1
00:00:03,800 --> 00:00:01,579
with today's final launch of the space

2
00:00:05,660 --> 00:00:03,810
shuttle we turn the page on a remarkable

3
00:00:08,360 --> 00:00:05,670
period of America's history in space

4
00:00:10,160 --> 00:00:08,370
while beginning the next chapter in our

5
00:00:12,650 --> 00:00:10,170
nation's extraordinary story of

6
00:00:14,780 --> 00:00:12,660
exploration from the early exploits of

7
00:00:16,910 --> 00:00:14,790
Daniel Boone Lewis and Clark and Robert

8
00:00:19,490 --> 00:00:16,920
Peary to the breakthrough journeys of

9
00:00:22,250 --> 00:00:19,500
Alan Shepard and John Glenn Americans

10
00:00:25,070 --> 00:00:22,260
have always been a curious people bold

11
00:00:26,929 --> 00:00:25,080
enough to imagine new worlds ingenious

12
00:00:29,509 --> 00:00:26,939
enough to start to chart a course to

13
00:00:31,370 --> 00:00:29,519

them and courageous enough to go for it

14
00:00:33,080 --> 00:00:31,380
and the gifts of knowledge and

15
00:00:35,630 --> 00:00:33,090
innovation that we have brought back

16
00:00:37,700 --> 00:00:35,640
from the unknown have played their part

17
00:00:40,670 --> 00:00:37,710
in the building of our more perfect

18
00:00:42,590 --> 00:00:40,680
union some say that this final shuttle

19
00:00:44,779 --> 00:00:42,600
mission will mark the end of America's

20
00:00:47,330 --> 00:00:44,789
50 years of dominance in human space

21
00:00:49,459 --> 00:00:47,340
flight as a former astronaut and the

22
00:00:51,380 --> 00:00:49,469
current NASA Administrator I want to

23
00:00:54,020 --> 00:00:51,390
make clear that American leadership in

24
00:00:56,750 --> 00:00:54,030
space will continue for at least the

25
00:00:59,060 --> 00:00:56,760
next half century because we've laid the

26
00:01:02,630 --> 00:00:59,070
foundation for success and for us at

27
00:01:04,490 --> 00:01:02,640
NASA failure is not an option over three

28
00:01:07,310 --> 00:01:04,500
decades the shuttle has brought this

29
00:01:09,649 --> 00:01:07,320
nation many firsts and many many proud

30
00:01:11,690 --> 00:01:09,659
moments it has helped the United States

31
00:01:14,810 --> 00:01:11,700
to maintain its leadership in space it

32
00:01:17,300 --> 00:01:14,820
has vastly increased our knowledge about

33
00:01:18,940 --> 00:01:17,310
launch systems which will apply to the

34
00:01:22,370 --> 00:01:18,950
next generation of space transportation

35
00:01:25,429 --> 00:01:22,380
it opened the door to space for men and

36
00:01:27,800 --> 00:01:25,439
women of all races it United our globe

37
00:01:30,469 --> 00:01:27,810
with communication satellites and helped

38
00:01:32,149 --> 00:01:30,479

us learn how to repair them in orbit it

39
00:01:34,609 --> 00:01:32,159
launched science missions and brought

40
00:01:36,560 --> 00:01:34,619
the hundreds of research experiments to

41
00:01:38,840 --> 00:01:36,570
the International Space Station which

42
00:01:41,359 --> 00:01:38,850
will be the centerpiece for our human

43
00:01:43,999 --> 00:01:41,369
spaceflight activities into the future I

44
00:01:46,160 --> 00:01:44,009
know the transition from our flagship

45
00:01:49,639 --> 00:01:46,170
program to a new chapter in human space

46
00:01:52,520 --> 00:01:49,649
flight has not been easy change never is

47
00:01:55,130 --> 00:01:52,530
I want to thank the NASA workforce for

48
00:01:58,010 --> 00:01:55,140
its dedication and professionalism what

49
00:02:00,789 --> 00:01:58,020
you have accomplished continues to amaze

50
00:02:03,469 --> 00:02:00,799
the world and we've only just begun

51
00:02:06,080 --> 00:02:03,479
tomorrow's destinations will inspire new

52
00:02:08,300 --> 00:02:06,090
generations of explorers and the shuttle

53
00:02:11,029 --> 00:02:08,310
pioneers have made the next chapter of

54
00:02:13,100 --> 00:02:11,039
human space flight possible President

55
00:02:13,850 --> 00:02:13,110
Obama is asking us to harness that

56
00:02:16,220 --> 00:02:13,860
Americans

57
00:02:18,560 --> 00:02:16,230
of innovation the drive to solve

58
00:02:21,050 --> 00:02:18,570
problems and create capabilities that is

59
00:02:24,320 --> 00:02:21,060
so embedded in our story and has led us

60
00:02:27,080 --> 00:02:24,330
to the moon the Great observatories into

61
00:02:29,540 --> 00:02:27,090
humans living and working in space that

62
00:02:32,480 --> 00:02:29,550
American ingenuity is alive and well and

63
00:02:36,080 --> 00:02:32,490

it will fire up our economy and help us

64
00:02:43,580 --> 00:02:36,090
win the future thank you and God speed

65
00:02:46,250 --> 00:02:43,590
to Atlantis and her crew good afternoon

66
00:02:49,160 --> 00:02:46,260
everybody and welcome to a very joyous

67
00:02:50,750 --> 00:02:49,170
day the sts-135 post-launch news

68
00:02:53,229 --> 00:02:50,760
conference after the successful launch

69
00:02:56,090 --> 00:02:53,239
of space shuttle Atlantis today before

70
00:03:01,040 --> 00:02:56,100
near record crowds in the Space Coast

71
00:03:02,780 --> 00:03:01,050
area I believe that we have 1535 news

72
00:03:04,430 --> 00:03:02,790
media here in attendance and it looks

73
00:03:05,770 --> 00:03:04,440
like we crammed as many of you folks in

74
00:03:08,420 --> 00:03:05,780
the room as we possibly could today

75
00:03:11,510 --> 00:03:08,430
thank you very much for coming we would

76
00:03:12,920 --> 00:03:11,520
like to begin things with by introducing

77
00:03:14,479 --> 00:03:12,930
the members of our panel and then we'll

78
00:03:16,430 --> 00:03:14,489
have opening comments and then we'll be

79
00:03:18,550 --> 00:03:16,440
happy to take your questions to my

80
00:03:21,199 --> 00:03:18,560
immediate left is mr. bill Gerstenmaier

81
00:03:25,610 --> 00:03:21,209
NASA associate administrator for Space

82
00:03:31,100 --> 00:03:25,620
Operations Bob Cabana kennedy space

83
00:03:32,930 --> 00:03:31,110
center director Mike Moses space shuttle

84
00:03:34,580 --> 00:03:32,940
program launch integration manager and

85
00:03:38,210 --> 00:03:34,590
the chairman of the pre-launch mission

86
00:03:40,670 --> 00:03:38,220
management team definitely and Mike line

87
00:03:42,610 --> 00:03:40,680
Bach space shuttle launch director good

88
00:03:45,979 --> 00:03:42,620

afternoon everybody mr. grizzmeyer

89
00:03:49,699 --> 00:03:45,989
thanks Mike what a truly awesome day to

90
00:03:51,680 --> 00:03:49,709
day we got to witness something really

91
00:03:54,620 --> 00:03:51,690
really special and something really

92
00:03:57,110 --> 00:03:54,630
amazing and you may think that sometimes

93
00:03:58,850 --> 00:03:57,120
I talk about the hardware but I'm really

94
00:04:00,380 --> 00:03:58,860
talking about the teams and the people

95
00:04:02,780 --> 00:04:00,390
that supported that launch that just

96
00:04:04,880 --> 00:04:02,790
occurred what you saw is the finest

97
00:04:06,949 --> 00:04:04,890
launch team and shuttle preparation

98
00:04:09,470 --> 00:04:06,959
teams in the world that got this vehicle

99
00:04:11,479 --> 00:04:09,480
ready to go fly you got to see the team

100
00:04:14,030 --> 00:04:11,489
perform everything we've asked them to

101
00:04:16,460 --> 00:04:14,040
perform over these years the vehicle had

102
00:04:18,620 --> 00:04:16,470
a tremendous launch the team's work

103
00:04:20,960 --> 00:04:18,630
flawlessly even the last minute to hold

104
00:04:23,089 --> 00:04:20,970
at 31 seconds they worked through that

105
00:04:24,680 --> 00:04:23,099
with tremendous professionalism and got

106
00:04:27,629 --> 00:04:24,690
this launch off today so just

107
00:04:29,070 --> 00:04:27,639
congratulations to the que si si team

108
00:04:31,800 --> 00:04:29,080
I can't thank you enough for everything

109
00:04:33,570 --> 00:04:31,810
you've done for us everything I've asked

110
00:04:35,489 --> 00:04:33,580
this team to do here at KSC they have

111
00:04:37,860 --> 00:04:35,499
done and they've done it superbly and

112
00:04:40,980 --> 00:04:37,870
beyond my highest expectations so thank

113
00:04:42,749 --> 00:04:40,990

you to the KSC team the JSC team in the

114
00:04:45,269 --> 00:04:42,759
ISS team they've still got to get busy

115
00:04:47,279 --> 00:04:45,279
as well as the crew on orbit the docking

116
00:04:49,860 --> 00:04:47,289
will be on Sunday it's a pretty busy

117
00:04:52,709 --> 00:04:49,870
mission you'll see that activity on

118
00:04:54,330 --> 00:04:52,719
orbit that we're going to go through you

119
00:04:55,950 --> 00:04:54,340
we're going to try to extend a mission

120
00:04:57,450 --> 00:04:55,960
probably an extra day they'll work that

121
00:04:59,580 --> 00:04:57,460
to the mission management team as things

122
00:05:01,350 --> 00:04:59,590
go on but but I urge you to follow the

123
00:05:03,659 --> 00:05:01,360
mission and watch what's going on with I

124
00:05:05,730 --> 00:05:03,669
ask what is going on with ISS and and

125
00:05:07,740 --> 00:05:05,740
really take in and spend a little extra

126
00:05:10,379 --> 00:05:07,750
time to understand the research and the

127
00:05:12,390 --> 00:05:10,389
activities are happening on ISS and then

128
00:05:14,909 --> 00:05:12,400
we look forward to till landing here at

129
00:05:16,469 --> 00:05:14,919
KSC so again still a lot of work in

130
00:05:18,119 --> 00:05:16,479
front of us but what an awesome and

131
00:05:19,920 --> 00:05:18,129
great start to the mission today so

132
00:05:22,649 --> 00:05:19,930
again thank you and I look forward to

133
00:05:25,230 --> 00:05:22,659
your questions later wow thanks Bill

134
00:05:26,820 --> 00:05:25,240
first off I want to thank bill

135
00:05:29,070 --> 00:05:26,830
Gerstenmaier for the leadership that he

136
00:05:30,899 --> 00:05:29,080
has provided human space flight from

137
00:05:33,329 --> 00:05:30,909
NASA headquarters he truly has done an

138
00:05:35,760 --> 00:05:33,339

outstanding job and John Shannon's not

139
00:05:38,490 --> 00:05:35,770
here today but John I can't think of a

140
00:05:40,290 --> 00:05:38,500
finer program manager for the shuttle

141
00:05:42,629 --> 00:05:40,300
program to close it out and see us get

142
00:05:43,950 --> 00:05:42,639
this last vehicle on orbit and of course

143
00:05:45,929 --> 00:05:43,960
last but not least I want to say thank

144
00:05:48,360 --> 00:05:45,939
the two mics here I think they did a

145
00:05:50,969 --> 00:05:48,370
truly excellent job leading the team

146
00:05:52,439 --> 00:05:50,979
through this last launch and we got a

147
00:05:55,050 --> 00:05:52,449
little dicey there a couple of times but

148
00:05:58,139 --> 00:05:55,060
we found our way through it and I'll let

149
00:06:00,929 --> 00:05:58,149
them talk about that it truly wasn't an

150
00:06:02,309 --> 00:06:00,939
awesome spectacular launch in my opinion

151
00:06:03,719 --> 00:06:02,319
the only way it could have been better

152
00:06:06,240 --> 00:06:03,729
is if I'd have found a way to stow away

153
00:06:08,429 --> 00:06:06,250
on there somewhere but unfortunately

154
00:06:10,260 --> 00:06:08,439
that didn't work out I want to share

155
00:06:12,119 --> 00:06:10,270
with you what I shared with the with the

156
00:06:15,389 --> 00:06:12,129
launch team after launch and Bill kind

157
00:06:17,579 --> 00:06:15,399
of said it but hey words can't express

158
00:06:20,429 --> 00:06:17,589
the gratitude I have for this team in

159
00:06:24,230 --> 00:06:20,439
the pride that I have in them they are

160
00:06:26,969 --> 00:06:24,240
truly the most professional the best

161
00:06:31,290 --> 00:06:26,979
most outstanding technicians and

162
00:06:32,850 --> 00:06:31,300
engineers anywhere and we owe a great

163
00:06:35,969 --> 00:06:32,860

debt of thanks so they have just done a

164
00:06:39,480 --> 00:06:35,979
truly outstanding job in service to our

165
00:06:41,040 --> 00:06:39,490
country and they've provided us provided

166
00:06:43,320 --> 00:06:41,050
us with one heck of a

167
00:06:46,230 --> 00:06:43,330
for the last 30 years on the United

168
00:06:48,899 --> 00:06:46,240
States shuttle program and I just they

169
00:06:50,700 --> 00:06:48,909
really need recognition we're going to

170
00:06:52,619 --> 00:06:50,710
be going through a tough time change is

171
00:06:54,059 --> 00:06:52,629
hard and we're going to have more folks

172
00:06:56,369 --> 00:06:54,069
walking out the door here in a few weeks

173
00:06:58,050 --> 00:06:56,379
and you know they were and are

174
00:07:00,570 --> 00:06:58,060
performing their job absolutely

175
00:07:02,369 --> 00:07:00,580
flawlessly right up to the end and that

176
00:07:05,909 --> 00:07:02,379
says a lot for them it speaks to that

177
00:07:07,980 --> 00:07:05,919
professionalism change is difficult but

178
00:07:09,390 --> 00:07:07,990
you can't do something else you can't do

179
00:07:12,480 --> 00:07:09,400
something better unless you go through

180
