1
00:00:06,800 --> 00:00:04,910
good afternoon everyone and welcome to

2
00:00:09,110 --> 00:00:06,810
NASA's Kennedy Space Center in Florida

3
00:00:13,160 --> 00:00:09,120
where we are gathered for the launch of

4
00:00:14,419 --> 00:00:13,170
the SpaceX crs six flight it will be

5
00:00:16,519 --> 00:00:14,429
launching from cape canaveral air force

6
00:00:18,500 --> 00:00:16,529
station tomorrow at four thirty three

7
00:00:20,359 --> 00:00:18,510
p.m. eastern time and we're here today

8
00:00:22,310 --> 00:00:20,369
for the pre-launch news conference for

9
00:00:24,740 --> 00:00:22,320
the mission and i'm pleased to be joined

10
00:00:27,200 --> 00:00:24,750
by a panel who will fill us in on all

11
00:00:29,990 --> 00:00:27,210
the aspects of the mission to my left is

12
00:00:32,389 --> 00:00:30,000
Dan Hartman the deputy international

13
00:00:37,310 --> 00:00:32,399

space station program manager from the

14
00:00:39,680 --> 00:00:37,320
Johnson Space Center in Houston Hans

15
00:00:45,229 --> 00:00:39,690
connects meant vice president of mission

16
00:00:47,840 --> 00:00:45,239
assurance for SpaceX and Dave craft our

17
00:00:49,880 --> 00:00:47,850
launch weather officer from the 45th

18
00:00:51,740 --> 00:00:49,890
weather squadron at cape canaveral air

19
00:00:53,540 --> 00:00:51,750
force station and we'll begin with

20
00:00:55,520 --> 00:00:53,550
comments and then we'll be happy to take

21
00:00:56,959 --> 00:00:55,530
your questions dan all right thank you

22
00:00:59,869 --> 00:00:56,969
very much and good afternoon everybody

23
00:01:01,459 --> 00:00:59,879
it's great to be back at KSC for another

24
00:01:04,009 --> 00:01:01,469
resupply mission to the to the

25
00:01:05,870 --> 00:01:04,019
International Space Station SpaceX

26
00:01:08,120 --> 00:01:05,880
SpaceX six the Dragon will be carrying

27
00:01:11,120 --> 00:01:08,130
about two thousand kilograms of total

28
00:01:13,070 --> 00:01:11,130
pressurized cargo mass for us about 85

29
00:01:15,950 --> 00:01:13,080
or eight hundred fifty kilograms so that

30
00:01:19,310 --> 00:01:15,960
will be for our research work that will

31
00:01:21,440 --> 00:01:19,320
be doing over the next 35 36 days that

32
00:01:24,440 --> 00:01:21,450
we have the the birth mission attached

33
00:01:26,870 --> 00:01:24,450
to the station the rest is cargos cargo

34
00:01:29,050 --> 00:01:26,880
resupplies and maintenance gear that we

35
00:01:31,609 --> 00:01:29,060
need to keep and maintain the station

36
00:01:36,880 --> 00:01:31,619
and then on return will be bringing back

37
00:01:39,649 --> 00:01:36,890
about 500 kilograms of research so a big

38
00:01:41,450 --> 00:01:39,659

pressurized research mission force and I

39
00:01:43,520 --> 00:01:41,460
know you've heard some some additional

40
00:01:47,240 --> 00:01:43,530
information on the research that will be

41
00:01:49,340 --> 00:01:47,250
doing in the in the previous panels with

42
00:01:51,020 --> 00:01:49,350
the launch tomorrow Samantha will

43
00:01:53,719 --> 00:01:51,030
capture dragon around six a.m. on

44
00:01:55,850 --> 00:01:53,729
wednesday the hatch will be open the

45
00:01:59,630 --> 00:01:55,860
following day and like I said we

46
00:02:02,959 --> 00:01:59,640
anticipate 35 36 day mission with a nun

47
00:02:05,120 --> 00:02:02,969
birthing and return on mate 21st so a

48
00:02:07,819 --> 00:02:05,130
lot of work for the crew to do on board

49
00:02:09,229 --> 00:02:07,829
the ISS during this time period as far

50
00:02:11,270 --> 00:02:09,239
as station we've done the pre-launch

51
00:02:12,610 --> 00:02:11,280
check out of the SS RMS and our vehicle

52
00:02:15,070 --> 00:02:12,620
systems

53
00:02:18,100 --> 00:02:15,080
we performed we had our I mmt mission

54
00:02:20,320 --> 00:02:18,110
management team on Thursday and we're

55
00:02:22,809 --> 00:02:20,330
not working any outstanding issues on

56
00:02:25,839 --> 00:02:22,819
the space station so so we're ready to

57
00:02:28,449 --> 00:02:25,849
go capture and and bring it into the

58
00:02:30,390 --> 00:02:28,459
node to nadir port I was talking to Hans

59
00:02:33,759 --> 00:02:30,400
just a little bit ago the lake cargo

60
00:02:35,920 --> 00:02:33,769
processing that will do is underway it's

61
00:02:37,899 --> 00:02:35,930
it's still in our hands will be turning

62
00:02:40,360 --> 00:02:37,909
that over to SpaceX for loading into the

63
00:02:41,619 --> 00:02:40,370

dragon within the next hour and then

64
00:02:44,050 --> 00:02:41,629
they'll proceed with that on to the

65
00:02:47,259 --> 00:02:44,060
launch so so far everything is going

66
00:02:48,690 --> 00:02:47,269
very very smoothly there as far as the

67
00:02:50,800 --> 00:02:48,700
gear that we're getting ready to go fly

68
00:02:52,930 --> 00:02:50,810
part of the cargo that's going up as

69
00:02:54,640 --> 00:02:52,940
well as in support of our ISS

70
00:02:56,979 --> 00:02:54,650
reconfiguration that we've talked about

71
00:03:00,160 --> 00:02:56,989
in the past this is where we're trying

72
00:03:02,050 --> 00:03:00,170
to put to docking ports on the

73
00:03:05,440 --> 00:03:02,060
International Space Station one on node

74
00:03:07,390 --> 00:03:05,450
to forward and one on no tues EF we had

75
00:03:09,759 --> 00:03:07,400
three very successful EV a's in the

76
00:03:11,649 --> 00:03:09,769
februari March time period that laid all

77
00:03:14,680 --> 00:03:11,659
the cable out on the trust put up some

78
00:03:16,870 --> 00:03:14,690
antennas laid wire to the to the node to

79
00:03:18,580 --> 00:03:16,880
forward port in support of the

80
00:03:20,920 --> 00:03:18,590
international docking adaptor which will

81
00:03:23,140 --> 00:03:20,930
come up on SpaceX seven so when that

82
00:03:25,839 --> 00:03:23,150
comes up on SpaceX seven the space

83
00:03:28,930 --> 00:03:25,849
station is ready to receive it today and

84
00:03:30,970 --> 00:03:28,940
so no further ebas or wiring needs to be

85
00:03:34,809 --> 00:03:30,980
done to accommodate the docking port so

86
00:03:36,729 --> 00:03:34,819
that's that's a great great three ebas

87
00:03:38,770 --> 00:03:36,739
that set us up into that position I

88
00:03:40,750 --> 00:03:38,780

mentioned that we'd laid the wires and

89
00:03:43,629 --> 00:03:40,760
in the antennas on the outside of the

90
00:03:45,460 --> 00:03:43,639
trusses p3 and s3 our communication

91
00:03:47,289 --> 00:03:45,470
boxes that actually talk to the antennas

92
00:03:49,030 --> 00:03:47,299
will be come up later this year and

93
00:03:51,039 --> 00:03:49,040
we'll install those into the lab and

94
00:03:53,379 --> 00:03:51,049
we're still on track by the end of the

95
00:03:55,689 --> 00:03:53,389
year to be able to support or have the

96
00:03:57,400 --> 00:03:55,699
check are the systems on board to allow

97
00:03:59,289 --> 00:03:57,410
docking of one of the Commercial Crew

98
00:04:01,349 --> 00:03:59,299
vehicles and so we want to make sure we

99
00:04:04,360 --> 00:04:01,359
get that done ahead of us we can do

100
00:04:06,670 --> 00:04:04,370
troubleshoot any issues we may find and

101
00:04:09,250 --> 00:04:06,680
in efforts to be ready for when they're

102
00:04:12,569 --> 00:04:09,260
ready so that would be great our

103
00:04:15,610 --> 00:04:12,579
consumables on board are in good shape

104
00:04:17,680 --> 00:04:15,620
you know we took a hit in the last

105
00:04:20,500 --> 00:04:17,690
October time period and we're still

106
00:04:22,570 --> 00:04:20,510
catching up you know we're around for

107
00:04:25,060 --> 00:04:22,580
four and a half months of consumables

108
00:04:28,570 --> 00:04:25,070
for food and water of those

109
00:04:31,510 --> 00:04:28,580
nature we like to maintain six and so by

110
00:04:34,120 --> 00:04:31,520
the end of say November we hope to be

111
00:04:36,550 --> 00:04:34,130
back up to that that six-month reserve

112
00:04:40,120 --> 00:04:36,560
level that we can that we just like to

113
00:04:43,120 --> 00:04:40,130

accommodate on the ISS the one-year crew

114
00:04:44,800 --> 00:04:43,130
Scott and Mikhail there in full swing

115
00:04:47,830 --> 00:04:44,810
they've settled into the space station

116
00:04:51,040 --> 00:04:47,840
they began their their one-year science

117
00:04:54,100 --> 00:04:51,050
missions that that will take them for

118
00:04:55,510 --> 00:04:54,110
you know the long journey you know and

119
00:04:58,150 --> 00:04:55,520
the rest of the crew they're doing great

120
00:05:01,810 --> 00:04:58,160
they're very very excited getting SpaceX

121
00:05:04,060 --> 00:05:01,820
six up here tomorrow additional Cup

122
00:05:05,860 --> 00:05:04,070
upcoming vehicle traffic to the station

123
00:05:07,740 --> 00:05:05,870
it's been very very it will be very very

124
00:05:10,060 --> 00:05:07,750
busy for us over the next few months

125
00:05:12,790 --> 00:05:10,070
with SpaceX six and then we have

126
00:05:15,490 --> 00:05:12,800
progress 59 that will arrive in in late

127
00:05:17,860 --> 00:05:15,500
April April twenty-eighth we have 41 s

128
00:05:20,800 --> 00:05:17,870
undocks on May thirteenth with 43 s

129
00:05:23,260 --> 00:05:20,810
launch on mate 27th we have another

130
00:05:25,720 --> 00:05:23,270
space x 7 launch in the middle of June

131
00:05:28,690 --> 00:05:25,730
June nineteenth but when working with

132
00:05:31,270 --> 00:05:28,700
our Japanese counterparts on trying to

133
00:05:34,750 --> 00:05:31,280
nail down when the next HTV mission will

134
00:05:36,190 --> 00:05:34,760
be HTV five right now it is August

135
00:05:39,010 --> 00:05:36,200
eighteenth and that looks like it's

136
00:05:41,950 --> 00:05:39,020
holding pretty firm another SpaceX

137
00:05:44,560 --> 00:05:41,960
launch in mid-september and then we'll

138
00:05:47,440 --> 00:05:44,570

get back with our orbital flights out of

139
00:05:49,870 --> 00:05:47,450
KSC and the November time period so

140
00:05:52,780 --> 00:05:49,880
we're staying extremely busy and look

141
00:05:55,240 --> 00:05:52,790
forward to the to the launch tomorrow if

142
00:05:56,950 --> 00:05:55,250
we have a weather or any kind of issue

143
00:05:59,620 --> 00:05:56,960
tomorrow we do have the backup date on

144
00:06:01,510 --> 00:05:59,630
the 14th any backup days behind that we

145
00:06:02,830 --> 00:06:01,520
were going to have to go back and work

146
00:06:05,470 --> 00:06:02,840
with not only our science community

147
