



1
00:00:03,750 --> 00:00:01,910
welcome

2
00:00:06,789 --> 00:00:03,760
thank you all for

3
00:00:11,030 --> 00:00:06,799
being here in our panel four on the

4
00:00:13,830 --> 00:00:11,040
space economy i definitely feel like uh

5
00:00:15,749 --> 00:00:13,840
it is a hard act to follow

6
00:00:18,470 --> 00:00:15,759
when the president has really laid out

7
00:00:21,109 --> 00:00:18,480
not only i think for our panel but all

8
00:00:24,550 --> 00:00:21,119
four of the important panels

9
00:00:25,269 --> 00:00:24,560
the underpinnings of why our new plan

10
00:00:27,109 --> 00:00:25,279
is

11
00:00:29,990 --> 00:00:27,119
the right way to go forward for the

12
00:00:32,549 --> 00:00:30,000
future of nasa but we are going to make

13
00:00:35,590 --> 00:00:32,559

an attempt here to delve even deeper

14

00:00:38,549 --> 00:00:35,600

into the really meaningful aspects of

15

00:00:41,030 --> 00:00:38,559

why we believe the investment in space

16

00:00:42,630 --> 00:00:41,040

in r d and in the very

17

00:00:44,950 --> 00:00:42,640

programs that the president just

18

00:00:47,910 --> 00:00:44,960

outlined are going to be the best to

19

00:00:51,029 --> 00:00:47,920

help us develop a vibrant space economy

20

00:00:54,069 --> 00:00:51,039

of the future i have a wonderful panel

21

00:00:55,830 --> 00:00:54,079

uh here today and we're going to

22

00:00:58,709 --> 00:00:55,840

each i'm going to ask them each to just

23

00:01:00,950 --> 00:00:58,719

give an overview of a few minutes so

24

00:01:03,029 --> 00:01:00,960

that we can start with the interaction

25

00:01:04,869 --> 00:01:03,039

of the panel we do have roving

26

00:01:07,429 --> 00:01:04,879

microphones so we'll ask you to use

27

00:01:10,630 --> 00:01:07,439

those and and just to begin i i would

28

00:01:12,550 --> 00:01:10,640

like to again sort of outline that

29

00:01:16,390 --> 00:01:12,560

the president's plan

30

00:01:18,630 --> 00:01:16,400

has this explicit goal of the creation

31

00:01:21,990 --> 00:01:18,640

and continuous improvement of american

32

00:01:24,230 --> 00:01:22,000

capabilities in space which will open up

33

00:01:26,390 --> 00:01:24,240

new opportunities for the economy and i

34

00:01:28,789 --> 00:01:26,400

know this is a shift that people have

35

00:01:30,870 --> 00:01:28,799

been talking about certainly in the uh

36

00:01:33,910 --> 00:01:30,880

25 years of space policy development

37

00:01:35,990 --> 00:01:33,920

that i've been participating and so it's

38

00:01:37,670 --> 00:01:36,000

exciting today to be able to

39

00:01:39,270 --> 00:01:37,680

talk more about those details and the

40

00:01:41,429 --> 00:01:39,280

research that has gone into this and a

41

00:01:44,230 --> 00:01:41,439

very meaningful shift that we believe

42

00:01:45,830 --> 00:01:44,240

will help sustain a vibrant space future

43

00:01:48,230 --> 00:01:45,840

for us all

44

00:01:51,270 --> 00:01:48,240

the second component is really that in

45

00:01:53,830 --> 00:01:51,280

the way we procure uh this commercially

46

00:01:56,230 --> 00:01:53,840

our space transportation services are to

47

00:01:59,190 --> 00:01:56,240

provide those incentives for improvement

48

00:02:01,910 --> 00:01:59,200

in commercial capabilities and

49

00:02:03,510 --> 00:02:01,920

reduce costs and that will allow us to

50

00:02:04,709 --> 00:02:03,520

develop the new private sector

51

00:02:07,030 --> 00:02:04,719

activities

52

00:02:09,109 --> 00:02:07,040

that employ these new capabilities so

53

00:02:11,029 --> 00:02:09,119

it's a combined effort of the government

54

00:02:13,910 --> 00:02:11,039

taking what the government does best and

55

00:02:16,790 --> 00:02:13,920

investing in the r d going further

56

00:02:19,350 --> 00:02:16,800

faster beyond low earth orbit and then

57

00:02:22,150 --> 00:02:19,360

utilizing the private sector

58

00:02:24,150 --> 00:02:22,160

in its unique benefits that it brings

59

00:02:25,589 --> 00:02:24,160

providing that innovation

60

00:02:26,869 --> 00:02:25,599

to take us

61

00:02:28,949 --> 00:02:26,879

to take over those things that the

62

00:02:31,910 --> 00:02:28,959

government has historically done

63

00:02:33,110 --> 00:02:31,920

so we have to with this plan

64

00:02:34,550 --> 00:02:33,120
shift

65

00:02:36,150 --> 00:02:34,560
from the previous architecture and i

66

00:02:37,990 --> 00:02:36,160
know that's what's been difficult but we

67

00:02:41,270 --> 00:02:38,000
need to adapt to

68

00:02:44,070 --> 00:02:41,280
a more open architecture that will

69

00:02:45,589 --> 00:02:44,080
advance our capabilities and

70

00:02:47,750 --> 00:02:45,599
i believe that that is what the

71

00:02:50,390 --> 00:02:47,760
president has laid out in addition

72

00:02:53,270 --> 00:02:50,400
focusing on our r d efforts on

73

00:02:56,630 --> 00:02:53,280
technologies is historically one of the

74

00:02:59,270 --> 00:02:56,640
real elements of nasa that has provided

75

00:03:01,509 --> 00:02:59,280
for the economic growth that the nation

76

00:03:04,949 --> 00:03:01,519

has seen over time and it is time for

77

00:03:06,790 --> 00:03:04,959

nasa to get back to that right now the

78

00:03:08,630 --> 00:03:06,800

international market alone for

79

00:03:11,830 --> 00:03:08,640

commercial space products and services

80

00:03:14,710 --> 00:03:11,840

is 175 billion dollars and nasa's

81

00:03:16,869 --> 00:03:14,720

investment in r d needs to help us

82

00:03:18,790 --> 00:03:16,879

keep more of that at home

83

00:03:19,990 --> 00:03:18,800

and i would also just uh close my