00:07:14,100 --> 00:07:12,490
change and all this talk about you know

181
00:07:16,649 --> 00:07:14,110
NASA is adrift we don't have a plan we

182
00:07:17,969 --> 00:07:16,659
do have a plan we're enabling commercial

183
00:07:20,790 --> 00:07:17,979
space we have the Commercial Crew

184
00:07:23,219 --> 00:07:20,800
program here at Kennedy supported by the

185
00:07:25,589 --> 00:07:23,229
johnson space center in houston we have

186
00:07:28,469 --> 00:07:25,599
four folks under contract trying to

187
00:07:31,200 --> 00:07:28,479
build a vehicle that will take Americans

188
00:07:32,879 --> 00:07:31,210

to space supporting our International

189
00:07:35,490 --> 00:07:32,889
Space Station that's still up there

190
00:07:37,709 --> 00:07:35,500
until at least 2020 with Americans on

191
00:07:40,469 --> 00:07:37,719
board a human spaceflight program and

192
00:07:41,999 --> 00:07:40,479
yes we have to rely on rides on Russian

193
00:07:44,219 --> 00:07:42,009
Rockets for a while but we're

194
00:07:46,439 --> 00:07:44,229
implementing those plans to get a

195
00:07:48,540 --> 00:07:46,449
commercial us capability to get our

196
00:07:50,999 --> 00:07:48,550
folks here and we're working very hard

197
00:07:52,649 --> 00:07:51,009
on a heavy-lift program that will allow

198
00:07:55,950 --> 00:07:52,659
us again to explore beyond our home

199
00:07:57,809 --> 00:07:55,960
planet if you look out the pad be you

200
00:08:00,209 --> 00:07:57,819
know you see a shuttle structure on pate

201
00:08:02,070 --> 00:08:00,219
but let me tell you pad bees and a lot

202
00:08:03,659 --> 00:08:02,080
better shape than that shuttle structure

203
00:08:04,980 --> 00:08:03,669
and even though you see stuff coming

204
00:08:07,260 --> 00:08:04,990
down on the top of the pad what you

205
00:08:09,540 --> 00:08:07,270
don't see is what's inside all new fiber

206
00:08:11,339 --> 00:08:09,550
optics all new digital control systems a

207
00:08:14,070 --> 00:08:11,349
new lightning protection system that

208
00:08:15,629 --> 00:08:14,080
even helped us clear the shuttle down on

209
00:08:18,749 --> 00:08:15,639
pate for the lightning strikes that

210
00:08:20,820 --> 00:08:18,759
we've had state-of-the-art so a lot of

211
00:08:24,480 --> 00:08:20,830
progress is being made to prepare for

212
00:08:26,399 --> 00:08:24,490
this multi-user capability at KSC a

213
00:08:28,409 --> 00:08:26,409

multi-user launch complex where we can

214
00:08:31,670 --> 00:08:28,419
have a heavy lift program that allows us

215
00:08:36,360 --> 00:08:31,680
to explore and commercial programs also

216
00:08:38,100 --> 00:08:36,370
we announced the MPCV as Orion to go on

217
00:08:39,509 --> 00:08:38,110
that big rocket that Hardware starts

218
00:08:42,420 --> 00:08:39,519
arriving here at the Cape later this

219
00:08:43,860 --> 00:08:42,430
year for the first test article soon

220
00:08:45,389 --> 00:08:43,870
we'll have an announcement on the exact

221
00:08:47,550 --> 00:08:45,399
architecture of the rocket to go along

222
00:08:49,769 --> 00:08:47,560
with that and so we are making progress

223
00:08:52,740 --> 00:08:49,779
we're doing all that we need to do to

224
00:08:55,030 --> 00:08:52,750
help move us forward so you know the

225
00:08:56,769 --> 00:08:55,040
shuttle program has been truly phenomena

226
00:08:59,199 --> 00:08:56,779
and I take great pride in esteem and

227
00:09:01,329 --> 00:08:59,209
thank them for all they've done we still

228
00:09:03,340 --> 00:09:01,339
got a lot to do before it's over and

229
00:09:04,600 --> 00:09:03,350
they're going to be doing some work on

230
00:09:05,829 --> 00:09:04,610
orbit and we're going to we're going to

231
00:09:07,150 --> 00:09:05,839
bring them home safe and I'm looking

232
00:09:09,009 --> 00:09:07,160
forward to that landing back here at the

233
00:09:11,650 --> 00:09:09,019
cape and shaking their hands after a

234
00:09:13,389 --> 00:09:11,660
great mission so tall you thanks for

235
00:09:15,430 --> 00:09:13,399
your support and we are going to get

236
00:09:18,420 --> 00:09:15,440
through this and we're gonna do well but

237
00:09:21,759 --> 00:09:18,430
awesome launch today Mike thanks Bob

238
00:09:22,930 --> 00:09:21,769

let's see yeah yeah after years of

239
00:09:24,370 --> 00:09:22,940
training to tell me to do things in the

240
00:09:25,240 --> 00:09:24,380
right order I'll do something the wrong

241
00:09:27,670 --> 00:09:25,250
over here i'm going to start up my

242
00:09:29,290 --> 00:09:27,680
remarks by by telling you mike tells you

243
00:09:31,210 --> 00:09:29,300
a lot that he leads the best launch team

244
00:09:33,040 --> 00:09:31,220
in the world and i'll include that the

245
00:09:34,840 --> 00:09:33,050
ascent team back in houston and and they

246
00:09:37,420 --> 00:09:34,850
are truly the best it is an honor and a

247
00:09:38,499 --> 00:09:37,430
privilege to serve with you Mike the the

248
00:09:39,610 --> 00:09:38,509
judgment they showed today the

249
00:09:42,040 --> 00:09:39,620
leadership they showed today was

250
00:09:43,900 --> 00:09:42,050
absolutely amazing so let me get back on

251
00:09:45,370 --> 00:09:43,910
track before I lose it I'll talk about

252
00:09:49,629 --> 00:09:45,380
technical stuff right because I'm I'm

253
00:09:51,970 --> 00:09:49,639
good at that so you saw these guys you

254
00:09:53,259 --> 00:09:51,980
saw these guys really perform you know

255
00:09:54,280 --> 00:09:53,269
it started yesterday I don't I don't

256
00:09:56,290 --> 00:09:54,290
even know what time I was getting ready

257
00:09:57,939 --> 00:09:56,300
to take a nap and and they called up and

258
00:10:00,730 --> 00:09:57,949
said we took a lightning strike pretty

259
00:10:02,290 --> 00:10:00,740
much on the pad and the team had that

260
00:10:03,579 --> 00:10:02,300
cleared within about four hours we knew

261
00:10:05,530 --> 00:10:03,589
we were good to go press on with the

262
00:10:07,000 --> 00:10:05,540
count we still had to do some data

263
00:10:09,639 --> 00:10:07,010

review still had to dot some i's and

264
00:10:11,110 --> 00:10:09,649
cross some T's echoed that to about two

265
00:10:12,129 --> 00:10:11,120
years ago when I first two and half

266
00:10:13,629 --> 00:10:12,139
years ago when I first started we had a

267
00:10:16,150 --> 00:10:13,639
lightning strike about that same time

268
00:10:17,590 --> 00:10:16,160
frame made us delayed 24 hours play that

269
00:10:18,759 --> 00:10:17,600
back about him two years before that we

270
00:10:20,829 --> 00:10:18,769
had a lightning strike Tomatoes delay

271
00:10:22,930 --> 00:10:20,839
about two days so you really shows you

272
00:10:24,430 --> 00:10:22,940
how well the team takes the challenge of

273
00:10:26,050 --> 00:10:24,440
recognizing that there's something we're

274
00:10:28,300 --> 00:10:26,060
not quite the best at and we'll go

275
00:10:29,680 --> 00:10:28,310
become the best at it and and we really

276
00:10:31,840 --> 00:10:29,690
showed that with the lightning strike

277
00:10:34,329 --> 00:10:31,850
clearing the decision to go tank today

278
00:10:36,790 --> 00:10:34,339
in face of that weather forecast with

279
00:10:38,139 --> 00:10:36,800
the with the the odds we had against

280
00:10:39,670 --> 00:10:38,149
this all day and for the weekend I

281
00:10:42,160 --> 00:10:39,680
thought was unbelievable leadership as

282
00:10:44,250 --> 00:10:42,170
well to take us down that path and let

283
00:10:46,509 --> 00:10:44,260
us try today and it really did pay off

284
00:10:49,179 --> 00:10:46,519
Mike's team worked a couple of good

285
00:10:52,480 --> 00:10:49,189
technical issues a LOX pump acting up a

286
00:10:54,370 --> 00:10:52,490
little bit and and then just to make it

287
00:10:56,079 --> 00:10:54,380
really exciting at 31 seconds the gock

288
00:10:57,370 --> 00:10:56,089

Sven arm all that Mike tell you about

289
00:10:58,689 --> 00:10:57,380
again that was a great example of how

290
00:11:00,610 --> 00:10:58,699
well the team had prepared ahead of time

291
00:11:03,040 --> 00:11:00,620
and then we just worked out whether all

292
00:11:05,170 --> 00:11:03,050
day long and we ended up coming right

293
00:11:06,939 --> 00:11:05,180
down to the wire the range weather hung

294
00:11:08,350 --> 00:11:06,949
right in there was pretty good all day

295
00:11:09,699 --> 00:11:08,360
long we really had

296
00:11:11,980 --> 00:11:09,709
advantage of having the the weather

297
00:11:13,540 --> 00:11:11,990
recon aircraft up there to go slice up

298
00:11:15,759 --> 00:11:13,550
the clouds to truly find out how thick

299
00:11:17,139 --> 00:11:15,769
they were where they really were look at

300
00:11:19,449 --> 00:11:17,149
where showers were popping up and not

301
00:11:22,090 --> 00:11:19,459
and when it came right down to it we end

302
00:11:23,800 --> 00:11:22,100
up right up against our rtls rain shower

303
00:11:25,720 --> 00:11:23,810
rule which says we don't want rain

304
00:11:28,600 --> 00:11:25,730
showers within 20 nautical miles of the

305
00:11:30,610 --> 00:11:28,610
of the landing site the SLF the shuttle

306
00:11:32,350 --> 00:11:30,620
landing facility and on this day we had

307
00:11:34,509 --> 00:11:32,360
a few showers that were still popping up

308
00:11:36,699 --> 00:11:34,519
in that circle so we were at the time

309
00:11:38,860 --> 00:11:36,709
needing to go we were observed no go at

310
00:11:40,480 --> 00:11:38,870
the at the landing site but that's okay

311
00:11:42,730 --> 00:11:40,490
because rtls landing wouldn't be for

312
00:11:44,769 --> 00:11:42,740
about 35 minutes after launch but we

313
00:11:45,850 --> 00:11:44,779

were also going to be forecast no go and

314
00:11:48,280 --> 00:11:45,860
that's where we needed to talk about

315
00:11:49,960 --> 00:11:48,290
maybe taking a little bit of an

316
00:11:51,670 --> 00:11:49,970
exception today beyond what's printed in

317
00:11:53,110 --> 00:11:51,680
the rules to say we understand the

318
00:11:54,910 --> 00:11:53,120
situation a little better because this

319
00:11:56,769 --> 00:11:54,920
this situation is not one that we wrote

320
00:11:57,880 --> 00:11:56,779
down ahead of time and that's what we

321
00:12:00,519 --> 00:11:57,890
did the team did a very thorough

322
00:12:02,860 --> 00:12:00,529
evaluation the the ascent team led by

323
00:12:05,410 --> 00:12:02,870
Richard Jones back in Houston and our

324
00:12:07,180 --> 00:12:05,420
weather recon aircraft with CJ sturckow

325
00:12:09,100 --> 00:12:07,190
flyin and all the team that supports

326
00:12:10,509 --> 00:12:09,110
them did an amazing job of really

327
00:12:14,199 --> 00:12:10,519
talking about what conditions we were

328
00:12:15,970 --> 00:12:14,209
truly facing we knew we had some showers

329
00:12:17,949 --> 00:12:15,980
that might pop up but they would be

330
00:12:19,600 --> 00:12:17,959
limited in scope to only affect one end

331
00:12:20,920 --> 00:12:19,610
of the runway we had good energy

332
00:12:22,329 --> 00:12:20,930
profiles that would let us land on

333
00:12:24,460 --> 00:12:22,339
either end of the runway so we could

334
00:12:27,040 --> 00:12:24,470
read eze egnater round rain shower if it

335
00:12:28,090 --> 00:12:27,050
did pop up really when you're flying

336
00:12:30,100 --> 00:12:28,100
through rain showers you worried about

337
00:12:31,540 --> 00:12:30,110
losing a lot of your energy and we knew

338
00:12:33,400 --> 00:12:31,550

through calculations that even if we had

339
00:12:34,870 --> 00:12:33,410
that we had excess margin that would

340
00:12:37,449 --> 00:12:34,880
would be okay even if we did happen to

341
00:12:39,579 --> 00:12:37,459
catch a rain shower at the bad time but

342
00:12:41,829 --> 00:12:39,589
really what made us go today was the the

343
00:12:43,780 --> 00:12:41,839
radar forecasts the radar maps the

344
00:12:45,670 --> 00:12:43,790
forecasts and the observations by the

345
00:12:47,410 --> 00:12:45,680
STA pilot that showed there was really

346
00:12:50,139 --> 00:12:47,420
nothing developing down in the quadrant

347
00:12:51,610 --> 00:12:50,149
that would then blow up over the pad so

348
00:12:53,439 --> 00:12:51,620
we knew we might have a tiny risk of a

349
00:12:55,269 --> 00:12:53,449
chance of a shower we knew very well it

350
00:12:56,590 --> 00:12:55,279
was not going to be a thunderstorm and

351
00:12:57,970 --> 00:12:56,600
that allowed us to be comfortable today

352
00:12:59,590 --> 00:12:57,980
to just go a little bit beyond the

353
00:13:01,360 --> 00:12:59,600
printed rule and take that extra

354
00:13:03,730 --> 00:13:01,370
exception at the end and go ahead and

355
00:13:05,019 --> 00:13:03,740
launch today approved out I kept an eye

356
00:13:06,699 --> 00:13:05,029
on the radar map as we were flying

357
00:13:07,930 --> 00:13:06,709
uphill all the way through Archie last

358