00:06:07,990 --> 00:06:05,480
space X in the range and so will work

148
00:06:09,870 --> 00:06:08,000
those after we if we find out what's

149
00:06:12,600 --> 00:06:09,880
going on or if we have an issue tomorrow

150
00:06:16,150 --> 00:06:12,610
and with that I'll turn it over to Hans

151
00:06:18,130 --> 00:06:16,160
thank you I'd like actually before I

152
00:06:20,320 --> 00:06:18,140
forget it to thank NASA for the

153
00:06:22,720 --> 00:06:20,330
opportunity to to deliver cargo to the

154
00:06:24,970 --> 00:06:22,730
ISS this is the midterm mission actually

155
00:06:28,120 --> 00:06:24,980
actually after that mission is new term

156
00:06:30,010 --> 00:06:28,130
right but it's been a great program and

157
00:06:33,150 --> 00:06:30,020
I really enjoyed it very much space

158
00:06:36,100 --> 00:06:33,160
access is really proud to serve the ISS

159
00:06:38,560 --> 00:06:36,110
also like to thank the 45 space being

160
00:06:38,959 --> 00:06:38,570
and the FAA certifying and supporting

161
00:06:41,529 --> 00:06:38,969
the launch

162
00:06:44,439 --> 00:06:41,539
all the time and then I thought I

163
00:06:47,089 --> 00:06:44,449

continue with the least important part

164
00:06:49,299 --> 00:06:47,099
and just want to tell you that we're

165
00:06:53,149 --> 00:06:49,309
trying to lend on the autonomous

166
00:06:56,719 --> 00:06:53,159
spaceship which has been named just read

167
00:06:59,139 --> 00:06:56,729
the instructions I'm going to go a

168
00:07:01,639 --> 00:06:59,149
little bit into detail how we do this

169
00:07:02,809 --> 00:07:01,649
basically what happens is the end again

170
00:07:03,589 --> 00:07:02,819
this is the least important one I'm

171
00:07:06,769 --> 00:07:03,599
going to follow up with the most

172
00:07:08,209 --> 00:07:06,779
important one after that after the

173
00:07:12,049 --> 00:07:08,219
estate separation we're going to flip

174
00:07:14,119 --> 00:07:12,059
the stage around 180 degrees you're

175
00:07:17,539 --> 00:07:14,129
gonna perform a so-called boots back

176
00:07:19,519 --> 00:07:17,549
burn that boots backbone will keep the

177
00:07:21,919 --> 00:07:19,529
first stage from falling too far it

178
00:07:27,199 --> 00:07:21,929
keeps it a little bit closer and

179
00:07:30,109 --> 00:07:27,209
basically will target the the drone ship

180
00:07:32,979 --> 00:07:30,119
and then after the boost backbone which

181
00:07:35,449 --> 00:07:32,989
lasts about about half a minute roughly

182
00:07:38,269 --> 00:07:35,459
we're going to have another shutdown and

183
00:07:39,979 --> 00:07:38,279
we deploy the fins these good friends

184
00:07:41,629 --> 00:07:39,989
that you can see on the vehicle they

185
00:07:42,979 --> 00:07:41,639
folded in right now they're folded

186
00:07:46,100 --> 00:07:42,989
during ascent and then I come out after

187
00:07:49,040 --> 00:07:46,110
the bus back burn after that we will

188
00:07:50,709 --> 00:07:49,050

cost we will reach about 125 kilometers

189
00:07:53,299 --> 00:07:50,719
and then come back into the atmosphere

190
00:07:56,239 --> 00:07:53,309
that's the time when we do in entry burn

191
00:07:58,009 --> 00:07:56,249
the entry burn is literally tapping the

192
00:08:00,679 --> 00:07:58,019
brake a little bit so it doesn't get too

193
00:08:03,709 --> 00:08:00,689
hot during the entry that entry burn is

194
00:08:05,989 --> 00:08:03,719
it's fairly sure that's about 10-15

195
00:08:08,269 --> 00:08:05,999
seconds and it happens about seven

196
00:08:10,009 --> 00:08:08,279
minutes into the flight and then as the

197
00:08:12,350 --> 00:08:10,019
stage comes further down it decelerates

198
00:08:14,719 --> 00:08:12,360
through the reentry there's going to be

199
00:08:16,879 --> 00:08:14,729
a landing burn that learning burn is on

200
00:08:20,419 --> 00:08:16,889
a on this on the single last engine

201
00:08:22,999 --> 00:08:20,429
basically then and halfway to the

202
00:08:24,949 --> 00:08:23,009
landing burn you see the well I'm not

203
00:08:27,559 --> 00:08:24,959
sure you see it but the landing legs

204
00:08:30,019 --> 00:08:27,569
will deploy shortly thereafter we will

205
00:08:34,069 --> 00:08:30,029
touch down on just read the instructions

206
00:08:36,379 --> 00:08:34,079
so getting this out of the way he I can

207
00:08:38,719 --> 00:08:36,389
talk about the main the the primary

208
00:08:40,670 --> 00:08:38,729
mission here the primary mission is as

209
00:08:43,879 --> 00:08:40,680
Dan mentioned to bring up two thousand

210
00:08:46,240 --> 00:08:43,889
kilograms roughly two tons of scientific

211
00:08:48,470 --> 00:08:46,250
and supplies to the to the station

212
00:08:50,569 --> 00:08:48,480
that's what the second stage as the

213
00:08:52,310 --> 00:08:50,579

second stage continues you send after it

214
00:08:55,760 --> 00:08:52,320
separates on the first stage

215
00:08:59,480 --> 00:08:55,770
it would burn for roughly nine almost 10

216
00:09:01,040 --> 00:08:59,490
minutes 99 minutes 40 seconds as shut

217
00:09:05,420 --> 00:09:01,050
down at this time vary a little bit

218
00:09:07,220 --> 00:09:05,430
depends on how well the engine runs how

219
00:09:09,890 --> 00:09:07,230
actually the weight we know pretty well

220
00:09:11,660 --> 00:09:09,900
but it's mostly there's small variations

221
00:09:15,440 --> 00:09:11,670
here and there so it could be a couple

222
00:09:18,470 --> 00:09:15,450
of seconds longer or shorter it will

223
00:09:21,140 --> 00:09:18,480
insert dragon into a 200 x 360 kilometer

224
00:09:25,250 --> 00:09:21,150
orbit it's a the ISS inclination of

225
00:09:27,470 --> 00:09:25,260
course and it will deploy dragon 35

226
00:09:29,810 --> 00:09:27,480
seconds after shutdown we should be able

227
00:09:33,440 --> 00:09:29,820
to see shut shut down from the ground

228
00:09:36,040 --> 00:09:33,450
and sorry shut down from the ground and

229
00:09:39,710 --> 00:09:36,050
actually drag and deploy from the ground

230
00:09:42,610 --> 00:09:39,720
dragon will then deploy the the solar

231
00:09:45,380 --> 00:09:42,620
arrays within the next two minutes and

232
00:09:47,360 --> 00:09:45,390
that's about the end of the mission at

233
00:09:51,380 --> 00:09:47,370
least for Falcon 9 dragon of course

234
00:09:54,500 --> 00:09:51,390
continues will take about thirty eight

235
00:09:57,740 --> 00:09:54,510
hours to the station where it begin to

236
00:09:59,690 --> 00:09:57,750
climb on the Arbor and get grappled by

237
00:10:03,560 --> 00:09:59,700
the body astronaut and will be brought

238
00:10:07,460 --> 00:10:03,570

to the station there it will stay up

239
00:10:10,640 --> 00:10:07,470
there for 35 days which is the longest

240
00:10:15,620 --> 00:10:10,650
we've ever done I believe pretty sure

241
00:10:19,970 --> 00:10:15,630
actually and and then we'll be unbirth

242
00:10:23,060 --> 00:10:19,980
and will depart from the ISS and land

243
00:10:26,240 --> 00:10:23,070
and the Pacific Ocean basically in our

244
00:10:29,450 --> 00:10:26,250
front yard where we pick it up and bring

245
00:10:32,090 --> 00:10:29,460
the return cargo to the harbor return

246
00:10:35,630 --> 00:10:32,100
calico is if I remember correctly about

247
00:10:39,380 --> 00:10:35,640
1,300 kilograms of really important

248
00:10:43,010 --> 00:10:39,390
science results that have to be powered

249
00:10:45,200 --> 00:10:43,020
entire time kept cool and captured the

250
00:10:49,700 --> 00:10:45,210
entire time and we supply this in Dragon

251
00:10:53,660 --> 00:10:49,710
all the way from these ISS to the onto

252
00:10:56,580 --> 00:10:53,670
the boat at this point in time that's

253
00:11:02,440 --> 00:10:59,860
okay good afternoon I'm Dave craft that

254
00:11:05,320 --> 00:11:02,450
launch weather officer for this 40-foot

255
00:11:06,940 --> 00:11:05,330
Space Wing I'd like to start out with

256
00:11:09,970 --> 00:11:06,950
this framing the meteorological

257
00:11:11,920 --> 00:11:09,980
situation for everyone it'll be better

258
00:11:13,240 --> 00:11:11,930
for you to understand the situation that

259
00:11:14,680 --> 00:11:13,250
we're looking at and the challenges that

260
00:11:19,930 --> 00:11:14,690
we're facing over the next couple of

261
00:11:22,990 --> 00:11:19,940
days typically in April here in Central

262
00:11:24,880 --> 00:11:23,000
Florida and on the Space Coast it's one

263
00:11:27,970 --> 00:11:24,890

of the driest months relative to the

264
00:11:29,590 --> 00:11:27,980
rest of the year here and the past

265
00:11:32,350 --> 00:11:29,600
couple of days that is not the case so

266
00:11:34,960 --> 00:11:32,360
it's not typical over really for the

267
00:11:36,580 --> 00:11:34,970
majority of the upcoming week and we're

268
00:11:40,210 --> 00:11:36,590
looking at more of a summertime

269
00:11:42,190 --> 00:11:40,220
situation and in summertime meaning that

270
00:11:44,890 --> 00:11:42,200
it's a wetter it's a wetter situation

271
00:11:47,710 --> 00:11:44,900
and we're looking at sea breeze activity

272
00:11:49,870 --> 00:11:47,720
sea breeze formation every day late

273
00:11:52,990 --> 00:11:49,880
morning to early afternoon and then

274
00:11:55,060 --> 00:11:53,000
moving west of the spaceport and then

275
00:11:57,070 --> 00:11:55,070
collisions of the sea breezes in the

276
00:11:59,290 --> 00:11:57,080
afternoon and then so the challenges

277
00:12:02,770 --> 00:11:59,300
that we're looking at are the really

278
00:12:04,960 --> 00:12:02,780
thick cloud and anvil cloud bull off

279
00:12:07,990 --> 00:12:04,970
from some of these thunderstorms that

280
00:12:10,870 --> 00:12:08,000
would be inland or in close proximity of

281
00:12:12,700 --> 00:12:10,880
the spaceport and and then drifting back

282
00:12:14,650 --> 00:12:12,710
toward us by the afternoon so we're

283
00:12:16,270 --> 00:12:14,660
looking at animal cloud threat mainly in

284
00:12:19,300 --> 00:12:16,280
the next couple of days thick cloud

285
00:12:22,210 --> 00:12:19,310
which is thick cloth 4500 feet thick or

286
00:12:23,860 --> 00:12:22,220
greater and we're the area the altitude

287
00:12:27,460 --> 00:12:23,870
of concern is at the zero degrees

288
00:12:30,160 --> 00:12:27,470

Celsius height and if it spans that

289
00:12:32,350 --> 00:12:30,170
height and at the minus 20 degrees

290
00:12:34,500 --> 00:12:32,360
Celsius height so if you affect I draw

291
00:12:37,660 --> 00:12:34,510
your attention to the satellite imagery

292
