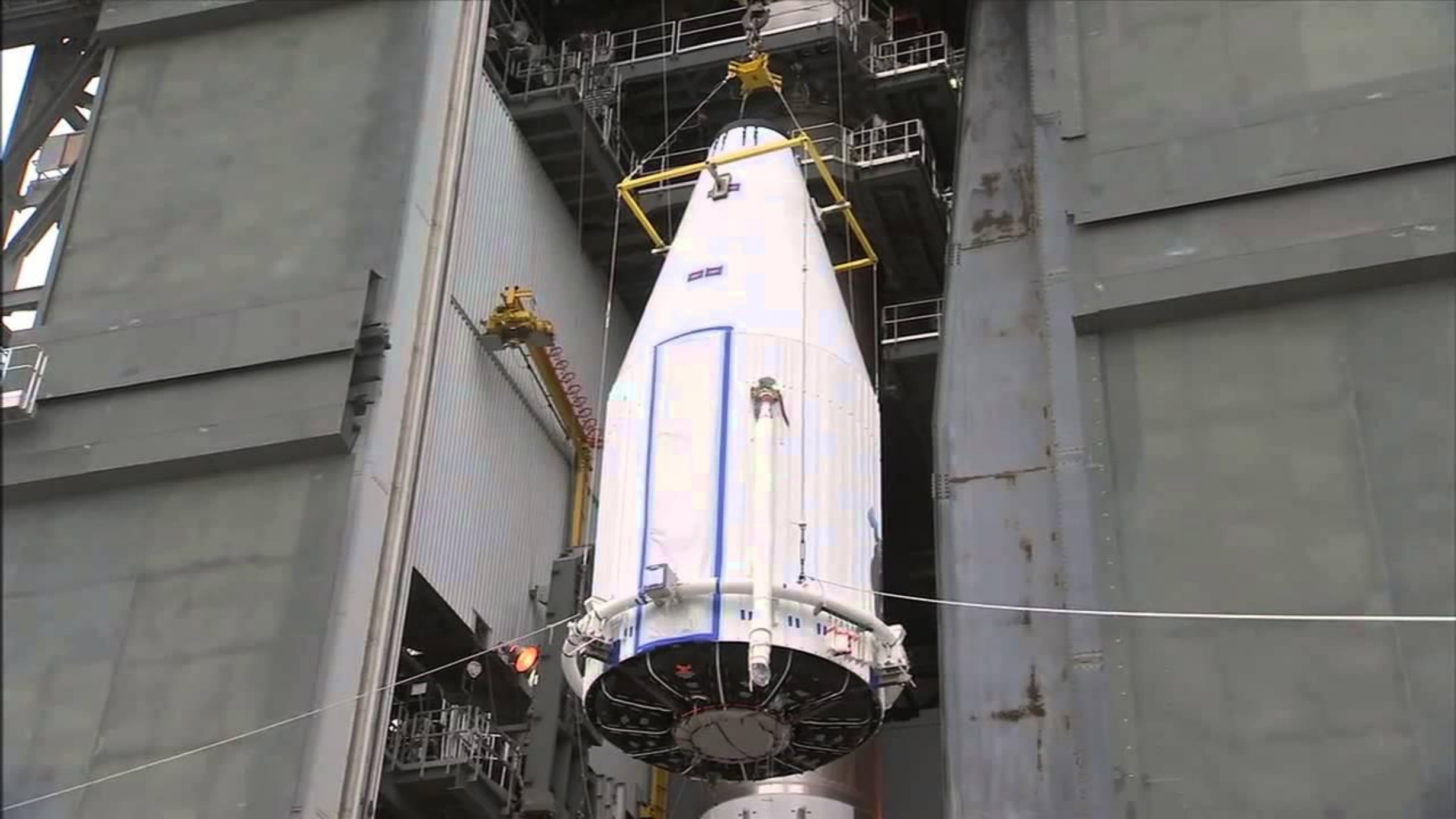

1
00:00:08,629 --> 00:00:05,510
good afternoon everyone this is the

2
00:00:12,310 --> 00:00:08,639
pre-launch news conference for tdrs-k

3
00:00:14,709 --> 00:00:12,320
nasa's tracking and data relay satellite

4
00:00:16,870 --> 00:00:14,719
to be launched on wednesday aboard an

5
00:00:19,510 --> 00:00:16,880
atlas v rocket

6
00:00:21,189 --> 00:00:19,520
built by united launch alliance

7
00:00:23,750 --> 00:00:21,199
and in our briefing today our

8
00:00:26,950 --> 00:00:23,760
participants leading off will be madre

9
00:00:29,429 --> 00:00:26,960
yunus the deputy associate administrator

10
00:00:33,510 --> 00:00:29,439
for space communications and navigation

11
00:00:40,869 --> 00:00:36,470
tim dunn the nasa launch director from

12
00:00:44,470 --> 00:00:43,110
vernon thorpe the program manager for

13
00:00:46,389 --> 00:00:44,480

nasa missions

14
00:00:49,590 --> 00:00:46,399
from united launch alliance

15
00:00:53,990 --> 00:00:51,189
jeffrey gramling

16
00:00:56,830 --> 00:00:54,000
the nasa tdrs-k project manager from

17
00:00:59,830 --> 00:00:56,840
goddard space flight

18
00:01:01,830 --> 00:00:59,840
center and joel tumbiolo the launch

19
00:01:03,910 --> 00:01:01,840
weather officer from the 45th weather

20
00:01:05,590 --> 00:01:03,920
squadron at cape canaveral air force

21
00:01:07,190 --> 00:01:05,600
station

22
00:01:10,710 --> 00:01:07,200
and we'll begin our briefing with

23
00:01:13,190 --> 00:01:10,720
opening remarks from padre eunice badmi

24
00:01:15,190 --> 00:01:13,200
thank you george um

25
00:01:15,990 --> 00:01:15,200
i would like to mention that there are

26
00:01:18,149 --> 00:01:16,000
two

27
00:01:19,990 --> 00:01:18,159
critical functions and essential

28
00:01:22,230 --> 00:01:20,000
functions without which

29
00:01:24,870 --> 00:01:22,240
space exploration and all kind of

30
00:01:27,109 --> 00:01:24,880
science that we do in space

31
00:01:28,870 --> 00:01:27,119
wouldn't have been possible these are

32
00:01:30,230 --> 00:01:28,880
the launch services

33
00:01:32,550 --> 00:01:30,240
and the space communication and

34
00:01:34,230 --> 00:01:32,560
navigations these two functions if you

35
00:01:37,910 --> 00:01:34,240
don't if you don't have and you don't

36
00:01:40,550 --> 00:01:37,920
perform them successfully you cannot do

37
00:01:42,950 --> 00:01:40,560
any science or human exploration

38
00:01:45,350 --> 00:01:42,960

in space

39
00:01:46,389 --> 00:01:45,360
space communication navigation

40
00:01:48,789 --> 00:01:46,399
scan

41
00:01:51,350 --> 00:01:48,799
is the program office at headquarter

42
00:01:53,270 --> 00:01:51,360
responsible for all nasa space

43
00:01:55,350 --> 00:01:53,280
communication navigations

44
00:01:57,350 --> 00:01:55,360
i'm the deputy associate administrator

45
00:01:58,310 --> 00:01:57,360
and i'm also the program manager for

46
00:02:00,389 --> 00:01:58,320
scam

47
00:02:02,870 --> 00:02:00,399
i have few slides to show you to explain

48
00:02:05,429 --> 00:02:02,880
a little bit about our program and the

49
00:02:07,590 --> 00:02:05,439
value we add we add to the nation

50
00:02:10,630 --> 00:02:07,600
first slide

51
00:02:15,510 --> 00:02:12,070
scan is a

52
00:02:17,589 --> 00:02:15,520
very intricate and complex

53
00:02:20,150 --> 00:02:17,599
program

54
00:02:21,910 --> 00:02:20,160
we have assets all over the world

55
00:02:24,630 --> 00:02:21,920
providing

56
00:02:28,869 --> 00:02:24,640
communication and navigation services to

57
00:02:32,070 --> 00:02:28,879
a whole wide variety of space users

58
00:02:33,910 --> 00:02:32,080
and they can vary from sub-orbital users

59
00:02:37,110 --> 00:02:33,920
all the way to users who are now

60
00:02:39,430 --> 00:02:37,120
presently crisscrossing the boundaries

61
00:02:41,190 --> 00:02:39,440
of our solar systems

62
00:02:44,229 --> 00:02:41,200
we have three separate networks that

63
00:02:46,470 --> 00:02:44,239

have evolved independently over time

64
00:02:48,869 --> 00:02:46,480
catering to the specific needs of the

65
00:02:50,949 --> 00:02:48,879
various missions these are

66
00:02:53,030 --> 00:02:50,959
the near earth network

67
00:02:55,509 --> 00:02:53,040
the deep space network

68
00:02:58,390 --> 00:02:55,519
and the space network

69
00:03:02,470 --> 00:02:59,830
at any day

70
00:03:04,550 --> 00:03:02,480
we support over a hundred mission

71
00:03:06,390 --> 00:03:04,560
any anything you see uh coming from

72
00:03:08,390 --> 00:03:06,400
space has to go through us has to be

73
00:03:10,229 --> 00:03:08,400
enabled by by us

74
00:03:13,110 --> 00:03:10,239
and these are the kind of missions you

75
00:03:15,509 --> 00:03:13,120
know uh coded per the network

76
00:03:18,470 --> 00:03:15,519
uh that provide that support

77
00:03:21,910 --> 00:03:18,480
uh sometime two networks may be

78
00:03:24,949 --> 00:03:21,920
providing support to the same mission

79
00:03:29,830 --> 00:03:24,959
and i will talk about the specific

80
00:03:37,430 --> 00:03:31,110
the

81
00:03:39,270 --> 00:03:37,440
space flight as well to robotic missions

82
00:03:42,070 --> 00:03:39,280
whether you are doing astrophysics

83
00:03:45,190 --> 00:03:42,080
heliophysics whether you are doing space

84
00:03:47,990 --> 00:03:45,200
research in general earth exploration

85
00:03:51,350 --> 00:03:48,000
science it has to go and it will go and

86
00:03:53,670 --> 00:03:51,360
it's all enabled by scan

87
00:03:56,309 --> 00:03:53,680
next slide

88
00:03:57,910 --> 00:03:56,319

the deep space network essentially

89
00:04:01,110 --> 00:03:57,920
supports

90
00:04:02,550 --> 00:04:01,120
users that are far away from earth

91
00:04:04,309 --> 00:04:02,560
and

92
00:04:06,470 --> 00:04:04,319
their main characteristic is that they

93
00:04:08,309 --> 00:04:06,480
look and they have been designed to look

94
00:04:10,390 --> 00:04:08,319
for faint signal

95
00:04:12,630 --> 00:04:10,400
imagine a user having a 100 watt

96
00:04:15,589 --> 00:04:12,640
transmitter what's 100 watt

97
00:04:17,509 --> 00:04:15,599
like a light bulb you have in your home

98
00:04:20,229 --> 00:04:17,519
the further you go away the less you can

99
00:04:22,550 --> 00:04:20,239
see it imagine you are yourself billions

100
00:04:24,629 --> 00:04:22,560
of miles away

101
00:04:27,749 --> 00:04:24,639
we have the kind of capabilities

102
00:04:28,629 --> 00:04:27,759
antennas that can detect these signals

103
00:04:31,590 --> 00:04:28,639
and

104
00:04:32,950 --> 00:04:31,600
bring it back to the user to make sense

105
00:04:34,950 --> 00:04:32,960
out of it

106
00:04:36,950 --> 00:04:34,960
the near-earth network essentially

107
00:04:38,629 --> 00:04:36,960
caters to missions that are flying

108
00:04:40,629 --> 00:04:38,639
around earth

109
00:04:41,590 --> 00:04:40,639
they are primarily earth exploration

110
00:04:44,469 --> 00:04:41,600
system

111
00:04:45,350 --> 00:04:44,479
studying uh the the the weather study in

112
00:04:48,710 --> 00:04:45,360
uh

113
00:04:52,390 --> 00:04:48,720

interest

114
00:04:53,270 --> 00:04:52,400
to us on earth about you know drought

115
00:04:56,950 --> 00:04:53,280
about

116
00:04:57,830 --> 00:04:56,960
we do on earth

117
00:05:03,430 --> 00:04:57,840
and

118
00:05:05,430 --> 00:05:03,440
an example of efficiency because

119
00:05:07,670 --> 00:05:05,440
we do rely on

120
00:05:11,110 --> 00:05:07,680
on a hybrid model where in addition to

121
00:05:13,430 --> 00:05:11,120
the nasa assets we get also support from

122
00:05:15,430 --> 00:05:13,440
commercially provided

123
00:05:16,710 --> 00:05:15,440
services

124
00:05:18,790 --> 00:05:16,720
the space

125
00:05:20,070 --> 00:05:18,800
network is the newest of the all of the

126
00:05:22,629 --> 00:05:20,080
networks

127
00:05:25,749 --> 00:05:22,639
and it has evolved over time

128
00:05:29,430 --> 00:05:25,759
based on need and need to provide near

129
