we're pretty

585
00:21:57,029 --> 00:21:54,799
close to the two-week tax right now out

586
00:21:59,190 --> 00:21:57,039
of the factory um

587
00:22:01,110 --> 00:21:59,200
and uh and out of texas as well so we

588
00:22:02,789 --> 00:22:01,120

really we just need to get flying and

589
00:22:04,230 --> 00:22:02,799
then you should see hardware here about

590
00:22:06,390 --> 00:22:04,240
every two and a half weeks initially

591
00:22:07,110 --> 00:22:06,400
going to every two or so weeks uh after

592
00:22:08,310 --> 00:22:07,120
that

593
00:22:14,870 --> 00:22:08,320
um

594
00:22:16,549 --> 00:22:14,880
fill in the queue of folks that are that

595
00:22:19,510 --> 00:22:16,559
have been waiting for a flight since we

596
00:22:20,789 --> 00:22:19,520
were down last september

597
00:22:22,870 --> 00:22:20,799
well still going to launch all their

598
00:22:26,950 --> 00:22:22,880
missions in the contractual time period

599
00:22:30,470 --> 00:22:28,710
scott powers from florida politics i

600
00:22:31,590 --> 00:22:30,480
have uh related questions for both bob

601
00:22:34,230 --> 00:22:31,600
and gwen

602
00:22:37,350 --> 00:22:34,240
i assume that uh the whole generations

603
00:22:39,430 --> 00:22:37,360
of engineers and technicians made their

604
00:22:40,630 --> 00:22:39,440
careers on this pad uh gwen i'm

605
00:22:42,630 --> 00:22:40,640
wondering whether or not you guys were

606
00:22:45,350 --> 00:22:42,640
able to hire any of them onto your staff

607
00:22:46,950 --> 00:22:45,360
here or through contractors and bob i'd

608
00:22:48,789 --> 00:22:46,960
like you to comment if you could sort of

609
00:22:50,070 --> 00:22:48,799
on their behalf about

610
00:22:52,390 --> 00:22:50,080
what it means to see this pad come back

611
00:22:54,710 --> 00:22:52,400
to life

612
00:22:56,630 --> 00:22:54,720
so we have had uh we have hired some

613
00:22:57,990 --> 00:22:56,640

folks from the from the shuttle program

614
00:23:00,070 --> 00:22:58,000
i don't know if we've hired even one

615
00:23:01,029 --> 00:23:00,080
that was part of building this pad

616
00:23:02,630 --> 00:23:01,039
um

617
00:23:04,070 --> 00:23:02,640
but uh but we definitely have hired

618
00:23:07,110 --> 00:23:04,080
people from the shuttle program they've

619
00:23:08,950 --> 00:23:07,120
been great contributors to

620
00:23:10,950 --> 00:23:08,960
work this spacex as far as

621
00:23:13,270 --> 00:23:10,960
operations go you know when you're at

622
00:23:15,029 --> 00:23:13,280
spacex you work everywhere at spacex if

623
00:23:17,750 --> 00:23:15,039
there's a need in texas you go to texas

624
00:23:19,830 --> 00:23:17,760
if there's a need at 39a you go to 39a

625
00:23:21,430 --> 00:23:19,840
so i can tell you 39a has had a lot of

626
00:23:23,909 --> 00:23:21,440
emphasis over the last three or four

627
00:23:27,590 --> 00:23:23,919
months to get prepared for tomorrow

628
00:23:31,270 --> 00:23:29,029
you mind repeating the question one more

629
00:23:32,710 --> 00:23:31,280
time i didn't quite hear it

630
00:23:34,390 --> 00:23:32,720
obviously a lot of engineers and

631
00:23:36,390 --> 00:23:34,400
technicians spent their careers at this

632
00:23:37,669 --> 00:23:36,400
pad i'm wondering if you can speak sort

633
00:23:39,750 --> 00:23:37,679
of on their behalf of what it means to

634
00:23:41,750 --> 00:23:39,760
see this pad come back to life

635
00:23:44,149 --> 00:23:41,760
well i think it it means a lot to see

636
00:23:47,029 --> 00:23:44,159
the pad just not sit in

637
00:23:49,190 --> 00:23:47,039
in waste away it's a tremendous asset

638
00:23:51,190 --> 00:23:49,200

and everybody that i've talked to is

639