00:13:10,269 --> 00:13:07,940
landing time there never was a shower

359
00:13:11,620 --> 00:13:10,279
that popped up in the circle and it was

360
00:13:15,460 --> 00:13:11,630
a really good decision by the team today

361
00:13:17,920 --> 00:13:15,470
had no problem endorsing that one on the

362
00:13:19,930 --> 00:13:17,930
way uphill we got a dpdt alarm which is

363
00:13:21,940 --> 00:13:19,940

a delta pressure over delta time

364
00:13:23,290 --> 00:13:21,950
basically a change in pressure

365
00:13:25,480 --> 00:13:23,300
the cabin pressure dropped off just a

366
00:13:26,950 --> 00:13:25,490
tiny little bit we attribute that to

367
00:13:28,690 --> 00:13:26,960
cabin stretch if you think about it as

368
00:13:30,430 --> 00:13:28,700
we're as we're lifting up through the

369
00:13:32,620 --> 00:13:30,440
cabin grows a little bit because of all

370
00:13:34,210 --> 00:13:32,630
the g-forces on it and it just vents off

371
00:13:36,040 --> 00:13:34,220
a little bit of oxygen pressure was very

372
00:13:38,110 --> 00:13:36,050
stable after that little bit flip so no

373
00:13:40,420 --> 00:13:38,120
worries but it did ring alarm on the way

374
00:13:43,330 --> 00:13:40,430
uphill to give the crew yet more

375
00:13:45,520 --> 00:13:43,340
excitement on this last mission they got

376
00:13:46,720 --> 00:13:45,530
in orbit mikko was right on target homes

377
00:13:47,920 --> 00:13:46,730
to was perfect and they're doing a

378
00:13:49,780 --> 00:13:47,930
really good job the doors are open now

379
00:13:52,050 --> 00:13:49,790
and we're really looking forward to a

380
00:13:54,250 --> 00:13:52,060
great mission as bill said this is a

381
00:13:55,990 --> 00:13:54,260
very critical mission for station

382
00:13:58,060 --> 00:13:56,000
resupply we're going to do our best to

383
00:14:00,100 --> 00:13:58,070
try to stretch out an extra day to help

384
00:14:02,350 --> 00:14:00,110
get some stowage on station cleaned up

385
00:14:04,450 --> 00:14:02,360
and in good shape and this is really

386
00:14:05,800 --> 00:14:04,460
going to posture the space station to to

387
00:14:07,870 --> 00:14:05,810
be done for the future so i think the

388
00:14:09,700 --> 00:14:07,880

shuttle program is ending exactly as it

389
00:14:11,290 --> 00:14:09,710
should we built the International Space

390
00:14:13,660 --> 00:14:11,300
Station we're stocking it up for the

391
00:14:15,520 --> 00:14:13,670
future and ready to hand it off and and

392
00:14:17,050 --> 00:14:15,530
we finished really strong that said

393
00:14:18,370 --> 00:14:17,060
we're not ready to look back or forward

394
00:14:19,900 --> 00:14:18,380
we still have this mission to complete

395
00:14:23,110 --> 00:14:19,910
so we're going to stay very focused on

396
00:14:24,850 --> 00:14:23,120
the mission at hand a 12 hopefully 13 de

397
00:14:26,920 --> 00:14:24,860
mission in front of us that's going to

398
00:14:28,240 --> 00:14:26,930
be jam-packed and and we're handing off

399
00:14:30,670 --> 00:14:28,250
to the team over in Houston to get that

400
00:14:32,110 --> 00:14:30,680
executed so with that I'll hand it over

401
00:14:34,240 --> 00:14:32,120
to Mike and just say I can't I can't

402
00:14:35,410 --> 00:14:34,250
express again how proud I am to be to be

403
00:14:38,290 --> 00:14:35,420
sitting up here after a good successful

404
00:14:39,730 --> 00:14:38,300
launch today thanks Mike well thanks for

405
00:14:42,100 --> 00:14:39,740
this opening remarks so that was very

406
00:14:43,630 --> 00:14:42,110
nice and on behalf of the KC show

407
00:14:45,910 --> 00:14:43,640
launched am I by except those remarks

408
00:14:48,340 --> 00:14:45,920
very nice Mike talked about the the

409
00:14:50,020 --> 00:14:48,350
decision to go tank today and it made it

410
00:14:52,840 --> 00:14:50,030
sound like it was a tough decision let

411
00:14:54,760 --> 00:14:52,850
me tell you how that really came down we

412
00:15:00,070 --> 00:14:54,770
met in my office before the before the

413
00:15:02,740 --> 00:15:00,080

mmt meeting we flipped a coin that's how

414
00:15:04,360 --> 00:15:02,750
we really make decisions a big dark

415
00:15:05,950 --> 00:15:04,370
board as a big dart board you know now

416
00:15:09,340 --> 00:15:05,960
the program's over we can develop some

417
00:15:10,960 --> 00:15:09,350
of our secrets now you know we met we

418
00:15:12,910 --> 00:15:10,970
met before the meeting we went over some

419
00:15:14,620 --> 00:15:12,920
strategy and then the the forecast was

420
00:15:16,840 --> 00:15:14,630
such that you know we had a decent shot

421
00:15:18,970 --> 00:15:16,850
at it and and as we said before we've

422
00:15:21,100 --> 00:15:18,980
tanked with worst worst predictions than

423
00:15:22,840 --> 00:15:21,110
that and so we went with it today and we

424
00:15:25,300 --> 00:15:22,850
got and we got lucky I mean we got lucky

425
00:15:27,160 --> 00:15:25,310
is the way you can put it from the

426
00:15:28,450 --> 00:15:27,170
launch weather perspective Kathy winters

427
00:15:29,980 --> 00:15:28,460
or launch weather officer did an

428
00:15:32,380 --> 00:15:29,990
outstanding job and the folks

429
00:15:34,690 --> 00:15:32,390
appreciated her on console Joel Tom

430
00:15:35,800 --> 00:15:34,700
violo and Mike McLean an outstanding job

431
00:15:37,870 --> 00:15:35,810
today guys thank you

432
00:15:39,910 --> 00:15:37,880
very much forecast for the launch

433
00:15:41,530 --> 00:15:39,920
perspective was right on the money and

434
00:15:43,540 --> 00:15:41,540
we got that little bit of clearing that

435
00:15:45,510 --> 00:15:43,550
we needed and so from my perspective on

436
00:15:47,530 --> 00:15:45,520
the launch side of it was pretty easy

437
00:15:50,050 --> 00:15:47,540
Richard Jones on the other hand the

438
00:15:51,850 --> 00:15:50,060

flight director wrestling with the rtls

439
00:15:53,680 --> 00:15:51,860
that was a bit more challenging for him

440
00:15:56,140 --> 00:15:53,690
and he worked his way through that and

441
00:15:57,760 --> 00:15:56,150
it was just an outstanding job so we got

442
00:15:59,230 --> 00:15:57,770
out we got through all that and the

443
00:16:01,390 --> 00:15:59,240
tanking went fine we had a little bit of

444
00:16:04,269 --> 00:16:01,400
an issue with one of with our LOX pump

445
00:16:05,890 --> 00:16:04,279
the major pump that puts the liquid

446
00:16:07,780 --> 00:16:05,900
liquid oxygen into the external tank

447
00:16:09,370 --> 00:16:07,790
we're getting a little bit of a chill

448
00:16:11,860 --> 00:16:09,380
down on that pump indicative a very

449
00:16:13,360 --> 00:16:11,870
minor leak and so we opted to sort of

450
00:16:14,920 --> 00:16:13,370
voluntarily switch to the other pump

451
00:16:18,340 --> 00:16:14,930
before we got into trouble on that one

452
00:16:20,560 --> 00:16:18,350
that went / the / the book never never

453
00:16:22,269 --> 00:16:20,570
uncovered the Eco sensors or the

454
00:16:24,760 --> 00:16:22,279
depletion sensors in the tank at all and

455
00:16:27,040 --> 00:16:24,770
so we were good there too and so the

456
00:16:28,870 --> 00:16:27,050
locks guys did a great job coming on

457
00:16:30,850 --> 00:16:28,880
down to the count I thought we were in

458
00:16:32,380 --> 00:16:30,860
the clear until 31 seconds when the

459
00:16:34,750 --> 00:16:32,390
Sven arm gave us a little bit of trouble

460
00:16:36,519 --> 00:16:34,760
and all that was folks was was when we

461
00:16:37,840 --> 00:16:36,529
retracted the GBA we didn't get one of

462
00:16:39,190 --> 00:16:37,850
the indicators that it was back and

463
00:16:41,350 --> 00:16:39,200

locked and we have procedures in place

464
00:16:43,150 --> 00:16:41,360
to go verify visually that its back and

465
00:16:44,740 --> 00:16:43,160
indeed it was and there's enough

466
00:16:46,360 --> 00:16:44,750
hydraulic pressure in that system that

467
00:16:48,760 --> 00:16:46,370
we were not concerned at all with the

468
00:16:51,820 --> 00:16:48,770
GBA coming back out during during a main

469
00:16:54,250 --> 00:16:51,830
engine ignition so no issue there team

470
00:16:56,260 --> 00:16:54,260
worked through it very very well I think

471
00:16:57,700 --> 00:16:56,270
we launched with 58 seconds left in the

472
00:17:01,240 --> 00:16:57,710
in the window this time which is an

473
00:17:04,059 --> 00:17:01,250
eternity lately and so that that worked

474
00:17:06,370 --> 00:17:04,069
out really well for us and just on

475
00:17:08,559 --> 00:17:06,380
behalf of the of the launch team and all

476
00:17:10,480 --> 00:17:08,569
the thousands of people here km just

477
00:17:12,040 --> 00:17:10,490
very very proud that we finished is

478
00:17:13,990 --> 00:17:12,050
strong from a launch perspective as we

479
00:17:15,760 --> 00:17:14,000
did again the mission ahead of us

480
00:17:17,230 --> 00:17:15,770
landing ahead of us and then we'll be

481
00:17:19,329 --> 00:17:17,240
able to look back and celebrate today

482
00:17:21,340 --> 00:17:19,339
was a great day and there's a party in

483
00:17:25,510 --> 00:17:21,350
the VA be so I hope you don't ask too

484
00:17:28,120 --> 00:17:25,520
many questions and so with with that

485
00:17:29,440 --> 00:17:28,130
life yeah that said oh go ahead it's

486
00:17:31,690 --> 00:17:29,450
just one real quick before we take

487
00:17:34,050 --> 00:17:31,700
questions I think y'all know Rick's

488
00:17:36,280 --> 00:17:34,060

Turco Marine was flying the weather

489
00:17:39,190 --> 00:17:36,290
aircraft and I was listening on the loop

490
00:17:41,860 --> 00:17:39,200
and instead of using really technical

491
00:17:43,810 --> 00:17:41,870
meteorological terms he put it in marine

492
00:17:45,760 --> 00:17:43,820
terms like I am so that we could all

493
00:17:49,850 --> 00:17:45,770
understand he said it's a really really

494
00:17:53,700 --> 00:17:52,049
alright we will take questions these

495
00:17:55,590 --> 00:17:53,710
gentlemen have been working since around

496
00:17:56,960 --> 00:17:55,600
midnight and their day has not done so

497
00:17:59,490 --> 00:17:56,970
we do want to let them get out of here

498
00:18:01,080 --> 00:17:59,500
by two o'clock at the latest so we have

499
00:18:02,820 --> 00:18:01,090
about 30 minutes worth of questions

500
00:18:05,820 --> 00:18:02,830
unless they nudge me and say we have to

501
00:18:08,310 --> 00:18:05,830
go sooner to try to make sure everybody

502
00:18:10,110 --> 00:18:08,320
gets covered please ask one question and

503
00:18:12,480 --> 00:18:10,120
a follow-up please make sure you wait

504
00:18:14,010 --> 00:18:12,490
for the microphone tell us your name and

505
00:18:15,810 --> 00:18:14,020
affiliation and to whom you're

506
00:18:16,950 --> 00:18:15,820
addressing your question and we'll start

507
00:18:19,620 --> 00:18:16,960
in the front row with Seth Borenstein

508
00:18:22,860 --> 00:18:19,630
Seth Borenstein ap from my client POC

509
00:18:26,399 --> 00:18:22,870
can you describe sort of them mood after

510
00:18:28,620 --> 00:18:26,409
launch you know where I'm in the launch

511
00:18:33,769 --> 00:18:28,630
control did it take longer for people to

512
00:18:37,500 --> 00:18:33,779
file out since it you know is last 10 or

513
00:18:38,940 --> 00:18:37,510

was how was it different then after

514
00:18:41,669 --> 00:18:38,950
other launches can you just describe

515
00:18:44,039 --> 00:18:41,679
what was going on there you hit on a

516
00:18:46,409 --> 00:18:44,049
very good stuff it did take a while to

517
00:18:48,090 --> 00:18:46,419
leave the control room we had

518
00:18:50,580 --> 00:18:48,100
photographers set up to take some some

519
00:18:52,560 --> 00:18:50,590
pictures of the team the entire team at

520
00:18:55,440 --> 00:18:52,570
once and then individually or group

521
00:18:56,430 --> 00:18:55,450
pictures whatever we chose to do a lot

522
00:18:58,710 --> 00:18:56,440
of us walked around and shook

523
00:19:01,080 --> 00:18:58,720
everybody's hand people at it seemed

524
00:19:03,299 --> 00:19:01,090
like we didn't want to leave it was like

525
00:19:04,860 --> 00:19:03,309
the end of a party and you just don't

526
00:19:07,889 --> 00:19:04,870
want to go you just want to hang around

527
00:19:09,779 --> 00:19:07,899
a little bit longer and relish relish

528
00:19:13,049 --> 00:19:09,789
our friends and what we've accomplished

529
00:19:15,690 --> 00:19:13,059
and so it was very special a lot of

530
00:19:18,510 --> 00:19:15,700
Pat's on the back today and just to

531
00:19:20,490 --> 00:19:18,520
follow up either Mike you talked about

532
00:19:22,889 --> 00:19:20,500
all the you know the tiny technical

533
00:19:25,799 --> 00:19:22,899
problems you overcame in the end are you

534
00:19:27,570 --> 00:19:25,809
kind of glad that it was instead of a

535
00:19:30,180 --> 00:19:27,580
completely clean clown which I know is

536