00:05:31,110 --> 00:05:29,440
real-time communication to our users

130
00:05:33,430 --> 00:05:31,120
you know as you go

131
00:05:35,110 --> 00:05:33,440
in space the further you go

132
00:05:36,230 --> 00:05:35,120
the more visibility you have to the

133
00:05:37,990 --> 00:05:36,240
earth

134
00:05:39,510 --> 00:05:38,000
but for those missions who are flying

135
00:05:41,430 --> 00:05:39,520
very near earth

136
00:05:42,390 --> 00:05:41,440
you know because they go over ocean and

137
00:05:44,070 --> 00:05:42,400
land

138
00:05:45,189 --> 00:05:44,080

it's tough to provide continuous

139
00:05:48,150 --> 00:05:45,199
coverage

140
00:05:51,189 --> 00:05:48,160
i i can give you an example

141
00:05:54,390 --> 00:05:53,029
the space network before getting into

142
00:05:56,550 --> 00:05:54,400
the example

143
00:05:59,510 --> 00:05:56,560
uh out of uh

144
00:06:02,790 --> 00:05:59,520
nine spacecraft we had an orbit

145
00:06:04,710 --> 00:06:02,800
we only have uh seven who have survived

146
00:06:07,029 --> 00:06:04,720
the two spacecraft that has

147
00:06:09,110 --> 00:06:07,039
that have been retired recently

148
00:06:12,469 --> 00:06:09,120
although they have outlived their uh

149
00:06:13,270 --> 00:06:12,479
expected life expect life expectancy

150
00:06:16,150 --> 00:06:13,280
uh

151
00:06:18,390 --> 00:06:16,160
they they they they failed

152
00:06:21,350 --> 00:06:18,400
and so we had to put them in a

153
00:06:23,590 --> 00:06:21,360
retirement home in a in an orbit far

154
00:06:25,510 --> 00:06:23,600
away from our up you know our

155
00:06:28,950 --> 00:06:25,520
uh operating orbit

156
00:06:31,510 --> 00:06:28,960
and uh we continue to rely on the

157
00:06:34,070 --> 00:06:31,520
remaining spacecraft but many of them

158
00:06:35,990 --> 00:06:34,080
are getting old and they need to to

159
00:06:38,230 --> 00:06:36,000
refurnish you know

160
00:06:41,350 --> 00:06:38,240
so uh that's why we will be flying the

161
00:06:45,029 --> 00:06:41,360
tdrs-k and the following tdrs

162
00:06:46,950 --> 00:06:45,039
uh uh next space and next uh chart

163
00:06:50,309 --> 00:06:46,960

uh operationally

164
00:06:51,189 --> 00:06:50,319
we need seven uh spacecraft

165
00:06:54,150 --> 00:06:51,199
six

166
00:06:57,430 --> 00:06:54,160
uh operational and one hot spare just in

167
00:06:59,110 --> 00:06:57,440
case one fails we're we we move it there

168
00:07:01,990 --> 00:06:59,120
and we'll continue the support to our

169
00:07:03,430 --> 00:07:02,000
users but the concept started in the in

170
00:07:05,270 --> 00:07:03,440
the 70s

171
00:07:06,309 --> 00:07:05,280
for the space network

172
00:07:11,990 --> 00:07:06,319
where

173
00:07:15,110 --> 00:07:13,189
sorry about that

174
00:07:18,309 --> 00:07:15,120
in order to continue to provide

175
00:07:20,150 --> 00:07:18,319
continuous coverage we had to

176
00:07:21,749 --> 00:07:20,160
move away from the old model where we

177
00:07:23,110 --> 00:07:21,759
had so many stations distributed

178
00:07:25,670 --> 00:07:23,120
worldwide

179
00:07:26,629 --> 00:07:25,680
along with ships and airplanes the cost

180
00:07:31,830 --> 00:07:26,639
was

181
00:07:33,029 --> 00:07:31,840
additionally it only provided 15 percent

182
00:07:34,950 --> 00:07:33,039
coverage

183
00:07:36,950 --> 00:07:34,960
we could do more so we came up with the

184
00:07:40,309 --> 00:07:36,960
concept that it took us a while to

185
00:07:41,350 --> 00:07:40,319
implement it in the 80s where the the

186
00:07:48,469 --> 00:07:41,360
the

187
00:07:50,390 --> 00:07:48,479
satellite in a geosynchronous orbit

188
00:07:51,270 --> 00:07:50,400

looking down on earth we were able to

189
00:07:54,469 --> 00:07:51,280
see

190
00:07:55,510 --> 00:07:54,479
you know much of the activities down on

191
00:07:57,110 --> 00:07:55,520
under the

192
00:07:58,869 --> 00:07:57,120
synchronous orbit

193
00:08:02,790 --> 00:07:58,879
and

194
00:08:05,749 --> 00:08:02,800
moving away from the dangerous situation

195
00:08:08,790 --> 00:08:05,759
where we had to operate previously in

196
00:08:12,150 --> 00:08:08,800
dangerous uh part of the world the jew

197
00:08:14,869 --> 00:08:12,160
political situation you know was such

198
00:08:17,110 --> 00:08:14,879
that you know that the cost was high and

199
00:08:18,710 --> 00:08:17,120
there were danger associated with a

200
00:08:20,230 --> 00:08:18,720
caption that mission provided that

201
00:08:22,950 --> 00:08:20,240
support

202
00:08:27,110 --> 00:08:25,510
so uh we kept on evolving the network

203
00:08:28,390 --> 00:08:27,120
and we added

204
00:08:31,749 --> 00:08:28,400
another

205
00:08:33,350 --> 00:08:31,759
capability to close a zone of exclusion

206
00:08:35,670 --> 00:08:33,360
although with two spacecraft you can see

207
00:08:37,350 --> 00:08:35,680
most of earth's there was a small sliver

208
00:08:39,829 --> 00:08:37,360
that you could not see

209
00:08:44,149 --> 00:08:39,839
and that was about 15 percent of

210
00:08:45,269 --> 00:08:44,159
coverage for altitude below 50 1200 uh

211
00:08:47,750 --> 00:08:45,279
kilometer

212
00:08:50,470 --> 00:08:47,760
by putting another station at

213
00:08:52,230 --> 00:08:50,480

guam we are able to close that

214
00:08:55,110 --> 00:08:52,240
zone of exclusion

215
00:08:57,269 --> 00:08:55,120
the success we had was with tdrs you

216
00:08:59,269 --> 00:08:57,279
know made everyone come to us for

217
00:09:01,430 --> 00:08:59,279
support you know all of the nasa mission

218
00:09:03,350 --> 00:09:01,440
wanted to be supported by theatres at

219
00:09:05,110 --> 00:09:03,360
the beginning we wanted it to be

220
00:09:07,269 --> 00:09:05,120
to cater to those who required near

221
00:09:09,910 --> 00:09:07,279
real-time support such as the human

222
00:09:11,990 --> 00:09:09,920
space flight but when they when all of

223
00:09:13,910 --> 00:09:12,000
the other users saw the value

224
00:09:17,110 --> 00:09:13,920
our requirements started to increase and

225
00:09:19,590 --> 00:09:17,120
we had to add more spacecrafts

226
00:09:21,670 --> 00:09:19,600
next slide

227
00:09:22,389 --> 00:09:21,680
that's what the example i was referring

228
00:09:24,949 --> 00:09:22,399
to

229
00:09:26,790 --> 00:09:24,959
as you can tell without a theatre

230
00:09:29,350 --> 00:09:26,800
the green area the green spots that you

231
00:09:31,590 --> 00:09:29,360
see are the only coverage areas the rest

232
00:09:34,150 --> 00:09:31,600
of the time you know

233
00:09:35,110 --> 00:09:34,160
the spacecraft was in the dark you know

234
00:09:37,110 --> 00:09:35,120
was

235
00:09:38,870 --> 00:09:37,120
we couldn't communicate

236
00:09:41,829 --> 00:09:38,880
with it now with the addition of

237
00:09:45,030 --> 00:09:41,839
theaters text slide

238
00:09:46,310 --> 00:09:45,040

we provided that hundred percent uh

239
00:09:48,550 --> 00:09:46,320
coverage

240
00:09:51,750 --> 00:09:48,560
next slide

241
00:09:54,470 --> 00:09:51,760
again our need is uh based on

242
00:09:57,190 --> 00:09:54,480
on the requirements that we have uh that

243
00:09:59,110 --> 00:09:57,200
are requiring the seventh spacecraft and

244
00:10:01,269 --> 00:09:59,120
we will keep on

245
00:10:03,509 --> 00:10:01,279
furnishing new spacecraft to replace

246
00:10:05,590 --> 00:10:03,519
failed one

247
00:10:08,470 --> 00:10:05,600
and we expect that need

248
00:10:13,110 --> 00:10:08,480
the requirement to to go uh to go down

249
00:10:15,829 --> 00:10:13,120
um between uh you know starting in 2016

250
00:10:18,230 --> 00:10:15,839
but uh you know we see more spacecraft

251
00:10:20,150 --> 00:10:18,240
failing but

252
00:10:22,310 --> 00:10:20,160
we most probably will be moving from a

253
00:10:24,710 --> 00:10:22,320
space seven spacecraft operation to a

254
00:10:26,870 --> 00:10:24,720
five spacecraft operation based on the

255
00:10:28,630 --> 00:10:26,880
requirements that we'll be having

256