00:23:53,350 --> 00:23:51,200
very pleased to see that

640
00:23:54,950 --> 00:23:53,360
we're still utilizing it that it's

641
00:23:56,950 --> 00:23:54,960
fulfilling a function

642
00:23:58,870 --> 00:23:56,960
we want to see more launches

643
00:24:01,350 --> 00:23:58,880
government and commercial off all these

644
00:24:02,950 --> 00:24:01,360
pads and i think we've got the team the

645
00:24:05,750 --> 00:24:02,960
contractors civil service team the

646
00:24:07,430 --> 00:24:05,760
partnership with our commercial partners

647
00:24:09,029 --> 00:24:07,440
to be able to do that and we want to

648
00:24:11,750 --> 00:24:09,039
continue to make it happen

649
00:24:14,630 --> 00:24:11,760
you know i see our role as an enabler

650
00:24:16,149 --> 00:24:14,640
you know we provide the services to

651
00:24:17,750 --> 00:24:16,159
to spacex

652
00:24:19,909 --> 00:24:17,760
to be able to make this operation

653
00:24:21,750 --> 00:24:19,919
possible and it's it's a great

654
00:24:23,430 --> 00:24:21,760
partnership it's great for our nation so

655
00:24:24,630 --> 00:24:23,440
we want to we want to continue it just

656
00:24:26,710 --> 00:24:24,640
like we want to do with the rest of our

657
00:24:28,470 --> 00:24:26,720
commercial partners you know you talk

658
00:24:31,510 --> 00:24:28,480
about young folks coming on board you

659
00:24:33,990 --> 00:24:31,520
know spacex of course is a very young

660
00:24:36,870 --> 00:24:34,000
and they got a few old season guys that

661
00:24:38,870 --> 00:24:36,880
they managed to steal too but you know

662
00:24:40,630 --> 00:24:38,880
uh here at ksc

663
00:24:44,230 --> 00:24:40,640

we've hired an awful lot of young folks

664
00:24:47,590 --> 00:24:46,390
training auditorium event the other day

665
00:24:49,350 --> 00:24:47,600
and i asked the folks to raise their

666
00:24:50,470 --> 00:24:49,360
hand how many came

667
00:24:53,029 --> 00:24:50,480
after

668
00:24:55,110 --> 00:24:53,039
the last launch of the shuttle and over

669
00:24:57,830 --> 00:24:55,120
a third of the folks in the auditorium

670
00:25:00,870 --> 00:24:57,840
raised their hand and they are truly

671
00:25:03,669 --> 00:25:00,880
excited to see launches government and

672
00:25:05,590 --> 00:25:03,679
commercial and what i say is you know

673
00:25:06,549 --> 00:25:05,600
every launch that we launch off this

674
00:25:09,590 --> 00:25:06,559
cape

675
00:25:12,390 --> 00:25:09,600
the ksc team needs needs to take credit

676
00:25:15,830 --> 00:25:12,400
and be proud of that because in some way

677
00:25:18,230 --> 00:25:15,840
we supported or helped enable it so

678
00:25:23,110 --> 00:25:18,240
it's an exciting time for space flight

679
00:25:28,310 --> 00:25:25,669
bart leahy space flight insider two

680
00:25:30,630 --> 00:25:28,320
questions for gwen uh one how soon can

681
00:25:33,350 --> 00:25:30,640
we expect to see all of spacex's launch

682
00:25:35,990 --> 00:25:33,360
pads in operation and two when do you

683
00:25:38,149 --> 00:25:36,000
plan to extend attach the crew access

684
00:25:40,390 --> 00:25:38,159
arm to 39a

685
00:25:42,470 --> 00:25:40,400
so the 39 or the crew access arm has to

686
00:25:44,630 --> 00:25:42,480
go on by the end of the year

687
00:25:46,710 --> 00:25:44,640
obviously to facilitate our crew

688
00:25:48,230 --> 00:25:46,720

demonstration flight

689
00:25:50,710 --> 00:25:48,240
i don't have an exact date for you but

690
00:25:51,990 --> 00:25:50,720
it'll be by the end of the year and then

691
00:25:54,470 --> 00:25:52,000
when will we have all our sites

692
00:25:56,630 --> 00:25:54,480
activated

693
00:25:57,750 --> 00:25:56,640
pad 40 should be back up and running uh