84

00:03:22,390 --> 00:03:20,000

opening comments with a look

85

00:03:25,910 --> 00:03:22,400

historically that in fact this is not

86

00:03:28,070 --> 00:03:25,920

something new that a shift to having

87

00:03:30,070 --> 00:03:28,080

more private sector involvement is

88

00:03:32,949 --> 00:03:30,080

something that historically has been

89

00:03:34,149 --> 00:03:32,959

happening within space exploration

90

00:03:35,910 --> 00:03:34,159

since

91

00:03:38,869 --> 00:03:35,920

for instance the

92

00:03:40,869 --> 00:03:38,879

robert goddard's first flights that were

93

00:03:43,110 --> 00:03:40,879

his experiments in liquid field rocket

94

00:03:45,509 --> 00:03:43,120

rocketry were funded by the guggenheim

95

00:03:48,390 --> 00:03:45,519

family and in fact

96

00:03:51,030 --> 00:03:48,400

telescopes space observatories have been

97

00:03:53,670 --> 00:03:51,040

funded by private uh interests uh

98

00:03:56,229 --> 00:03:53,680

historically as well so when you look at

99

00:03:58,149 --> 00:03:56,239

the paul allens and jeff bezos elon

100

00:04:00,309 --> 00:03:58,159

musks and robert bigelows

101
00:04:02,229 --> 00:04:00,319
utilizing some of their resources for

102
00:04:04,789 --> 00:04:02,239
exploration in space this is really a

103
00:04:07,110 --> 00:04:04,799
continuation historically of what uh we

104
00:04:09,429 --> 00:04:07,120
have done in this country and uh we

105
00:04:12,630 --> 00:04:09,439
believe it is time to harness that

106
00:04:14,630 --> 00:04:12,640
again that that energy and excitement

107
00:04:17,110 --> 00:04:14,640
so i would like to

108
00:04:20,550 --> 00:04:17,120
invite our our panelists to begin we

109
00:04:22,550 --> 00:04:20,560
will start with greg juniman who is has

110
00:04:24,870 --> 00:04:22,560
a long career with the international

111
00:04:27,430 --> 00:04:24,880
federation of professional and technical

112
00:04:29,830 --> 00:04:27,440
engineers ifpte he is currently the

113
00:04:32,310 --> 00:04:29,840

president he's held many positions over

114

00:04:33,510 --> 00:04:32,320

his 20 years there including being the

115

00:04:37,350 --> 00:04:33,520

cfo

116

00:04:39,110 --> 00:04:37,360

and he's been president since 2003

117

00:04:41,590 --> 00:04:39,120

is that correct

118

00:04:43,670 --> 00:04:41,600

oh my gosh my notes are bad

119

00:04:46,629 --> 00:04:43,680

and before working at ifpte he was

120

00:04:49,030 --> 00:04:46,639

employed for 17 years in wisconsin where

121

00:04:51,430 --> 00:04:49,040

he was a senior cost estimator and

122

00:04:53,030 --> 00:04:51,440

project planner so greg is going to talk

123

00:04:55,909 --> 00:04:53,040

to us about

124

00:04:57,749 --> 00:04:55,919

their views of the president's program

125

00:05:01,029 --> 00:04:57,759

and the investment in r d and its value

126
00:05:03,670 --> 00:05:02,310
okay good

127
00:05:05,909 --> 00:05:03,680
yes um

128
00:05:08,469 --> 00:05:05,919
hello i'm the i was telling dale earlier

129
00:05:11,909 --> 00:05:08,479
and i really feel like this i'm i'm

130
00:05:14,070 --> 00:05:11,919
really reminded of a time i'm a union

131
00:05:17,110 --> 00:05:14,080
official and i had to speak before the

132
00:05:20,070 --> 00:05:17,120
wisconsin state afl-cio right before

133
00:05:21,909 --> 00:05:20,080
the 2006 governor's election and i

134
00:05:24,550 --> 00:05:21,919
looked at the program and it said

135
00:05:27,110 --> 00:05:24,560
keynote speaker gregory juniman

136
00:05:28,710 --> 00:05:27,120
other featured speaker henry aaron and i

137
00:05:30,710 --> 00:05:28,720
thought who's going to want to listen to

138
00:05:31,510 --> 00:05:30,720

what i've got to say after hearing henry

139

00:05:32,629 --> 00:05:31,520

aaron

140

00:05:35,270 --> 00:05:32,639

anyway

141

00:05:37,590 --> 00:05:35,280

so i'd like to talk about our views my

142

00:05:40,150 --> 00:05:37,600

union's views we're the largest union at

143

00:05:41,990 --> 00:05:40,160

nasa representing about ten thousand

144

00:05:45,590 --> 00:05:42,000

scientists engineers and technicians at

145

00:05:49,110 --> 00:05:45,600

nasa at sites across the nation about uh

146

00:05:51,430 --> 00:05:49,120

our views on the president's program not

147

00:05:53,270 --> 00:05:51,440

necessarily from a scientific viewpoint

148

00:05:55,670 --> 00:05:53,280

or an economic viewpoint

149

00:05:58,070 --> 00:05:55,680

i guess somewhat economic but more from

150

00:06:01,830 --> 00:05:58,080

i think a union reps standpoint because

151

00:06:03,990 --> 00:06:01,840

while i represent about 10 000

152

00:06:05,510 --> 00:06:04,000

engineers and and scientists at nasa i

153

00:06:08,390 --> 00:06:05,520

also represent about hundred thousand

154

00:06:11,029 --> 00:06:08,400

people who aren't at nasa so they look

155

00:06:13,749 --> 00:06:11,039

at this program and say why does this

156

00:06:15,909 --> 00:06:13,759

make sense uh and in the labor movement

157

00:06:17,990 --> 00:06:15,919

my union the international federation of

158

00:06:20,070 --> 00:06:18,000

professional technical engineers like

159

00:06:22,309 --> 00:06:20,080

many other unions in this country are

160

00:06:23,749 --> 00:06:22,319

interested in jobs we are still even

161

00:06:25,029 --> 00:06:23,759

though the numbers look good the last

162

00:06:26,790 --> 00:06:25,039

time around

163

00:06:28,950 --> 00:06:26,800

we're still facing very close to 10

164

00:06:32,070 --> 00:06:28,960

percent unemployment in this country and

165

00:06:34,070 --> 00:06:32,080

we consider it a major jobs crisis so we