00:12:40,900 --> 00:12:37,670
this is today's visual satellite that

293
00:12:43,120 --> 00:12:40,910
you see right now it'll briefly in a

294
00:12:45,540 --> 00:12:43,130
couple seconds it will rotate through to

295
00:12:49,000 --> 00:12:45,550
an infrared but that's what's firing up

296
00:12:52,330 --> 00:12:49,010
actually right now along the Space Coast

297
00:12:54,070 --> 00:12:52,340
now looking at the southeastern US those

298
00:12:57,280 --> 00:12:54,080
color this is an infrared shot by the

299
00:13:00,070 --> 00:12:57,290
way the colors and the dark those bright

300
00:13:03,550 --> 00:13:00,080
reds and yellows that's a lot of very

301
00:13:05,770 --> 00:13:03,560
strong high-altitude tops thunderstorm

302
00:13:08,470 --> 00:13:05,780
activity stretching along a frontal

303
00:13:10,629 --> 00:13:08,480
boundary that's east-west oriented

304
00:13:12,250 --> 00:13:10,639
north of us now epically in April these

305
00:13:15,639 --> 00:13:12,260
fronts still make their way down through

306
00:13:20,319 --> 00:13:15,649
us the but like I said it's not a

307
00:13:23,710 --> 00:13:20,329
typical week in April for us and if you

308
00:13:26,590 --> 00:13:23,720
see this east/west orientated front all

309
00:13:28,420 --> 00:13:26,600
the activity is is concentrated along

310
00:13:32,079 --> 00:13:28,430
that boundary to the north of us in

311
00:13:34,150 --> 00:13:32,089
northern Florida so what it is it's

312
00:13:36,250 --> 00:13:34,160
actually allowing south of that boundary

313
00:13:38,100 --> 00:13:36,260

that's the surface boundary south of

314
00:13:41,259 --> 00:13:38,110
that boundary is tropical moisture

315
00:13:42,910 --> 00:13:41,269
tropical weather like conditions that

316
00:13:46,269 --> 00:13:42,920
were experiencing so more of a

317
00:13:49,840 --> 00:13:46,279
summertime situation so if I could get

318
00:13:53,920 --> 00:13:49,850
into the forecast we're looking at just

319
00:13:56,290 --> 00:13:53,930
were looking mostly cloudy skies seven

320
00:14:00,040 --> 00:13:56,300
miles visibility with with isolated

321
00:14:03,870 --> 00:14:00,050
shower chance for for the for the launch

322
00:14:07,060 --> 00:14:03,880
day with thunderstorms again inland with

323
00:14:10,240 --> 00:14:07,070
the bow off of the ambles approaching us

324
00:14:12,069 --> 00:14:10,250
by the t0 and the probability launch

325
00:14:14,199 --> 00:14:12,079
weather constraint is forty percent and

326
00:14:16,990 --> 00:14:14,209
again the primary concern will be anvil

327
00:14:19,870 --> 00:14:17,000
cloud and thick cloud layer winds will

328
00:14:22,600 --> 00:14:19,880
be out of the southeast about 12 to

329
00:14:26,530 --> 00:14:22,610
peaking to 17 miles per hour next slide

330
00:14:29,680 --> 00:14:26,540
if we need a 24-hour delay similar

331
00:14:31,210 --> 00:14:29,690
conditions still mostly cloudy skies I'd

332
00:14:33,250 --> 00:14:31,220
like to point out more of a southerly

333
00:14:34,809 --> 00:14:33,260
direction for the winds and that that

334
00:14:38,290 --> 00:14:34,819
actually allows the sea breeze to

335
00:14:41,050 --> 00:14:38,300
hang-hang a little closer during the

336
00:14:43,059 --> 00:14:41,060
afternoon and not not progress westward

337
00:14:45,430 --> 00:14:43,069
away from us as much as it normally

338
00:14:47,769 --> 00:14:45,440

would the past these past couple of days

339
00:14:49,900 --> 00:14:47,779
so we're actually another primary

340
00:14:51,509 --> 00:14:49,910
concern for the 24-hour delay would be

341
00:14:53,769 --> 00:14:51,519
the cumulus cloud will add that in

342
00:14:56,410 --> 00:14:53,779
because we could have some more activity

343
00:14:57,910 --> 00:14:56,420
closer in on the 24-hour delay but still

344
00:15:01,240 --> 00:14:57,920
nevertheless a forty percent chance

345
00:15:03,160 --> 00:15:01,250
probability of violating and then for

346
00:15:05,350 --> 00:15:03,170
recovery landing forecast couple hundred

347
00:15:07,389 --> 00:15:05,360
miles off Jacksonville for the first

348
00:15:11,740 --> 00:15:07,399
stage we're looking at a seventy percent

349
00:15:13,240 --> 00:15:11,750
cloud cover so cloudy skies it's if you

350
00:15:15,160 --> 00:15:13,250
keep in mind that satellite imagery

351
00:15:17,139 --> 00:15:15,170
before it's closer to that surface

352
00:15:20,800 --> 00:15:17,149
boundary so it's going to be cloudy some

353
00:15:22,900 --> 00:15:20,810
showers in the area see state will be

354
00:15:27,190 --> 00:15:22,910
four to four to six feet

355
00:15:28,900 --> 00:15:27,200
and it's but it's looking fairly

356
00:15:31,120 --> 00:15:28,910
favorable to land just not the greatest

357
00:15:33,400 --> 00:15:31,130
viewing but there will be some isolated

358
00:15:35,020 --> 00:15:33,410
showers into the city for the the

359
00:15:38,440 --> 00:15:35,030
recovery and it we're looking forward to

360
00:15:40,540 --> 00:15:38,450
that so that's all I have okay Dave

361
00:15:43,360 --> 00:15:40,550
thank you we will take your questions

362
00:15:44,740 --> 00:15:43,370
now if you're in the room please let us

363
00:15:46,600 --> 00:15:44,750

know if you have a question by raising

364
00:15:50,140 --> 00:15:46,610
your hand we have folks with microphones

365
00:15:51,640 --> 00:15:50,150
and they'll bring them around we ask you

366
00:15:53,410 --> 00:15:51,650
to wait for the microphone and state

367
00:15:55,120 --> 00:15:53,420
your name and affiliation and to whom

368
00:15:57,760 --> 00:15:55,130
you're addressing the question and we'll

369
00:16:00,090 --> 00:15:57,770
start off with Marcia Dunn why should an

370
00:16:02,680 --> 00:16:00,100
Associated Press for mr. clinics Minh

371
00:16:04,330 --> 00:16:02,690
this is your third attempt to land I

372
00:16:06,610 --> 00:16:04,340
mean what are is there anything

373
00:16:08,830 --> 00:16:06,620
different about this third try and do

374
00:16:10,240 --> 00:16:08,840
you see your odds is being better to

375
00:16:14,530 --> 00:16:10,250
achieve this since you've got the other

376
00:16:18,030 --> 00:16:14,540
two behind you yeah so on if you recall

377
00:16:20,440 --> 00:16:18,040
on the first one we went out of control

378
00:16:23,080 --> 00:16:20,450
authority under on the fins flute

379
00:16:24,760 --> 00:16:23,090
basically we fix that on the second one

380
00:16:29,110 --> 00:16:24,770
on the second one we didn't have at your

381
00:16:31,390 --> 00:16:29,120
own ship there the weather was terrible

382
00:16:32,980 --> 00:16:31,400
on the second attempt and and it looks

383
00:16:36,280 --> 00:16:32,990
it looks right now like the weather is

384
00:16:39,070 --> 00:16:36,290
significantly better four to six feet of

385
00:16:41,950 --> 00:16:39,080
swells is nothing we did we did also

386
00:16:46,920 --> 00:16:41,960
upgrade the drone ship so it can put

387
00:16:50,710 --> 00:16:46,930
keep the position better so we're more

388
00:16:55,240 --> 00:16:50,720

review we can tolerate a higher wind and

389
00:16:57,070 --> 00:16:55,250
swell leveled and then previously and I

390
00:16:58,900 --> 00:16:57,080
guess together the improvements on the

391
00:17:01,330 --> 00:16:58,910
vehicle on first stage and the

392
00:17:05,500 --> 00:17:01,340
improvements on the on the drone ship

393
00:17:07,420 --> 00:17:05,510
itself I would up my probability to

394
00:17:12,930 --> 00:17:07,430
seventy-five percent at this point in

395
00:17:21,390 --> 00:17:18,600
Irene thanks um they for a for Dan with

396
00:17:23,850 --> 00:17:21,400
the addition of the three more of cargo

397
00:17:26,130 --> 00:17:23,860
flights for SpaceX does that have a

398
00:17:29,970 --> 00:17:26,140
corresponding increase in the contract

399
00:17:32,880 --> 00:17:29,980
value from 1.6 to roughly 2 billion I

400
00:17:34,860 --> 00:17:32,890
don't know this X it would have you know

401
00:17:37,800 --> 00:17:34,870
obviously been up were in the contract

402
00:17:41,190 --> 00:17:37,810
value I'm not quite sure of the total

403
00:17:46,740 --> 00:17:41,200
budget otal money allocated for those

404
00:17:49,200 --> 00:17:46,750
three missions though yeah I you know

405
00:17:51,330 --> 00:17:49,210
haunts my I'm sure there was a typical

406
00:17:52,800 --> 00:17:51,340
inflation for the out years considering

407
00:17:56,940 --> 00:17:52,810
when these ones when these vehicles are

408
00:18:02,550 --> 00:17:56,950
fine but it was a escalation probably on

409
00:18:05,040 --> 00:18:02,560
top of what we had mm-hmm Jim Siegel I'm

410
00:18:09,660 --> 00:18:05,050
with the celebration news and the split

411
00:18:11,720 --> 00:18:09,670
spaceflight insider question for Dan the

412
00:18:15,500 --> 00:18:11,730
you mentioned the consumables earlier

413
00:18:18,410 --> 00:18:15,510

hoping to get up to six months or so of

414
00:18:21,390 --> 00:18:18,420
supplies I'm interested in whether

415
00:18:24,390 --> 00:18:21,400
anything new or different is going up

416
00:18:27,960 --> 00:18:24,400
with this group of supplies any new

417
00:18:30,000 --> 00:18:27,970
foods and I knew what evers on this

418
00:18:32,790 --> 00:18:30,010
particular one we're flying about a

419
00:18:34,770 --> 00:18:32,800
month's worth of food so it's not the

420
00:18:38,250 --> 00:18:34,780
the ones that push us over the edge i'll

421
00:18:40,290 --> 00:18:38,260
say that is going to be h tv5 where

422
00:18:42,720 --> 00:18:40,300
we've kind of new a new thing we're

423
00:18:45,210 --> 00:18:42,730
doing we're fine 30 i'll say rather

424
00:18:48,890 --> 00:18:45,220
large bags of water that will get our

425
00:18:52,080 --> 00:18:48,900
water consumables significantly improved

426
00:18:54,270 --> 00:18:52,090
as well as a lot of food and i don't

427
00:18:55,980 --> 00:18:54,280
have the specific numbers for you and

428
00:18:57,900 --> 00:18:55,990
then or before which will follow in

429
00:19:00,540 --> 00:18:57,910
november again will will most likely

430
00:19:03,240 --> 00:19:00,550
carry some water force and a significant

431
00:19:05,640 --> 00:19:03,250
amount of food as well some of the the

432
00:19:06,990 --> 00:19:05,650
dragon missions we kind of you know try

433
00:19:09,020 --> 00:19:07,000
to use from you know for some of the

434
00:19:13,830 --> 00:19:09,030
dedicated science that really needs to

435
00:19:17,880 --> 00:19:13,840
the capability to to bring power late

436
00:19:20,220 --> 00:19:17,890