00:19:32,610 --> 00:19:30,190
easier that is it more sweet that you

537
00:19:34,590 --> 00:19:32,620
had to overcome all these things and yet

538
00:19:36,899 --> 00:19:34,600

still launch or would you just assume

539
00:19:40,769 --> 00:19:36,909
had a nice easier clean account for you

540
00:19:42,990 --> 00:19:40,779
and any time we get to at0 and and we

541
00:19:47,279 --> 00:19:43,000
get to orbit safely is is good by me so

542
00:19:49,560 --> 00:19:47,289
it hit it was fine it it challenged the

543
00:19:52,080 --> 00:19:49,570
team a little bit at the end but we've

544
00:19:55,200 --> 00:19:52,090
practiced that scenario a numerous times

545
00:19:56,700 --> 00:19:55,210
and so we're ready to go with it in fact

546
00:19:58,560 --> 00:19:56,710
we had written a little special

547
00:20:00,240 --> 00:19:58,570
procedure because in some of the testing

548
00:20:00,780 --> 00:20:00,250
of the gox been arm over the last month

549
00:20:02,430 --> 00:20:00,790
or so

550
00:20:04,170 --> 00:20:02,440
didn't always get that retract indicator

551
00:20:06,930 --> 00:20:04,180
so we put together a little procedure

552
00:20:09,060 --> 00:20:06,940
and and we put the procedure together

553
00:20:11,910 --> 00:20:09,070
figuring if we do that we'll never get

554
00:20:13,920 --> 00:20:11,920
that failure well of course of course we

555
00:20:17,580 --> 00:20:13,930
got the failure and so we had a knock

556
00:20:19,800 --> 00:20:17,590
today that was no big deal Leo Enright

557
00:20:22,590 --> 00:20:19,810
with Irish television just a question

558
00:20:25,140 --> 00:20:22,600
about the rtls waiver I would would you

559
00:20:26,490 --> 00:20:25,150
have done this if the shuttle was going

560
00:20:28,140 --> 00:20:26,500
to fly another mission the reason i

561
00:20:29,730 --> 00:20:28,150
asked being that it was always my

562
00:20:32,150 --> 00:20:29,740
understanding that one of the concerns

563
00:20:34,050 --> 00:20:32,160

was that if you flew through

564
00:20:35,880 --> 00:20:34,060
precipitation that it would damage the

565
00:20:37,500 --> 00:20:35,890
tiles and I mean I'm just wondering were

566
00:20:39,210 --> 00:20:37,510
you just make in the calculation that

567
00:20:40,620 --> 00:20:39,220
well hey we're not flying it again so

568
00:20:42,810 --> 00:20:40,630
that sort of tire damage doesn't matter

569
00:20:45,030 --> 00:20:42,820
or other I completely misunderstood note

570
00:20:46,320 --> 00:20:45,040
that actually that last mission type

571
00:20:48,210 --> 00:20:46,330
thing was not part of the consideration

572
00:20:49,380 --> 00:20:48,220
today but but you are right flying

573
00:20:52,110 --> 00:20:49,390
through rain showers will damage the

574
00:20:53,400 --> 00:20:52,120
tile and so the rules not written

575
00:20:54,900 --> 00:20:53,410
because your damage tile and then

576
00:20:56,910 --> 00:20:54,910
therefore it's a turnaround maintenance

577
00:20:58,980 --> 00:20:56,920
issue the rule is the damaging in the

578
00:21:00,930 --> 00:20:58,990
towel literally is taking energy out of

579
00:21:02,370 --> 00:21:00,940
your profile you remember the shuttles

580
00:21:04,650 --> 00:21:02,380
coming in as a glider without engines

581
00:21:06,120 --> 00:21:04,660
every last little bit of energy is well

582
00:21:08,760 --> 00:21:06,130
managed to make sure you make the runway

583
00:21:10,920 --> 00:21:08,770
we knew today for the approach profiles

584
00:21:13,140 --> 00:21:10,930
with the wind that we had the head winds

585
00:21:14,340 --> 00:21:13,150
across winds and the brake energy we

586
00:21:16,410 --> 00:21:14,350
would see that we weren't going to have

587
00:21:17,520 --> 00:21:16,420
any energy problems so losing a little

588
00:21:19,530 --> 00:21:17,530

bit of energy by flying through a

589
00:21:21,900 --> 00:21:19,540
rainstorm would be okay in today's

590
00:21:23,520 --> 00:21:21,910
situation just like you see with the

591
00:21:26,520 --> 00:21:23,530
forecast and we were talking pre launch

592
00:21:28,890 --> 00:21:26,530
no single forecast is the same you know

593
00:21:30,210 --> 00:21:28,900
seventy percent no go one day is not the

594
00:21:32,280 --> 00:21:30,220
same as a seventy percent no go the next

595
00:21:33,780 --> 00:21:32,290
day for different reasons those those

596
00:21:35,520 --> 00:21:33,790
rain shower exception rules are the same

597
00:21:37,290 --> 00:21:35,530
thing they're written for for certain

598
00:21:39,150 --> 00:21:37,300
cases but not every case so we take a

599
00:21:40,470 --> 00:21:39,160
look at each one every time it's one of

600
00:21:42,150 --> 00:21:40,480
the reasons we have people making these

601
00:21:45,510 --> 00:21:42,160
rules and not just a computer voting red

602
00:21:48,410 --> 00:21:45,520
or green to go or no go so yeah it did

603
00:21:50,940 --> 00:21:48,420
not come into consideration today at all

604
00:21:53,270 --> 00:21:50,950
Jim Siegel celebration independent

605
00:21:56,310 --> 00:21:53,280
newspaper a question from the Bob Cabana

606
00:21:59,820 --> 00:21:56,320
you mentioned Bob some of the work being

607
00:22:01,980 --> 00:21:59,830
done on pad 39b so looking forward now

608
00:22:05,220 --> 00:22:01,990
when would you anticipate that that work

609
00:22:07,950 --> 00:22:05,230
is going to be completed what missions

610
00:22:11,970 --> 00:22:07,960
do you think our upcoming for that pad

611
00:22:13,500 --> 00:22:11,980
and what about 39a is that going to kind

612
00:22:14,670 --> 00:22:13,510
of just stay where it is for a while for

613
00:22:17,940 --> 00:22:14,680

budget reasons

614
00:22:20,880 --> 00:22:17,950
or what well we're obviously preparing

615
00:22:23,130 --> 00:22:20,890
to be able to launch a heavy-lift rocket

616
00:22:25,290 --> 00:22:23,140
off that pad as soon as possible with

617
00:22:27,090 --> 00:22:25,300
our goal being 2016 now how things work

618
00:22:29,070 --> 00:22:27,100
out in the budget process you know we'll

619
00:22:30,690 --> 00:22:29,080
have to see and does that doesn't look

620
00:22:33,000 --> 00:22:30,700
feasible right now but we want the pad

621
00:22:34,740 --> 00:22:33,010
to be ready to go so we'll progress

622
00:22:38,220 --> 00:22:34,750
ahead to have it ready as soon as we

623
00:22:41,610 --> 00:22:38,230
possibly can for accommodating NASA

624
00:22:44,250 --> 00:22:41,620
rocket launches off it 39a you're right

625
00:22:45,690 --> 00:22:44,260
we don't have funding right now to to

626
00:22:48,210 --> 00:22:45,700
move with it so we're going to kind of

627
00:22:49,950 --> 00:22:48,220
put it in a caretaker status eventually

628
00:22:51,990 --> 00:22:49,960
as we explore beyond our home planet

629
00:22:53,910 --> 00:22:52,000
there are scenarios where we need to big

630
00:22:55,470 --> 00:22:53,920
launch pads to support two big rockets

631
00:22:58,110 --> 00:22:55,480
to go do some of the things we want to

632
00:23:00,690 --> 00:22:58,120
do so down the road we do see a need for

633
00:23:03,240 --> 00:23:00,700
that pad in the meantime we'll make sure

634
00:23:04,680 --> 00:23:03,250
that it's not in such a condition that

635
00:23:09,540 --> 00:23:04,690
we can't bring it back up when we need

636
00:23:11,730 --> 00:23:09,550
it okay over here at Ken Kramer hi can't

637
00:23:13,410 --> 00:23:11,740
remember for Space Flight magazine Mike

638
00:23:14,850 --> 00:23:13,420

Leinbach and well first of all of you I

639
00:23:18,240 --> 00:23:14,860
just want to say congratulations and

640
00:23:20,100 --> 00:23:18,250
thank you okay and if you're wearing a

641
00:23:21,330 --> 00:23:20,110
very elegant medallion there or wonder

642
00:23:24,450 --> 00:23:21,340
if you could tell us a little bit about

643
00:23:26,390 --> 00:23:24,460
it this is a this is a little flag that

644
00:23:29,850 --> 00:23:26,400
i gave the launch team today it's a

645
00:23:32,130 --> 00:23:29,860
sts-135 prime launch team member and i

646
00:23:34,380 --> 00:23:32,140
just wanted to give them something they

647
00:23:36,090 --> 00:23:34,390
could take with them and and remember

648
00:23:39,630 --> 00:23:36,100
the good times and so that's what this

649
00:23:42,000 --> 00:23:39,640
is about if i could just follow up with

650
00:23:44,970 --> 00:23:42,010
bill Gerstenmaier what is your reaction

651
00:23:47,910 --> 00:23:44,980
to these significant cuts the Vanessa

652
00:23:50,280 --> 00:23:47,920
proposed NASA budget by the by the house

653
00:23:52,080 --> 00:23:50,290
appropriations committee again I think

654
00:23:53,580 --> 00:23:52,090
it's too early to react to those cuts

655
00:23:56,070 --> 00:23:53,590
aren't this is what we've seen from the

656
00:23:57,780 --> 00:23:56,080
house we'll get some discussions with

657
00:23:59,820 --> 00:23:57,790
the Senate and eventually that'll get

658
00:24:02,610 --> 00:23:59,830
worked into what the NASA bill is so I

659
00:24:03,840 --> 00:24:02,620
don't react to those we understand what

660
00:24:05,520 --> 00:24:03,850
they mean we understand the tough

661
00:24:07,350 --> 00:24:05,530
environment and we'll work with that and

662
00:24:09,330 --> 00:24:07,360
we'll watch the process go through and

663
00:24:10,980 --> 00:24:09,340

we'll be prepared to execute with what

664
00:24:15,600 --> 00:24:10,990
we get when we finally get an answer

665
00:24:17,940 --> 00:24:15,610
from Congress or mark kirkman interspace

666
00:24:19,470 --> 00:24:17,950
news obviously I don't ask feeling

667
00:24:22,200 --> 00:24:19,480
questions normally but this time I would

668
00:24:23,760 --> 00:24:22,210
like to and particularly the I'd like

669
00:24:26,130 --> 00:24:23,770
the perspective of the whole panel but

670
00:24:28,020 --> 00:24:26,140
in particular the two mics in my view

671
00:24:28,380 --> 00:24:28,030
there's kind of no other place where you

672
00:24:30,690 --> 00:24:28,390
can

673
00:24:32,820 --> 00:24:30,700
where you see the flight control teams

674
00:24:34,230 --> 00:24:32,830
and the launch teams the way when

675
00:24:36,450 --> 00:24:34,240
they're on their game there's nothing

676
00:24:38,370 --> 00:24:36,460
like that to see them perform whether

677
00:24:39,990 --> 00:24:38,380
it's simulations are real launch and I'd

678
00:24:41,580 --> 00:24:40,000
really like you all to reflect on the

679
00:24:44,340 --> 00:24:41,590
fact that no matter what follow-on

680
00:24:46,050 --> 00:24:44,350
program you get this animal is never

681
00:24:48,210 --> 00:24:46,060
going to exist before this is the last

682
00:24:50,520 --> 00:24:48,220
time you're ever going to see that kind

683
00:24:57,260 --> 00:24:50,530
of execution and just just your thoughts

684
00:25:00,150 --> 00:24:57,270
on that we have grown into a very

685
00:25:01,560 --> 00:25:00,160
cohesive team throughout the whole

686
00:25:03,060 --> 00:25:01,570
shuttle program not just the flight

687
00:25:05,610 --> 00:25:03,070
control team the launch team but all the

688
00:25:08,820 --> 00:25:05,620

processing team the designers of the

689
00:25:13,260 --> 00:25:08,830
missions you know the payload folks it's

690
00:25:15,180 --> 00:25:13,270
it's a very very cohesive group I'm not

691
00:25:18,110 --> 00:25:15,190
sure we'd never see it again we have

692
00:25:21,750 --> 00:25:18,120
grown into a very very good organization

693
00:25:24,000 --> 00:25:21,760
and it's taken years to do that but that

694
00:25:26,700 --> 00:25:24,010
doesn't say it can't be done again in

695
00:25:28,560 --> 00:25:26,710
fact it will be done again it has to be

696
00:25:31,290 --> 00:25:28,570
done again what we have learned in the

697
00:25:34,710 --> 00:25:31,300
shuttle program in part is is how to

698
00:25:37,680 --> 00:25:34,720
work between centers and you split the

699
00:25:39,090 --> 00:25:37,690
work up certain organizations are

700
00:25:42,360 --> 00:25:39,100
responsible for certain things you

701
00:25:44,160 --> 00:25:42,370
respect that and and you go about your

702
00:25:47,460 --> 00:25:44,170
business and work together as a team and

703
00:25:50,660 --> 00:25:47,470
it seems very natural to me to work this

704
00:25:54,450 --> 00:25:50,670
way and so I'm sure it will happen again

705
00:25:57,090 --> 00:25:54,460
if there's no doubt in my mind and for

706
00:25:59,220 --> 00:25:57,100
me I'll steal a quote from from gene

707
00:26:01,620 --> 00:25:59,230
Kranz who calls the control center a

708
00:26:03,690 --> 00:26:01,630
leadership laboratory and it really is

709
00:26:06,570 --> 00:26:03,700
that it trains people to be critical

710
00:26:10,560 --> 00:26:06,580
decision makers communicators and and

711
00:26:12,090 --> 00:26:10,570
leaders and and so while we we aren't

712
00:26:14,310 --> 00:26:12,100
going to be turning out from that

713
00:26:15,300 --> 00:26:14,320

laboratory for a little bit we have a

714
00:26:17,280 --> 00:26:15,310