166

00:06:36,870 --> 00:06:34,080

look and say okay where are the jobs

167

00:06:39,350 --> 00:06:36,880

going to be and what i tell my members

168

00:06:42,309 --> 00:06:39,360

is that and i really strongly believe

169

00:06:44,629 --> 00:06:42,319

this nasa is the place where we can make

170

00:06:47,590 --> 00:06:44,639

an investment into our country into the

171

00:06:50,150 --> 00:06:47,600

scientific mind it's the only place that

172

00:06:52,469 --> 00:06:50,160

i think that we can do that as taxpayers

173

00:06:55,110 --> 00:06:52,479

that we can invest in our own society

174

00:06:57,749 --> 00:06:55,120

it's where we i mean again it's where

175

00:06:59,990 --> 00:06:57,759

the future is going to be it's in the

176
00:07:02,710 --> 00:07:00,000
creation of jobs we all understand

177
00:07:05,909 --> 00:07:02,720
economically jobs creation starts in the

178
00:07:08,070 --> 00:07:05,919
private sector however i've also seen in

179
00:07:10,629 --> 00:07:08,080
way too many cases the private sector

180
00:07:13,589 --> 00:07:10,639
creates jobs and shifts them overseas

181
00:07:16,710 --> 00:07:13,599
you know so where we look to the obama

182
00:07:19,270 --> 00:07:16,720
administration particularly with nasa in

183
00:07:22,150 --> 00:07:19,280
the creation of jobs is uh you know

184
00:07:25,029 --> 00:07:22,160
through this investment is this is where

185
00:07:27,510 --> 00:07:25,039
we can make a real strategic investment

186
00:07:30,230 --> 00:07:27,520
into uh you know the creation and

187
00:07:32,710 --> 00:07:30,240
maintenance of meaningful and lasting

188
00:07:34,469 --> 00:07:32,720

sustaining jobs through new ideas

189

00:07:36,629 --> 00:07:34,479

through new strategies and through new

190

00:07:38,550 --> 00:07:36,639

innovation and technologies

191

00:07:40,390 --> 00:07:38,560

uh and if you know it seems and what

192

00:07:43,749 --> 00:07:40,400

i've talked about with my members if we

193

00:07:46,710 --> 00:07:43,759

intend to stay a world power we can't

194

00:07:49,830 --> 00:07:46,720

simply do so by the strength of will or

195

00:07:52,390 --> 00:07:49,840

through patriotic zeal but it has to be

196

00:07:54,629 --> 00:07:52,400

through responsible investment in our

197

00:07:57,430 --> 00:07:54,639

own communities in our youth and in our

198

00:07:58,869 --> 00:07:57,440

own scientific minds and i think the way

199

00:08:00,550 --> 00:07:58,879

that i've seen that we can do that

200

00:08:04,309 --> 00:08:00,560

because again i'm not going to talk

201
00:08:06,469 --> 00:08:04,319
specifically about uh space and earth

202
00:08:08,950 --> 00:08:06,479
science exploration but about the

203
00:08:11,749 --> 00:08:08,960
scientific and technological byproducts

204
00:08:12,869 --> 00:08:11,759
that come about through the work at nasa

205
00:08:15,110 --> 00:08:12,879
certainly

206
00:08:17,589 --> 00:08:15,120
um you know again if we just look at

207
00:08:19,990 --> 00:08:17,599
space exploration and earth science that

208
00:08:22,150 --> 00:08:20,000
those things alone that are done at nasa

209
00:08:23,830 --> 00:08:22,160
are remarkable in themselves but looking

210
00:08:25,749 --> 00:08:23,840
at the technological transfers the

211
00:08:28,950 --> 00:08:25,759
byproducts i mean we really have to

212
00:08:30,150 --> 00:08:28,960
stand up and see how much how much gains

213
00:08:31,830 --> 00:08:30,160

we can make

214

00:08:33,589 --> 00:08:31,840

both in the country and in our various

215

00:08:35,829 --> 00:08:33,599

communities through jobs that are

216

00:08:37,670 --> 00:08:35,839

created through nasa's technological

217

00:08:39,589 --> 00:08:37,680

byproducts the president mentioned

218

00:08:41,269 --> 00:08:39,599

almost as a lark tang you know but

219

00:08:42,949 --> 00:08:41,279

that's when i look and see like the

220

00:08:45,350 --> 00:08:42,959

people who live on main street in

221

00:08:47,190 --> 00:08:45,360

lincoln nebraska they don't think much

222

00:08:49,750 --> 00:08:47,200

beyond that i mean they sort of see that

223

00:08:51,590 --> 00:08:49,760

they see post-it notes they heard about

224

00:08:53,910 --> 00:08:51,600

michael phelps's swimming suit that

225

00:08:55,750 --> 00:08:53,920

helped him to win eight gold medals you

226

00:08:58,389 --> 00:08:55,760

know but i'm not talking about that i'm

227

00:09:00,949 --> 00:08:58,399

talking about what i find remarkable is

228

00:09:03,670 --> 00:09:00,959

nasa's work that has led to you know

229

00:09:05,910 --> 00:09:03,680

diagnostic procedures that that bring us

230

00:09:07,190 --> 00:09:05,920

early detection of breast cancer you

231

00:09:08,949 --> 00:09:07,200

know those are the sorts of things

232

00:09:11,190 --> 00:09:08,959

within nasa that i think that create

233

00:09:13,670 --> 00:09:11,200

jobs that are important and it seems to

234

00:09:15,670 --> 00:09:13,680

me with all of the hoopla

235

00:09:17,829 --> 00:09:15,680

that's been that's been spread about

236

00:09:20,790 --> 00:09:17,839

health care reform in this country now

237

00:09:23,350 --> 00:09:20,800

is the perfect time you know to look at

238

00:09:25,269 --> 00:09:23,360

the important uh gains and breakthroughs

239

00:09:28,070 --> 00:09:25,279

that have been made on nasa that made by

240

00:09:30,389 --> 00:09:28,080

nasa on things like the early detection

241

00:09:32,389 --> 00:09:30,399

of breast breast cancer and in cancer

242

00:09:34,550 --> 00:09:32,399

cells in men and women across this

243

00:09:37,350 --> 00:09:34,560