late load research hardware up as well

437
00:19:23,910 --> 00:19:20,230
as return and so we're a little bit

438
00:19:25,880 --> 00:19:23,920

picky of making sure we give that to the

439
00:19:27,290 --> 00:19:25,890
research community first

440
00:19:29,000 --> 00:19:27,300
and then we'll pick up some of the slack

441
00:19:31,420 --> 00:19:29,010
on consumables with with the other

442
00:19:33,560 --> 00:19:31,430
vehicles that's kind of been our plan

443
00:19:35,780 --> 00:19:33,570
well take a question here on the front

444
00:19:39,020 --> 00:19:35,790
row and then come over to Ken and then

445
00:19:41,150 --> 00:19:39,030
we'll go back over here steward money

446
00:19:43,370 --> 00:19:41,160
interspace net my question is for hands

447
00:19:46,040 --> 00:19:43,380
has there been any change in the landing

448
00:19:47,780 --> 00:19:46,050
profile or did you learn anything from

449
00:19:49,850 --> 00:19:47,790
the discover attempt even though the

450
00:19:52,760 --> 00:19:49,860
drone ship wasn't there is have you

451
00:19:56,330 --> 00:19:52,770
tweaked it in some way since i since the

452
00:19:57,920 --> 00:19:56,340
discover launch i believe that if the

453
00:19:59,960 --> 00:19:57,930
drone ship would have been there would

454
00:20:01,580 --> 00:19:59,970
have been a good landing and i don't

455
00:20:04,520 --> 00:20:01,590
think we made any changes following that

456
00:20:07,190 --> 00:20:04,530
so from that perspective it was

457
00:20:09,740 --> 00:20:07,200
literally just missing the ship now

458
00:20:11,540 --> 00:20:09,750
having said that we thought we haven't

459
00:20:15,080 --> 00:20:11,550
tested the last couple seconds and so

460
00:20:17,390 --> 00:20:15,090
that of course is important yeah but

461
00:20:19,670 --> 00:20:17,400
there was no significant change on the

462
00:20:21,560 --> 00:20:19,680
vehicle side between the last flight and

463
00:20:24,590 --> 00:20:21,570

between the last attempt to land on this

464
00:20:26,330 --> 00:20:24,600
attempt one actually independently I

465
00:20:30,140 --> 00:20:26,340
want to point something out when dance

466
00:20:36,950 --> 00:20:30,150
has space x6 and I say cs6 we mean the

467
00:20:38,810 --> 00:20:36,960
same thing just different ok in Kramer

468
00:20:41,930 --> 00:20:38,820
for America's space in universe today a

469
00:20:44,600 --> 00:20:41,940
question for dan please with the loss of

470
00:20:47,060 --> 00:20:44,610
it are three can you say it was if it

471
00:20:49,460 --> 00:20:47,070
was there any impact on on science that

472
00:20:52,400 --> 00:20:49,470
we the other is the science that's

473
00:20:55,580 --> 00:20:52,410
ongoing now impacted anyway by the loss

474
00:20:58,250 --> 00:20:55,590
of orb three and and with or before

475
00:21:00,080 --> 00:20:58,260
launching on an atlas how confident are

476
00:21:02,840 --> 00:21:00,090
you that you'll actually be able to

477
00:21:04,550 --> 00:21:02,850
launch that in November because it is a

478
00:21:06,470 --> 00:21:04,560
different vehicle I know you had to do a

479
00:21:08,750 --> 00:21:06,480
lot of new work to make sure that

480
00:21:10,940 --> 00:21:08,760
everything would work out girl we did

481
00:21:13,850 --> 00:21:10,950
loose we did lose some science on on orb

482
00:21:15,380 --> 00:21:13,860
three you know NanoRacks deployers I was

483
00:21:17,710 --> 00:21:15,390
actually up Wallops looking at a lot of

484
00:21:21,410 --> 00:21:17,720
the the hardware that came back and so

485
00:21:23,510 --> 00:21:21,420
we have we adjusted our space x5

486
00:21:25,490 --> 00:21:23,520
manifest to fly as much you know

487
00:21:27,860 --> 00:21:25,500
backfill as much research as we could

488
00:21:32,420 --> 00:21:27,870

again balancing it with this with the

489
00:21:35,210 --> 00:21:32,430
consumables discussion but you know some

490
00:21:37,070 --> 00:21:35,220
of the Pacific's on orb 3 you know I'd

491
00:21:38,760 --> 00:21:37,080
have to get you know NanoRacks had a

492
00:21:40,500 --> 00:21:38,770
large complement of payloads on

493
00:21:43,440 --> 00:21:40,510
that they'll be looking to refi with the

494
00:21:46,290 --> 00:21:43,450
cube 10 and then as far as or before on

495
00:21:49,230 --> 00:21:46,300
atlas you know if you think about the

496
00:21:51,660 --> 00:21:49,240
cygnus side of things in the way orbital

497
00:21:53,670 --> 00:21:51,670
in the past is integrated onto the bus

498
00:21:55,230 --> 00:21:53,680
of atlas they're very very familiar with

499
00:21:57,270 --> 00:21:55,240
that they've done satellites with that

500
00:22:01,320 --> 00:21:57,280
so as far as an overall integration

501
00:22:03,390 --> 00:22:01,330
issue of the Cygnus onto the Atlas that

502
00:22:05,880 --> 00:22:03,400
seems to be going rather smooth and so I

503
00:22:08,310 --> 00:22:05,890
have not heard of any showstoppers that

504
00:22:10,410 --> 00:22:08,320
would get us out of that November time

505
00:22:12,120 --> 00:22:10,420
period you know and then we also have to

506
00:22:13,740 --> 00:22:12,130
play with and that's good not play with

507
00:22:16,740 --> 00:22:13,750
but we have the constraint of when an

508
00:22:19,680 --> 00:22:16,750
HTV flies because they use the prox the

509
00:22:21,780 --> 00:22:19,690
same proc system you need to get HTTP

510
00:22:23,460 --> 00:22:21,790
down we need to convert that over to the

511
00:22:25,170 --> 00:22:23,470
orb system and that takes a little bit

512
00:22:28,260 --> 00:22:25,180
you know an indefinite amount of time so

513
00:22:29,970 --> 00:22:28,270

by time HTV flies then it has the

514
00:22:32,790 --> 00:22:29,980
mission duration and then you need to do

515
00:22:36,620 --> 00:22:32,800
this this hand over to support orbital

516
00:22:39,360 --> 00:22:36,630
it November basically lines up for them

517
00:22:41,550 --> 00:22:39,370
Jason Jason Ryan for spaceflight

518
00:22:42,600 --> 00:22:41,560
insider.com this one's for Hans Hans you

519
00:22:44,460 --> 00:22:42,610
guys encountered a little bit of problem

520
00:22:46,830 --> 00:22:44,470
your helium bottles in the I believe the

521
00:22:48,540 --> 00:22:46,840
first stage of the Falcon 9 can you

522
00:22:50,880 --> 00:22:48,550
describe a little bit about what you

523
00:22:54,120 --> 00:22:50,890
encountered there and what changes you

524
00:22:57,060 --> 00:22:54,130
made if any or noted that would involve

525
00:22:58,830 --> 00:22:57,070
the these helium bottles yeah i think i

526
00:23:01,080 --> 00:22:58,840
think the right term is in abundance of

527
00:23:03,630 --> 00:23:01,090
caution we didn't have anything fail or

528
00:23:06,000 --> 00:23:03,640
anything decon the vehicle it's very

529
00:23:07,500 --> 00:23:06,010
important we didn't we didn't find

530
00:23:10,350 --> 00:23:07,510
anything on the vehicles that either but

531
00:23:12,110 --> 00:23:10,360
we had some some test articles and some

532
00:23:14,280 --> 00:23:12,120
rejected hardware that we looked at and

533
00:23:15,900 --> 00:23:14,290
became concerned and wanted to

534
00:23:18,360 --> 00:23:15,910
investigate if you had similar

535
00:23:22,020 --> 00:23:18,370
conditions on the vehicle we didn't see

536
00:23:23,430 --> 00:23:22,030
anything now CH cs6 was actually at a

537
00:23:26,760 --> 00:23:23,440
position where this was relatively easy

538
00:23:29,040 --> 00:23:26,770

that's why the schedule for cs6 was not

539
00:23:34,470 --> 00:23:29,050
affected so from that perspective it was

540
00:23:36,420 --> 00:23:34,480
was fairly transparent James oh thank

541
00:23:37,320 --> 00:23:36,430
you change the floor today Hans I was

542
00:23:40,380 --> 00:23:37,330
wondering if you could describe a little

543
00:23:43,410 --> 00:23:40,390
bit the upcoming upgrades to Falcon 9

544
00:23:47,000 --> 00:23:43,420
and how soon as that happened how many

545
00:23:48,830 --> 00:23:47,010
more flights before you implement those

546
00:23:53,990 --> 00:23:48,840
yeah

547
00:23:58,789 --> 00:23:54,000
so so the the desk as upgrades coming on

548
00:24:00,350 --> 00:23:58,799
mostly engine thrust and what this what

549
00:24:02,380 --> 00:24:00,360
we do right now is we run the engines

550
00:24:04,600 --> 00:24:02,390
basically with a lot of margin and

551
00:24:07,669 --> 00:24:04,610
basically not one hundred percent power

552
00:24:09,320 --> 00:24:07,679
it's probably equivalent if you would

553
00:24:11,330 --> 00:24:09,330
say we're running at eighty percent and

554
00:24:13,640 --> 00:24:11,340
what we do is we go to full performance

555
00:24:16,700 --> 00:24:13,650
so we call is actually also full

556
00:24:21,919 --> 00:24:16,710
performance these upgrades folding in

557
00:24:24,889 --> 00:24:21,929
one of the next vehicles I'm always

558
00:24:28,820 --> 00:24:24,899
looking at the next two and I believe it

559
00:24:34,220 --> 00:24:28,830
is in four vehicles then from here from

560
00:24:37,370 --> 00:24:34,230
from from today so that will bring bring

561
00:24:43,399 --> 00:24:37,380
our payload a little bit up and allow us

562
00:24:46,430 --> 00:24:43,409
to to do better return to land first

563
00:24:47,360 --> 00:24:46,440

stage landings and partial endings on

564
00:24:50,570 --> 00:24:47,370
payloads that are more demanding

565
00:24:52,190 --> 00:24:50,580
primarily I don't think you see any

566
00:24:57,440 --> 00:24:52,200
significant change on the outside of the

567
00:24:59,269 --> 00:24:57,450
vehicle hiya ends oviedo NASA social

568
00:25:02,180 --> 00:24:59,279
embry-riddle press get these questions

569
00:25:05,060 --> 00:25:02,190
for dr. Koon xmen in January the

570
00:25:07,370 --> 00:25:05,070
associate administrator gerson mayor

571
00:25:09,380 --> 00:25:07,380
said NASA would direct SpaceX to

572
00:25:11,659 --> 00:25:09,390
redesign the dragon to carry water to

573
00:25:13,610 --> 00:25:11,669
the ISS in response to the orbital

574
00:25:16,820 --> 00:25:13,620
sciences mishap what were those

575
00:25:19,549 --> 00:25:16,830
redesigns if any yeah that was you can

576
00:25:21,769 --> 00:25:19,559
what do you see when a tribe yeah yeah

577
00:25:24,590 --> 00:25:21,779
we're the am from the space station

578
00:25:27,590 --> 00:25:24,600
program where the cargo guys so we did

579
00:25:29,930 --> 00:25:27,600
we looked at in fact we we performed we

580
00:25:31,460 --> 00:25:29,940
we have some bags big kind of big bags

581
00:25:34,460 --> 00:25:31,470