whole batch of folks that are going to

715
00:26:19,350 --> 00:26:17,290
go out and seed both commercial industry

716
00:26:22,500 --> 00:26:19,360
and private industry and the NASA team

717
00:26:23,670 --> 00:26:22,510
and go push the envelope and take what

718
00:26:25,950 --> 00:26:23,680
they've learned in the skills they know

719
00:26:27,420 --> 00:26:25,960
how to do now and go help us keep moving

720
00:26:29,280 --> 00:26:27,430
to the future into our future goals so

721
00:26:31,110 --> 00:26:29,290
from that standpoint I feel good that

722
00:26:33,210 --> 00:26:31,120
we're going to go take this team that's

723
00:26:36,900 --> 00:26:33,220
excellent what they do and go out there

724
00:26:38,070 --> 00:26:36,910
and save the world so to speak and and

725
00:26:39,150 --> 00:26:38,080
we will be able to rebuild that team

726
00:26:41,539 --> 00:26:39,160
when the time comes and we need that

727
00:26:42,590 --> 00:26:41,549
again but yeah in the short term I

728
00:26:43,970 --> 00:26:42,600
know exactly what you mean where you've

729
00:26:46,310 --> 00:26:43,980
been there so you recognize that that

730
00:26:48,289 --> 00:26:46,320
it's in the short term that's going to

731
00:26:52,609 --> 00:26:48,299
be something missed that a chance to do

732
00:26:55,310 --> 00:26:52,619
that kids to do that every day okay

733
00:26:57,850 --> 00:26:55,320
Randy Siegel wcsu radio for a Mike

734
00:27:01,220 --> 00:26:57,860
Leinbach Mike you got the sash from

735
00:27:05,509 --> 00:27:01,230
endeavor you got the sash from discovery

736
00:27:07,879 --> 00:27:05,519
you got the one from Atlantis and did

737
00:27:10,419 --> 00:27:07,889
you say anything special to the team

738
00:27:14,239 --> 00:27:10,429

after was all over realizing the

739
00:27:16,669 --> 00:27:14,249
finality of where we're at it it's

740
00:27:26,090 --> 00:27:16,679
almost like we planted you in the in the

741
00:27:29,539 --> 00:27:26,100
audience there's Atlantis what I said to

742
00:27:31,580 --> 00:27:29,549
the team today there's been a tradition

743
00:27:33,889 --> 00:27:31,590
an american manned spaceflight that the

744
00:27:35,450 --> 00:27:33,899
launch directors has bid the cruise fare

745
00:27:37,909 --> 00:27:35,460
well the astronauts fare well in launch

746
00:27:41,090 --> 00:27:37,919
day traditionally with good luck and

747
00:27:43,190 --> 00:27:41,100
Godspeed and the definition of Godspeed

748
00:27:45,799 --> 00:27:43,200
that I like the best is is have a

749
00:27:47,029 --> 00:27:45,809
prosperous journey and so at the end of

750
00:27:48,830 --> 00:27:47,039
my speech to the launch team today I

751
00:27:55,279 --> 00:27:48,840
wish them from the bottom of my heart

752
00:27:57,229 --> 00:27:55,289
good luck and Godspeed okay Clark thank

753
00:27:59,599 --> 00:27:57,239
you a tark Malik with the space com I

754
00:28:02,119 --> 00:27:59,609
have I think one in a follow-up first

755
00:28:04,519 --> 00:28:02,129
for the to my ex I'm I know that during

756
00:28:06,409 --> 00:28:04,529
a launch you're fairly busy and maybe

757
00:28:08,479 --> 00:28:06,419
you get only a few seconds to get a look

758
00:28:10,609 --> 00:28:08,489
at the the actual ascent I'm just

759
00:28:12,200 --> 00:28:10,619
wondering when you did get a peek did it

760
00:28:13,879 --> 00:28:12,210
shine brighter at all did it feel like

761
00:28:16,460 --> 00:28:13,889
it lasted longer was there anything

762
00:28:18,859 --> 00:28:16,470
different that set it apart as it was

763
00:28:20,389 --> 00:28:18,869

happening and as you were looking not

764
00:28:22,249 --> 00:28:20,399
tired you you you put the words in my

765
00:28:24,919 --> 00:28:22,259
mouth for me yet to me it looked like it

766
00:28:27,799 --> 00:28:24,929
was lifting off in slow motion I get you

767
00:28:28,879 --> 00:28:27,809
again I feel to apologize like I did the

768
00:28:30,440 --> 00:28:28,889
last time that we didn't give you a big

769
00:28:32,239 --> 00:28:30,450
enough view but for a long enough time

770
00:28:33,919 --> 00:28:32,249
for hit the cloud deck but but to me it

771
00:28:37,340 --> 00:28:33,929
definitely it hits slow-motion there for

772
00:28:40,070 --> 00:28:37,350
a good 10 seconds were just it was it

773
00:28:42,009 --> 00:28:40,080
was very moving it was very beautiful it

774
00:28:45,229 --> 00:28:42,019
was it was special today I remember

775
00:28:46,789 --> 00:28:45,239
standing there after the vehicle went

776
00:28:49,609 --> 00:28:46,799
into the cloud deck he could still see

777
00:28:51,560 --> 00:28:49,619
that the the smoke from the SRBs and the

778
00:28:53,149 --> 00:28:51,570
main engines and first stage and it

779
00:28:54,810 --> 00:28:53,159
seemed like that cloud plume just was

780
00:28:57,960 --> 00:28:54,820
growing and just hovering

781
00:29:00,149 --> 00:28:57,970
and slowly drifting north and build a

782
00:29:02,970 --> 00:29:00,159
dell a good friend of mine the payload

783
00:29:04,379 --> 00:29:02,980
launch manager I believe I'm right when

784
00:29:05,639 --> 00:29:04,389
I say we put our arms around each other

785
00:29:07,889 --> 00:29:05,649
and just looked at it and said you know

786
00:29:11,639 --> 00:29:07,899
we will never see that again it was it

787
00:29:13,980 --> 00:29:11,649
was a it was a special moment correct Oh

788
00:29:17,249 --> 00:29:13,990

Tareq I'm sorry I just had one more fall

789
00:29:19,470 --> 00:29:17,259
of sorry for for bill you mentioned the

790
00:29:23,039 --> 00:29:19,480
same message that administrator bolden

791
00:29:24,990 --> 00:29:23,049
did in his recording about the u.s. not

792
00:29:27,840 --> 00:29:25,000
pulling out of human spaceflight I know

793
00:29:29,730 --> 00:29:27,850
there's been a lot of talk in the public

794
00:29:31,440 --> 00:29:29,740
about that perception because of the

795
00:29:33,810 --> 00:29:31,450
lack of an iconic vehicle like the space

796
00:29:35,730 --> 00:29:33,820
shuttle and I'm just wondering how you

797
00:29:37,680 --> 00:29:35,740
you perceive up the challenge to kind of

798
00:29:39,600 --> 00:29:37,690
combat that perception in the months and

799
00:29:42,330 --> 00:29:39,610
years ahead before the gap is complete I

800
00:29:44,789 --> 00:29:42,340
think one piece of that we forget is

801
00:29:47,399 --> 00:29:44,799
we've created this unbelievable facility

802
00:29:49,860 --> 00:29:47,409
in space is 16 partner nine hundred

803
00:29:52,080 --> 00:29:49,870
thousand pound research facility in

804
00:29:54,180 --> 00:29:52,090
space and we've got to really maximize

805
00:29:56,580 --> 00:29:54,190
the way we talk about that and the way

806
00:29:58,889 --> 00:29:56,590
we use that facility you know we've got

807
00:30:00,840 --> 00:29:58,899
a chance to do unbelievable research and

808
00:30:03,210 --> 00:30:00,850
a facility we've never been able to do

809
00:30:05,430 --> 00:30:03,220
this is a unique period in our in our

810
00:30:07,320 --> 00:30:05,440
lives to get that done so we need to do

811
00:30:09,119 --> 00:30:07,330
our level best to take advantage of that

812
00:30:11,070 --> 00:30:09,129
and then when you talk about the flight

813
00:30:13,740 --> 00:30:11,080

teams there's still a flight team on the

814
00:30:15,899 --> 00:30:13,750
ISS side that's managing 17 launches to

815
00:30:18,029 --> 00:30:15,909
that vehicle every year there they're

816
00:30:19,740 --> 00:30:18,039
jugglin cargo manifest their juggle and

817
00:30:21,560 --> 00:30:19,750
research manifests we're looking at

818
00:30:23,820 --> 00:30:21,570
establishing a new nonprofit

819
00:30:26,369 --> 00:30:23,830
organization to manage the National Lab

820
00:30:27,779 --> 00:30:26,379
portion of that is s so we are still in

821
00:30:29,850 --> 00:30:27,789
space and we are still moving forward

822
00:30:32,340 --> 00:30:29,860
with the ISS you're seeing commercial

823
00:30:34,379 --> 00:30:32,350
cargo come online later this fall and

824
00:30:36,690 --> 00:30:34,389
next spring you'll see Commercial Crew

825
00:30:38,399 --> 00:30:36,700
come after that so we're ready to keep

826
00:30:40,830 --> 00:30:38,409
going and we're going to springboard off

827
00:30:42,899 --> 00:30:40,840
of what the shuttle is done and and move

828
00:30:44,879 --> 00:30:42,909
the next 50 years then make them just as

829
00:30:49,110 --> 00:30:44,889
bright as these last 30 have been for

830
00:30:51,149 --> 00:30:49,120
shuttle Greg Greg Dobbs from HDNet

831
00:30:52,769 --> 00:30:51,159
television and this is for the two mics

832
00:30:54,480 --> 00:30:52,779
because you're the guys on this group

833
00:30:56,249 --> 00:30:54,490
who spent the most time around the

834
00:30:57,889 --> 00:30:56,259
shuttle it's a more highly technical

835
00:31:01,500 --> 00:30:57,899
question than terex first question but

836
00:31:08,860 --> 00:31:01,510
did you choke up

837
00:31:12,779 --> 00:31:08,870
yep most def one yes you you open it to

838
00:31:15,549 --> 00:31:12,789

follow up yeah I'll choke up if I do

839
00:31:18,220 --> 00:31:15,559
elaborate on why you personally choked

840
00:31:20,230 --> 00:31:18,230
up your engineers you're always just you

841
00:31:23,500 --> 00:31:20,240
know analyzing things at every stage of

842
00:31:25,149 --> 00:31:23,510
ascent you know to be honest I choked up

843
00:31:26,740 --> 00:31:25,159
at every launch this one I choked up

844
00:31:30,220 --> 00:31:26,750
before launch which was the unusual

845
00:31:33,190 --> 00:31:30,230
thing for me but again as an engineer is

846
00:31:34,330 --> 00:31:33,200
whatever at I can't see how anybody who

847
00:31:36,909 --> 00:31:34,340
comes down here and sees the shuttle

848
00:31:39,490 --> 00:31:36,919
launch doesn't choke up and just swell

849
00:31:43,299 --> 00:31:39,500
with pride at seeing that thing go it

850
00:31:45,669 --> 00:31:43,309
just does it to you every time okay in

851
00:31:48,940 --> 00:31:45,679
the pink marsha smith space policy

852
00:31:50,740 --> 00:31:48,950
online com to Bob Cabana you talked

853
00:31:52,960 --> 00:31:50,750
about the future of the pads but not

854
00:31:55,840 --> 00:31:52,970
about the VAB did the commercial guys

855
00:31:57,399 --> 00:31:55,850
want the VAB does NASA knee the Bab does

856
00:31:59,860 --> 00:31:57,409
it get an uplifter doesn't get bulldozed

857
00:32:01,240 --> 00:31:59,870
oh absolutely yeah I think there are

858
00:32:03,120 --> 00:32:01,250
folks who would shoot me if I thought

859
00:32:06,730 --> 00:32:03,130
about doing anything other than

860
00:32:08,649 --> 00:32:06,740
refurbishing it our plan is to refurbish

861
00:32:11,200 --> 00:32:08,659
complex 39 to make it a multi-user

862
00:32:13,000 --> 00:32:11,210
spaceport and that includes utilizing

863
00:32:15,070 --> 00:32:13,010

the VAB and the other facilities that

864
00:32:17,830 --> 00:32:15,080
are out there we're partnering with

865
00:32:19,390 --> 00:32:17,840
space Florida in commercial companies

866
00:32:21,250 --> 00:32:19,400
through Space Act agreements and use

867
00:32:23,799 --> 00:32:21,260
agreements to try and bring commercial

868
00:32:25,180 --> 00:32:23,809
work here but we most definitely need

869
00:32:27,610 --> 00:32:25,190
that VA be for the heavy-lift rocket

870
00:32:30,760 --> 00:32:27,620
that we're going to build to support

871
00:32:33,669 --> 00:32:30,770
launches at a complex 39 that take us

872
00:32:36,610 --> 00:32:33,679
beyond Earth so absolutely we are going

873
00:32:38,230 --> 00:32:36,620
to continue to make a viable part of the

874
00:32:39,610 --> 00:32:38,240
future and that includes some

875
00:32:41,740 --> 00:32:39,620
refurbishment so we're making the most

876
00:32:44,020 --> 00:32:41,750
of the downtime the transition between

877
00:32:46,120 --> 00:32:44,030
programs fortunately we only needed one

878
00:32:49,210 --> 00:32:46,130
shuttle pad so we were able to get a

879
00:32:52,029 --> 00:32:49,220
jump start on 39b to start transitioning

880
00:32:53,560 --> 00:32:52,039
it to the future and we need a little

881
00:32:55,539 --> 00:32:53,570
bit of downtime in order to make the

882
00:32:57,070 --> 00:32:55,549
modifications and transition from one

883
00:32:59,980 --> 00:32:57,080
program to the next and that's what

884
00:33:02,320 --> 00:32:59,990
we're doing right now yeah go ahead

885
00:33:04,360 --> 00:33:02,330
Marshall I won't ask you how much it's

886
00:33:06,580 --> 00:33:04,370
going to cost but well the government

887
00:33:07,779 --> 00:33:06,590
have to bear all those costs or all

888
00:33:10,600 --> 00:33:07,789

those be shared with the commercial

889
00:33:11,950 --> 00:33:10,610
sector commercial companies are going to

890
00:33:15,270 --> 00:33:11,960
use it they're going to have to pay to

891
00:33:21,970 --> 00:33:18,970
Irene thanks Irene Klotz with Reuters

892