country you know and when i talked to

244

00:09:39,590 --> 00:09:37,360

some of my members who are you know nasa

245

00:09:41,590 --> 00:09:39,600

scientists they say that well yeah a lot

246

00:09:43,670 --> 00:09:41,600

of this has come about through their

247

00:09:47,190 --> 00:09:43,680

work on research on

248

00:09:48,710 --> 00:09:47,200

thermography is that right um what's

249

00:09:50,870 --> 00:09:48,720

i mean i think that that's part of the

250

00:09:52,710 --> 00:09:50,880

problem you know you go to people you

251
00:09:54,230 --> 00:09:52,720
know in madison wisconsin and you say

252
00:09:56,070 --> 00:09:54,240
let's increase the taxes so we can have

253
00:09:58,070 --> 00:09:56,080
more research done on thermography

254
00:09:59,990 --> 00:09:58,080
you'll get thrown out of a room right

255
00:10:02,389 --> 00:10:00,000
it's like what is that what the heck is

256
00:10:04,310 --> 00:10:02,399
thermography and it kind of reminds me

257
00:10:05,910 --> 00:10:04,320
of when i started as a union

258
00:10:07,750 --> 00:10:05,920
representative when i was a secretary

259
00:10:10,310 --> 00:10:07,760
treasurer before i became the president

260
00:10:13,509 --> 00:10:10,320
i met with one of my members who was

261
00:10:17,350 --> 00:10:13,519
complaining about management's

262
00:10:19,910 --> 00:10:17,360
escalating interference into his

263
00:10:23,590 --> 00:10:19,920

occupational environment through

264

00:10:26,069 --> 00:10:23,600

systemic uh yet innocuous uh intrusions

265

00:10:27,750 --> 00:10:26,079

into his work life and i said oh so

266

00:10:29,829 --> 00:10:27,760

they're nickel and diming you to death

267

00:10:31,350 --> 00:10:29,839

and he said oh that's perfect and i said

268

00:10:33,829 --> 00:10:31,360

well this is why you need a union you

269

00:10:35,509 --> 00:10:33,839

can't even speak plain english you know

270

00:10:38,310 --> 00:10:35,519

uh you know no matter how smart he is

271

00:10:40,230 --> 00:10:38,320

but i'm really in in plain english

272

00:10:42,550 --> 00:10:40,240

what's really being done that that's

273

00:10:44,870 --> 00:10:42,560

incredible is um you know the

274

00:10:47,990 --> 00:10:44,880

cleveland's the cleveland clinic is

275

00:10:50,710 --> 00:10:48,000

doing really great collaborative work uh

276

00:10:52,470 --> 00:10:50,720

on research on heart disease you know

277

00:10:54,389 --> 00:10:52,480

within and i think the only ones who

278

00:10:56,550 --> 00:10:54,399

know about that are the people that work

279

00:10:58,870 --> 00:10:56,560

there in that general area yet this is

280

00:11:01,269 --> 00:10:58,880

really important work you know that

281

00:11:03,670 --> 00:11:01,279

there's work there's byproducts at nasa

282

00:11:06,150 --> 00:11:03,680

you know that that come out that um you

283

00:11:08,150 --> 00:11:06,160

know the the micro batteries that are

284

00:11:10,550 --> 00:11:08,160

used to power uh

285

00:11:11,990 --> 00:11:10,560

robots and satellites are used to power

286

00:11:13,829 --> 00:11:12,000

pacemakers

287

00:11:15,670 --> 00:11:13,839

you know and nobody knows about this

288

00:11:17,269 --> 00:11:15,680

stuff and they really should people

289

00:11:19,110 --> 00:11:17,279

should know about this they should talk

290

00:11:21,590 --> 00:11:19,120

about this they should understand this

291

00:11:23,750 --> 00:11:21,600

is why you know it's important that we

292

00:11:25,910 --> 00:11:23,760

have nasa beyond space exploration and

293

00:11:27,670 --> 00:11:25,920

earth science and these are where jobs

294

00:11:29,590 --> 00:11:27,680

can be created you know that are going

295

00:11:31,509 --> 00:11:29,600

to help us again beyond nasa and it's

296

00:11:33,030 --> 00:11:31,519

sort of like we need to answer the

297

00:11:35,350 --> 00:11:33,040

question why

298

00:11:36,710 --> 00:11:35,360

you know why why is this necessary for

299

00:11:38,710 --> 00:11:36,720

this work to get done beyond the

300

00:11:42,550 --> 00:11:38,720

scientific community to get out of the

301
00:11:44,949 --> 00:11:42,560
inside the baseball stuff right um

302
00:11:48,310 --> 00:11:44,959
you know the um

303
00:11:50,389 --> 00:11:48,320
following my notes here okay um

304
00:11:51,990 --> 00:11:50,399
so i and i i do need to sort of mention

305
00:11:54,150 --> 00:11:52,000
this because charlie bolden said let's

306
00:11:56,550 --> 00:11:54,160
sort of like dare to disagree with one

307
00:11:58,389 --> 00:11:56,560
another once in a while i think very

308
00:12:01,910 --> 00:11:58,399
much of this

309
00:12:03,910 --> 00:12:01,920
stuff needs to be discussed on the nasa

310
00:12:05,509 --> 00:12:03,920
television channel i don't know who's in

311
00:12:07,030 --> 00:12:05,519
charge of that but it's

312
00:12:09,110 --> 00:12:07,040
somebody said it's like watching paint

313
00:12:11,269 --> 00:12:09,120

dry i think it's more like watching dry

314

00:12:13,190 --> 00:12:11,279

paint because watching paint dry would

315

00:12:15,670 --> 00:12:13,200

actually be something happening i think

316

00:12:17,190 --> 00:12:15,680

you might be on it right now so if i see

317

00:12:19,670 --> 00:12:17,200

the logo

318

00:12:21,910 --> 00:12:19,680

if okay well

319

00:12:25,590 --> 00:12:21,920

maybe i blend into how boring the things

320

00:12:30,310 --> 00:12:28,310

so yeah in any event the other and and i

321

00:12:31,910 --> 00:12:30,320

do got to say i mean and i read recently

322

00:12:34,389 --> 00:12:31,920

and this is sort of all i'll fault the

323