00:10:30,550 --> 00:10:28,640
uh in the future

257
00:10:33,829 --> 00:10:30,560
and we don't see any need to any

258
00:10:35,829 --> 00:10:33,839
spacecraft beyond k and l and m that we

259
00:10:38,710 --> 00:10:35,839
are launching over the next few years

260
00:10:41,910 --> 00:10:38,720
until 2022 we are doing reliability

261
00:10:43,670 --> 00:10:41,920
modeling now to see how soon do we need

262
00:10:45,269 --> 00:10:43,680
to build the next generation of data

263
00:10:46,550 --> 00:10:45,279

relay satellites

264
00:10:48,630 --> 00:10:46,560
next slide

265
00:10:50,470 --> 00:10:48,640
again all of the beautiful images

266
00:10:51,990 --> 00:10:50,480
whether you are looking deep into space

267
00:10:53,030 --> 00:10:52,000
trying to discover the origin of the

268
00:10:56,310 --> 00:10:53,040
universe

269
00:10:59,190 --> 00:10:56,320
looking at the the galaxies or looking

270
00:11:00,949 --> 00:10:59,200
at earth you know trying to see the

271
00:11:02,710 --> 00:11:00,959
trend in the weather and the changes

272
00:11:03,829 --> 00:11:02,720
that are taking place

273
00:11:05,990 --> 00:11:03,839
looking at

274
00:11:07,350 --> 00:11:06,000
also providing support to the to the

275
00:11:09,269 --> 00:11:07,360
space station

276
00:11:10,790 --> 00:11:09,279
all of the voice and the data and the

277
00:11:13,590 --> 00:11:10,800
video that you are getting that go

278
00:11:15,750 --> 00:11:13,600
through scan without which

279
00:11:17,430 --> 00:11:15,760
you you know if scan didn't exist you

280
00:11:20,230 --> 00:11:17,440
wouldn't see any of the things that you

281
00:11:23,110 --> 00:11:20,240
are seeing science couldn't be performed

282
00:11:25,590 --> 00:11:23,120
as as we know it today probably nas you

283
00:11:27,829 --> 00:11:25,600
would have seen a different nasa if nasa

284
00:11:29,990 --> 00:11:27,839
could exist without

285
00:11:31,990 --> 00:11:30,000
next slide

286
00:11:33,990 --> 00:11:32,000
we have a lot more information on the

287
00:11:35,350 --> 00:11:34,000
website and it's given to you over there

288
00:11:37,430 --> 00:11:35,360

but i would be more than happy to take

289
00:11:39,670 --> 00:11:37,440
your questions later

290
00:11:42,470 --> 00:11:39,680
all right thank you pottery and now to

291
00:11:43,990 --> 00:11:42,480
our nasa launch director tim dunn tim

292
00:11:45,910 --> 00:11:44,000
thank you george

293
00:11:47,990 --> 00:11:45,920
i'm proud to be here today representing

294
00:11:50,230 --> 00:11:48,000
the men and women of nasa's launch

295
00:11:51,990 --> 00:11:50,240
services program and i'm thrilled to be

296
00:11:53,590 --> 00:11:52,000
the launch director for the tdrs-k

297
00:11:55,590 --> 00:11:53,600
mission

298
00:11:57,910 --> 00:11:55,600
as audrey mentioned the voice and data

299
00:12:00,069 --> 00:11:57,920
communications of tdrs constellation

300
00:12:02,230 --> 00:12:00,079
bring back to earth every day

301
00:12:04,949 --> 00:12:02,240
from the international space station the

302
00:12:07,590 --> 00:12:04,959
hubble space telescope and many of our

303
00:12:09,190 --> 00:12:07,600
nasa science spacecraft it touches each

304
00:12:11,430 --> 00:12:09,200
of our lives

305
00:12:13,750 --> 00:12:11,440
working alongside our united launch

306
00:12:16,790 --> 00:12:13,760
alliance colleagues the engineers and

307
00:12:18,710 --> 00:12:16,800
analysts of nasa lsp take great pride in

308
00:12:21,030 --> 00:12:18,720
reading tdrs k to join this

309
00:12:23,269 --> 00:12:21,040
constellation

310
00:12:24,550 --> 00:12:23,279
nasa has a terrific record flying on

311
00:12:26,310 --> 00:12:24,560
atlas v

312
00:12:27,990 --> 00:12:26,320
we've successfully launched seven

313
00:12:29,509 --> 00:12:28,000

missions on this rocket

314
00:12:30,550 --> 00:12:29,519
missions to pluto

315
00:12:32,389 --> 00:12:30,560
jupiter

316
00:12:34,870 --> 00:12:32,399
the moon the sun

317
00:12:36,389 --> 00:12:34,880
the radiation belts and two spacecraft

318
00:12:38,949 --> 00:12:36,399
to mars

319
00:12:42,230 --> 00:12:38,959
tdrs-k will be the eighth nasa mission

320
00:12:44,470 --> 00:12:42,240
on an atlas v and the 35th atlas 5

321
00:12:46,150 --> 00:12:44,480
overall

322
00:12:48,949 --> 00:12:46,160
tdrsk will launch

323
00:12:51,590 --> 00:12:48,959
on the atlas 5 401 configuration vehicle

324
00:12:54,150 --> 00:12:51,600
from space launch complex 41

325
00:12:57,110 --> 00:12:54,160
slick 41 is proud to have hosted 29

326
00:12:59,350 --> 00:12:57,120
atlas 5 launches to date

327
00:13:01,269 --> 00:12:59,360
now i'd like to show a video of the ula

328
00:13:03,990 --> 00:13:01,279
crew building up the atlas 5 launch

329
00:13:07,350 --> 00:13:04,000
vehicle and mating the tdrs-k spacecraft

330
00:13:10,230 --> 00:13:07,360
at slick 41. please roll the tape

331
00:13:12,870 --> 00:13:10,240
here's a nice shot of the mariner ship

332
00:13:15,269 --> 00:13:12,880
that transports hardware from the ula

333
00:13:17,110 --> 00:13:15,279
factory in decatur alabama this is a

334
00:13:20,470 --> 00:13:17,120
shot of the tdrs k

335
00:13:23,110 --> 00:13:20,480
second stage centaur being offloaded

336
00:13:25,030 --> 00:13:23,120
here at cape canaveral air force station

337
00:13:27,670 --> 00:13:25,040
and transported to the

338
00:13:30,550 --> 00:13:27,680

asoc for ground testing

339
00:13:33,430 --> 00:13:30,560
a beautiful shot of the antonov aircraft

340
00:13:35,910 --> 00:13:33,440
the antonov is used occasionally by ula

341
00:13:38,150 --> 00:13:35,920
to transport the rockets both the

342
00:13:41,110 --> 00:13:38,160
centaur and the first stage here you see

343
00:13:43,350 --> 00:13:41,120
the tdrs-k first stage being offloaded

344
00:13:45,509 --> 00:13:43,360
at the skid strip at cape canaveral air

345
00:13:48,870 --> 00:13:45,519
force station and being transported over

346
00:13:52,389 --> 00:13:48,880
to the same facility as centaur the asoc

347
00:13:54,230 --> 00:13:52,399
the atlas space flight operations center

348
00:13:56,389 --> 00:13:54,240
for ground testing

349
00:13:57,990 --> 00:13:56,399
here we are early on the morning of

350
00:14:01,829 --> 00:13:58,000
january 3rd

351
00:14:05,509 --> 00:14:01,839
in the fog out at the vif near slick 41

352
00:14:07,750 --> 00:14:05,519
erecting the first stage onto the mobile

353
00:14:09,509 --> 00:14:07,760
launch platform

354
00:14:12,069 --> 00:14:09,519
you see the

355
00:14:14,310 --> 00:14:12,079
professionals of united launch alliance

356
00:14:15,350 --> 00:14:14,320
connecting the overhead crane from the

357
00:14:17,590 --> 00:14:15,360
vif

358
00:14:19,110 --> 00:14:17,600
and putting the first stage booster in

359
00:14:21,590 --> 00:14:19,120
the vertical position

360
00:14:23,910 --> 00:14:21,600
you see the first stage engine there the

361
00:14:25,829 --> 00:14:23,920
rd amros

362
00:14:29,350 --> 00:14:25,839
rd-180 engine

363
00:14:33,189 --> 00:14:29,360

thrust of 861 thousand pounds

364
00:14:35,110 --> 00:14:33,199
being lowered down onto that mlp

365
00:14:37,189 --> 00:14:35,120
on saturday morning on the 5th of

366
00:14:39,269 --> 00:14:37,199
january we brought out the second stage

367
00:14:41,750 --> 00:14:39,279
the centaur

368
00:14:42,829 --> 00:14:41,760
rolled it from the asoc out to the fifth

369
00:14:45,590 --> 00:14:42,839
for a

370
00:14:47,750 --> 00:14:45,600
same erection activities as the first

371
00:14:48,790 --> 00:14:47,760
stage

372
00:14:50,870 --> 00:14:48,800
you'll see

373
00:14:52,389 --> 00:14:50,880
the erection sequence beginning here

374
00:14:54,710 --> 00:14:52,399
with the attachment

375
00:14:57,509 --> 00:14:54,720
and the second stage centaur is powered

376
00:15:02,069 --> 00:14:57,519
by the pratt whitney rocketdyne rl10

377
00:15:05,030 --> 00:15:02,079
engine with a thrust of 21 900 pounds

378
00:15:07,509 --> 00:15:05,040
you see it being carefully positioned

379