that typically fit and I'll say the

582
00:25:35,750 --> 00:25:34,470
shuttle mid-deck lockers in the past

583
00:25:37,639 --> 00:25:35,760
that's kind of what we sized them for

584
00:25:42,080 --> 00:25:37,649
and flew them actually sometimes on

585
00:25:43,970 --> 00:25:42,090
those to protect them we couldn't find

586
00:25:45,980 --> 00:25:43,980
we were looking for nooks and crannies

587
00:25:48,620 --> 00:25:45,990
I'll say within the SpaceX Dragon and

588
00:25:52,730 --> 00:25:48,630

still trying to protect the resupply

589
00:25:54,320 --> 00:25:52,740
cold stowage for for the research folks

590
00:25:56,000 --> 00:25:54,330
for the pale folks and so we didn't want

591
00:25:59,120 --> 00:25:56,010
to impact that so what we had to do is

592
00:26:01,010 --> 00:25:59,130
redesign let's slightly tweaked our bag

593
00:26:02,120 --> 00:26:01,020
design a little bit and we have since

594
00:26:04,910 --> 00:26:02,130
perform that

595
00:26:07,940 --> 00:26:04,920
are able to carry water on SpaceX we've

596
00:26:09,950 --> 00:26:07,950
elected not to do that so far but we put

597
00:26:11,990 --> 00:26:09,960
that capability in place in case we

598
00:26:13,730 --> 00:26:12,000
needed it and so it's just a design

599
00:26:17,270 --> 00:26:13,740
feature that we have to carry water on

600
00:26:19,010 --> 00:26:17,280
on Dragon the SpaceX really didn't have

601
00:26:20,990 --> 00:26:19,020
to make any modifications to the vehicle

602
00:26:25,430 --> 00:26:21,000
to accommodate that it wasn't it was

603
00:26:28,880 --> 00:26:25,440
honors up yeah Christian kiski with NASA

604
00:26:30,950 --> 00:26:28,890
social mr. Hartman continuing on with

605
00:26:33,410 --> 00:26:30,960
the water my 12 year old son is

606
00:26:37,400 --> 00:26:33,420
particularly amused by the recycling of

607
00:26:40,070 --> 00:26:37,410
the water on the space station and so as

608
00:26:43,460 --> 00:26:40,080
a consumable how much is lost with the

609
00:26:46,060 --> 00:26:43,470
recycling and how much would that how

610
00:26:48,980 --> 00:26:46,070
much how long would that water last yeah

611
00:26:53,000 --> 00:26:48,990
last I it could be indefinitely right so

612
00:26:56,000 --> 00:26:53,010
you know we actually turn our urine into

613
00:26:58,160 --> 00:26:56,010

drinking water we collect sweat from the

614
00:27:00,260 --> 00:26:58,170
crew members as the exercise your air

615
00:27:02,360 --> 00:27:00,270
conditioning systems at home have

616
00:27:05,120 --> 00:27:02,370
condensate and so we collect all that

617
00:27:08,780 --> 00:27:05,130
water put it through our water processor

618
00:27:13,520 --> 00:27:08,790
on orbit and right now I think we're

619
00:27:14,960 --> 00:27:13,530
about 80% recollection right so we lose

620
00:27:16,670 --> 00:27:14,970
I'll say if another way to look at it

621
00:27:19,430 --> 00:27:16,680
you lose twenty percent we dispose of

622
00:27:22,910 --> 00:27:19,440
that in a variety of forms primarily

623
00:27:26,240 --> 00:27:22,920
brine which is a very thick unfiltered

624
00:27:28,520 --> 00:27:26,250
substance I'll say but eighty percent is

625
00:27:31,700 --> 00:27:28,530
good you know we also have the sub body

626
00:27:33,860 --> 00:27:31,710
a system on board where we can use the

627
00:27:36,920 --> 00:27:33,870
byproduct of our carbon dioxide scrubber

628
00:27:39,200 --> 00:27:36,930
co2 Plus some hydrogen and we can create

629
00:27:41,810 --> 00:27:39,210
additional water from from that event as

630
00:27:43,670 --> 00:27:41,820
well so overall big picture between the

631
00:27:46,130 --> 00:27:43,680
two you know that part of them our main

632
00:27:48,410 --> 00:27:46,140
region system in sabatier were roughly

633
00:27:51,380 --> 00:27:48,420
about eighty percent and we're

634
00:27:54,320 --> 00:27:51,390
constantly trying to push that because

635
00:27:55,910 --> 00:27:54,330
you know you know a gallon of water

636
00:27:58,850 --> 00:27:55,920
weighs eight pounds and it's and it's

637
00:28:01,760 --> 00:27:58,860
expensive to launch a lot of mass to

638
00:28:04,010 --> 00:28:01,770

orbit and so the better we can do on on

639
00:28:06,200 --> 00:28:04,020
getting that percentage higher the

640
00:28:08,390 --> 00:28:06,210
better we'll all be that's in that that

641
00:28:12,020 --> 00:28:08,400
main that is one of the key drivers for

642
00:28:13,760 --> 00:28:12,030
our environmental control a team as they

643
00:28:15,320 --> 00:28:13,770
look for you know kind of their roadmap

644
00:28:16,490 --> 00:28:15,330
to exploration is how can we

645
00:28:18,170 --> 00:28:16,500
get that up to eighty-five ninety

646
00:28:22,220 --> 00:28:18,180
percent and we're working on some

647
00:28:25,190 --> 00:28:22,230
techniques now rusty meadows NASA social

648
00:28:27,920 --> 00:28:25,200
this questions Franz can you talk about

649
00:28:29,660 --> 00:28:27,930
the implications of a successful Falcon

650
00:28:32,570 --> 00:28:29,670
landing and what that means for future

651
00:28:35,380 --> 00:28:32,580
missions the implications of a

652
00:28:38,510 --> 00:28:35,390
successful first stage landing well

653
00:28:46,370 --> 00:28:38,520
first it would be an epic launch landing

654
00:28:48,680 --> 00:28:46,380
party yes we we would need to look at

655
00:28:50,570 --> 00:28:48,690
the stage and evaluate and what do we

656
00:28:54,440 --> 00:28:50,580
need to do to reef lie this particular

657
00:28:56,930 --> 00:28:54,450
stage and so far so it's it's an it's a

658
00:29:02,450 --> 00:28:56,940
really valuable object to work towards

659
00:29:04,730 --> 00:29:02,460
reusability and to take whatever action

660
00:29:06,560 --> 00:29:04,740
we have to take to get this stage back

661
00:29:11,720 --> 00:29:06,570
in the state that we can then we fly

662
00:29:13,730 --> 00:29:11,730
within a short time so in the long term

663
00:29:17,210 --> 00:29:13,740

obviously if you're able to reflow your

664
00:29:19,790 --> 00:29:17,220
first stage you need to establish how

665
00:29:22,760 --> 00:29:19,800
many times can you reply it it's a 20

666
00:29:24,590 --> 00:29:22,770
time so that 40 time is 50 times but

667
00:29:27,770 --> 00:29:24,600
where's the limit what do you have to

668
00:29:30,890 --> 00:29:27,780
exchange if you fly more than 50 times

669
00:29:33,020 --> 00:29:30,900
and you get basically into an your

670
00:29:35,360 --> 00:29:33,030
operation completely changes my opinion

671
00:29:38,780 --> 00:29:35,370
you get into a maintenance operation

672
00:29:40,630 --> 00:29:38,790
value where you it's more like like an

673
00:29:43,730 --> 00:29:40,640
airplane type operation yeah and

674
00:29:47,210 --> 00:29:43,740
honestly from from from my perspective I

675
00:29:48,860 --> 00:29:47,220
look at risk I actually like getting the

676
00:29:52,270 --> 00:29:48,870
stage back because that is the stage I

677
00:29:55,220 --> 00:29:52,280
know and I it you know it has it has it

678
00:29:57,500 --> 00:29:55,230
has proven itself so there's some some

679
00:29:59,420 --> 00:29:57,510
benefit terms of reliability you're not

680
00:30:02,990 --> 00:29:59,430
you're not always getting to a new car

681
00:30:05,480 --> 00:30:03,000
every time you drive to work right so I

682
00:30:07,070 --> 00:30:05,490
think the implications are huge and and

683
00:30:10,160 --> 00:30:07,080
of course in the long term this might

684
00:30:12,970 --> 00:30:10,170
change completely how we how we approach

685
00:30:15,370 --> 00:30:12,980
transportation to space

686
00:30:17,500 --> 00:30:15,380
Jason Jason run for Space Flight insider

687
00:30:18,789 --> 00:30:17,510
again real quick for Hans dragon is

688
00:30:21,250 --> 00:30:18,799

partially supposed to be partially

689
00:30:23,890 --> 00:30:21,260
reusable have any component from prior

690
00:30:27,760 --> 00:30:23,900
missions flown on or being scheduled to

691
00:30:30,130 --> 00:30:27,770
fly on upcoming flights of Dragon in

692
00:30:32,470 --> 00:30:30,140
details only i would say and i don't

693
00:30:34,390 --> 00:30:32,480
think i have the full list year but not

694
00:30:37,150 --> 00:30:34,400
a full dragon in a way that you know

695
00:30:39,520 --> 00:30:37,160
this dragon but it is it is certainly

696
00:30:43,330 --> 00:30:39,530
something that we've worked towards it's

697
00:30:48,460 --> 00:30:43,340
not it's not the space flight itself

698
00:30:51,700 --> 00:30:48,470
that uses up dragon it's actually more

699
00:30:54,280 --> 00:30:51,710
the water landing that does that sea

700
00:30:55,780 --> 00:30:54,290
water is just not not very good for that

701
00:30:58,210 --> 00:30:55,790
when you protect and it takes a lot of

702
00:31:00,610 --> 00:30:58,220
effort to protect something against sea

703
00:31:03,370 --> 00:31:00,620
water corrosion we learned a lot over

704
00:31:06,100 --> 00:31:03,380
the last couple dragons basically how to

705
00:31:09,730 --> 00:31:06,110
do this and we also taking the next step

706
00:31:12,510 --> 00:31:09,740
on dragon reusability in the long run so

707
00:31:14,560 --> 00:31:12,520
that we are able to reuse dragons but I

708
00:31:15,610 --> 00:31:14,570
you know we've worked with the teams

709
00:31:18,310 --> 00:31:15,620
right there there are numerous

710
00:31:20,620 --> 00:31:18,320
components that reef lie on Dragon today

711
00:31:22,450 --> 00:31:20,630
and we'll so in the future we we work

712
00:31:24,610 --> 00:31:22,460
with SpaceX our engineering teens work

713
00:31:26,110 --> 00:31:24,620

with SpaceX to make sure it has useful

714
00:31:28,299 --> 00:31:26,120
life back in it that it you know the

715
00:31:30,700 --> 00:31:28,309
margins are still all there but

716
00:31:32,770 --> 00:31:30,710
reusability is you know it's acceptable

717
00:31:35,169 --> 00:31:32,780
when the hardware performs and we just

718
00:31:37,570 --> 00:31:35,179
we need to see that kind of verification

719
00:31:39,789 --> 00:31:37,580
certification once we see it we haven't

720
00:31:45,400 --> 00:31:39,799
had any objections to to that going down

721
00:31:47,049 --> 00:31:45,410
that path Charlie would NASA social a

722
00:31:48,909 --> 00:31:47,059
lot of the experiments we've heard about

723
00:31:50,049 --> 00:31:48,919
today have to do with studying and

724
00:31:53,140 --> 00:31:50,059
mitigating the effects of microgravity

725
00:31:54,850 --> 00:31:53,150