00:33:24,040 --> 00:33:21,980
for anybody who'd care to take this you

893
00:33:26,200 --> 00:33:24,050
all inherited a vehicle that was

894
00:33:29,650 --> 00:33:26,210
ultimately proved far more complicated

895
00:33:31,270 --> 00:33:29,660
and labor-intensive to to work on and

896
00:33:33,490 --> 00:33:31,280
one of the goals that the shuttle

897
00:33:37,360 --> 00:33:33,500
program didn't meet was this low-cost

898
00:33:40,030 --> 00:33:37,370
reusability reliability I guess I'm just

899
00:33:43,180 --> 00:33:40,040
wondering why you think it took 30 years

900
00:33:45,780 --> 00:33:43,190
for the shuttle program to get to the

901
00:33:48,610 --> 00:33:45,790
point where it would stand down and give

902
00:33:51,070 --> 00:33:48,620
perhaps another operator commercial or

903
00:33:52,600 --> 00:33:51,080
some other version of government an

904
00:33:54,040 --> 00:33:52,610
opportunity to develop something that

905
00:33:59,110 --> 00:33:54,050
would actually meet one of those goals

906
00:34:07,870 --> 00:33:59,120
that the shuttle program was sold on is

907
00:34:09,520 --> 00:34:07,880
it for me the shuttle program you know

908
00:34:12,720 --> 00:34:09,530
we could not have built the space

909
00:34:16,360 --> 00:34:12,730
station without the space shuttle and

910
00:34:19,540 --> 00:34:16,370
you know it is a phenomenal achievement

911
00:34:20,950 --> 00:34:19,550
on orbit right now so you know I look

912
00:34:23,340 --> 00:34:20,960
back on what the shuttles done in 30

913
00:34:26,950 --> 00:34:23,350

years the Hubble Space Telescope

914
00:34:29,860 --> 00:34:26,960
Magellan Ulysses Galileo the probes you

915
00:34:32,800 --> 00:34:29,870
know it is the shuttle opened up space

916
00:34:34,450 --> 00:34:32,810
when you look back on the Apollo and

917
00:34:35,890 --> 00:34:34,460
prior look at the makeup of the

918
00:34:38,350 --> 00:34:35,900
astronaut corps and look at it today

919
00:34:40,060 --> 00:34:38,360
look at the diversity within the

920
00:34:42,370 --> 00:34:40,070
astronaut corps look at the multi

921
00:34:44,800 --> 00:34:42,380
nations that have flown to space on the

922
00:34:46,690 --> 00:34:44,810
space shuttle in what it's done I don't

923
00:34:48,820 --> 00:34:46,700
think it ended early I think you know I

924
00:34:51,460 --> 00:34:48,830
think it totally fulfilled what it was

925
00:34:52,990 --> 00:34:51,470
what it was meant to do it did it to

926
00:34:56,260 --> 00:34:53,000
deliver on the costs that some people

927
00:34:58,990 --> 00:34:56,270
said no but did it achieve something

928
00:35:01,360 --> 00:34:59,000
that was not achievable by any other

929
00:35:03,930 --> 00:35:01,370
country or any other vehicle absolutely

930
00:35:06,490 --> 00:35:03,940
so I think it's done a phenomenal job

931
00:35:07,810 --> 00:35:06,500
agreed oh go ahead do you think that the

932
00:35:10,210 --> 00:35:07,820
commercial companies are going to have

933
00:35:12,700 --> 00:35:10,220
an easier time of developing vehicles

934
00:35:15,010 --> 00:35:12,710
that non astronauts can fly in I guess

935
00:35:17,740 --> 00:35:15,020
is what I was kind of alluding to with a

936
00:35:18,910 --> 00:35:17,750
simpler design well yes but they're not

937
00:35:20,920 --> 00:35:18,920
gonna be able to do with the shuttle did

938
00:35:22,960 --> 00:35:20,930

the shuttle was designed to carry large

939
00:35:25,150 --> 00:35:22,970
payloads torbett to carry large cruised

940
00:35:26,680 --> 00:35:25,160
orbit to stay on orbit for a long time

941
00:35:29,800 --> 00:35:26,690
to service vehicles in space

942
00:35:31,440 --> 00:35:29,810
is a capsule is designed to go somewhere

943
00:35:33,730 --> 00:35:31,450
drop somebody off and bring him home and

944
00:35:36,309 --> 00:35:33,740
is a capsule a lot easier to build

945
00:35:38,620 --> 00:35:36,319
absolutely that's why we chose the

946
00:35:40,329 --> 00:35:38,630
Mercury capsule you know NASA was

947
00:35:43,089 --> 00:35:40,339
working on lifting bodies when the space

948
00:35:44,470 --> 00:35:43,099
program was starting out because that

949
00:35:46,300 --> 00:35:44,480
was really the best way to go back and

950
00:35:48,550 --> 00:35:46,310
forth you know to have some cross-range

951
00:35:50,770 --> 00:35:48,560
to land on a runway but they needed to

952
00:35:52,540 --> 00:35:50,780
do it quickly and cheaply and a capsule

953
00:35:55,390 --> 00:35:52,550
was the simplest easiest way to do that

954
00:35:57,190 --> 00:35:55,400
and it still is and so we've been going

955
00:35:59,470 --> 00:35:57,200
back and forth to low-earth orbit for 50

956
00:36:01,540 --> 00:35:59,480
years now we ought to be able to define

957
00:36:04,120 --> 00:36:01,550
the requirements for somebody to build a

958
00:36:05,620 --> 00:36:04,130
capsule that allows them to take people

959
00:36:07,270 --> 00:36:05,630
up to the International Space Station in

960
00:36:09,760 --> 00:36:07,280
back and not just International Space

961
00:36:12,520 --> 00:36:09,770
Station but I mean boeing has a contract

962
00:36:13,859 --> 00:36:12,530
with Bigelow Aerospace you know there

963
00:36:15,819 --> 00:36:13,869

are going to be other destinations

964
00:36:17,230 --> 00:36:15,829
commercial space is not just a

965
00:36:19,720 --> 00:36:17,240
government contract to the space station

966
00:36:22,210 --> 00:36:19,730
it's got to be more than that and I

967
00:36:23,740 --> 00:36:22,220
think also the shuttle program gave a

968
00:36:25,690 --> 00:36:23,750
lot of information is going to be

969
00:36:27,670 --> 00:36:25,700
tremendously valuable to these programs

970
00:36:28,960 --> 00:36:27,680
that are emerging and coming forward you

971
00:36:30,640 --> 00:36:28,970
know a lot of our computational fluid

972
00:36:31,960 --> 00:36:30,650
dynamics some of the things we

973
00:36:33,460 --> 00:36:31,970
understand about boundary layer

974
00:36:35,920 --> 00:36:33,470
transition on the vehicle how the

975
00:36:37,510 --> 00:36:35,930
vehicle flies those kind of things are

976
00:36:39,400 --> 00:36:37,520
still important two capsules how life

977
00:36:41,559 --> 00:36:39,410
support systems are designed inside the

978
00:36:43,960 --> 00:36:41,569
capsule how docking mechanisms work all

979
00:36:45,730 --> 00:36:43,970
those things that we have really kind of

980
00:36:47,440 --> 00:36:45,740
proven and refined throughout the

981
00:36:48,700 --> 00:36:47,450
shuttle years we can hand those off to

982
00:36:50,410 --> 00:36:48,710
the commercial companies and they can

983
00:36:52,960 --> 00:36:50,420
pick those up and move those in another

984
00:36:54,640 --> 00:36:52,970
direction so I think there was a lot

985
00:36:56,920 --> 00:36:54,650
learn from the shuttle program that will

986
00:36:59,109 --> 00:36:56,930
become isn't immediately evident to you

987
00:37:00,730 --> 00:36:59,119
until you look behind the hardware and

988
00:37:02,200 --> 00:37:00,740

you look at the equations and some of

989
00:37:04,599 --> 00:37:02,210
the physical understandings of how we

990
00:37:06,309 --> 00:37:04,609
fly in space that actually have one

991
00:37:08,290 --> 00:37:06,319
hundred percent of application to this

992
00:37:12,099 --> 00:37:08,300
new ms new activity we're heading off to

993
00:37:14,559 --> 00:37:12,109
you in the green shirt hi Dave Moshe

994
00:37:16,359 --> 00:37:14,569
orthwein calm so you guys have a mission

995
00:37:18,640 --> 00:37:16,369
in space now this is for anybody who can

996
00:37:21,160 --> 00:37:18,650
best answer it what is going to be a

997
00:37:23,230 --> 00:37:21,170
really key moment up there aside from

998
00:37:25,410 --> 00:37:23,240
getting the astronauts safely on the

999
00:37:28,240 --> 00:37:25,420
ground what's going to be sort of

1000
00:37:29,440 --> 00:37:28,250
tensest moment the main objective that

1001
00:37:33,430 --> 00:37:29,450
you want to get done before you come

1002
00:37:36,430 --> 00:37:33,440
home first of all there's the there's a

1003
00:37:38,530 --> 00:37:36,440
lot of just logistics activity that's

1004
00:37:40,440 --> 00:37:38,540
just moving cargo from the multi-purpose

1005
00:37:43,230 --> 00:37:40,450
Logistics Module into this

1006
00:37:45,420 --> 00:37:43,240
a station this is the the heaviest em

1007
00:37:47,400 --> 00:37:45,430
PLM multi-purpose Logistics Module we've

1008
00:37:49,609 --> 00:37:47,410
flown so it is really packed full so

1009
00:37:51,690 --> 00:37:49,619
there's going to be a just a big kind of

1010
00:37:53,970 --> 00:37:51,700
logistics activity of moving that

1011
00:37:55,170 --> 00:37:53,980
activity from the module then also space

1012
00:37:56,579 --> 00:37:55,180
station is getting pretty crowded

1013
00:37:58,530 --> 00:37:56,589

there's a lot of things up there that

1014
00:38:00,390 --> 00:37:58,540
are stored that need to come back this

1015
00:38:02,069 --> 00:38:00,400
is a unique time to bring unique

1016
00:38:03,990 --> 00:38:02,079
components back so you'll see us fill

1017
00:38:05,849 --> 00:38:04,000
the MPL em up that's why we really would

1018
00:38:07,470 --> 00:38:05,859
like to have the extra day on orbit we

1019
00:38:09,030 --> 00:38:07,480
also have a pump module that's failed on

1020
00:38:10,680 --> 00:38:09,040
the outside of space station had failed

1021
00:38:13,109 --> 00:38:10,690
a little bit earlier than our analysis

1022
00:38:15,359 --> 00:38:13,119
has shown we would like to return that

1023
00:38:17,190 --> 00:38:15,369
pump module to understand why it failed

1024
00:38:19,079 --> 00:38:17,200
so we can improve the next generation

1025
00:38:20,970 --> 00:38:19,089
and then we have another experiment

1026
00:38:22,620 --> 00:38:20,980
that's going up it's a refueling

1027
00:38:24,240 --> 00:38:22,630
experiment that will sit on the outside

1028
00:38:28,109 --> 00:38:24,250
the station and this fall we'll be able

1029
00:38:32,490 --> 00:38:28,119
to use the Canadian in a dexterous robot

1030
00:38:34,470 --> 00:38:32,500
to actually service to do a mock

1031
00:38:36,150 --> 00:38:34,480
demonstration of servicing a satellite

1032
00:38:38,190 --> 00:38:36,160
that was never meant to be serviced so

1033
00:38:39,660 --> 00:38:38,200
it has on the outside of an interface it

1034
00:38:41,880 --> 00:38:39,670
looks just like a satellite that's in

1035
00:38:44,280 --> 00:38:41,890
geosynchronous orbit we've designed

1036
00:38:45,750 --> 00:38:44,290
unique tools for it very much like we

1037
00:38:47,970 --> 00:38:45,760
design unique tools for the Hubble

1038
00:38:50,130 --> 00:38:47,980

servicing mission but now this robot

1039
00:38:52,319 --> 00:38:50,140
will use these unique tools it will cut

1040
00:38:54,599 --> 00:38:52,329
the blanket away and remove a panel to

1041
00:38:56,309 --> 00:38:54,609
remove lock wire or move a cap and then

1042
00:38:58,680 --> 00:38:56,319
actually demonstrate fluid transfer

1043
00:39:00,420 --> 00:38:58,690
between two tanks on board so it's going

1044
00:39:02,370 --> 00:39:00,430
to take us now from the spacewalk

1045
00:39:04,410 --> 00:39:02,380
generation to start showing us what we

1046
00:39:07,530 --> 00:39:04,420
can do in terms of robotic activities

1047
00:39:10,079 --> 00:39:07,540
onboard space station ok back on the

1048
00:39:11,640 --> 00:39:10,089
other side of the room yes hi Mevlut

1049
00:39:13,920 --> 00:39:11,650
it's from the radio network New Zealand

1050
00:39:15,500 --> 00:39:13,930
thank you gentlemen for today I think it

1051
00:39:18,240 --> 00:39:15,510
will be with us the rest of our lives

1052
00:39:20,609 --> 00:39:18,250
the initial ascent of Atlantis did look

1053
00:39:22,980 --> 00:39:20,619
to me anyway slightly slow like she was

1054
00:39:26,940 --> 00:39:22,990
strutting perhaps a Christian and a

1055
00:39:30,089 --> 00:39:26,950
follow up for Bob Cabana pad 39a as has

1056
00:39:31,620 --> 00:39:30,099
been mentioned as in the past the

1057
00:39:33,059 --> 00:39:31,630
present and the future going to be a

1058
00:39:36,780 --> 00:39:33,069
working launch pad but are there any

1059
00:39:39,809 --> 00:39:36,790
plans to have any significant extra

1060
00:39:41,690 --> 00:39:39,819
commemoration plaques what have you for

1061
00:39:45,260 --> 00:39:41,700
that pad in the coming future and also

1062
00:39:47,579 --> 00:39:45,270
when Atlantis returns home are there any

1063
00:39:48,990 --> 00:39:47,589

special ceremonies that you have up your

1064
00:39:50,420 --> 00:39:49,000
sleeve that you perhaps cannot tell us

1065
00:39:53,540 --> 00:39:50,430
about yet

1066
00:39:55,010 --> 00:39:53,550
well actually I'm working with the

1067
00:39:56,510 --> 00:39:55,020
shuttle program to come up with some

1068
00:39:58,910 --> 00:39:56,520
commemorative plaques to put in some

1069
00:40:00,559 --> 00:39:58,920
various places both at the shuttle