00:15:12,470 --> 00:15:07,519
onto the forward end of the first stage

380
00:15:17,829 --> 00:15:15,030
and here we are just over a week ago the

381
00:15:21,030 --> 00:15:17,839
early morning hours of january 20th the

382
00:15:23,670 --> 00:15:21,040
tdrs-k spacecraft encapsulated in its

383
00:15:25,509 --> 00:15:23,680
payload fairing left the astrotech

384
00:15:28,629 --> 00:15:25,519
payload processing facility in

385
00:15:31,509 --> 00:15:28,639
titusville and made its way out to slick

386
00:15:32,949 --> 00:15:31,519
41 at the vif for mate to the atlas v

387
00:15:34,870 --> 00:15:32,959
launch vehicle

388
00:15:37,030 --> 00:15:34,880

you see the encapsulated assembly being

389
00:15:41,990 --> 00:15:37,040
lowered down onto the forward end of

390
00:15:46,150 --> 00:15:44,069
the tdrs-k launch campaign has gone very

391
00:15:48,949 --> 00:15:46,160
well to date over the past week since

392
00:15:51,590 --> 00:15:48,959
that tdrs-k mate the atlas 5 team has

393
00:15:54,230 --> 00:15:51,600
been busy with launch preparations

394
00:15:56,470 --> 00:15:54,240
last tuesday on the 22nd of january we

395
00:15:58,710 --> 00:15:56,480
performed the final integrated systems

396
00:16:00,069 --> 00:15:58,720
test with the spacecraft and rocket

397
00:16:02,710 --> 00:16:00,079
together

398
00:16:04,550 --> 00:16:02,720
last thursday the combined nasa and ula

399
00:16:06,230 --> 00:16:04,560
launch team held the flight readiness

400
00:16:08,150 --> 00:16:06,240
review where we assessed the

401
00:16:10,949 --> 00:16:08,160
preparations and readiness of the atlas

402
00:16:13,030 --> 00:16:10,959
v vehicle range assets and the tdrs-k

403
00:16:15,110 --> 00:16:13,040
spacecraft

404
00:16:17,269 --> 00:16:15,120
last friday we performed a mission dress

405
00:16:19,030 --> 00:16:17,279
rehearsal to exercise and prepare the

406
00:16:22,389 --> 00:16:19,040
entire ula

407
00:16:24,389 --> 00:16:22,399
air force and nasa launch team

408
00:16:27,110 --> 00:16:24,399
this morning we conducted the launch

409
00:16:29,670 --> 00:16:27,120
readiness review for the tdrs-k mission

410
00:16:30,629 --> 00:16:29,680
senior managers from nasa kennedy space

411
00:16:35,749 --> 00:16:30,639
center

412
00:16:37,590 --> 00:16:35,759
and nasa headquarters as well as ula and

413
00:16:40,629 --> 00:16:37,600

the air force assess the readiness of

414
00:16:42,150 --> 00:16:40,639
the rocket the spacecraft and all range

415
00:16:44,389 --> 00:16:42,160
assets to proceed with launch on

416
00:16:46,230 --> 00:16:44,399
wednesday evening

417
00:16:48,310 --> 00:16:46,240
tomorrow we'll begin our final launch

418
00:16:51,110 --> 00:16:48,320
preparations at approximately 10 am

419
00:16:53,829 --> 00:16:51,120
eastern time by rolling the atlas 5

420
00:16:56,150 --> 00:16:53,839
vehicle on its mobile launch platform

421
00:16:57,749 --> 00:16:56,160
approximately one-quarter mile north

422
00:16:59,509 --> 00:16:57,759
from the fifth to the launch mount at

423
00:17:01,189 --> 00:16:59,519
slick41

424
00:17:03,350 --> 00:17:01,199
we'll then fill the first stage fuel

425
00:17:05,350 --> 00:17:03,360
tank with highly refined kerosene known

426
00:17:07,429 --> 00:17:05,360
as rp-1

427
00:17:09,590 --> 00:17:07,439
on wednesday the launch team will begin

428
00:17:11,429 --> 00:17:09,600
arriving on console in the afternoon

429
00:17:13,270 --> 00:17:11,439
hours eastern time

430
00:17:15,110 --> 00:17:13,280
the crew will perform all final

431
00:17:16,789 --> 00:17:15,120
preparations for vehicle power on and

432
00:17:20,069 --> 00:17:16,799
electrical checks beginning in the

433
00:17:21,829 --> 00:17:20,079
afternoon hours about 1 30 pm eastern

434
00:17:24,549 --> 00:17:21,839
we'll follow that later in the day about

435
00:17:26,549 --> 00:17:24,559
6 pm with cryogenic tanking of first

436
00:17:28,470 --> 00:17:26,559
stage liquid oxygen

437
00:17:31,590 --> 00:17:28,480
as well as the second stage centaur

438
00:17:33,669 --> 00:17:31,600

liquid oxygen and liquid hydrogen

439
00:17:35,830 --> 00:17:33,679
final engine sloughs will be performed

440
00:17:39,029 --> 00:17:35,840
after tanking and then will be ready for

441
00:17:41,350 --> 00:17:39,039
launch wednesday evening at 8 48 pm

442
00:17:43,110 --> 00:17:41,360
eastern time with a 40-minute launch

443
00:17:45,909 --> 00:17:43,120
window

444
00:17:48,310 --> 00:17:45,919
in summary the atlas v rocket and range

445
00:17:50,390 --> 00:17:48,320
equipment is ready and the combined

446
00:17:52,789 --> 00:17:50,400
government and contractor launch team is

447
00:17:55,350 --> 00:17:52,799
prepared and excited to launch this

448
00:17:56,789 --> 00:17:55,360
critical national asset the tedious case

449
00:18:00,150 --> 00:17:56,799
spacecraft

450
00:18:02,310 --> 00:18:00,160
back to you george thank you tim and now

451
00:18:03,909 --> 00:18:02,320
to vernon thorpe the program manager for

452
00:18:06,310 --> 00:18:03,919
nasa missions from united launch

453
00:18:08,150 --> 00:18:06,320
alliance vern

454
00:18:10,390 --> 00:18:08,160
hey thank you george

455
00:18:12,549 --> 00:18:10,400
ula is honored to be here today just two

456
00:18:13,590 --> 00:18:12,559
days from the launch of the tdrs-k

457
00:18:15,750 --> 00:18:13,600
satellite

458
00:18:17,590 --> 00:18:15,760
since we began building this vehicle in

459
00:18:19,430 --> 00:18:17,600
decatur alabama

460
00:18:21,190 --> 00:18:19,440
nearly two years ago and through all of

461
00:18:22,470 --> 00:18:21,200
the engineering the production and all

462
00:18:23,590 --> 00:18:22,480
of the processing down here at the

463
00:18:25,190 --> 00:18:23,600

launch site

464
00:18:27,909 --> 00:18:25,200
we worked with nasa and our other

465
00:18:30,870 --> 00:18:27,919
mission partners to get us to this point

466
00:18:33,110 --> 00:18:30,880
and on wednesday to a successful launch

467
00:18:36,390 --> 00:18:33,120
the vehicle that will launch tdrs-k was

468
00:18:38,070 --> 00:18:36,400
prepared in just 27 days

469
00:18:40,710 --> 00:18:38,080
from its arrival at cape canaveral air

470
00:18:43,110 --> 00:18:40,720
force station that's a record processing

471
00:18:45,270 --> 00:18:43,120
time for an atlas 5 vehicle

472
00:18:47,190 --> 00:18:45,280
when the atlas 5 program started a

473
00:18:49,909 --> 00:18:47,200
typical processing time was on the order

474
00:18:51,750 --> 00:18:49,919
of 60 to 90 days and as the team gained

475
00:18:54,870 --> 00:18:51,760
more experience we were able to get that

476
00:18:58,549 --> 00:18:54,880
down to as few as 44 days in the past

477
00:19:00,950 --> 00:18:58,559
the 40 reduction down to 27 days

478
00:19:02,710 --> 00:19:00,960
was possible due to the growing

479
00:19:04,150 --> 00:19:02,720
continued growing experience of our team

480
00:19:06,310 --> 00:19:04,160
and also the results of a major

481
00:19:09,190 --> 00:19:06,320
initiative in 2012

482
00:19:10,870 --> 00:19:09,200
to reduce processing time without adding

483
00:19:13,029 --> 00:19:10,880
any technical risk

484
00:19:15,350 --> 00:19:13,039
we called this initiative launch span

485
00:19:17,270 --> 00:19:15,360
reduction and it offers our customers

486
00:19:18,470 --> 00:19:17,280
added manifest flexibility to meet their

487
00:19:20,870 --> 00:19:18,480
schedules

488
00:19:22,630 --> 00:19:20,880

and it also offers additional launch

489
00:19:25,430 --> 00:19:22,640
opportunities to ensure that payloads

490
00:19:28,310 --> 00:19:25,440
can be launched on time and reliably in

491
00:19:30,150 --> 00:19:28,320
fact as a result of reducing our span

492
00:19:32,150 --> 00:19:30,160
times we were actually able to insert an

493
00:19:33,909 --> 00:19:32,160
additional mission into our 2013

494
00:19:37,430 --> 00:19:33,919
manifest

495
00:19:40,070 --> 00:19:37,440
tdrs-k will be the first of 13 ula

496
00:19:42,150 --> 00:19:40,080
launches planned in 2013.