00:12:35,750 --> 00:12:34,399

press a bit for this um i recently

324

00:12:37,590 --> 00:12:35,760

something about that there was that

325

00:12:39,590 --> 00:12:37,600

there's work being done very much of

326

00:12:41,590 --> 00:12:39,600

what nasa's work is you know that's done

327

00:12:42,629 --> 00:12:41,600

the research work has to be done and you

328

00:12:44,629 --> 00:12:42,639

know this

329

00:12:46,230 --> 00:12:44,639

at zero gravity so work was done on the

330

00:12:48,150 --> 00:12:46,240

space station i read this some place

331

00:12:50,389 --> 00:12:48,160

recently that you know was the

332

00:12:53,030 --> 00:12:50,399

investigation of the hiv

333

00:12:55,750 --> 00:12:53,040

genome so i talked to a reporter about

334

00:12:58,470 --> 00:12:55,760

this from a nationally known publication

335

00:13:00,310 --> 00:12:58,480

who i won't advertise for free

336

00:13:02,389 --> 00:13:00,320

and said you know why aren't you talking

337

00:13:04,150 --> 00:13:02,399

about this this could lead to the cure

338

00:13:06,629 --> 00:13:04,160

for hiv aids

339

00:13:08,790 --> 00:13:06,639

and he said everybody knows about that

340

00:13:10,629 --> 00:13:08,800

is that nobody knows about this stuff

341

00:13:12,470 --> 00:13:10,639

nobody i mean we need to be talking

342

00:13:14,069 --> 00:13:12,480

about this people need to be hearing

343

00:13:15,990 --> 00:13:14,079

about this and maybe a lot of that is

344

00:13:18,310 --> 00:13:16,000

our fault you know but again this is the

345

00:13:20,870 --> 00:13:18,320

sort of thing i think that leads to jobs

346

00:13:22,310 --> 00:13:20,880

that leads to you know real meaningful

347

00:13:24,629 --> 00:13:22,320

uh um

348

00:13:26,629 --> 00:13:24,639

need for investment in nasa and of

349

00:13:29,430 --> 00:13:26,639

course beyond all of that i mean and i

350

00:13:31,350 --> 00:13:29,440

look at my own union i represent uh

351
00:13:33,110 --> 00:13:31,360
engineers and technicians outside of the

352
00:13:34,949 --> 00:13:33,120
medical field my own unite represent

353
00:13:36,949 --> 00:13:34,959
engineers technicians and scientists at

354
00:13:39,750 --> 00:13:36,959
boeing and at general electric and the

355
00:13:42,150 --> 00:13:39,760
work that's done there by nasa you know

356
00:13:44,310 --> 00:13:42,160
into the improvement of jet engines and

357
00:13:46,230 --> 00:13:44,320
wing design you know the the fuel

358
00:13:48,150 --> 00:13:46,240
efficiency gains that have been made by

359
00:13:50,310 --> 00:13:48,160
nasa are just incredible that have been

360
00:13:52,310 --> 00:13:50,320
passed on to the private sector

361
00:13:55,030 --> 00:13:52,320
you know and there so we now have

362
00:13:57,430 --> 00:13:55,040
quieter more fuel efficient uh jet

363
00:13:59,269 --> 00:13:57,440

engines you know which means less noise

364

00:14:01,990 --> 00:13:59,279

pollution less air pollution so that as

365

00:14:04,069 --> 00:14:02,000

some nasa scientists are studying the

366

00:14:06,550 --> 00:14:04,079

effects that we're having on our own

367

00:14:08,550 --> 00:14:06,560

globe you know nasa is also taking

368

00:14:09,509 --> 00:14:08,560

positive action toward improving those

369

00:14:10,710 --> 00:14:09,519

things

370

00:14:12,069 --> 00:14:10,720

i've got friends who were in the

371

00:14:17,430 --> 00:14:12,079

firefighters

372

00:14:19,509 --> 00:14:17,440

when i look and see the sort of work

373

00:14:22,470 --> 00:14:19,519

that nasa is doing on flame retardant

374

00:14:24,629 --> 00:14:22,480

materials that firefighters can use

375

00:14:26,790 --> 00:14:24,639

and i heard just recently that we've

376

00:14:29,110 --> 00:14:26,800

that nasa has developed these like face

377

00:14:31,189 --> 00:14:29,120

masks that if the firefighters on

378

00:14:32,949 --> 00:14:31,199

september 11th on the recovery mission

379

00:14:34,870 --> 00:14:32,959

had had these they wouldn't have gotten

380

00:14:35,750 --> 00:14:34,880

the insides of their throats irreparably

381

00:14:37,509 --> 00:14:35,760

burned

382

00:14:40,230 --> 00:14:37,519

you know this is incredible stuff that

383

00:14:42,150 --> 00:14:40,240

nasa is doing beyond space exploration

384

00:14:44,550 --> 00:14:42,160

beyond earth science that needs to be

385

00:14:46,470 --> 00:14:44,560

talked about within the general public

386

00:14:47,990 --> 00:14:46,480

and if it's not being talked about shame

387

00:14:49,910 --> 00:14:48,000

on us for not doing it because i think

388

00:14:51,750 --> 00:14:49,920

we need to bring that out there so this

389

00:14:53,110 --> 00:14:51,760

makes sense so nasa makes sense to the

390

00:14:55,189 --> 00:14:53,120

people on main street in lincoln

391

00:14:57,430 --> 00:14:55,199

nebraska who are helping to pay for

392

00:15:00,470 --> 00:14:57,440

these things and certainly when we look

393

00:15:02,790 --> 00:15:00,480

at the remarkable work that's done by

394

00:15:03,990 --> 00:15:02,800

nasa in space exploration in our science

395

00:15:06,069 --> 00:15:04,000

that i'm sure others are going to be

396

00:15:08,629 --> 00:15:06,079

talking about you know it's it's just

397

00:15:10,870 --> 00:15:08,639

incredible work and it really needs our

398

00:15:13,590 --> 00:15:10,880

investment our continuous investment as

399

00:15:14,710 --> 00:15:13,600

a society because when i look at when i

400

00:15:15,910 --> 00:15:14,720

consider

401
00:15:18,389 --> 00:15:15,920
um

402
00:15:20,150 --> 00:15:18,399
other civilizations that have faltered

403