694
00:25:58,950 --> 00:25:57,760
this summer

695
00:26:01,909 --> 00:25:58,960
um

696
00:26:04,710 --> 00:26:01,919
and uh vandenberg's up and running and

697
00:26:06,390 --> 00:26:04,720
you know as of tomorrow uh although 39a

698
00:26:08,710 --> 00:26:06,400
is obviously already activated we did a

699
00:26:11,830 --> 00:26:08,720
static fire here this past sunday

700
00:26:13,750 --> 00:26:11,840
but first flight out of here tomorrow

701
00:26:15,029 --> 00:26:13,760
we have brownsville

702
00:26:16,470 --> 00:26:15,039
as well

703
00:26:18,710 --> 00:26:16,480
and i think we're still doing dirt work

704
00:26:22,230 --> 00:26:18,720
in brownsville trying to build

705
00:26:23,590 --> 00:26:22,240
that kind of giant mountain that you see

706
00:26:33,269 --> 00:26:23,600
the

707
00:26:37,590 --> 00:26:36,230
rick lamsby with wfit and npr news do

708
00:26:39,430 --> 00:26:37,600
you have an estimate of when we might

709
00:26:43,830 --> 00:26:39,440
see a flight with one of the flight

710
00:26:47,029 --> 00:26:43,840
proven boosters oh good question yes um

711
00:26:49,350 --> 00:26:47,039
yeah we're gonna fly uh the uh we should

712
00:26:52,470 --> 00:26:49,360
fly a flight proven booster this march

713
00:26:54,549 --> 00:26:52,480

here for the ses-10 mission

714
00:26:56,789 --> 00:26:54,559
yep out of this pad

715
00:26:57,750 --> 00:26:56,799
very exciting it's in the the boosters

716
00:27:02,470 --> 00:26:57,760
in the

717
00:27:04,070 --> 00:27:02,480
it's on its way back to the hangar it

718
00:27:07,430 --> 00:27:04,080
wasn't the hangar went to texas for

719
00:27:10,390 --> 00:27:07,440
testing now it's coming back

720
00:27:13,510 --> 00:27:10,400
marcia done ap again for you gwen um

721
00:27:15,669 --> 00:27:13,520
boeing recently introduced its starliner

722
00:27:17,909 --> 00:27:15,679
suits when can we expect to see the

723
00:27:19,510 --> 00:27:17,919
dragon suits and can you give us a

724
00:27:23,350 --> 00:27:19,520
little sneak preview

725
00:27:25,430 --> 00:27:23,360
i never give away spacex secrets

726
00:27:27,350 --> 00:27:25,440
our spacesuits are really cool though

727
00:27:28,710 --> 00:27:27,360
they look really good

728
00:27:31,750 --> 00:27:28,720
we've spent a ton of time on the

729
00:27:33,669 --> 00:27:31,760
engineering obviously the utility piece

730
00:27:36,230 --> 00:27:33,679
but we also wanted them to look really

731
00:27:38,549 --> 00:27:36,240
good like we're trying to inspire

732
00:27:40,470 --> 00:27:38,559
the next generation existing generations

733
00:27:42,230 --> 00:27:40,480
future generations and

734
00:27:44,230 --> 00:27:42,240
and maybe even some past generation

735
00:27:47,110 --> 00:27:44,240
folks uh to be thinking about the future

736
00:27:48,630 --> 00:27:47,120
and thinking about space travel um

737
00:27:51,350 --> 00:27:48,640
i'm not sure john do we know when we're

738
00:27:52,950 --> 00:27:51,360

rolling the suit out

739
00:27:55,430 --> 00:27:52,960
i don't know

740
00:27:57,029 --> 00:27:55,440
yeah it won't be me though i won't be

741
00:27:59,269 --> 00:27:57,039
rolling that one out ahead of its time

742
00:28:01,029 --> 00:27:59,279
it's great looking though super exciting

743
00:28:03,510 --> 00:28:01,039
it's not gonna be blue is it

744
00:28:06,149 --> 00:28:03,520
it's not gonna be what blue blue blue

745
00:28:09,830 --> 00:28:06,159
color uh you know i've seen i've seen

746
00:28:09,840 --> 00:28:18,549
not pink i've not seen a pink one though

747
00:28:21,590 --> 00:28:20,149
thanks again james in florida gwen can

748
00:28:24,710 --> 00:28:21,600
you just kind of give us a state of

749
00:28:27,830 --> 00:28:24,720