497
00:19:44,710 --> 00:19:42,160
as tim mentioned it'll be the 35th atlas

498
00:19:47,669 --> 00:19:44,720
v mission it will also be the 67th

499
00:19:49,590 --> 00:19:47,679
mission that ula has flown to date

500
00:19:53,110 --> 00:19:49,600
this mission will be launched aboard an

501
00:19:55,029 --> 00:19:53,120
atlas 5 401 which uses the 4 meter

502
00:19:57,990 --> 00:19:55,039
metallic payload fairing

503
00:20:00,310 --> 00:19:58,000
it has a booster powered by an rd amros

504
00:20:01,909 --> 00:20:00,320
rd-180 engine and the centaur upper

505
00:20:05,029 --> 00:20:01,919
stage will have a single pratt whitney

506
00:20:07,190 --> 00:20:05,039
rocketdyne rl10a-4 engine

507
00:20:09,270 --> 00:20:07,200
this mission will not require the use of

508
00:20:11,190 --> 00:20:09,280
any solid rocket boosters

509
00:20:13,110 --> 00:20:11,200
and now i'd like to show an animation

510
00:20:17,110 --> 00:20:13,120
that will give you a preview of what we

511
00:20:20,789 --> 00:20:18,310
that's what the

512
00:20:22,549 --> 00:20:20,799
atlas 5 401 will look like on the launch

513
00:20:25,430 --> 00:20:22,559

pad

514
00:20:28,149 --> 00:20:25,440
and at liftoff the booster engines will

515
00:20:30,789 --> 00:20:28,159
generate almost 900 000 pounds of thrust

516
00:20:33,110 --> 00:20:30,799
to get the vehicle off the ground

517
00:20:34,789 --> 00:20:33,120
and for this configuration without srbs

518
00:20:37,270 --> 00:20:34,799
the first major event that you'll see

519
00:20:38,630 --> 00:20:37,280
during the flight will be about four

520
00:20:40,470 --> 00:20:38,640
minutes in

521
00:20:43,350 --> 00:20:40,480
when we've depleted the propellants in

522
00:20:45,750 --> 00:20:43,360
the booster stage and we shut down the

523
00:20:50,950 --> 00:20:45,760
booster main engine

524
00:20:55,990 --> 00:20:53,990
once we shut down the booster engine

525
00:20:58,549 --> 00:20:56,000
we'll separate from the centaur upper

526
00:20:59,669 --> 00:20:58,559
stage about six seconds later right

527
00:21:01,190 --> 00:20:59,679
there

528
00:21:05,350 --> 00:21:01,200
and we will begin preparing for the

529
00:21:07,669 --> 00:21:05,360
first of two centaur main engine burns

530
00:21:10,470 --> 00:21:07,679
the first burn for this mission will

531
00:21:12,310 --> 00:21:10,480
last approximately 14 minutes

532
00:21:14,230 --> 00:21:12,320
10 seconds into that burn will jettison

533
00:21:16,870 --> 00:21:14,240
the payload fairing since we're pretty

534
00:21:19,510 --> 00:21:16,880
much out of the atmosphere by that point

535
00:21:21,830 --> 00:21:19,520
and that 14-minute burn will put centaur

536
00:21:23,909 --> 00:21:21,840
with the tdrs spacecraft into a very uh

537
00:21:25,990 --> 00:21:23,919
a highly elliptical orbit the perigee

538
00:21:28,230 --> 00:21:26,000

will be about 99 nautical miles but the

539
00:21:31,909 --> 00:21:28,240
apogee at that point will be over 13 000

540
00:21:33,750 --> 00:21:31,919
nautical miles following that first burn

541
00:21:35,830 --> 00:21:33,760
will coast for 82 minutes then we'll do

542
00:21:37,350 --> 00:21:35,840
the second burn that you see here that

543
00:21:38,789 --> 00:21:37,360
second burn will only last about a

544
00:21:40,870 --> 00:21:38,799
minute and that will put us into a

545
00:21:43,270 --> 00:21:40,880
geosynchronous transfer orbit

546
00:21:45,750 --> 00:21:43,280
six minutes after that second burn we

547
00:21:47,350 --> 00:21:45,760
will reorient and separate the tdger

548
00:21:48,950 --> 00:21:47,360
spacecraft

549
00:21:51,909 --> 00:21:48,960
total mission duration up to that point

550
00:21:54,310 --> 00:21:51,919
will be about an hour and 46 minutes

551
00:21:55,350 --> 00:21:54,320
and then following that separation event

552
00:21:57,029 --> 00:21:55,360
we will

553
00:21:58,710 --> 00:21:57,039
perform the normal contamination and

554
00:22:00,630 --> 00:21:58,720
collision avoidance maneuver and put the

555
00:22:04,549 --> 00:22:00,640
centaur into a safe orbit so there's no

556
00:22:06,950 --> 00:22:04,559
chance of re-contact with the spacecraft

557
00:22:09,029 --> 00:22:06,960
ula is proud to serve a critical role in

558
00:22:10,390 --> 00:22:09,039
delivering nasa payloads to orbit and

559
00:22:12,230 --> 00:22:10,400
we're focused on perfect product

560
00:22:15,029 --> 00:22:12,240
delivery for this and every mission we

561
00:22:17,029 --> 00:22:15,039
launch for nasa and our other customers

562
00:22:19,750 --> 00:22:17,039
our focus is on successfully delivering

563
00:22:21,190 --> 00:22:19,760

important capabilities to orbit

564
00:22:22,950 --> 00:22:21,200
launch is just the beginning of this

565
00:22:25,110 --> 00:22:22,960
satellite's journey and the addition of

566
00:22:27,029 --> 00:22:25,120
tdrs-k to the overall constellation will

567
00:22:29,510 --> 00:22:27,039
continue the successful legacy of the

568
00:22:31,510 --> 00:22:29,520
project and strengthen nasa's

569
00:22:32,789 --> 00:22:31,520
communication system that's so vital

570
00:22:35,190 --> 00:22:32,799
vital for the international space

571
00:22:36,950 --> 00:22:35,200
station and many other satellites that

572
00:22:38,310 --> 00:22:36,960
are in orbit today and will be in orbit

573
00:22:39,990 --> 00:22:38,320
in the future

574
00:22:41,990 --> 00:22:40,000
in fact even the rockets that launch

575
00:22:43,909 --> 00:22:42,000
these satellites rely on the tdrs

576
00:22:45,909 --> 00:22:43,919
constellation for receiving and

577
00:22:47,590 --> 00:22:45,919
returning the telemetry data to help us

578
00:22:49,990 --> 00:22:47,600
understand how to make these rockets

579
00:22:51,750 --> 00:22:50,000
function even better in the future

580
00:22:53,430 --> 00:22:51,760
once again i'd like to say thank you to

581
00:22:55,190 --> 00:22:53,440
all of our mission partners and with

582
00:22:56,710 --> 00:22:55,200
that i'll turn it back to you george all

583
00:22:59,990 --> 00:22:56,720
right thank you vern

584
00:23:02,789 --> 00:23:00,000
and now to tdrs k and to discuss the

585
00:23:04,789 --> 00:23:02,799
satellite is jeffrey grambling the nasa

586
00:23:06,310 --> 00:23:04,799
tdrs-k project manager

587
00:23:07,590 --> 00:23:06,320
thank you george and good afternoon

588
00:23:09,669 --> 00:23:07,600

everyone

589
00:23:11,990 --> 00:23:09,679
we're very excited to be here this week

590
00:23:13,830 --> 00:23:12,000
to launch the tdrs-k satellite this will

591
00:23:16,310 --> 00:23:13,840
be the 11th tdrs satellite that we've

592
00:23:18,070 --> 00:23:16,320
launched but it's been a long time it's

593
00:23:21,830 --> 00:23:18,080
been 10 years since we launched the last

594
00:23:24,070 --> 00:23:21,840
one we launched tdrs-h in 2000 and inj

595
00:23:24,950 --> 00:23:24,080
both in 2002

596
00:23:28,149 --> 00:23:24,960
uh

597
00:23:29,590 --> 00:23:28,159
hij and the klm series of spacecraft

598
00:23:31,590 --> 00:23:29,600
have all been built by boeing and el

599
00:23:34,630 --> 00:23:31,600
segundo california

600
00:23:36,950 --> 00:23:34,640
so we arrived at the cape about december

601
00:23:39,029 --> 00:23:36,960
18th and i've got a video here to show

602
00:23:44,390 --> 00:23:39,039
you what's what's transpired since we've

603
00:23:48,950 --> 00:23:46,310
so what you see here is

604
00:23:50,950 --> 00:23:48,960
the spacecraft was flown on a c-17

605
00:23:53,029 --> 00:23:50,960
provided by the air force and it landed

606
00:24:03,269 --> 00:23:53,039
at the kennedy shuttle landing facility

607
00:24:08,230 --> 00:24:05,590
and that's the shipping container

608
00:24:10,789 --> 00:24:08,240
which was then taken to astrotech and

609
00:24:14,390 --> 00:24:10,799
titusville where we we did spacecraft

610
00:24:26,070 --> 00:24:14,400
processing which included testing

611
00:24:31,669 --> 00:24:27,830
as you can see it's very delicate

612
00:24:59,590 --> 00:24:31,679
operations to unpack the spacecraft and

613
00:25:03,110 --> 00:25:00,789

so at this point obviously the

614
00:25:06,549 --> 00:25:03,120
spacecraft arrived with a solar single

615
00:25:09,110 --> 00:25:06,559
access antennas furled for for shipment

616
00:25:11,350 --> 00:25:09,120
to the cape and then also will remain

617
00:25:13,110 --> 00:25:11,360
stowed until we

618
00:25:14,630 --> 00:25:13,120
while we were encapsulated and then

619
00:25:16,310 --> 00:25:14,640
deployed after we separate from the

620
00:25:18,310 --> 00:25:16,320
centaur on orbit but you can see the two

621
00:25:23,430 --> 00:25:18,320
single access reflectors folded one

622
00:25:29,110 --> 00:25:24,950
and here of course you can see the two

623
00:25:33,029 --> 00:25:29,120
halves of the payload fairing being

624
00:25:37,190 --> 00:25:35,590
and and then we we rolled out about a

625
00:25:39,029 --> 00:25:37,200
week ago a little more than a week ago

626
00:25:41,350 --> 00:25:39,039
we rolled out from astrotech and were

627
00:25:43,750 --> 00:25:41,360
transported to the vift and and you saw

628
00:25:46,070 --> 00:25:43,760
the the footage that tim showed of us

629
00:25:49,830 --> 00:25:46,080
being hoisted and made it on top of the

630
00:25:51,669 --> 00:25:49,840
atlas centaur stack

631
00:25:53,510 --> 00:25:51,679
so things have been going very well

632
00:25:56,230 --> 00:25:53,520
since we arrived on december 18th the

633
00:25:58,390 --> 00:25:56,240
spacecraft is is ready and i've got one

634
00:26:00,310 --> 00:25:58,400
more clip to kind of fill in the gaps

635
00:26:01,990 --> 00:26:00,320
tim or

636
00:26:04,230 --> 00:26:02,000
vern showed you the

637
00:26:06,470 --> 00:26:04,240
the uh the sequence to

638
00:26:08,470 --> 00:26:06,480

up until tdr spacecraft separation so

639
00:26:10,149 --> 00:26:08,480
now we've got one animation that kind of

640
00:26:13,590 --> 00:26:10,159
shows you what happens after that which

641
00:26:16,789 --> 00:26:15,269
so as i mentioned after we separate from

642
00:26:19,750 --> 00:26:16,799
the centaur the first thing that we do

643
00:26:22,230 --> 00:26:19,760
is unfold the the single access antennas

644
00:26:23,830 --> 00:26:22,240
so they don't take a set their composite

645
00:26:25,990 --> 00:26:23,840
fiber that boeing designed for this

646
00:26:27,590 --> 00:26:26,000
mission back on hij

647
00:26:29,269 --> 00:26:27,600
and here you can see the

648
00:26:31,350 --> 00:26:29,279
single access well first thing you saw

649
00:26:34,789 --> 00:26:31,360
was a solar array one solar array being

650
00:26:37,350 --> 00:26:34,799
deployed and then the two single access

651
00:26:38,950 --> 00:26:37,360
antenna booms and then the second solar

652
00:26:40,390 --> 00:26:38,960
array

653
00:26:42,070 --> 00:26:40,400
and following that

654
00:26:43,990 --> 00:26:42,080
right now what you see is the forward

655
00:26:45,110 --> 00:26:44,000
omni being deployed and then the last

656
00:26:46,789 --> 00:26:45,120
deployment

657
00:26:49,029 --> 00:26:46,799
that you're seeing is the space ground

658
00:26:50,789 --> 00:26:49,039
link antenna which is the antenna that

659
00:26:52,789 --> 00:26:50,799
points at white sands new mexico where

660
00:26:55,350 --> 00:26:52,799
our ground station is

661
00:26:57,990 --> 00:26:55,360
the two large single access

662
00:27:00,230 --> 00:26:58,000
antennas are the high bandwidth channels

663
00:27:01,990 --> 00:27:00,240

that we have to user spacecraft such as

664
00:27:03,750 --> 00:27:02,000
the space station space telescope and

665
00:27:05,430 --> 00:27:03,760
those are gimbaled and they they track

666
00:27:06,950 --> 00:27:05,440
the users to

667
00:27:10,390 --> 00:27:06,960
allow for the high bandwidth data

668
00:27:15,750 --> 00:27:13,110
so that said we're excited to go

669
00:27:17,990 --> 00:27:15,760
wednesday where we're ready and

670
00:27:19,909 --> 00:27:18,000
following our successful launch we've

671
00:27:23,029 --> 00:27:19,919
got about a 10-day transfer of it until

672
00:27:24,630 --> 00:27:23,039
we get to geosynchronous altitude

673
00:27:26,310 --> 00:27:24,640
during that time we're controlled at the

674
00:27:28,710 --> 00:27:26,320
boeing mission control center in el

675
00:27:31,190 --> 00:27:28,720
segundo following deployments we hand

676
00:27:33,590 --> 00:27:31,200
over to the tdrs ground station in white

677
00:27:35,590 --> 00:27:33,600
sands new mexico and from there we do

678
00:27:37,350 --> 00:27:35,600
about three months of on orbit test and

679
00:27:40,470 --> 00:27:37,360
calibration

680
00:27:42,070 --> 00:27:40,480
will there will be an honorable

681
00:27:45,110 --> 00:27:42,080
acceptance review and then the

682
00:27:47,430 --> 00:27:45,120
spacecraft will be drifted to its uh on

683
00:27:49,269 --> 00:27:47,440
operational location

684
00:27:51,990 --> 00:27:49,279
but it doesn't end here what's coming up

685
00:27:53,990 --> 00:27:52,000
next for our our project and and our

686
00:27:56,549 --> 00:27:54,000
boeing teammates are we're we're

687
00:27:58,149 --> 00:27:56,559
finishing up the tdrs-l spacecraft it'll

688
00:28:00,149 --> 00:27:58,159

go into storage within the next two

689
00:28:01,750 --> 00:28:00,159
months and we'll be back here hopefully

690
00:28:05,029 --> 00:28:01,760
about a year from now

691
00:28:07,830 --> 00:28:05,039
launching on another atlas v mission to

692
00:28:08,950 --> 00:28:07,840
launch tdrs-l and we continue to work

693
00:28:12,070 --> 00:28:08,960
towards

694
00:28:14,710 --> 00:28:12,080
tdrs-m and we're ready to go with tdrs-m

695
00:28:16,710 --> 00:28:14,720
in december of 2015.