and zero gravity and which are obviously

726
00:31:56,860 --> 00:31:54,860
problematic for long term missions

727
00:31:58,720 --> 00:31:56,870
including deep space missions so my

728
00:32:01,570 --> 00:31:58,730
question is is a zero gravity

729
00:32:04,000 --> 00:32:01,580
environment assumed for a mission to

730
00:32:07,390 --> 00:32:04,010
Mars or is artificial gravity a

731
00:32:08,919 --> 00:32:07,400
possibility I have not heard of very

732
00:32:11,230 --> 00:32:08,929
many studies going on for artificial

733
00:32:13,419 --> 00:32:11,240
gravity on the way to Mars certainly the

734
00:32:16,539 --> 00:32:13,429
the effects of the human body and zero

735
00:32:18,190 --> 00:32:16,549
gfx is what we have been studying you

736
00:32:21,460 --> 00:32:18,200
know the fluid shifts experiments that

737
00:32:24,019 --> 00:32:21,470
are going on with the one-year crew the

738
00:32:27,019 --> 00:32:24,029

the inter-cranial pressure and then bill

739
00:32:29,629 --> 00:32:27,029
the you know pressure around the eye and

740
00:32:32,629 --> 00:32:29,639
affects a vision and so everything that

741
00:32:35,869 --> 00:32:32,639
I know of has been toward the zero-g

742
00:32:41,930 --> 00:32:35,879
effect I'm not aware of any large

743
00:32:45,049 --> 00:32:41,940
studies on defeating that Courtney NASA

744
00:32:47,330 --> 00:32:45,059
social on Friday Elon Musk tweeted two

745
00:32:50,060 --> 00:32:47,340
pictures of the dragon being prepared

746
00:32:51,799 --> 00:32:50,070
and it says he he said points if you

747
00:32:54,589 --> 00:32:51,809
notice what's new now I could only

748
00:32:57,649 --> 00:32:54,599
notice the logo was new but could you

749
00:32:59,959 --> 00:32:57,659
maybe give us some insight the logo

750
00:33:02,180 --> 00:32:59,969
itself he he just tweeted pictures and

751
00:33:04,789 --> 00:33:02,190
said points if you can find what's new I

752
00:33:06,409 --> 00:33:04,799
was just wondering what was new that the

753
00:33:09,680 --> 00:33:06,419
logo change from the last two of this

754
00:33:11,930 --> 00:33:09,690
one so and it looks a little bit sleeker

755
00:33:15,680 --> 00:33:11,940
a little bit more modern I guess more in

756
00:33:21,609 --> 00:33:15,690
line with the lyin logos just for

757
00:33:23,659 --> 00:33:21,619
logo Matt it looks nice I know ken I'm

758
00:33:27,259 --> 00:33:23,669
America's space in the universe today

759
00:33:29,089 --> 00:33:27,269
for for hunts and Dan probably too I'm

760
00:33:32,810 --> 00:33:29,099
wondering about the instantaneous launch

761
00:33:35,029 --> 00:33:32,820
window um if you were not doing this fly

762
00:33:37,669 --> 00:33:35,039
back could the launch window be more

763
00:33:40,820 --> 00:33:37,679

than just momentary the other thing

764
00:33:43,190 --> 00:33:40,830
about it is this this dragons carrying

765
00:33:45,109 --> 00:33:43,200
about 700 pounds less than the other one

766
00:33:47,930 --> 00:33:45,119
so I monitoring also from that

767
00:33:49,729 --> 00:33:47,940
standpoint why you cannot since that's

768
00:33:52,129 --> 00:33:49,739
pretty significant why you can't have a

769
00:33:57,950 --> 00:33:52,139
lawned a longer launch window than

770
00:34:00,229 --> 00:33:57,960
instantaneous thank you let me so so

771
00:34:02,180 --> 00:34:00,239
you're right it's actually instantaneous

772
00:34:04,759 --> 00:34:02,190
is to some extent and optimization

773
00:34:06,950 --> 00:34:04,769
because you you are optimizing that you

774
00:34:08,569 --> 00:34:06,960
hit the right plane by the time you

775
00:34:10,639 --> 00:34:08,579
actually do the orbit insertion you

776
00:34:13,819 --> 00:34:10,649
could be off a couple seconds and what

777
00:34:17,059 --> 00:34:13,829
you do is you then have to fix your

778
00:34:19,039 --> 00:34:17,069
inclination and that is expensive so in

779
00:34:21,139 --> 00:34:19,049
other words if you do launch a couple of

780
00:34:23,500 --> 00:34:21,149
seconds later a couple seconds earlier

781
00:34:26,329 --> 00:34:23,510
you could pay this in propellant

782
00:34:27,980 --> 00:34:26,339
primarily actually on the dragon side

783
00:34:30,589 --> 00:34:27,990
that's why it doesn't help you too much

784
00:34:33,230 --> 00:34:30,599
on the landing at all the lending has no

785
00:34:35,250 --> 00:34:33,240
impact in my opinion here and from from

786
00:34:37,169 --> 00:34:35,260
our perspective

787
00:34:41,159 --> 00:34:37,179
from the launch team perspective whether

788
00:34:42,720 --> 00:34:41,169

you launch at a an exact moment or five

789
00:34:45,330 --> 00:34:42,730
seconds earlier five seconds later

790
00:34:47,520 --> 00:34:45,340
doesn't matter it's this whole you get

791
00:34:50,250 --> 00:34:47,530
into the the you know that the whole

792
00:34:52,620 --> 00:34:50,260
setup and the long count down and and

793
00:34:54,389 --> 00:34:52,630
and at the end of it you uu on a second

794
00:34:56,340 --> 00:34:54,399
basically whether you five seconds

795
00:34:58,050 --> 00:34:56,350
longer doesn't help you to solve any

796
00:35:00,750 --> 00:34:58,060
problems and so from our perspective

797
00:35:02,730 --> 00:35:00,760
it's basically automatic hands off this

798
00:35:06,020 --> 00:35:02,740
vehicle will launch right on the second

799
00:35:09,480 --> 00:35:06,030
that's optimal for propellant you cook

800
00:35:12,870 --> 00:35:09,490
yes we had we had cases where we need

801
00:35:14,700 --> 00:35:12,880
collision avoidance timing the second

802
00:35:17,760 --> 00:35:14,710
here or there but but it's really just a

803
00:35:19,470 --> 00:35:17,770
second and to go along with that a lot

804
00:35:20,640 --> 00:35:19,480
of it is driven by our payloads right

805
00:35:22,560 --> 00:35:20,650
they have you know they're being

806
00:35:24,390 --> 00:35:22,570
processed and you know here at KSC

807
00:35:27,510 --> 00:35:24,400
they're being turned over under the

808
00:35:30,360 --> 00:35:27,520
dragon they want to get to orbit and you

809
00:35:32,640 --> 00:35:30,370
know begin immediate you know processing

810
00:35:35,310 --> 00:35:32,650
of their research on orbit and so we at

811
00:35:37,890 --> 00:35:35,320
times tend to drive how quick we want

812
00:35:39,510 --> 00:35:37,900
dragon to get to the ISS birth open

813
00:35:41,760 --> 00:35:39,520

hatch and get the research out so that

814
00:35:44,340 --> 00:35:41,770
tends to drag it as far as the 700

815
00:35:46,290 --> 00:35:44,350
pounds probably you know that we don't

816
00:35:47,880 --> 00:35:46,300
have anything flying in the trunk on

817
00:35:49,230 --> 00:35:47,890
this flight and that's that's probably

818
00:35:51,540 --> 00:35:49,240
the you know I mean that would be the

819
00:35:55,380 --> 00:35:51,550
majority of the makeup we had a payload

820
00:35:57,000 --> 00:35:55,390
that was manifested for the trunk it ran

821
00:36:00,450 --> 00:35:57,010
into some testing some integration

822
00:36:01,500 --> 00:36:00,460
issues and so we had an option and the

823
00:36:02,760 --> 00:36:01,510
way that payload would have been

824
00:36:06,270 --> 00:36:02,770
installed on orbit would have been

825
00:36:07,830 --> 00:36:06,280
completely ground control robotic Lee so

826
00:36:09,810 --> 00:36:07,840
we would have pulled it out of the cargo

827
00:36:11,880 --> 00:36:09,820
out of the trunk of the SpaceX we were

828
00:36:13,500 --> 00:36:11,890
handed off to the big arm it was

829
00:36:14,910 --> 00:36:13,510
actually going to go over to the GM BF

830
00:36:17,370 --> 00:36:14,920
and so we would have handed off to the

831
00:36:20,430 --> 00:36:17,380
gym EF arm all this is orchestrated

832
00:36:21,960 --> 00:36:20,440
choreographed on the ground with ground

833
00:36:23,940 --> 00:36:21,970
robotics and then they would have put it

834
00:36:27,360 --> 00:36:23,950
in place on on the exposed facility on

835
00:36:30,060 --> 00:36:27,370
the gym BF so that cost us zero crew

836
00:36:32,340 --> 00:36:30,070
time when we had this payload in the

837
00:36:34,710 --> 00:36:32,350
cargo bay we have actually had an option

838
00:36:36,990 --> 00:36:34,720

to launch the ida the international

839
00:36:40,770 --> 00:36:37,000
docket adapter we had time to accelerate

840
00:36:42,270 --> 00:36:40,780
it and get it on SpaceX six Honda's team

841
00:36:44,280 --> 00:36:42,280
could have changed the f of the flight

842
00:36:45,900 --> 00:36:44,290
support equipment that could have done

843
00:36:47,730 --> 00:36:45,910
that we could have made the you know the

844
00:36:50,670 --> 00:36:47,740
GNC system work

845
00:36:53,670 --> 00:36:50,680
but when we looked at installing the IDA

846
00:36:56,010 --> 00:36:53,680
it actually takes an EV a during the

847
00:37:00,150 --> 00:36:56,020
birth mission to install it so you have

848
00:37:02,670 --> 00:37:00,160
to then use the time for the EV a witch

849
00:37:04,890 --> 00:37:02,680
some if it's just a single a VA can be

850
00:37:07,710 --> 00:37:04,900
eighty to a hundred hours of crew time

851
00:37:09,870 --> 00:37:07,720
just to prep the suits prep the airlock

852
00:37:12,450 --> 00:37:09,880
get everything get the tools ready get

853
00:37:14,100 --> 00:37:12,460
out the door and perform the task so we

854
00:37:16,609 --> 00:37:14,110
looked at the eighty to a hundred hours

855
00:37:19,500 --> 00:37:16,619
of EV a time it took to go outside

856
00:37:22,230 --> 00:37:19,510
versus the mission requirements that we

857
00:37:24,320 --> 00:37:22,240
had specifically for the payloads during

858
00:37:27,960 --> 00:37:24,330
this time period and we could not find

859
00:37:30,359 --> 00:37:27,970
the room to go suck up 80 hours and take

860
00:37:32,850 --> 00:37:30,369
that out of the payload utilization time

861
00:37:34,620 --> 00:37:32,860
so it was purely that kind of trade yeah

862
00:37:36,690 --> 00:37:34,630
we wish the the first payload would have

863
00:37:38,310 --> 00:37:36,700

been there we could have accelerated I

864
00:37:40,140 --> 00:37:38,320
to but we elected to protect the

865
00:37:43,500 --> 00:37:40,150
research that's flying on SpaceX six

866
00:37:47,100 --> 00:37:43,510
will fly I'd on seven and we'll pick up

867
00:37:48,660 --> 00:37:47,110
this payload on a subsequent trunk once

868
00:37:50,970 --> 00:37:48,670
it gets through some some integration

869
00:37:55,080 --> 00:37:50,980
and testing and we there will be slots

870
00:37:58,170 --> 00:37:55,090