spacex coming off that second mishap

750
00:28:29,430 --> 00:28:27,840
um how is the company doing uh uh

751
00:28:30,870 --> 00:28:29,440
in the worst case scenarios that we

752
00:28:33,029 --> 00:28:30,880
always worry about if you had another

753
00:28:33,990 --> 00:28:33,039
bad day anytime soon

754
00:28:35,830 --> 00:28:34,000
you know how would that affect the

755
00:28:37,669 --> 00:28:35,840
company can you withstand that yeah we

756
00:28:39,430 --> 00:28:37,679
can certainly withstand another bad day

757
00:28:42,470 --> 00:28:39,440
although i always hate talking about it

758
00:28:44,710 --> 00:28:42,480
um you know we have

759
00:28:47,990 --> 00:28:44,720
we've got cash in the bank and we have

760
00:28:49,430 --> 00:28:48,000
no debt so financially we're fine it's

761
00:28:51,350 --> 00:28:49,440
hard to make money though in a year when

762
00:28:53,110 --> 00:28:51,360
you have a failure though so

763
00:28:55,269 --> 00:28:53,120

i'm not going to kid anybody to say that

764
00:28:56,789 --> 00:28:55,279
that wasn't a painful financial year for

765
00:28:58,789 --> 00:28:56,799
us last year

766
00:29:00,549 --> 00:28:58,799
and frankly 2015

767
00:29:01,990 --> 00:29:00,559
but that doesn't mean we're still it

768
00:29:03,590 --> 00:29:02,000
doesn't mean we're not a healthy and a

769
00:29:05,669 --> 00:29:03,600
vibrant company we can withstand another

770
00:29:07,590 --> 00:29:05,679
failure for sure yeah i would not have

771
00:29:11,110 --> 00:29:07,600
done my job properly

772
00:29:15,590 --> 00:29:13,669
but people are smiling again at spacex

773
00:29:16,870 --> 00:29:15,600
after the last flight it was a good good

774
00:29:17,990 --> 00:29:16,880
good comeback

775
00:29:20,710 --> 00:29:18,000
um

776
00:29:23,350 --> 00:29:20,720
and uh people are really enthusiastic

777
00:29:24,789 --> 00:29:23,360
about uh the commercial crew program

778
00:29:27,590 --> 00:29:24,799
you know this this flight here out of

779
00:29:29,350 --> 00:29:27,600
39a falcon heavy is super exciting

780
00:29:30,950 --> 00:29:29,360
people are excited about red dragon and

781
00:29:33,029 --> 00:29:30,960
they're really excited to start working

782
00:29:34,950 --> 00:29:33,039
on the marship i need to keep everybody

783
00:29:37,029 --> 00:29:34,960
focused on the other stuff first let's

784
00:29:40,149 --> 00:29:37,039
get those things done reliably

785
00:29:41,510 --> 00:29:40,159
fly successfully um and then then

786
00:29:44,549 --> 00:29:41,520
there'll be lots of activity on the mars

787
00:29:49,110 --> 00:29:46,630
i'm jim siegel i'm with the celebration

788
00:29:51,029 --> 00:29:49,120

news and space flight insider and i'm a

789
00:29:52,950 --> 00:29:51,039
little curious about the number of

790
00:29:54,950 --> 00:29:52,960
launch pads or launch facilities that

791
00:29:57,430 --> 00:29:54,960
you have um

792
00:29:58,549 --> 00:29:57,440
i can understand one or two but

793
00:30:01,029 --> 00:29:58,559
um

794
00:30:03,029 --> 00:30:01,039
so why so many i mean since it seems

795
00:30:04,870 --> 00:30:03,039
like a kind of duplication of facilities

796
00:30:07,190 --> 00:30:04,880
is it because they're tailored for

797
00:30:09,190 --> 00:30:07,200
different payloads or what what's the

798
00:30:10,789 --> 00:30:09,200
reason so the launch site at vandenberg

799
00:30:13,190 --> 00:30:10,799
is tailored for high inclination

800
00:30:15,909 --> 00:30:13,200
launches you can't really do that kind

801
00:30:16,870 --> 00:30:15,919
of launch from here on the east coast

802
00:30:19,029 --> 00:30:16,880
um

803
00:30:21,830 --> 00:30:19,039
and

804
00:30:24,230 --> 00:30:21,840