00:15:22,389 --> 00:15:20,160
throughout history and i think it's

404
00:15:23,910 --> 00:15:22,399
because in a lot of ways it's because

405
00:15:26,710 --> 00:15:23,920
they stopped

406
00:15:29,829 --> 00:15:26,720
gazing outward and wonder and began just

407
00:15:31,829 --> 00:15:29,839
staring inward you know in self-interest

408
00:15:33,430 --> 00:15:31,839
and then they began to falter over time

409
00:15:35,030 --> 00:15:33,440
and we can't let that happen in this

410
00:15:36,790 --> 00:15:35,040
country that's why we need to make

411
00:15:38,710 --> 00:15:36,800
investments into our space program in

412
00:15:40,470 --> 00:15:38,720
earth science because you know through

413
00:15:41,910 --> 00:15:40,480

those things and the scientists would

414

00:15:43,910 --> 00:15:41,920

tell me this and maybe a lot of people

415

00:15:45,509 --> 00:15:43,920

know this that after these projects are

416

00:15:47,910 --> 00:15:45,519

done and they write these technical

417

00:15:49,910 --> 00:15:47,920

reports and say here's practical uses

418

00:15:51,829 --> 00:15:49,920

for the things that we've learned you

419

00:15:53,590 --> 00:15:51,839

know in in in

420

00:15:55,269 --> 00:15:53,600

launching this rocket or launching the

421

00:15:56,710 --> 00:15:55,279

space shuttle and these things can be

422

00:15:58,310 --> 00:15:56,720

you know can be used in our general

423

00:16:00,389 --> 00:15:58,320

society in general communities in the

424

00:16:02,550 --> 00:16:00,399

creation of jobs in the creation of

425

00:16:05,110 --> 00:16:02,560

industries in meaningful sustainable

426

00:16:07,749 --> 00:16:05,120

jobs that'll stay with this country you

427

00:16:11,509 --> 00:16:07,759

know then that seems to me to be that's

428

00:16:13,350 --> 00:16:11,519

a very smart investment that we can make

429

00:16:15,990 --> 00:16:13,360

you know and and i sort of look at it

430

00:16:18,470 --> 00:16:16,000

and think even the most conservative tea

431

00:16:21,590 --> 00:16:18,480

party people if they figured out only

432

00:16:24,150 --> 00:16:21,600

less than a penny of our each tax dollar

433

00:16:26,550 --> 00:16:24,160

goes into nasa i mean it's it's an

434

00:16:29,670 --> 00:16:26,560

incredible investment i i also i read

435

00:16:31,670 --> 00:16:29,680

recently that uh you know um you know we

436

00:16:35,030 --> 00:16:31,680

look at our partners where a lot of my

437

00:16:37,430 --> 00:16:35,040

members jobs go right and uh in the net

438

00:16:39,829 --> 00:16:37,440

in terms of the national budget

439

00:16:41,990 --> 00:16:39,839

china spends about 11 percent of its

440

00:16:45,350 --> 00:16:42,000

budget on education

441

00:16:48,870 --> 00:16:45,360

independence about 9.98 of its budget on

442

00:16:51,269 --> 00:16:48,880

education japan is about 9.3 percent of

443

00:16:53,509 --> 00:16:51,279

its budget on education united states we

444

00:16:55,670 --> 00:16:53,519

spend about two percent

445

00:16:57,910 --> 00:16:55,680

of our budget on education

446

00:16:59,509 --> 00:16:57,920

china will graduate and we've got if you

447

00:17:03,509 --> 00:16:59,519

think the unemployment numbers are bad

448

00:17:06,630 --> 00:17:05,110

digress here for just a minute the

449

00:17:08,069 --> 00:17:06,640

unemployment numbers in this country

450

00:17:09,189 --> 00:17:08,079

don't really tell the story as we all

451
00:17:10,710 --> 00:17:09,199
know that's just the measure of the

452
00:17:12,949 --> 00:17:10,720
people who are collecting unemployment

453
00:17:14,309 --> 00:17:12,959
insurance but we're about to graduate a

454
00:17:15,350 --> 00:17:14,319
half a million

455
00:17:16,789 --> 00:17:15,360
students

456
00:17:18,549 --> 00:17:16,799
both out of college and out of high

457
00:17:20,069 --> 00:17:18,559
school maybe it's more than that i think

458
00:17:22,069 --> 00:17:20,079
it's actually millions that are going to

459
00:17:23,590 --> 00:17:22,079
come onto the streets that won't be part

460
00:17:25,429 --> 00:17:23,600
of the unemployment numbers in this

461
00:17:27,669 --> 00:17:25,439
country you know but we're going to

462
00:17:29,590 --> 00:17:27,679
graduate however many engineers we're

463
00:17:31,110 --> 00:17:29,600

going to get out china will graduate

464

00:17:34,150 --> 00:17:31,120

about three and a half times more

465

00:17:36,390 --> 00:17:34,160

engineers than us so will india japan

466

00:17:39,029 --> 00:17:36,400

with half of our population graduates

467

00:17:41,110 --> 00:17:39,039

twice as many engineers as we do and we

468

00:17:42,630 --> 00:17:41,120

lose 40 percent of our graduates to

469

00:17:45,750 --> 00:17:42,640

other countries because where they're

470

00:17:48,150 --> 00:17:45,760

going to get jobs especially if we don't

471

00:17:49,990 --> 00:17:48,160

invest in ourselves invest in our invest

472

00:17:52,470 --> 00:17:50,000

in our own young minds

473

00:17:55,750 --> 00:17:52,480

it seems to me in so many ways

474

00:17:59,190 --> 00:17:55,760

that nasa provides sort of the the

475

00:18:02,150 --> 00:17:59,200

golden eggs of our society right and the

476

00:18:04,950 --> 00:18:02,160

goose is easily fed you know that if we

477

00:18:06,789 --> 00:18:04,960

look to invest in our own futures nasa

478

00:18:08,549 --> 00:18:06,799

is the way to do it and i would just

479

00:18:10,230 --> 00:18:08,559

close by you know please remember the

480

00:18:11,830 --> 00:18:10,240

great line by albert einstein when he

481

00:18:14,549 --> 00:18:11,840

talked about the high cost of an