available for it Irene Irene Klotz with

871
00:37:59,849 --> 00:37:58,180
Reuters and Hans could you maybe just go

872
00:38:02,099 --> 00:37:59,859
through a little bit about what the plan

873
00:38:04,920 --> 00:38:02,109
would be for the Falcon first stage

874
00:38:08,609 --> 00:38:04,930
assuming it does land where it would go

875
00:38:10,859 --> 00:38:08,619
and what would be the time frame to take

876
00:38:13,220 --> 00:38:10,869
it apart and would it would you try and

877
00:38:15,420 --> 00:38:13,230
then fly it from New Mexico and then

878
00:38:16,859 --> 00:38:15,430
unrelated if you could maybe give us a

879
00:38:20,370 --> 00:38:16,869
little overview of where things stand

880
00:38:23,400 --> 00:38:20,380
for the dragon pad abort test in May

881
00:38:27,150 --> 00:38:23,410
yeah so on the first stage the first

882
00:38:30,030 --> 00:38:27,160
stage gets pulled back to Jacksonville

883
00:38:31,349 --> 00:38:30,040
hover in the next couple days after

884
00:38:33,930 --> 00:38:31,359
landing it depends a little bit on how

885
00:38:38,370 --> 00:38:33,940
the weather is on that and how smooth

886
00:38:40,260 --> 00:38:38,380
the landing goes and and what shape the

887
00:38:42,420 --> 00:38:40,270
vehicle is so it might take a couple

888
00:38:44,970 --> 00:38:42,430

days more year it's how to predict

889
00:38:46,890 --> 00:38:44,980
really if it's not a problem at all i

890
00:38:48,480 --> 00:38:46,900
would say one or two days but it could

891
00:38:53,010 --> 00:38:48,490
be problems and there will be

892
00:38:54,660 --> 00:38:53,020
opportunities then there to look at the

893
00:38:55,770 --> 00:38:54,670
vehicle we will inspect the vehicle

894
00:38:58,650 --> 00:38:55,780
there we will

895
00:39:00,030 --> 00:38:58,660
break it over which means putting it on

896
00:39:03,000 --> 00:39:00,040
which is actually not that easy because

897
00:39:07,260 --> 00:39:03,010
it is at all Ukraine to pick it up and

898
00:39:10,170 --> 00:39:07,270
then move it around and I believe we

899
00:39:12,900 --> 00:39:10,180
will bring it to Texas our test site for

900
00:39:14,730 --> 00:39:12,910
further inspections but we flied from

901
00:39:16,350 --> 00:39:14,740
dale or from some other place has not

902
00:39:19,350 --> 00:39:16,360
been decided at this point in time

903
00:39:23,760 --> 00:39:19,360
depends how it looks what the

904
00:39:27,150 --> 00:39:23,770
inspections say and you know that we go

905
00:39:29,550 --> 00:39:27,160
the next step from there the second

906
00:39:34,320 --> 00:39:29,560
question was paddleboard paddle board

907
00:39:37,440 --> 00:39:34,330
has a tentatively law launch date i

908
00:39:39,240 --> 00:39:37,450
believe on may two i don't think it's

909
00:39:42,180 --> 00:39:39,250
been confirmed by the range so that

910
00:39:45,450 --> 00:39:42,190
Stetson work and early May now I'm pad

911
00:39:47,870 --> 00:39:45,460
abort is a test vehicle so it's not it's

912
00:39:50,130 --> 00:39:47,880
not a production vehicle it it's been

913
00:39:51,960 --> 00:39:50,140

integrated right now I took a look a

914
00:39:58,650 --> 00:39:51,970
couple days ago it's in great shape it's

915
00:40:01,320 --> 00:39:58,660
a really impressive vehicle it you know

916
00:40:03,090 --> 00:40:01,330
this is a very complex vehicle too so we

917
00:40:06,270 --> 00:40:03,100
do we do the pad both different than

918
00:40:08,280 --> 00:40:06,280
other guys it's a it's not a solid motor

919
00:40:10,560 --> 00:40:08,290
that sits in front of it and and just

920
00:40:12,900 --> 00:40:10,570
boot for both the singer thing out its

921
00:40:14,490 --> 00:40:12,910
instead it's using a shitty the same

922
00:40:16,950 --> 00:40:14,500
propellant as the vehicle would use

923
00:40:19,560 --> 00:40:16,960
later on that way you don't bring up

924
00:40:22,370 --> 00:40:19,570
this weight and throw it away and in

925
00:40:25,220 --> 00:40:22,380
mid-flight yeah and you get a lot of

926
00:40:27,270 --> 00:40:25,230
banging out of here back to in terms of

927
00:40:33,420 --> 00:40:27,280
you know what what you do with the

928
00:40:35,160 --> 00:40:33,430
propellant in orbit so I'm just saying

929
00:40:40,470 --> 00:40:35,170
I'll be little bit cautious I wouldn't

930
00:40:42,600 --> 00:40:40,480
book the flight now and and it might it

931
00:40:45,240 --> 00:40:42,610
might have some some it might require

932
00:40:49,350 --> 00:40:45,250
some flexibility on people trying to

933
00:40:52,110 --> 00:40:49,360
watch it and Marcia Marcia Dunn

934
00:40:53,640 --> 00:40:52,120
Associated Press for mr. Hartman the

935
00:40:56,550 --> 00:40:53,650
Italians are sending up an espresso

936
00:40:58,320 --> 00:40:56,560
maker and I'm wondering how much

937
00:41:01,980 --> 00:40:58,330
interest is NASA have in that in

938
00:41:04,020 --> 00:41:01,990

particular and in general how important

939
00:41:06,210 --> 00:41:04,030
is it going to be for you to try to

940
00:41:08,770 --> 00:41:06,220
improve life up there for people as they

941
00:41:10,870 --> 00:41:08,780
spend a year in longer in space

942
00:41:13,360 --> 00:41:10,880
from that aspect I think it makes again

943
00:41:14,860 --> 00:41:13,370
I don't know the the commercial side of

944
00:41:17,080 --> 00:41:14,870
the expression machine you know I think

945
00:41:19,420 --> 00:41:17,090
it is going up under our utilization so

946
00:41:22,210 --> 00:41:19,430
it makes me think it is part of some

947
00:41:24,550 --> 00:41:22,220
commercial endeavor but that that part

948
00:41:29,380 --> 00:41:24,560
the psychological support or is very

949
00:41:33,010 --> 00:41:29,390
very important we do a lot with crew

950
00:41:37,750 --> 00:41:33,020
members on orbit to keep them in sync

951
00:41:39,600 --> 00:41:37,760
with email personal phone calls home you

952
00:41:42,370 --> 00:41:39,610
know they can watch the evening news

953
00:41:44,490 --> 00:41:42,380
depending on our acquisition of signals

954
00:41:47,470 --> 00:41:44,500
that can have live football games and so

955
00:41:50,110 --> 00:41:47,480
we try to set up once a week two-way

956
00:41:52,540 --> 00:41:50,120
parties video both ways with their

957
00:41:54,940 --> 00:41:52,550
family members or they could have a

958
00:41:57,940 --> 00:41:54,950
family member overseas or in some other

959
00:41:59,680 --> 00:41:57,950
you know not necessarily Houston so the

960
00:42:02,440 --> 00:41:59,690
psychological support I think we're

961
00:42:04,780 --> 00:42:02,450
going to learn a lot as this unfolds

962
00:42:07,840 --> 00:42:04,790
over the next year but it's you know if

963
00:42:09,280 --> 00:42:07,850

an expresso machine comes back and we

964
00:42:10,900 --> 00:42:09,290
get a lot of great comments from the

965
00:42:12,430 --> 00:42:10,910
crew hey this is you know it's kind of

966
00:42:14,470 --> 00:42:12,440
like the ice cream thing right when we

967
00:42:17,410 --> 00:42:14,480
we fly ice cream every now and then

968
00:42:19,390 --> 00:42:17,420
that's just to boost spirits and you

969
00:42:21,640 --> 00:42:19,400
know maybe they've you know some rough

970
00:42:24,310 --> 00:42:21,650
day the scoop of ice cream get some over

971
00:42:26,470 --> 00:42:24,320
that hump kind of thing so well I think

972
00:42:27,850 --> 00:42:26,480
well yeah I don't know specifically

973
00:42:29,590 --> 00:42:27,860
about the expression machine but those

974
00:42:32,530 --> 00:42:29,600
kinds of things I think will be

975
00:42:36,400 --> 00:42:32,540
commonplace for us as we can continue on

976
00:42:38,920 --> 00:42:36,410
with these one-year cruise hi Val Philip

977
00:42:41,770 --> 00:42:38,930
0g news we talked to them briefly about

978
00:42:43,720 --> 00:42:41,780
the reuse you but reusability of Dragon

979
00:42:45,370 --> 00:42:43,730
and that one of the problems is actually

980
00:42:47,620 --> 00:42:45,380
the saltwater aspect the main living in

981
00:42:50,470 --> 00:42:47,630
Cape Canaveral you know that is ocean

982
00:42:52,300 --> 00:42:50,480
corrosion is very much of an issue how

983
00:42:54,160 --> 00:42:52,310
are you trying to resolve that and are

984
00:42:57,790 --> 00:42:54,170
you thinking perhaps of going into maybe

985
00:43:01,540 --> 00:42:57,800
land on land rather than on on water

986
00:43:03,640 --> 00:43:01,550
where perhaps that will be remove that

987
00:43:08,500 --> 00:43:03,650
issue and therefore make the capture

988
00:43:10,540 --> 00:43:08,510

more totally reusable yes certainly one

989
00:43:13,300 --> 00:43:10,550
problem to solve the sea water corrosion

990
00:43:19,890 --> 00:43:13,310
issues to land on land that would be a

991
00:43:22,380 --> 00:43:19,900
good way to do this it has other issues

992
00:43:24,630 --> 00:43:22,390
the ocean is just very big and there's a

993
00:43:27,299 --> 00:43:24,640
very low chance to to hit anything on

994
00:43:30,329 --> 00:43:27,309
the ocean so that's definitely for the

995
00:43:32,160 --> 00:43:30,339
ocean but you know you can protect

996
00:43:34,049 --> 00:43:32,170
actually a hardware against seawater

997
00:43:36,299 --> 00:43:34,059
that that is possible but it's just

998
00:43:40,490 --> 00:43:36,309
something that you have to learn and to

999
00:43:42,870 --> 00:43:40,500
work work into into the vehicle and

1000
00:43:44,819 --> 00:43:42,880
typically people that designs page graph

1001
00:43:47,160 --> 00:43:44,829
like people that design boats and ships

1002
00:43:49,049 --> 00:43:47,170
to different set of people and you got

1003
00:43:50,549 --> 00:43:49,059
to find the right people to to get this

1004
00:43:53,819 --> 00:43:50,559
done but you know there's different

1005
00:43:57,269 --> 00:43:53,829
possibilities coding pained surface

1006
00:43:59,910 --> 00:43:57,279
protection sacrificial anodes and and

1007
00:44:01,740 --> 00:43:59,920
all these technologies that help you get

1008
00:44:03,289 --> 00:44:01,750
corrosion under control and having

1009
00:44:05,730 --> 00:44:03,299
worked a couple years at the Cape we

1010
00:44:08,490 --> 00:44:05,740
learnt learned about corrosion how to

1011
00:44:11,160 --> 00:44:08,500
purge systems on the pad and and how to

1012
00:44:16,049 --> 00:44:11,170
make sure that that systems live long

1013
00:44:17,970 --> 00:44:16,059

under these conditions so Christian kiss

1014
00:44:21,230 --> 00:44:17,980
you with NASA social my question is for

1015