we probably would be fine with these two

805
00:30:26,149 --> 00:30:24,240
plus the vandenberg site but we do like

806
00:30:28,789 --> 00:30:26,159
operational flexibility

807
00:30:30,710 --> 00:30:28,799
and geographic diversity as well on

808
00:30:32,230 --> 00:30:30,720
launch sites

809
00:30:35,269 --> 00:30:32,240
frankly the fact that we were this close

810
00:30:37,110 --> 00:30:35,279
to operations on 39a when we had the

811
00:30:39,350 --> 00:30:37,120
event on september 1st last year was

812
00:30:41,750 --> 00:30:39,360
enormously helpful

813
00:30:43,830 --> 00:30:41,760

it obviously takes longer to

814
00:30:45,669 --> 00:30:43,840
rebuild that pad than to get this one up

815
00:30:47,590 --> 00:30:45,679
and running quickly so i mean from a

816
00:30:49,909 --> 00:30:47,600
business perspective you really want to

817
00:30:50,950 --> 00:30:49,919
have multiple launch sites

818
00:30:53,830 --> 00:30:50,960
and

819
00:30:55,909 --> 00:30:53,840
commercial missions go rapidly you know

820
00:30:57,509 --> 00:30:55,919
my commercial customers are happy to you

821
00:30:58,870 --> 00:30:57,519
know sit on the deck as short of

822
00:31:01,029 --> 00:30:58,880
possible time

823
00:31:02,710 --> 00:31:01,039
or as short as possible but many of our

824
00:31:04,950 --> 00:31:02,720
government customers

825
00:31:06,470 --> 00:31:04,960
are likely to sit on the on the launch

826
00:31:07,430 --> 00:31:06,480
mount uh

827
00:31:09,350 --> 00:31:07,440
longer

828
00:31:10,870 --> 00:31:09,360
um and so you know you got you don't

829
00:31:12,310 --> 00:31:10,880
want to back up your commercial missions

830
00:31:14,470 --> 00:31:12,320
while you're waiting for a national

831
00:31:15,590 --> 00:31:14,480
security space launch to go so i think

832
00:31:17,029 --> 00:31:15,600
it's uh

833
00:31:19,350 --> 00:31:17,039
you know it's the mature thing for us to

834
00:31:24,070 --> 00:31:19,360
do is to have launch pads and we are

835
00:31:29,990 --> 00:31:26,470
hi again um gwen you've said that a new

836
00:31:32,230 --> 00:31:30,000
launch pad costs roughly 100 million um

837
00:31:34,710 --> 00:31:32,240
was this in that ballpark or about how

838
00:31:36,950 --> 00:31:34,720

much did you save by being able to take

839
00:31:38,230 --> 00:31:36,960
over and refurbish some of the shuttle

840
00:31:40,789 --> 00:31:38,240
assets

841
00:31:43,269 --> 00:31:40,799
yeah um keep in mind this is more than

842
00:31:45,269 --> 00:31:43,279
just a launch pad right there's the crew

843
00:31:46,870 --> 00:31:45,279
capability there's air force vertical

844
00:31:49,750 --> 00:31:46,880
integration capability that's going to

845
00:31:52,950 --> 00:31:49,760
get enhanced as well so um i wouldn't

846
00:31:54,789 --> 00:31:52,960
say that we saved a bunch of money here

847
00:31:57,669 --> 00:31:54,799
is 100 million a good figure to use or

848
00:31:59,909 --> 00:31:57,679
do you have a better ballpark

849
00:32:02,789 --> 00:31:59,919
you know i did not ask my finance guys

850
00:32:04,310 --> 00:32:02,799
how much we've spent so far

851
00:32:05,750 --> 00:32:04,320
it might be a little it might be less

852
00:32:07,350 --> 00:32:05,760
than 100 million

853
00:32:09,430 --> 00:32:07,360
but i think when it's fully outfitted

854
00:32:10,710 --> 00:32:09,440
for crew and nss it'll be well over that

855
00:32:15,029 --> 00:32:10,720
how's that

856
00:32:18,870 --> 00:32:17,269
gwen brendan berman wmf again um any

857
00:32:20,549 --> 00:32:18,880
hiccups you're expecting tomorrow do you

858
00:32:22,470 --> 00:32:20,559
have faa approval to launch are there

859
00:32:24,470 --> 00:32:22,480
any range issues weather anything that