482

00:18:16,950 --> 00:18:14,559

education that i would just think if we

483

00:18:18,630 --> 00:18:16,960

consider the cost of investing in our

484

00:18:21,190 --> 00:18:18,640

own futures

485

00:18:24,310 --> 00:18:21,200

consider the alternative and that's why

486

00:18:33,029 --> 00:18:24,320

my union wholeheartedly endorses the

487

00:18:37,190 --> 00:18:35,669

thank you greg well i think if we were

488

00:18:39,430 --> 00:18:37,200

when we are on nasa watch it won't be

489

00:18:41,350 --> 00:18:39,440

like watching paint dry that uh and

490

00:18:43,750 --> 00:18:41,360

passion union speech we should have had

491

00:18:45,510 --> 00:18:43,760

a platform for you like you were in a

492

00:18:46,549 --> 00:18:45,520

workforce i've met with you a number of

493

00:18:48,870 --> 00:18:46,559

times

494

00:18:51,029 --> 00:18:48,880

this is your element and so thank you so

495

00:18:53,270 --> 00:18:51,039

much for being here and articulating

496

00:18:55,430 --> 00:18:53,280

that view i should note that greg does

497

00:18:58,310 --> 00:18:55,440

have a flight to catch so he will not be

498

00:19:00,549 --> 00:18:58,320

here uh much longer so if if

499

00:19:02,230 --> 00:19:00,559

while uh dale is speaking he leaves i

500

00:19:05,350 --> 00:19:02,240

really believe it is not because he's

501

00:19:08,630 --> 00:19:05,360

disagreeing with with dale

502

00:19:11,190 --> 00:19:08,640

so so thanks thanks again yes uh so our

503

00:19:13,190 --> 00:19:11,200

next speaker is dale ketchum he is a

504

00:19:15,750 --> 00:19:13,200

representative on a panel as a lifelong

505

00:19:17,990 --> 00:19:15,760

resident of florida's space coast as a

506

00:19:19,510 --> 00:19:18,000

graduate of the university of florida

507

00:19:21,510 --> 00:19:19,520

been involved in the space program

508

00:19:24,150 --> 00:19:21,520

directly or indirectly for his entire

509

00:19:26,310 --> 00:19:24,160

career he was at rockwell international

510

00:19:28,630 --> 00:19:26,320

working on the shuttle for a decade

511

00:19:31,270 --> 00:19:28,640

worked for a district director for

512

00:19:32,630 --> 00:19:31,280

congressman jim bacchus on the house

513

00:19:34,390 --> 00:19:32,640

space subcommittee and the former

514

00:19:37,350 --> 00:19:34,400

director of space programs for

515

00:19:39,510 --> 00:19:37,360

enterprise florida the state's economic

516

00:19:41,029 --> 00:19:39,520

development agency at the time and he is

517

00:19:43,029 --> 00:19:41,039

currently the director of spaceport's

518

00:19:45,510 --> 00:19:43,039

research and technology institute at the

519

00:19:47,350 --> 00:19:45,520

university of central florida

520

00:19:50,630 --> 00:19:47,360

dale we're looking forward to your

521

00:19:52,870 --> 00:19:50,640

comments on our future plans in space

522

00:19:55,110 --> 00:19:52,880

thank you lori uh i guess i want to take

523

00:19:57,430 --> 00:19:55,120

advantage of the fact that uh since this

524

00:19:58,710 --> 00:19:57,440

event is occurring in florida

525

00:20:01,750 --> 00:19:58,720

um

526

00:20:03,830 --> 00:20:01,760

uh focus on for the most part on the

527

00:20:05,590 --> 00:20:03,840

impacts to florida and you know it's

528

00:20:07,590 --> 00:20:05,600

happening here this is our home court

529

00:20:09,190 --> 00:20:07,600

advantage we're going to exploit it but

530

00:20:10,950 --> 00:20:09,200

i think the applications are are

531

00:20:11,990 --> 00:20:10,960

generally across the nation

532

00:20:13,350 --> 00:20:12,000

um

533

00:20:16,549 --> 00:20:13,360

what the president's doing for my

534

00:20:18,789 --> 00:20:16,559

perspective is extremely important

535

00:20:20,870 --> 00:20:18,799

and and i i say that in the in a very

536

00:20:23,430 --> 00:20:20,880

personal context

537

00:20:24,470 --> 00:20:23,440

when my father started putting me

538

00:20:26,789 --> 00:20:24,480

through

539

00:20:28,710 --> 00:20:26,799

uh college at the university of florida

540

00:20:31,350 --> 00:20:28,720

we've been here all our lives so my dad

541

00:20:33,590 --> 00:20:31,360

moved here in 1955 and i was not very

542

00:20:34,390 --> 00:20:33,600

big in 1955 i learned to walk on cocoa

543

00:20:37,270 --> 00:20:34,400

beach

544

00:20:38,549 --> 00:20:37,280

with the original astronauts and

545

00:20:40,310 --> 00:20:38,559

the

546

00:20:41,350 --> 00:20:40,320

when when he was putting me through

547

00:20:43,510 --> 00:20:41,360

college

548

00:20:44,470 --> 00:20:43,520

was 1972 when

549

00:20:46,230 --> 00:20:44,480

the

550

00:20:47,830 --> 00:20:46,240

apollo program was being canceled and

551
00:20:51,029 --> 00:20:47,840
and the devastation in this community

552
00:20:53,350 --> 00:20:51,039
was immense i think we went from 36 000

553
00:20:55,029 --> 00:20:53,360
to about 14 000 in 18 months working

554
00:20:58,549 --> 00:20:55,039
here at ksc and that was back when the

555
00:21:00,149 --> 00:20:58,559
economy was about half what it is today

556
00:21:02,630 --> 00:21:00,159
and um

557
00:21:04,789 --> 00:21:02,640
you know that occurred because all we

558
00:21:06,710 --> 00:21:04,799
did was launch

559
00:21:08,070 --> 00:21:06,720
launch here that's what ksc does we

560
00:21:10,230 --> 00:21:08,080
launch

561
00:21:12,549 --> 00:21:10,240
then now i'm going to be

562
00:21:15,029 --> 00:21:12,559
putting my kids through college

563
00:21:16,789 --> 00:21:15,039

through the painful transition out of

564

00:21:18,310 --> 00:21:16,799

the shuttle work program

565

00:21:20,070 --> 00:21:18,320