00:44:24,630 --> 00:44:21,240
mr. Kraft regarding the weather tomorrow

1016
00:44:27,150 --> 00:44:24,640
how how much advance notice do you

1017
00:44:31,380 --> 00:44:27,160
require and who makes the call as to

1018
00:44:33,839 --> 00:44:31,390
whether it's too bad or too good and how

1019
00:44:35,010 --> 00:44:33,849
is that determined well we have an

1020
00:44:37,470 --> 00:44:35,020
operation center range weather

1021
00:44:39,390 --> 00:44:37,480
Operations Center over on the Cape Cape

1022
00:44:41,760 --> 00:44:39,400
Canaveral sadhna Cape Canaveral Air

1023
00:44:44,220 --> 00:44:41,770
Force Station and there's a team of

1024
00:44:47,670 --> 00:44:44,230
launch weather officers and will will be

1025
00:44:50,549 --> 00:44:47,680
in will be working on console early in

1026
00:44:53,160 --> 00:44:50,559
the early hours of the count and all the

1027
00:44:56,490 --> 00:44:53,170
way through recovery of the first stage

1028
00:44:58,410 --> 00:44:56,500
but we will actually evaluate from

1029
00:45:01,950 --> 00:44:58,420
immediately being on console will will

1030
00:45:04,680 --> 00:45:01,960
evaluate the a very detailed set of

1031
00:45:07,799 --> 00:45:04,690
launch commit criteria lightning launch

1032
00:45:09,240 --> 00:45:07,809
commit criteria that's geared toward

1033
00:45:10,559 --> 00:45:09,250
natural lightning it's also geared

1034
00:45:13,019 --> 00:45:10,569
toward a potential for triggered

1035
00:45:14,339 --> 00:45:13,029
lightning so we're evaluating that and

1036
00:45:17,430 --> 00:45:14,349
we're actually we will actually make a

1037
00:45:19,349 --> 00:45:17,440
no-go call on the console during that if

1038
00:45:21,210 --> 00:45:19,359

it's an unsafe situation or it's

1039
00:45:24,990 --> 00:45:21,220
violating one of those what we call the

1040
00:45:27,420 --> 00:45:25,000
LCC rules for providing and one thing I

1041
00:45:29,160 --> 00:45:27,430
neglected to say earlier is that today

1042
00:45:31,260 --> 00:45:29,170
is going to be is a similar day that

1043
00:45:33,309 --> 00:45:31,270
from what we're expecting tomorrow and

1044
00:45:36,789 --> 00:45:33,319
actually at the t0 point

1045
00:45:39,670 --> 00:45:36,799
day it was a go condition so the team

1046
00:45:42,130 --> 00:45:39,680
the team relayed to me that it that

1047
00:45:45,009 --> 00:45:42,140
would have been a go so what that forty

1048
00:45:47,499 --> 00:45:45,019
percent chance of violation is probably

1049
00:45:49,269 --> 00:45:47,509
pretty pretty close pretty accurate so

1050
00:45:52,709 --> 00:45:49,279
we're expecting again we're expecting

1051
00:45:55,809 --> 00:45:52,719
activity we're expecting in inland and

1052
00:46:00,479 --> 00:45:55,819
you know we'll be dealing with anvil

1053
00:46:10,779 --> 00:46:04,870
that sounds good I do that to ya hope I

1054
00:46:14,620 --> 00:46:10,789
answered your question James thanks

1055
00:46:16,449 --> 00:46:14,630
James Dean Florida today Danna obviously

1056
00:46:18,099 --> 00:46:16,459
these are all quite important but to

1057
00:46:19,809 --> 00:46:18,109
steed referenced kind of still playing

1058
00:46:22,079 --> 00:46:19,819
catch-up after or of three I wondered

1059
00:46:24,609 --> 00:46:22,089
and we've talked for a long time about

1060
00:46:26,920 --> 00:46:24,619
getting the steady cadence as best we

1061
00:46:28,059 --> 00:46:26,930
can with both providers and so just

1062
00:46:30,549 --> 00:46:28,069
wondered if you can maybe kind of state

1063
00:46:34,269 --> 00:46:30,559

the obvious on how important it is

1064
00:46:36,870 --> 00:46:34,279
especially now when you're limited to

1065
00:46:39,039 --> 00:46:36,880
one provider commercial provider and

1066
00:46:40,150 --> 00:46:39,049
just the importance of the flight

1067
00:46:42,759 --> 00:46:40,160
especially in under these circumstances

1068
00:46:44,170 --> 00:46:42,769
and and honza just also want to ask

1069
00:46:47,079 --> 00:46:44,180
since we're at KSC if you might be able

1070
00:46:49,509 --> 00:46:47,089
to update where you're at on 39a and and

1071
00:46:52,839 --> 00:46:49,519
the potential timing of anything Falcon

1072
00:46:54,339 --> 00:46:52,849
Heavy related yeah the cadence is

1073
00:46:56,439 --> 00:46:54,349
important right we've kind of said that

1074
00:46:58,930 --> 00:46:56,449
we need to get into this drumbeat of

1075
00:47:01,180 --> 00:46:58,940
flights I I think we're all feeling

1076
00:47:04,089 --> 00:47:01,190
pretty confident and orbitals ability to

1077
00:47:06,459 --> 00:47:04,099
to get it get get back in gear and in

1078
00:47:09,309 --> 00:47:06,469
the November time period I think they've

1079
00:47:11,349 --> 00:47:09,319
done it just a tremendous job with how

1080
00:47:13,469 --> 00:47:11,359
they've gone from you know October to

1081
00:47:16,539 --> 00:47:13,479
where they're going to be here shortly

1082
00:47:18,699 --> 00:47:16,549
you know and so does that put additional

1083
00:47:22,449 --> 00:47:18,709
pucker factor on some of these missions

1084
00:47:25,059 --> 00:47:22,459
we have fun the answer is yes we have

1085
00:47:27,370 --> 00:47:25,069
some pretty important spares we have on

1086
00:47:30,249 --> 00:47:27,380
SpaceX six we have a couple sidra beds

1087
00:47:33,099 --> 00:47:30,259
that seizures are carbon dioxide

1088
00:47:34,870 --> 00:47:33,109

scrubber so we want to get the two new

1089
00:47:36,759 --> 00:47:34,880
ones up during the doc mission we want

1090
00:47:38,559 --> 00:47:36,769
to be able to hopefully find the crew

1091
00:47:41,799 --> 00:47:38,569
time to should replace those and bring

1092
00:47:44,120 --> 00:47:41,809
those home we have we talked about the

1093
00:47:45,680 --> 00:47:44,130
water processor a little bit early

1094
00:47:49,460 --> 00:47:45,690
right and trying to get our eighty

1095
00:47:52,430 --> 00:47:49,470
percent we always like to have a spare

1096
00:47:54,110 --> 00:47:52,440
on the shelf and we had we would have

1097
00:47:57,380 --> 00:47:54,120
been there and so there's a couple areas

1098
00:47:59,870 --> 00:47:57,390
with the orb 4 or 3 loss where we've

1099
00:48:02,660 --> 00:47:59,880
dipped below that and so there's a

1100
00:48:05,480 --> 00:48:02,670
little bit of a catch up between SpaceX

1101
00:48:08,150 --> 00:48:05,490
six and SpaceX seven that will get our

1102
00:48:12,460 --> 00:48:08,160
sparing situation kind of behind us for

1103
00:48:14,990 --> 00:48:12,470
for the critical regenerative ecosystem

1104
00:48:19,190 --> 00:48:15,000
okay we have time for one last question

1105
00:48:21,470 --> 00:48:19,200
in the back of the room I'm I'm Morgan

1106
00:48:23,870 --> 00:48:21,480
Turner from NASA social my question is

1107
00:48:25,940 --> 00:48:23,880
for Dan and Hans it's just a bit of a

1108
00:48:28,580 --> 00:48:25,950
general question about the innovation of

1109
00:48:29,810 --> 00:48:28,590
Dragon and the other crafts I know that

1110
00:48:31,790 --> 00:48:29,820
you were just saying that sea water

1111
00:48:35,090 --> 00:48:31,800
corrosion is a big problem is there a

1112
00:48:37,640 --> 00:48:35,100
way that you actively develop new new

1113
00:48:40,070 --> 00:48:37,650

crafts or you just build upon that that

1114
00:48:41,750 --> 00:48:40,080
the current model and just like build

1115
00:48:43,430 --> 00:48:41,760
off of its functionality or do you just

1116
00:48:48,410 --> 00:48:43,440
completely develop something different

1117
00:48:50,840 --> 00:48:48,420
on the side while you're using that you

1118
00:48:53,480 --> 00:48:50,850
want to take that I get an oz over your

1119
00:48:56,660 --> 00:48:53,490
commercial crew vehicle right but

1120
00:49:00,530 --> 00:48:56,670
whenever we learned on Dragon folded

1121
00:49:03,230 --> 00:49:00,540
into a crew dragon clearly and there's

1122
00:49:05,510 --> 00:49:03,240
also one ongoing improvements on cargo

1123
00:49:09,410 --> 00:49:05,520
dragon itself and keeping it watertight

1124
00:49:11,630 --> 00:49:09,420
what to see you brother it's it's

1125
00:49:14,630 --> 00:49:11,640
detailed work and you got to be careful

1126
00:49:16,700 --> 00:49:14,640
when you make those changes that nothing

1127
00:49:18,050 --> 00:49:16,710
gets affected by it negatively so it's

1128
00:49:19,640 --> 00:49:18,060
just it's just the process we going

1129
00:49:21,620 --> 00:49:19,650
through I don't think it's I wouldn't

1130
00:49:23,030 --> 00:49:21,630
really call it a huge problem at the end

1131
00:49:25,430 --> 00:49:23,040
of the day the main the main mission

1132
00:49:28,430 --> 00:49:25,440
caliber up cargo down power the entire

1133
00:49:32,540 --> 00:49:28,440
time and temperature correct humidity

1134
00:49:34,940 --> 00:49:32,550
correct nice environment we are we

1135
00:49:37,910 --> 00:49:34,950
fulfill those one hundred percent and

1136
00:49:40,070 --> 00:49:37,920
the the reusability is kind of goal that

1137
00:49:43,430 --> 00:49:40,080
we want to be pursuing it particularly

1138
00:49:45,710 --> 00:49:43,440

lon of course as it's really very much

1139
00:49:49,040 --> 00:49:45,720
into reusability he sees that as a key

1140
00:49:51,740 --> 00:49:49,050
to to lowering launch costs and and

1141
00:49:52,880 --> 00:49:51,750
space operation costs basically and

1142
00:49:55,460 --> 00:49:52,890
makes perfect sense if you think about

1143
00:49:58,569 --> 00:49:55,470
this so it's a long-term goal that we

1144
00:50:03,079 --> 00:50:01,069
alright thank you all very much for

1145
00:50:05,720 --> 00:50:03,089
coming we look forward two morrow to the

1146
00:50:08,870 --> 00:50:05,730
successful launch of the SpaceX Falcon 9

1147
00:50:10,400 --> 00:50:08,880
and Dragon on crs six our NASA

1148
00:50:13,730 --> 00:50:10,410
television coverage begins at three

1149
00:50:16,520 --> 00:50:13,740
thirty p.m. eastern time as does our

1150
00:50:18,710 --> 00:50:16,530
launch blog for the launch which is

1151
00:50:21,400 --> 00:50:18,720
scheduled to the second at four thirty

1152
00:50:24,170 --> 00:50:21,410
three and 15 seconds p.m. eastern time

1153
00:50:26,000 --> 00:50:24,180
between now and then please keep track

1154
00:50:28,910 --> 00:50:26,010
of everything that's happening on social

1155
00:50:31,789 --> 00:50:28,920
media by following us at NASA and at

1156
00:50:35,569 --> 00:50:31,799
SpaceX and also following the hashtags

1157
00:50:39,980 --> 00:50:35,579
is escargot and ISS and of course you