1070
00:40:01,849 --> 00:40:00,569
landing facility and at the launch pad

1071
00:40:04,460 --> 00:40:01,859
so we'll have something to commemorate

1072
00:40:08,690 --> 00:40:04,470
the history of those pads as well as the

1073
00:40:11,690 --> 00:40:08,700
the landings at the at the SLF and we've

1074
00:40:14,030 --> 00:40:11,700
got a couple of ceremonies coming up

1075
00:40:17,329 --> 00:40:14,040
after landing something special for the

1076
00:40:20,180 --> 00:40:17,339
the KSC team right here participating in

1077
00:40:21,859 --> 00:40:20,190
the landing post landing but we're gonna

1078
00:40:23,059 --> 00:40:21,869
have a big celebration I can't remember

1079
00:40:24,710 --> 00:40:23,069
the date right now but it's going to be

1080
00:40:26,420 --> 00:40:24,720
out at our visitors center and it's

1081
00:40:28,819 --> 00:40:26,430
going to celebrate the the entire

1082
00:40:32,599 --> 00:40:28,829
shuttle program and it's going to be

1083
00:40:34,579 --> 00:40:32,609
open to you know easy access to all the

1084
00:40:36,410 --> 00:40:34,589
the retirees the folks who have been a

1085
00:40:38,000 --> 00:40:36,420
key part of this program for the last 30

1086
00:40:39,829 --> 00:40:38,010
years so we can really celebrate the

1087
00:40:42,559 --> 00:40:39,839
significance of what the shuttle has

1088
00:40:46,880 --> 00:40:42,569

accomplished it's going to be on the

1089
00:40:48,620 --> 00:40:46,890
13th of august Andy Cox with the weather

1090
00:40:51,049 --> 00:40:48,630
channel seemed today like the weather

1091
00:40:53,299 --> 00:40:51,059
gods kind of conspired to let both the

1092
00:40:55,280 --> 00:40:53,309
teams kind of show their mettle you guys

1093
00:40:56,859 --> 00:40:55,290
talked about the SMG working the art a

1094
00:40:59,210 --> 00:40:56,869
less stuff and forty-fifth work in the

1095
00:41:00,740 --> 00:40:59,220
the range stuff here what if you guys

1096
00:41:02,450 --> 00:41:00,750
made a step to speak to the the bigger

1097
00:41:03,500 --> 00:41:02,460
picture of what the weather teams have

1098
00:41:06,230 --> 00:41:03,510
met just throughout the course of the

1099
00:41:08,000 --> 00:41:06,240
program the support they've given yeah

1100
00:41:10,700 --> 00:41:08,010
it's amazing and I might get into

1101
00:41:12,890 --> 00:41:10,710
because he works with Cathy a lot in the

1102
00:41:14,630 --> 00:41:12,900
45th and we're only single out Cathy

1103
00:41:17,329 --> 00:41:14,640
because she's the spokesman for that

1104
00:41:18,650 --> 00:41:17,339
team usually but the SMG guys you know

1105
00:41:21,710 --> 00:41:18,660
we're talking about the future and

1106
00:41:23,569 --> 00:41:21,720
looking ahead it's amazing when you work

1107
00:41:25,490 --> 00:41:23,579
down here how much we need the daily

1108
00:41:27,799 --> 00:41:25,500
weather forecasts for every operation we

1109
00:41:30,230 --> 00:41:27,809
do we're outside at the pad we're moving

1110
00:41:32,150 --> 00:41:30,240
hardware back and forth there's cargo

1111
00:41:34,700 --> 00:41:32,160
coming in at the slf we need weather

1112
00:41:36,829 --> 00:41:34,710
forecasting on a daily basis and in fact

1113
00:41:40,250 --> 00:41:36,839

mike has a daily weather call where we

1114
00:41:41,690 --> 00:41:40,260
tag up and see what's coming and so it's

1115
00:41:42,890 --> 00:41:41,700
played an integral part of the space

1116
00:41:46,160 --> 00:41:42,900
shuttle program and the space program

1117
00:41:48,470 --> 00:41:46,170
and and it's really built up an

1118
00:41:50,030 --> 00:41:48,480
unbelievable capability you always just

1119
00:41:52,940 --> 00:41:50,040
explaining to a few folks the other day

1120
00:41:54,140 --> 00:41:52,950
not too long ago we had had flight rules

1121
00:41:55,370 --> 00:41:54,150
in place that talked about triggered

1122
00:41:56,690 --> 00:41:55,380
lightning we learned that lesson the

1123
00:41:58,099 --> 00:41:56,700
hard way through some of our our

1124
00:41:59,960 --> 00:41:58,109
partners over on the Air Force side

1125
00:42:01,370 --> 00:41:59,970
where they had an event with a triggered

1126
00:42:03,410 --> 00:42:01,380
lightning that took out an atlas and and

1127
00:42:04,130 --> 00:42:03,420
a bunch of new rules came in place to

1128
00:42:05,780 --> 00:42:04,140
talk about

1129
00:42:07,270 --> 00:42:05,790
what the limits are and we we have

1130
00:42:09,560 --> 00:42:07,280
filled mills on the ground that measure

1131
00:42:10,520 --> 00:42:09,570
voltages from a from lightning and kind

1132
00:42:11,870 --> 00:42:10,530
of help tell you whether you're going to

1133
00:42:13,430 --> 00:42:11,880
get triggered lightning or a an

1134
00:42:14,630 --> 00:42:13,440
impending lightning strike but we didn't

1135
00:42:17,120 --> 00:42:14,640
know what was really happening altitude

1136
00:42:19,550 --> 00:42:17,130
and so combination with the with the

1137
00:42:21,500 --> 00:42:19,560
weather service the Air Force NASA and

1138
00:42:23,360 --> 00:42:21,510

NOAA we flew a project to basically fly

1139
00:42:25,940 --> 00:42:23,370
airborne field mills we used to have a

1140
00:42:27,230 --> 00:42:25,950
rule that any attached cumulus cloud if

1141
00:42:29,180 --> 00:42:27,240
it had lightning in it if it was

1142
00:42:30,350 --> 00:42:29,190
attached you need to be no go so we

1143
00:42:32,300 --> 00:42:30,360
could have a cloud deck that stretched

1144
00:42:34,370 --> 00:42:32,310
over the Gulf of Mexico with lightning

1145
00:42:36,080 --> 00:42:34,380
out near the middle of Mexico and we'd

1146
00:42:37,670 --> 00:42:36,090
be no go here for that and we learned

1147
00:42:38,930 --> 00:42:37,680
through these rules that it's probably

1148
00:42:40,880 --> 00:42:38,940
about and I can't remember the numbers

1149
00:42:42,620 --> 00:42:40,890
exactly but it's a 20 to 30 mile type of

1150
00:42:44,300 --> 00:42:42,630
radius affecting and so advanced in the

1151
00:42:45,920 --> 00:42:44,310
state of the art they're really really

1152
00:42:48,500 --> 00:42:45,930
paid off and I think we got that because

1153
00:42:50,660 --> 00:42:48,510
we had a dedicated team focused on

1154
00:42:52,400 --> 00:42:50,670
dedicated weather in in certain areas of

1155
00:42:54,230 --> 00:42:52,410
the country you learn so much when you

1156
00:42:56,930 --> 00:42:54,240
look at weather in one spot that closely

1157
00:42:58,370 --> 00:42:56,940
and so I really hope that that that

1158
00:43:00,620 --> 00:42:58,380
seeded itself throughout the rest of the

1159
00:43:01,910 --> 00:43:00,630
country in weather forecasting and

1160
00:43:03,230 --> 00:43:01,920
weather service to not just for the

1161
00:43:04,760 --> 00:43:03,240
shuttle program but it's an unbelievable

1162
00:43:08,120 --> 00:43:04,770
team we could not do what we do without

1163
00:43:10,850 --> 00:43:08,130

them yeah I agree a hundred percent it I

1164
00:43:13,190 --> 00:43:10,860
do have a daily weather call with Kathy

1165
00:43:15,350 --> 00:43:13,200
winters launch weather officer and as

1166
00:43:17,950 --> 00:43:15,360
mike says she's just a spokesman for a

1167
00:43:20,390 --> 00:43:17,960
large group of people over the 45th

1168
00:43:22,730 --> 00:43:20,400
different things come into play on daily

1169
00:43:23,840 --> 00:43:22,740
processing versus launch different

1170
00:43:25,970 --> 00:43:23,850
things come into play when we're talking

1171
00:43:27,500 --> 00:43:25,980
about tropical systems we work very

1172
00:43:30,380 --> 00:43:27,510
closely with the National Hurricane

1173
00:43:32,870 --> 00:43:30,390
Center when we have a tropical system

1174
00:43:34,670 --> 00:43:32,880
threatening us we've had criteria to

1175
00:43:36,710 --> 00:43:34,680
roll the shuttle off the launch pad to

1176
00:43:39,290 --> 00:43:36,720
get back into the VAB to protect it

1177
00:43:40,970 --> 00:43:39,300
we've done that in the past weather

1178
00:43:42,380 --> 00:43:40,980
weather here in Central Florida you know

1179
00:43:44,210 --> 00:43:42,390
lightning capital of the world right

1180
00:43:46,940 --> 00:43:44,220
there's there's a group of people the

1181
00:43:49,280 --> 00:43:46,950
Lightning launch commit criteria group

1182
00:43:51,980 --> 00:43:49,290
and it's a group of PhDs been together

1183
00:43:53,630 --> 00:43:51,990
for over 25 years and through through

1184
00:43:55,130 --> 00:43:53,640
those years and the studies they've done

1185
00:43:58,160 --> 00:43:55,140
like the airborne field know that Mike

1186
00:44:00,800 --> 00:43:58,170
mentioned we've been able to relax our

1187
00:44:04,010 --> 00:44:00,810
rules but yet stayed perfectly safe and

1188
00:44:05,720 --> 00:44:04,020

and so we're constantly challenging the

1189
00:44:08,420 --> 00:44:05,730
weather folks because we have an

1190
00:44:09,890 --> 00:44:08,430
operation to perform and but we need to

1191
00:44:11,930 --> 00:44:09,900
do it safely and so it's a balance

1192
00:44:14,810 --> 00:44:11,940
between between those those two

1193
00:44:17,570 --> 00:44:14,820
competing interests whether in Central

1194
00:44:17,989 --> 00:44:17,580
Florida is is a very very interesting

1195
00:44:21,079 --> 00:44:17,999
fan

1196
00:44:23,059 --> 00:44:21,089
and you saw it today it could have

1197
00:44:25,399 --> 00:44:23,069
easily turned very very sour and we

1198
00:44:28,629 --> 00:44:25,409
wouldn't be talking to you right now so

1199
00:44:31,429 --> 00:44:28,639
a little bit of luck never hurts but the

1200
00:44:33,829 --> 00:44:31,439
the relationship we have of the 45th and

1201
00:44:36,799 --> 00:44:33,839
SMG & and the other folks that support

1202
00:44:38,479 --> 00:44:36,809
them is just outstanding right we have

1203
00:44:40,099 --> 00:44:38,489
time for running unfortunately only

1204
00:44:42,439 --> 00:44:40,109
three more questions so we'll take one

1205
00:44:44,169 --> 00:44:42,449
here then todd halvorson and Ralph our

1206
00:44:46,489 --> 00:44:44,179
debate vartabedian from the LA Times

1207
00:44:48,109 --> 00:44:46,499
Thank You Jackie got out for The Times

1208
00:44:49,909 --> 00:44:48,119
of London over the last couple of years

1209
00:44:52,309 --> 00:44:49,919
we've been right up to last week really

1210
00:44:53,809 --> 00:44:52,319
we've seen certain harsh criticism

1211
00:44:56,929 --> 00:44:53,819
spelled out by some pretty heavyweight

1212
00:44:58,969 --> 00:44:56,939
NASA veterans Neil Armstrong chris-craft

1213
00:45:02,329 --> 00:44:58,979

at the gene Kranz Gene Cernan and the

1214
00:45:05,839 --> 00:45:02,339
letter last week to Charlie Bolden how

1215
00:45:10,069 --> 00:45:05,849
if NASA can't convince some of its own

1216
00:45:13,399 --> 00:45:10,079
finest d how do you think NASA will move

1217
00:45:15,409 --> 00:45:13,409
forward to convince the public that NASA

1218
00:45:16,909 --> 00:45:15,419
visited an agency that knows where it's

1219
00:45:21,169 --> 00:45:16,919
going what it's doing and that it's

1220
00:45:24,139 --> 00:45:21,179
worth doing well starting i'm going to

1221
00:45:26,659 --> 00:45:24,149
let they had a human spaceflight at NASA

1222
00:45:30,559 --> 00:45:26,669
add a little bit more to it but I think

1223
00:45:33,109 --> 00:45:30,569
as it becomes clearer and we announced

1224
00:45:34,459 --> 00:45:33,119
the specific design of the rocket that

1225
00:45:36,589 --> 00:45:34,469
we are building and how we are going to

1226
00:45:38,779 --> 00:45:36,599
use it in why we chose that design I

1227
00:45:41,449 --> 00:45:38,789
think that's going to help tremendously

1228
00:45:43,429 --> 00:45:41,459
in in educating and helping folks

1229
00:45:46,279 --> 00:45:43,439
understand what we're doing and why

1230
00:45:48,589 --> 00:45:46,289
we're doing it and I think also there's

1231
00:45:50,089 --> 00:45:48,599
a piece of it that you know we've got a

1232
00:45:52,159 --> 00:45:50,099
lot of detailed plans that we've been

1233
00:45:54,349 --> 00:45:52,169
working you know in-house quietly with

1234
00:45:56,479 --> 00:45:54,359
technical teams really building a pretty

1235
00:45:59,239 --> 00:45:56,489
strong strategy of how we go forward and

1236
00:46:01,519 --> 00:45:59,249
and they captured a vision of NASA that

1237
00:46:03,109 --> 00:46:01,529
was in the past with a different set of

1238
00:46:05,179 --> 00:46:03,119

teams and they haven't had the privilege

1239
00:46:06,559 --> 00:46:05,189
of being brought in and understanding

1240
00:46:08,119 --> 00:46:06,569
all the details that the technical

1241
00:46:10,459 --> 00:46:08,129
experts are working on a day to day

1242
00:46:11,959 --> 00:46:10,469
basis so we'll reach out to them and

1243
00:46:13,429 --> 00:46:11,969
make sure that we get the briefings to

1244
00:46:15,229 --> 00:46:13,439
them and they can understand what we're

1245
00:46:16,759 --> 00:46:15,239
doing we'll listen to their opinions