696
00:28:19,029 --> 00:28:16,720
so thank you

697
00:28:21,110 --> 00:28:19,039
thank you thank you jeff and a look now

698
00:28:23,110 --> 00:28:21,120
at wednesday's weather launch weather

699
00:28:25,510 --> 00:28:23,120
officer joel chambiola for the 45th

700
00:28:27,590 --> 00:28:25,520
weather squadron joel thank you george

701
00:28:29,430 --> 00:28:27,600
and good afternoon everyone

702
00:28:31,590 --> 00:28:29,440
this time of year as far as weather

703
00:28:33,750 --> 00:28:31,600
systems affecting florida the main

704
00:28:36,070 --> 00:28:33,760
things that we track are cold fronts

705
00:28:38,870 --> 00:28:36,080
that typically on average move through

706
00:28:39,830 --> 00:28:38,880
the state all roughly every four or five

707
00:28:41,590 --> 00:28:39,840
days

708
00:28:44,230 --> 00:28:41,600
and when we're approaching a launch

709
00:28:46,070 --> 00:28:44,240
campaign obviously the timing of these

710
00:28:48,389 --> 00:28:46,080
cold fronts moving through the state

711
00:28:49,269 --> 00:28:48,399
directly impacts what kind of weather we

712
00:28:50,630 --> 00:28:49,279
can

713
00:28:53,590 --> 00:28:50,640

anticipate

714
00:28:55,350 --> 00:28:53,600
this mission is no different we will be

715
00:28:57,190 --> 00:28:55,360
tracking a cold front

716
00:28:58,870 --> 00:28:57,200
right now if you can see the satellite

717
00:29:01,029 --> 00:28:58,880
picture

718
00:29:03,750 --> 00:29:01,039
basically that the system well up to the

719
00:29:05,669 --> 00:29:03,760
north west of that picture is really the

720
00:29:07,669 --> 00:29:05,679
entire weather system that will

721
00:29:10,070 --> 00:29:07,679
basically be organizing and then pushing

722
00:29:11,909 --> 00:29:10,080
a cold front through us and right now

723
00:29:14,950 --> 00:29:11,919
the timing of that cold front again

724
00:29:17,110 --> 00:29:14,960
timing is critical when we are comparing

725
00:29:19,029 --> 00:29:17,120
it or approaching a launch

726
00:29:22,230 --> 00:29:19,039
right now the timing of this front has

727
00:29:24,630 --> 00:29:22,240
it moving through the area on a very

728
00:29:28,230 --> 00:29:24,640
early morning hours on thursday after

729
00:29:30,070 --> 00:29:28,240
the launch window now during

730
00:29:32,470 --> 00:29:30,080
kind of starting on tuesday as far as

731
00:29:34,470 --> 00:29:32,480
the rollout to the pad what we can

732
00:29:36,470 --> 00:29:34,480
expect in terms of our local weather

733
00:29:37,909 --> 00:29:36,480
conditions will be very similar to what

734
00:29:39,909 --> 00:29:37,919
we're seeing today

735
00:29:42,630 --> 00:29:39,919
we're going to see breezy southeasterly

736
00:29:44,389 --> 00:29:42,640
winds could be an isolated shower or two

737
00:29:46,549 --> 00:29:44,399
in the area tomorrow but we're not

738
00:29:48,789 --> 00:29:46,559

really anticipating any weather

739
00:29:50,870 --> 00:29:48,799
significant weather impacts as far as

740
00:29:54,070 --> 00:29:50,880
rolling out to the pad

741
00:29:56,149 --> 00:29:54,080
moving on to wednesday during the day

742
00:29:57,830 --> 00:29:56,159
again that cold front that i mentioned

743
00:30:00,149 --> 00:29:57,840
will be approaching the northwestern

744
00:30:01,909 --> 00:30:00,159
portions of the state and will be over

745
00:30:04,149 --> 00:30:01,919
north central florida during the

746
00:30:06,789 --> 00:30:04,159
afternoon and evening hours

747
00:30:09,269 --> 00:30:06,799
with that our local weather conditions

748
00:30:11,269 --> 00:30:09,279
will continue to be breezy the winds

749
00:30:13,269 --> 00:30:11,279
will be shifting on kind of a compared

750
00:30:15,350 --> 00:30:13,279
to what they are now they'll be shifting

751
00:30:17,750 --> 00:30:15,360
in a clockwise fashion to more of a

752
00:30:19,510 --> 00:30:17,760
south and southwesterly direction on

753
00:30:21,909 --> 00:30:19,520
wednesday afternoon

754
00:30:23,990 --> 00:30:21,919
again we could have a few showers pop up

755
00:30:26,470 --> 00:30:24,000
ahead of the main frontal band during

756
00:30:28,710 --> 00:30:26,480
the afternoon hours on friday or on

757
00:30:30,789 --> 00:30:28,720
wednesday and wednesday evening

758
00:30:32,230 --> 00:30:30,799
but right now we're looking at a 40

759
00:30:34,950 --> 00:30:32,240
percent chance

760
00:30:37,750 --> 00:30:34,960
of having one of our weather rules being

761
00:30:39,990 --> 00:30:37,760
violated during the launch window

762
00:30:42,710 --> 00:30:40,000
again we're not anticipating the frontal

763
00:30:45,029 --> 00:30:42,720

passage until after the launch window

764
00:30:46,549 --> 00:30:45,039
until after midnight early morning hours

765
00:30:47,990 --> 00:30:46,559
on thursday

766
00:30:49,750 --> 00:30:48,000
and again

767
00:30:51,669 --> 00:30:49,760
we'll be tracking all the weather out

768
00:30:53,669 --> 00:30:51,679
ahead of that front so to be a little

769
00:30:56,149 --> 00:30:53,679
bit more specific in terms of weather

770
00:30:57,909 --> 00:30:56,159
conditions that during the launch window

771
00:31:00,789 --> 00:30:57,919
again we're going to have a couple

772
00:31:03,430 --> 00:31:00,799
scattered or a couple cloud decks a low

773
00:31:05,669 --> 00:31:03,440
scattered deck at around 3000 feet and a

774
00:31:07,669 --> 00:31:05,679
more broken overcast type deck at around

775
00:31:09,909 --> 00:31:07,679
twenty six thousand feet

776
00:31:11,909 --> 00:31:09,919
the visibility should be good the winds

777
00:31:13,990 --> 00:31:11,919
will be breezy the fact it will be windy

778
00:31:16,389 --> 00:31:14,000
on wednesday the wind direction will be

779
00:31:18,710 --> 00:31:16,399
190 degrees which is just slightly

780
00:31:20,710 --> 00:31:18,720
southwest of due south they're slightly

781
00:31:23,830 --> 00:31:20,720
west of due south and right now the

782
00:31:26,950 --> 00:31:23,840
forecast is for 24 knots with gusts up

783
00:31:28,789 --> 00:31:26,960
to 28 knots during the launch window

784
00:31:31,190 --> 00:31:28,799
for your information the launch one

785
00:31:33,509 --> 00:31:31,200
constraint based on that wind direction

786
00:31:35,269 --> 00:31:33,519
is 33 knots

787
00:31:36,630 --> 00:31:35,279
there will be some isolated showers in

788
00:31:38,630 --> 00:31:36,640

the area again we could have some

789
00:31:40,789 --> 00:31:38,640
showers pop up ahead of the main frontal

790
00:31:42,870 --> 00:31:40,799
boundary which again is not expected

791
00:31:44,950 --> 00:31:42,880
until after the launch window the

792
00:31:47,350 --> 00:31:44,960
temperature at during the window will be

793
00:31:49,029 --> 00:31:47,360
around 70 degrees

794
00:31:50,950 --> 00:31:49,039
and again as i mentioned we're looking

795
00:31:53,269 --> 00:31:50,960
at a 40 chance of having one of our

796
00:31:55,029 --> 00:31:53,279
weather rules being violated the two

797
00:31:56,789 --> 00:31:55,039
main issues the two main rules we'll be

798
00:32:00,070 --> 00:31:56,799
going to watching is the cumulus cloud

799
00:32:01,669 --> 00:32:00,080
rule and the disturbed weather rule

800
00:32:02,789 --> 00:32:01,679
those are the two

801
00:32:04,870 --> 00:32:02,799
natural and trigger lightning

802
00:32:06,389 --> 00:32:04,880
constraints that we'll be watching and

803
00:32:08,389 --> 00:32:06,399
also in terms of ground winds again it

804
00:32:10,310 --> 00:32:08,399
will be windy that day but based on the

805
00:32:12,470 --> 00:32:10,320
direction we're not anticipating a

806
00:32:14,149 --> 00:32:12,480
ground wind violation

807
00:32:16,870 --> 00:32:14,159
again the front moves through after the

808
00:32:19,110 --> 00:32:16,880
launch window and if we do need to go

809