860
00:32:26,470 --> 00:32:24,480
you're you're worried about um so i was

861
00:32:28,549 --> 00:32:26,480
worried about an faa launch license and

862
00:32:31,110 --> 00:32:28,559
weather and both have cleared up

863
00:32:33,350 --> 00:32:31,120

so uh we've got to obviously address

864
00:32:34,630 --> 00:32:33,360
this this spin issue tonight

865
00:32:36,230 --> 00:32:34,640
um but

866
00:32:37,029 --> 00:32:36,240
i don't see anything between now and

867
00:32:38,789 --> 00:32:37,039
then

868
00:32:40,630 --> 00:32:38,799
yeah so everybody keep everything

869
00:32:45,509 --> 00:32:40,640
crossed

870
00:32:49,750 --> 00:32:47,990
uh hi i just wanted to ask the the delay

871
00:32:51,750 --> 00:32:49,760
or the worry on the launch license can

872
00:32:52,950 --> 00:32:51,760
you talk about why that came in so last

873
00:32:55,029 --> 00:32:52,960
minute

874
00:32:57,750 --> 00:32:55,039
well i think we normally get our launch

875
00:32:59,909 --> 00:32:57,760
license from the faa pretty pretty close

876
00:33:01,430 --> 00:32:59,919
to the actual launch itself

877
00:33:04,310 --> 00:33:01,440
um

878
00:33:06,310 --> 00:33:04,320
this one was more work for everybody

879
00:33:08,470 --> 00:33:06,320
because it's first time we're launching

880
00:33:13,669 --> 00:33:08,480
off of 39a

881
00:33:16,470 --> 00:33:13,679
not really considered a government pad

882
00:33:19,110 --> 00:33:16,480
anymore either so the oversight that we

883
00:33:20,950 --> 00:33:19,120
have over at pad 40 with the air force

884
00:33:22,630 --> 00:33:20,960
we don't have here

885
00:33:24,149 --> 00:33:22,640
so everybody had to figure out what are

886
00:33:25,990 --> 00:33:24,159
the roles and responsibilities who's

887
00:33:27,750 --> 00:33:26,000
doing what make sure you check all the

888
00:33:29,990 --> 00:33:27,760

boxes to make sure no one gets hurt out

889
00:33:33,029 --> 00:33:30,000
there

890
00:33:35,029 --> 00:33:33,039
and so it just it took longer that plus

891
00:33:37,830 --> 00:33:35,039
the autonomous flight safety system that

892
00:33:40,310 --> 00:33:37,840
was a big challenge getting that done

893
00:33:42,310 --> 00:33:40,320
we did certify that for a range safety

894
00:33:44,149 --> 00:33:42,320
perspective but as bob mentioned earlier

895
00:33:45,830 --> 00:33:44,159
we still have to certify that for crew

896
00:33:49,029 --> 00:33:45,840
so certification work is by no means

897
00:33:54,389 --> 00:33:49,039
done there um but the faa has blessed it

898
00:33:58,630 --> 00:33:56,389
hi ken chang from new york times again

899
00:34:00,230 --> 00:33:58,640
uh for the marsh ship work when were you

900
00:34:02,070 --> 00:34:00,240
hoping to really start accelerating that

901
00:34:04,070 --> 00:34:02,080
work and how are you looking to finance

902
00:34:06,549 --> 00:34:04,080
all that

903
00:34:07,590 --> 00:34:06,559
so i think we will hit uh

904
00:34:08,869 --> 00:34:07,600
um

905
00:34:11,990 --> 00:34:08,879
we need to finish the work that we're

906
00:34:13,750 --> 00:34:12,000
doing right now so you know as we

907
00:34:16,230 --> 00:34:13,760
wind up commercial crew

908
00:34:18,230 --> 00:34:16,240
um as and i don't mean wind it up as in

909
00:34:20,149 --> 00:34:18,240
not do it anymore i mean wind up the

910
00:34:21,990 --> 00:34:20,159
development piece on that wind up the

911
00:34:24,069 --> 00:34:22,000
development on falcon heavy then you'll

912
00:34:27,190 --> 00:34:24,079
start to see a shift

913
00:34:29,349 --> 00:34:27,200

in in development teams at spacex

914
00:34:31,270 --> 00:34:29,359
but we will always have great engineers

915
00:34:33,270 --> 00:34:31,280