1246
00:46:19,099 --> 00:46:16,769
we'll see what makes sense if we miss

1247
00:46:21,079 --> 00:46:19,109
something I think when I grew up under

1248
00:46:23,389 --> 00:46:21,089
those those folks you mentioned those

1249
00:46:25,339 --> 00:46:23,399
are my teachers those are my mentors I

1250
00:46:28,249 --> 00:46:25,349
lived in houston with them I consider

1251
00:46:30,349 --> 00:46:28,259
all of them truly my mentors so i think

1252
00:46:31,610 --> 00:46:30,359
i've incorporated everything that they

1253
00:46:33,950 --> 00:46:31,620
bring to us and

1254
00:46:36,050 --> 00:46:33,960
terms of concerns I but I think we owe

1255
00:46:37,490 --> 00:46:36,060
them to show them technically what we've

1256
00:46:39,050 --> 00:46:37,500
done and how we're prepared to go

1257
00:46:40,850 --> 00:46:39,060
address these issues that they raised

1258
00:46:42,020 --> 00:46:40,860
and and I think after they see that I

1259
00:46:44,090 --> 00:46:42,030
think they'll come to an understanding

1260
00:46:45,710 --> 00:46:44,100
of where we're heading they may not

1261
00:46:47,420 --> 00:46:45,720
particularly like it because they want

1262
00:46:49,340 --> 00:46:47,430
to push into further direction they know

1263
00:46:51,470 --> 00:46:49,350

what this team is capable of they see

1264
00:46:53,990 --> 00:46:51,480
what we can go do and they want us to do

1265
00:46:55,730 --> 00:46:54,000
even more so they are pushing us as hard

1266
00:46:58,160 --> 00:46:55,740
as they can on the outside so a piece of

1267
00:47:00,050 --> 00:46:58,170
that is healthy to to have a good strong

1268
00:47:02,120 --> 00:47:00,060
debate that we can keep pushing and keep

1269
00:47:03,380 --> 00:47:02,130
trying to do more and then we are you

1270
00:47:05,240 --> 00:47:03,390
know this team is really ready to

1271
00:47:08,210 --> 00:47:05,250
execute whatever this nation wants this

1272
00:47:12,380 --> 00:47:08,220
this team to go do this this team can go

1273
00:47:15,110 --> 00:47:12,390
execute todd halvorson todd halvorson of

1274
00:47:18,590 --> 00:47:15,120
florida today for bill or mike maybe

1275
00:47:21,290 --> 00:47:18,600
mike moses with the end of the shuttle

1276
00:47:25,880 --> 00:47:21,300
program and maybe more specifically to

1277
00:47:29,540 --> 00:47:25,890
the end of ISS assembly I'm wondering if

1278
00:47:36,080 --> 00:47:29,550
either of you see this as an end of a

1279
00:47:38,270 --> 00:47:36,090
golden era in space walking yeah I don't

1280
00:47:41,930 --> 00:47:38,280
see it really as an end i see it really

1281
00:47:44,840 --> 00:47:41,940
is a it's a transition right you know

1282
00:47:47,000 --> 00:47:44,850
and unfortunately sometimes we can't do

1283
00:47:49,220 --> 00:47:47,010
you know we say we can multitask right

1284
00:47:51,800 --> 00:47:49,230
is a people but sometimes we can't

1285
00:47:53,120 --> 00:47:51,810
multitask as well as we think we can you

1286
00:47:55,310 --> 00:47:53,130
know you feel like you're multitasking

1287
00:47:57,470 --> 00:47:55,320
but are you really as efficient as you

1288
00:47:58,880 --> 00:47:57,480

were or you just doing three things that

1289
00:47:59,990 --> 00:47:58,890
actually take you longer than if you

1290
00:48:03,140 --> 00:48:00,000
would have done those three things

1291
00:48:05,780 --> 00:48:03,150
individually right so so in a way we had

1292
00:48:08,270 --> 00:48:05,790
to really quit assembly to really get

1293
00:48:10,220 --> 00:48:08,280
focused on this research page pace and

1294
00:48:11,750 --> 00:48:10,230
and to get this activity started and

1295
00:48:13,580 --> 00:48:11,760
we've got a nice window we've got a nice

1296
00:48:16,130 --> 00:48:13,590
nine year window where we can really

1297
00:48:17,930 --> 00:48:16,140
concentrate on this space research and

1298
00:48:19,280 --> 00:48:17,940
then that shows that there's potentially

1299
00:48:21,320 --> 00:48:19,290
in economic market there's now

1300
00:48:23,690 --> 00:48:21,330
potentially a commercial application for

1301
00:48:25,490 --> 00:48:23,700
space that's not government-driven so

1302
00:48:27,440 --> 00:48:25,500
then there's a unique window here where

1303
00:48:29,270 --> 00:48:27,450
now it's not only individual governments

1304
00:48:31,700 --> 00:48:29,280
pushing us into space but now there's a

1305
00:48:34,190 --> 00:48:31,710
real commercial pull toward space and

1306
00:48:36,830 --> 00:48:34,200
that can really springboard us and move

1307
00:48:38,900 --> 00:48:36,840
us in big directions so I don't see this

1308
00:48:41,210 --> 00:48:38,910
necessarily as an end but I see this as

1309
00:48:42,500 --> 00:48:41,220
a transition into another era and at the

1310
00:48:44,460 --> 00:48:42,510
same time we're going to be doing the

1311
00:48:46,560 --> 00:48:44,470
ISS research we're going to be building

1312
00:48:49,200 --> 00:48:46,570
the heavy-lift launch vehicle the

1313
00:48:50,970 --> 00:48:49,210

capsule we talked about the Ryan MPCV

1314
00:48:52,770 --> 00:48:50,980
that's going to allow us to get beyond

1315
00:48:54,810 --> 00:48:52,780
low-earth orbit to go push those

1316
00:48:56,790 --> 00:48:54,820
boundaries to really challenge us as a

1317
00:48:59,790 --> 00:48:56,800
human race to go out and explore with

1318
00:49:02,339 --> 00:48:59,800
humans to new destinations so so I don't

1319
00:49:04,560 --> 00:49:02,349
see this as an as an end of the golden

1320
00:49:06,540 --> 00:49:04,570
era I see this as a chance we can

1321
00:49:08,400 --> 00:49:06,550
leverage off of what we've got now and

1322
00:49:10,920 --> 00:49:08,410
really push it in new directions and

1323
00:49:13,230 --> 00:49:10,930
it's up to us to make sure we explain as

1324
00:49:16,170 --> 00:49:13,240
best we can to the broader community the

1325
00:49:18,030 --> 00:49:16,180
non space folks why we are doing what we

1326
00:49:20,520 --> 00:49:18,040
are doing why have we dedicated our

1327
00:49:22,320 --> 00:49:20,530
lives to this why are we doing all the

1328
00:49:24,420 --> 00:49:22,330
activities we have done we need to

1329
00:49:26,250 --> 00:49:24,430
convey to them that excitement in this

1330
00:49:27,960 --> 00:49:26,260
small window so they can get excited

1331
00:49:31,470 --> 00:49:27,970
with this and then move with us into

1332
00:49:34,260 --> 00:49:31,480
this next phase of spaceflight Ralph

1333
00:49:37,080 --> 00:49:34,270
Thank You Ralph are debating in LA times

1334
00:49:39,089 --> 00:49:37,090
less question as a lot of federal

1335
00:49:40,770 --> 00:49:39,099
agencies have gone through ends of eras

1336
00:49:44,250 --> 00:49:40,780
of very technically sophisticated

1337
00:49:45,870 --> 00:49:44,260
programs and have worried about the loss

1338
00:49:48,330 --> 00:49:45,880

and atrophy of the know-how and

1339
00:49:49,770 --> 00:49:48,340
knowledge that extended back decades I

1340
00:49:51,210 --> 00:49:49,780
mean I just want and they've gone

1341
00:49:53,579 --> 00:49:51,220
through processes of formally

1342
00:49:55,200 --> 00:49:53,589
documenting that technology and

1343
00:49:57,089 --> 00:49:55,210
knowledge and I'm just wondering now at

1344
00:50:00,150 --> 00:49:57,099
the end of the the shuttle era whether

1345
00:50:02,130 --> 00:50:00,160
you're concerned about preserving and

1346
00:50:04,589 --> 00:50:02,140
being able to tap all of the knowledge

1347
00:50:06,540 --> 00:50:04,599
the manufacturing art the operational

1348
00:50:07,859 --> 00:50:06,550
knowledge that you bring to this table

1349
00:50:10,200 --> 00:50:07,869
and how you're doing it and whether

1350
00:50:12,300 --> 00:50:10,210
you're concerned about it thank you we

1351
00:50:15,450 --> 00:50:12,310
have a pretty extensive lessons learned

1352
00:50:17,490 --> 00:50:15,460
program where we try to document exactly

1353
00:50:19,349 --> 00:50:17,500
you know what we've done we do it

1354
00:50:21,930 --> 00:50:19,359
through video archives we have a

1355
00:50:23,820 --> 00:50:21,940
database that searchable we have all

1356
00:50:25,950 --> 00:50:23,830
kinds of multimedia activities to try to

1357
00:50:28,320 --> 00:50:25,960
capture the knowledge but then I think

1358
00:50:29,760 --> 00:50:28,330
another really effective way to transfer

1359
00:50:31,950 --> 00:50:29,770
that knowledge is to move some of the

1360
00:50:33,720 --> 00:50:31,960
people from one activity or one program

1361
00:50:35,490 --> 00:50:33,730
to that next program so they can take

1362
00:50:37,530 --> 00:50:35,500
the actual lessons that they have

1363
00:50:39,540 --> 00:50:37,540

learned and applied themselves and they

1364
00:50:41,940 --> 00:50:39,550
get to then go apply to the new program

1365
00:50:45,000 --> 00:50:41,950
you know if you look at it our history

1366
00:50:46,859 --> 00:50:45,010
you know a lot of the the ISS team came

1367
00:50:48,540 --> 00:50:46,869
from the shuttle program so they got to

1368
00:50:50,250 --> 00:50:48,550
take all those hard lessons they learned

1369
00:50:52,020 --> 00:50:50,260
in the shuttle program that are really

1370
00:50:53,250 --> 00:50:52,030
internal lessons now that you're not

1371
00:50:54,750 --> 00:50:53,260
going to read in a book or you don't

1372
00:50:56,170 --> 00:50:54,760
have to search in a database and they

1373
00:50:58,540 --> 00:50:56,180
can actually apply them and then

1374
00:51:00,309 --> 00:50:58,550
application so as we knew that do the

1375
00:51:02,440 --> 00:51:00,319
new designs of these launch pads we knew

1376
00:51:04,210 --> 00:51:02,450
that do the new designs of the new

1377
00:51:05,890 --> 00:51:04,220
launch vehicles we're going to try to

1378
00:51:07,599 --> 00:51:05,900
capture and move people that have

1379
00:51:09,130 --> 00:51:07,609
experience in the shuttle world into

1380
00:51:11,349 --> 00:51:09,140
those areas so they can directly apply

1381
00:51:12,339 --> 00:51:11,359
the knowledge and the skills that

1382
00:51:15,750 --> 00:51:12,349
they've learned in the shuttle program

1383
00:51:17,799 --> 00:51:15,760
to the new new activities going forward

1384
00:51:19,390 --> 00:51:17,809
you're not really concerned that you're

1385
00:51:21,579 --> 00:51:19,400
going to have any atrophy or loss of

1386
00:51:23,349 --> 00:51:21,589
knowledge I think I'm concerned I mean

1387
00:51:25,000 --> 00:51:23,359
we need to watch out for that right but

1388
00:51:27,339 --> 00:51:25,010

what I've described to you is the way

1389
00:51:29,049 --> 00:51:27,349
we're going to try to prevent that so so

1390
00:51:30,700 --> 00:51:29,059
I think it's it's naive to say we've got

1391
00:51:32,620 --> 00:51:30,710
it well in hand because this is a very

1392
00:51:34,960 --> 00:51:32,630
difficult thing to do to how you capture

1393
00:51:36,490 --> 00:51:34,970
this knowledge and how you pass it on we

1394
00:51:37,960 --> 00:51:36,500
are trying our best with all the right

1395
00:51:40,450 --> 00:51:37,970
experts and all these techniques I

1396
00:51:41,890 --> 00:51:40,460
described to make sure we go do it time

1397
00:51:44,230 --> 00:51:41,900
will tell how well we've done it but I

1398
00:51:45,790 --> 00:51:44,240
think it's critical for us to try to

1399
00:51:48,420 --> 00:51:45,800
make that move and make sure we capture

1400
00:51:54,430 --> 00:51:48,430
but it will not be easy for us to do

1401
00:51:56,680 --> 00:51:54,440
okay they would like to see Mike's

1402
00:51:58,359 --> 00:51:56,690
Atlantis sash one more time and while

1403
00:51:59,290 --> 00:51:58,369
Mike you're displaying that I just want

1404
00:52:01,480 --> 00:51:59,300
to let everyone know we're going to

1405
00:52:04,839 --> 00:52:01,490
close today by replaying another launch

1406
00:52:06,670 --> 00:52:04,849
of Atlantis on television for you we

1407
00:52:08,650 --> 00:52:06,680
also will be replaying a very special

1408
00:52:10,480 --> 00:52:08,660
farewell tribute video from the closeout

1409
00:52:12,460 --> 00:52:10,490
crew before they broke down the white

1410
00:52:13,690 --> 00:52:12,470
room for the last time then we'll turn

1411
00:52:16,150 --> 00:52:13,700
things back to Mission Control in

1412
00:52:18,220 --> 00:52:16,160
Houston for sts-135 continuous coverage

1413
00:52:23,500 --> 00:52:18,230

you can keep up with the entire mission

1414
00:52:35,329 --> 00:52:23,510
at WWDC gov / shuttle now we'll roll

1415
00:52:46,530 --> 00:52:42,420
k7 all three engines up and burning two

1416
00:52:49,109 --> 00:52:46,540
one zero and liftoff the final liftoff

1417
00:52:55,450 --> 00:52:49,119
of Atlantis shoulders of the Space

1418
00:52:59,430 --> 00:52:57,410
with

1419
00:53:01,650 --> 00:52:59,440
Houston now controlling the flight of

1420
00:53:04,020 --> 00:53:01,660
Atlantis you know space shuttle spreads

1421
00:53:08,610 --> 00:53:04,030
and one final time to start the