00:32:21,350 --> 00:32:19,120
into a 24-hour

810
00:32:23,590 --> 00:32:21,360
slip into thursday evening the front

811
00:32:26,710 --> 00:32:23,600
again will be well to our south the main

812
00:32:28,630 --> 00:32:26,720
issue on the next day will be the winds

813
00:32:31,190 --> 00:32:28,640

it'll still be windy but the key there

814
00:32:33,509 --> 00:32:31,200
is that the wind direction will be more

815
00:32:35,110 --> 00:32:33,519
out of the north and northwest now from

816
00:32:36,870 --> 00:32:35,120
that direction and one constraint is

817
00:32:38,870 --> 00:32:36,880
only 25 knots

818
00:32:41,350 --> 00:32:38,880
and because of that and we could have

819
00:32:43,430 --> 00:32:41,360
some lingering post frontal thick clouds

820
00:32:45,669 --> 00:32:43,440
in the area but the main issue for the

821
00:32:47,750 --> 00:32:45,679
next day if that were to be needed

822
00:32:49,750 --> 00:32:47,760
would be the ground winds there's a 60

823
00:32:52,710 --> 00:32:49,760
percent chance that we would have a

824
00:32:56,710 --> 00:32:52,720
ground wind violation for the 24 hour

825
00:32:59,590 --> 00:32:56,720
slip as our forecast for the winds that

826
00:33:02,630 --> 00:32:59,600
day will be 20 gusting up to 25 knots

827
00:33:04,389 --> 00:33:02,640
with a wind direction of 350 degrees

828
00:33:07,190 --> 00:33:04,399
and again the wind constraint for that

829
00:33:08,950 --> 00:33:07,200
day is 25 knots so there is going to be

830
00:33:10,870 --> 00:33:08,960
that threat and it will be cooler the

831
00:33:13,669 --> 00:33:10,880
next day hence the cold front move

832
00:33:15,509 --> 00:33:13,679
through it'll be in the low to mid 60s

833
00:33:19,029 --> 00:33:15,519
so with that again in summary we're

834
00:33:22,389 --> 00:33:20,549
hopefully things will go as scheduled

835
00:33:23,750 --> 00:33:22,399
we'll be able to beat the front through

836
00:33:24,870 --> 00:33:23,760
but again that's well the thing that

837
00:33:26,789 --> 00:33:24,880
we're going to be tracking throughout

838
00:33:27,590 --> 00:33:26,799

the day on wednesday into uh wednesday

839
00:33:29,830 --> 00:33:27,600
night

840
00:33:32,310 --> 00:33:29,840
thank you george thanks joel and we're

841
00:33:33,750 --> 00:33:32,320
ready now to take questions please give

842
00:33:35,430 --> 00:33:33,760
your name an affiliation when the

843
00:33:37,269 --> 00:33:35,440
microphone gets to you and we'll start

844
00:33:38,950 --> 00:33:37,279
here in the front with marcia marcia

845
00:33:41,669 --> 00:33:38,960
done associated press a couple of

846
00:33:43,350 --> 00:33:41,679
questions from mr grambling um are you

847
00:33:45,909 --> 00:33:43,360
going to be putting

848
00:33:47,750 --> 00:33:45,919
this newest tdrs into service will it be

849
00:33:49,909 --> 00:33:47,760
a spare what are what are your near-term

850
00:33:52,230 --> 00:33:49,919
plans for once it's in its proper orbit

851
00:33:54,230 --> 00:33:52,240
and checked out

852
00:33:57,190 --> 00:33:54,240
i believe the near-term plan is to drift

853
00:33:59,830 --> 00:33:57,200
it to 171 west where it will be put into

854
00:34:02,230 --> 00:33:59,840
service for some period of time

855
00:34:04,630 --> 00:34:02,240
and tested with with users for a little

856
00:34:07,909 --> 00:34:04,640
while longer and after that i think will

857
00:34:09,669 --> 00:34:07,919
be re-evaluated at some point and

858
00:34:12,550 --> 00:34:09,679
whether it stays in service or it goes

859
00:34:15,270 --> 00:34:12,560
into storage as a backup

860
00:34:17,190 --> 00:34:15,280
will that be um when we'll be going into

861
00:34:18,470 --> 00:34:17,200
service do you how many months after

862
00:34:20,629 --> 00:34:18,480
launch or

863
00:34:22,230 --> 00:34:20,639

we we compete complete our own orbit

864
00:34:23,750 --> 00:34:22,240
test program about three months after

865
00:34:25,990 --> 00:34:23,760
launch and then we would begin

866
00:34:28,470 --> 00:34:26,000
operations to drift it to like i said

867
00:34:31,030 --> 00:34:28,480
171 west where we would put it into

868
00:34:34,470 --> 00:34:31,040
service for some period of time to test

869
00:34:36,230 --> 00:34:34,480
with users i imagine within you know two

870
00:34:38,310 --> 00:34:36,240
or three months after that a decision

871
00:34:40,950 --> 00:34:38,320
would be made about whether it stays in

872
00:34:42,629 --> 00:34:40,960
service or it goes into into storage

873
00:34:46,149 --> 00:34:42,639
right and i saw in the press kit that

874
00:34:49,109 --> 00:34:46,159
the tdrs k l plus the white sands

875
00:34:51,270 --> 00:34:49,119
modifications cost about 715 million

876
00:34:53,990 --> 00:34:51,280
could you sort of break that down to

877
00:34:57,670 --> 00:34:54,000
the specific satellite if possible

878
00:35:01,510 --> 00:34:57,680
so for tdrs-k the the portion of that

879
00:35:04,310 --> 00:35:01,520
is about 350 to 400 million of that

880
00:35:06,150 --> 00:35:04,320
doesn't include launch vehicles but

881
00:35:08,230 --> 00:35:06,160
it depends on how we break out the

882
00:35:10,550 --> 00:35:08,240
non-recurring cost and spread it between

883
00:35:11,990 --> 00:35:10,560
tdrs k and l and how we account for

884
00:35:15,030 --> 00:35:12,000
project office costs but it would be

885
00:35:16,630 --> 00:35:15,040
somewhere in the 350 to 400 million

886
00:35:18,310 --> 00:35:16,640
range

887
00:35:20,310 --> 00:35:18,320
the rocket or it does

888
00:35:23,030 --> 00:35:20,320

rocket costs i'm sorry does not all

889
00:35:25,589 --> 00:35:23,040
right thank you thanks

890
00:35:30,950 --> 00:35:25,599
additional questions

891
00:35:33,750 --> 00:35:32,710
i know this is uh bill harwood cbs news

892
00:35:36,150 --> 00:35:33,760
i know this is probably spelled out in

893
00:35:37,670 --> 00:35:36,160
the press kit obviously but uh again a

894
00:35:39,349 --> 00:35:37,680
teacher's question

895
00:35:41,349 --> 00:35:39,359
i remember when the first one went up

896
00:35:42,550 --> 00:35:41,359
way back when aboard challenger i guess

897
00:35:44,390 --> 00:35:42,560
and then you've had this series since

898
00:35:45,750 --> 00:35:44,400
then is there a way to

899
00:35:47,589 --> 00:35:45,760
in late terms to talk about the

900
00:35:49,190 --> 00:35:47,599
capability of this vehicle versus the

901
00:35:51,910 --> 00:35:49,200
originals or are they pretty much

902
00:35:54,310 --> 00:35:51,920
roughly the same now compared to then

903
00:35:56,790 --> 00:35:54,320
sure so you're right the we launched the

904
00:35:58,630 --> 00:35:56,800
first tdrs back in 1983 and the first

905
00:35:59,750 --> 00:35:58,640
seven were launched on on the space

906
00:36:05,430 --> 00:35:59,760
shuttle

907
00:36:07,109 --> 00:36:05,440
that was f7

908
00:36:10,150 --> 00:36:07,119
so that that

909
00:36:11,589 --> 00:36:10,160
version of the tdrs if you will was was

910
00:36:13,349 --> 00:36:11,599
fairly similar to what we're flying

911
00:36:15,109 --> 00:36:13,359
today we had the

912
00:36:17,589 --> 00:36:15,119
single access to two single access

913
00:36:19,109 --> 00:36:17,599

antennas that had s-band and k-u-band

914
00:36:20,870 --> 00:36:19,119
and then we had the s-band multiple

915
00:36:23,510 --> 00:36:20,880
access phased array

916
00:36:24,829 --> 00:36:23,520
when we got to the hij

917
00:36:28,230 --> 00:36:24,839
series in

918
00:36:30,630 --> 00:36:28,240
1995 was when we awarded the contract

919
00:36:33,670 --> 00:36:30,640
the the only change we we made was we

920
00:36:35,510 --> 00:36:33,680
added uh ka band services to the single

921
00:36:37,430 --> 00:36:35,520
access reflectors that's a higher

922
00:36:38,790 --> 00:36:37,440