and technicians working you know the

916
00:34:35,190 --> 00:34:33,280
programs that we're working right now

917
00:34:40,629 --> 00:34:35,200
a year or so is when we'll start to

918
00:34:43,829 --> 00:34:41,990
stephen clark from space flight now

919
00:34:46,230 --> 00:34:43,839
again um what's the plan for the

920
00:34:47,829 --> 00:34:46,240
rotating service structure here

921
00:34:49,430 --> 00:34:47,839
and if it's going to come down when we

922
00:34:51,030 --> 00:34:49,440
see it come down yeah it's definitely

923
00:34:52,470 --> 00:34:51,040
coming down it's coming down in bits and

924
00:34:55,589 --> 00:34:52,480
pieces so you have to do a before and

925
00:34:58,950 --> 00:34:55,599
after i think the first two floors are

926
00:35:01,030 --> 00:34:58,960
are down um what we're doing is we're um

927
00:35:02,630 --> 00:35:01,040
pulling it down actually literally piece

928
00:35:04,310 --> 00:35:02,640
by piece

929
00:35:06,630 --> 00:35:04,320
and uh

930
00:35:09,510 --> 00:35:06,640
nasa gets the scrap value for for that

931
00:35:12,390 --> 00:35:09,520
medal so

932
00:35:14,870 --> 00:35:12,400
just as we as we get to it we we we pull

933
00:35:16,710 --> 00:35:14,880
more down and give nasa a check have you

934
00:35:21,589 --> 00:35:16,720
seen a check yet from us

935
00:35:25,589 --> 00:35:23,109
we get the scrap we don't get the money

936
00:35:27,109 --> 00:35:25,599
from spacex and we have to get rid of it

937
00:35:30,390 --> 00:35:27,119
oh you have to get rid of it oh we could

938
00:35:32,550 --> 00:35:30,400

sell it for you

939
00:35:35,510 --> 00:35:32,560
we we have time for one more question

940
00:35:37,589 --> 00:35:35,520
from this side ken kramer universe today

941
00:35:39,750 --> 00:35:37,599
uh northeast astronomy forum back to

942
00:35:41,589 --> 00:35:39,760
mars can you talk about uh

943
00:35:43,430 --> 00:35:41,599
um are you gonna have a science payload

944
00:35:45,430 --> 00:35:43,440
at all on this on this first mission i

945
00:35:46,550 --> 00:35:45,440
understand nasa is not going to have one

946
00:35:49,109 --> 00:35:46,560
now

947
00:35:51,750 --> 00:35:49,119
are you going to have a um industry

948
00:35:53,270 --> 00:35:51,760
universities at all compete to submit

949
00:35:54,790 --> 00:35:53,280
proposals

950
00:35:57,349 --> 00:35:54,800
are you talking about for red dragon red

951
00:35:59,510 --> 00:35:57,359
dragon oh um no we were gonna fly some

952
00:36:01,829 --> 00:35:59,520
stuff on the 2018. we could fly more in

953
00:36:05,589 --> 00:36:01,839
2020 because people are are more ready

954
00:36:07,190 --> 00:36:05,599
to fly in 2020 than 2018. um but uh no

955
00:36:09,829 --> 00:36:07,200
we're going to put as much

956
00:36:11,750 --> 00:36:09,839
um payload on dragon as we can by the

957
00:36:13,030 --> 00:36:11,760
way dragon just dragon landing alone

958
00:36:16,310 --> 00:36:13,040
will be the

959
00:36:18,630 --> 00:36:16,320
largest mass put on the surface of uh

960
00:36:20,950 --> 00:36:18,640
of mars just a dragon alone empty dragon

961
00:36:22,310 --> 00:36:20,960
which will be pretty crazy yeah but no

962
00:36:24,829 --> 00:36:22,320
we're there's a bunch of folks that want

963
00:36:27,190 --> 00:36:24,839

to fly european customers uh commercial

964
00:36:28,069 --> 00:36:27,200
guys yeah they'll be they'll be stuff in

965
00:36:31,750 --> 00:36:28,079
dragon

966
00:36:34,550 --> 00:36:33,190
that's right all right

967
00:36:36,150 --> 00:36:34,560
well thanks very much for your time and

968
00:36:37,910 --> 00:36:36,160
attention today we're really excited

969
00:36:40,550 --> 00:36:37,920
about tomorrow's launch i think the only