bandwidth service and we continue to fly

923
00:36:41,510 --> 00:36:38,800
those

924
00:36:43,430 --> 00:36:41,520
that service on the ku spacecraft that

925
00:36:45,190 --> 00:36:43,440
will be flying this week the other

926
00:36:46,630 --> 00:36:45,200
change that we made from

927
00:36:48,550 --> 00:36:46,640
from the hij

928
00:36:50,630 --> 00:36:48,560
series or the the change we made from

929
00:36:52,950 --> 00:36:50,640
the hij series was on the one through

930
00:36:56,790 --> 00:36:52,960
seven spacecraft we did the beam forming

931
00:36:59,910 --> 00:36:56,800
for the return s-bend

932
00:37:01,750 --> 00:36:59,920
phased array antenna on the ground

933
00:37:03,270 --> 00:37:01,760
on hij we departed from that

934
00:37:05,829 --> 00:37:03,280
architecture we did the beam forming on

935
00:37:06,550 --> 00:37:05,839
the spacecraft well

936
00:37:10,390 --> 00:37:06,560
there

937
00:37:12,310 --> 00:37:10,400
the system that have evolved over time

938
00:37:14,230 --> 00:37:12,320

and one of those novel services was a

939
00:37:16,150 --> 00:37:14,240
demand access service and it turns out

940
00:37:17,910 --> 00:37:16,160
to do the demand access service we need

941
00:37:21,190 --> 00:37:17,920
to form the beam on the ground so for

942
00:37:22,630 --> 00:37:21,200
the klm series we've reverted back to

943
00:37:24,630 --> 00:37:22,640
you know ground-based beam forming for

944
00:37:28,069 --> 00:37:24,640
the sbn

945
00:37:29,430 --> 00:37:28,079
multiple access return system

946
00:37:31,829 --> 00:37:29,440
you're welcome

947
00:37:33,910 --> 00:37:31,839
any other questions here

948
00:37:37,270 --> 00:37:33,920
i think we have one on the line from

949
00:37:39,109 --> 00:37:37,280
marion kramer from space news go ahead

950
00:37:40,870 --> 00:37:39,119
hi uh yeah this is miriam kramer with

951
00:37:42,470 --> 00:37:40,880
space.com um

952
00:37:45,589 --> 00:37:42,480
i am

953
00:37:47,829 --> 00:37:45,599
mostly here so how many uh tierdous

954
00:37:50,069 --> 00:37:47,839
satellites have been in orbit how many

955
00:37:51,829 --> 00:37:50,079
are still in orbit and

956
00:37:58,310 --> 00:37:51,839
what is the life expectancy on the

957
00:38:04,150 --> 00:38:01,270
so this is jeff grambling again we like

958
00:38:07,030 --> 00:38:04,160
i said we launched the first one in 1983

959
00:38:09,589 --> 00:38:07,040
the the life design life of the first

960
00:38:11,670 --> 00:38:09,599
tdrs spacecraft and those were

961
00:38:14,550 --> 00:38:11,680
trw spacecraft

962
00:38:16,470 --> 00:38:14,560
now northrop grumman

963
00:38:18,870 --> 00:38:16,480

10-year design life

964
00:38:20,710 --> 00:38:18,880
beginning at hij though it's been a

965
00:38:23,430 --> 00:38:20,720
15-year design life

966
00:38:26,150 --> 00:38:23,440
tdrs-f1 actually lasted 27 years on

967
00:38:27,670 --> 00:38:26,160
orbit so that that has been retired for

968
00:38:29,829 --> 00:38:27,680
a few years now

969
00:38:32,870 --> 00:38:29,839
and we've since retired

970
00:38:34,150 --> 00:38:32,880
one other tdrs spacecraft f4

971
00:38:37,349 --> 00:38:34,160
so

972
00:38:39,109 --> 00:38:37,359
of the 10 we've launched

973
00:38:41,270 --> 00:38:39,119
we've retired two

974
00:38:43,349 --> 00:38:41,280
and all of the f one through seven

975
00:38:45,030 --> 00:38:43,359
spacecraft have have lasted well beyond

976
00:38:46,710 --> 00:38:45,040
design life

977
00:38:48,790 --> 00:38:46,720
f3 i'm not

978
00:38:50,870 --> 00:38:48,800
sure i remember right off the top of my

979
00:38:53,270 --> 00:38:50,880
head what it's predicted

980
00:38:56,630 --> 00:38:53,280
end of service date is but like i said

981
00:39:00,790 --> 00:38:56,640
we're well beyond design life

982
00:39:02,470 --> 00:39:00,800
and and that's been good for us

983
00:39:03,510 --> 00:39:02,480
i'm not sure if i answered your question

984
00:39:07,190 --> 00:39:03,520
completely

985
00:39:11,510 --> 00:39:09,829
any other questions uh here in the uh

986
00:39:13,750 --> 00:39:11,520
newsroom marcia

987
00:39:18,630 --> 00:39:13,760
i'm wondering when will it be renamed to

988
00:39:22,790 --> 00:39:20,470

i believe the convention is and i'll

989
00:39:24,710 --> 00:39:22,800
have to check on this is once we accept

990
00:39:26,790 --> 00:39:24,720
it on orbit and put it into service we

991
00:39:31,510 --> 00:39:26,800
would start calling it f

992
00:39:36,069 --> 00:39:34,710
any additional questions

993
00:39:39,750 --> 00:39:36,079
all right in that event a couple of

994
00:39:43,589 --> 00:39:39,760
programming notes you can follow the

995
00:39:48,950 --> 00:39:43,599
launch as we go along on twitter on

996
00:39:51,670 --> 00:39:50,310
tdrs

997
00:39:54,390 --> 00:39:51,680
and

998
00:39:57,829 --> 00:39:54,400
our launch coverage on nasa tv on

999
00:39:59,829 --> 00:39:57,839
wednesday will begin at 6 15 p.m eastern

1000
00:40:02,230 --> 00:39:59,839
time

1001
00:40:04,550 --> 00:40:02,240
and we'll conclude now we'll wrap up the

1002
00:40:06,390 --> 00:40:04,560
briefing and go to

1003
00:40:54,230 --> 00:40:06,400
a

1004
00:40:55,270 --> 00:40:54,240
two

1005
00:40:58,710 --> 00:40:55,280
one

1006
00:41:00,870 --> 00:40:58,720
and lift off the atlas v rocket carrying

1007
00:41:03,589 --> 00:41:00,880
the next generation and tracking and

1008
00:41:06,230 --> 00:41:03,599
data relay satellites

1009
00:41:08,470 --> 00:41:06,240
after a four minute burn the atlas v

1010
00:41:11,430 --> 00:41:08,480
main engine separates from the centaur

1011
00:41:13,349 --> 00:41:11,440
engine and drops back to earth

1012
00:41:15,510 --> 00:41:13,359
shortly after separation of the main

1013
00:41:17,829 --> 00:41:15,520

engine the protective shield that covers

1014
00:41:19,670 --> 00:41:17,839
the payload called the ferry

1015
00:41:21,589 --> 00:41:19,680
separates to reveal the tdrs-k

1016
00:41:25,589 --> 00:41:21,599
spacecraft

1017
00:41:27,829 --> 00:41:25,599
geosynchronous transfer orbit

1018
00:41:29,750 --> 00:41:27,839
the tdrs spacecraft separates from the

1019
00:41:31,990 --> 00:41:29,760
centaur engine

1020
00:41:34,309 --> 00:41:32,000
shortly after this separation

1021
00:41:36,470 --> 00:41:34,319
the two folded single access antenna

1022
00:41:39,270 --> 00:41:36,480
reflectors are released to take their

1023
00:41:41,510 --> 00:41:39,280
natural parabolic shape once arriving in

1024
00:41:43,109 --> 00:41:41,520
geosynchronous orbit the spacecraft

1025
00:41:45,829 --> 00:41:43,119
starts its deployment sequence by

1026
00:41:46,790 --> 00:41:45,839
unfolding the first solar array

1027
00:41:48,870 --> 00:41:46,800
next

1028
00:41:51,190 --> 00:41:48,880
the two single access antennas are

1029
00:41:53,190 --> 00:41:51,200
deployed and locked into position

1030
00:41:54,950 --> 00:41:53,200
these antennas are designed to track and

1031
00:41:56,390 --> 00:41:54,960
communicate with low earth orbit

1032
00:41:58,470 --> 00:41:56,400
satellites

1033
00:42:01,030 --> 00:41:58,480
after the single access antennas are

1034
00:42:04,069 --> 00:42:01,040
secured into place the second solar

1035
00:42:06,630 --> 00:42:04,079
array starts to unfold

1036
00:42:09,190 --> 00:42:06,640
and the sgl and omni antennas are

1037
00:42:13,750 --> 00:42:11,589
once tdrs-k completes this deployment

1038
00:42:15,270 --> 00:42:13,760

sequence it's now ready for a

1039
00:42:16,470 --> 00:42:15,280
three-month period of testing and

1040
00:42:19,109 --> 00:42:16,480
calibration

1041
00:42:21,829 --> 00:42:19,119
before being placed into service

1042
00:42:25,190 --> 00:42:21,839
with this edition of teachers k and the

1043
00:42:27,030 --> 00:42:25,200
upcoming launches of tdrs l and m