and that's going to be

566

00:21:21,510 --> 00:21:20,080

extremely difficult it won't be nearly

567

00:21:22,870 --> 00:21:21,520

as bad as the apollo but it's still

568

00:21:24,070 --> 00:21:22,880

going to hurt like heck to this

569

00:21:25,669 --> 00:21:24,080

community

570

00:21:27,270 --> 00:21:25,679

and i guess what inspires me the most

571

00:21:28,549 --> 00:21:27,280

about what the president's trying to do

572

00:21:32,230 --> 00:21:28,559

is

573

00:21:33,750 --> 00:21:32,240

uh the proposals he's put forward

574

00:21:35,990 --> 00:21:33,760

allow florida

575

00:21:37,669 --> 00:21:36,000

to to have a big piece of the in

576

00:21:39,590 --> 00:21:37,679

increased investment in research and

577

00:21:41,510 --> 00:21:39,600

development and technology development

578

00:21:43,590 --> 00:21:41,520

and to allow us to broaden our business

579

00:21:46,630 --> 00:21:43,600

base here at ksc so we're no longer

580

00:21:49,430 --> 00:21:46,640

focused strictly on operations we we now

581

00:21:51,669 --> 00:21:49,440

will have an institutionalized pieces

582

00:21:54,070 --> 00:21:51,679

of of research budgets of program

583

00:21:56,630 --> 00:21:54,080

development a program management and

584

00:21:58,950 --> 00:21:56,640

this will make it so that fortunately my

585

00:22:00,870 --> 00:21:58,960

kids won't have to go through the same

586

00:22:03,270 --> 00:22:00,880

sort of economic whipsaw that occurs

587

00:22:04,789 --> 00:22:03,280

when your programs cycle down for the

588

00:22:06,470 --> 00:22:04,799

same reason that if you you don't if

589

00:22:08,310 --> 00:22:06,480

your retirement fund is all invested in

590

00:22:09,430 --> 00:22:08,320

one stock when that stock goes down you

591

00:22:11,430 --> 00:22:09,440

get hammered

592

00:22:12,390 --> 00:22:11,440

it'll allow florida to be a much more

593

00:22:15,270 --> 00:22:12,400

diverse

594

00:22:18,870 --> 00:22:15,280

and robust and and hopefully not even uh

595

00:22:21,909 --> 00:22:18,880

solely focused on on on nasa as as a

596

00:22:23,510 --> 00:22:21,919

manned space launch activity for that

597

00:22:25,270 --> 00:22:23,520

particular agency

598

00:22:27,029 --> 00:22:25,280

so it's inspiring to me that we're going

599

00:22:28,470 --> 00:22:27,039

to finally get what a lot of us in the

600

00:22:30,070 --> 00:22:28,480

community have been seeking for a long

601
00:22:30,950 --> 00:22:30,080
time and that's a diversified business

602
00:22:34,630 --> 00:22:30,960
case

603
00:22:35,430 --> 00:22:34,640
for nasa here in the state of florida

604
00:22:37,350 --> 00:22:35,440
it

605
00:22:39,830 --> 00:22:37,360
on a broader context i think what the

606
00:22:41,909 --> 00:22:39,840
president is proposing when as we heard

607
00:22:43,350 --> 00:22:41,919
him today and as we listened to him

608
00:22:45,830 --> 00:22:43,360
uh some of us had the opportunity to

609
00:22:47,990 --> 00:22:45,840
meet with him uh for 15-20 minutes

610
00:22:49,750 --> 00:22:48,000
before he spoke and it was a real

611
00:22:51,669 --> 00:22:49,760
opportunity the president to who's a

612
00:22:53,990 --> 00:22:51,679
very approachable gentleman

613
00:22:56,230 --> 00:22:54,000

i mean he comes in with his retinue of

614

00:22:57,590 --> 00:22:56,240

secret service it's rather intimidating

615

00:22:59,590 --> 00:22:57,600

but he promptly walks over and starts

616

00:23:03,110 --> 00:22:59,600

talking to you in a very offhand manner

617

00:23:03,990 --> 00:23:03,120

and was able to effectively convey

618

00:23:07,510 --> 00:23:04,000

that

619

00:23:09,510 --> 00:23:07,520

statements

620

00:23:11,750 --> 00:23:09,520

about his investment and commitment to

621

00:23:13,430 --> 00:23:11,760

human space flight is genuine it's

622

00:23:16,149 --> 00:23:13,440

personal and and he was able to

623

00:23:18,390 --> 00:23:16,159

articulate not an in-depth understanding

624

00:23:20,870 --> 00:23:18,400

of physical principles of you know

625

00:23:23,029 --> 00:23:20,880

orbital mechanics that's not his field

626

00:23:24,950 --> 00:23:23,039

but a genuine understanding of the

627

00:23:27,110 --> 00:23:24,960

nature of the challenges that confront

628

00:23:29,029 --> 00:23:27,120

this industry the nature of the church

629

00:23:31,029 --> 00:23:29,039

that we're going to face trying to get

630

00:23:32,710 --> 00:23:31,039

out beyond low earth orbit and that his

631

00:23:34,950 --> 00:23:32,720

commitment was personal

632

00:23:37,029 --> 00:23:34,960

that was encouraging to me i think what

633

00:23:39,350 --> 00:23:37,039

he's talking about wanting to do which

634

00:23:41,990 --> 00:23:39,360

is is to

635

00:23:43,990 --> 00:23:42,000

to bring the commercial sector

636

00:23:46,549 --> 00:23:44,000

into low earth orbit that

637

00:23:48,630 --> 00:23:46,559

to me resonates very well because

638

00:23:51,830 --> 00:23:48,640

i've been here all my life uh you know

639

00:23:53,510 --> 00:23:51,840

i've seen uh uh you know

640

00:23:55,430 --> 00:23:53,520

all of the different vehicles and and i

641

00:23:57,510 --> 00:23:55,440

understand that the

642

00:23:59,350 --> 00:23:57,520

commercial sector

643

00:24:00,950 --> 00:23:59,360

is trying to develop technology that is

644

00:24:02,870 --> 00:24:00,960

essentially 50 years old we've been

645

00:24:04,149 --> 00:24:02,880

putting humans in space for 50 years the

646

00:24:05,269 --> 00:24:04,159

russians have been doing it for longer

647

00:24:06,789 --> 00:24:05,279

than that

648

00:24:08,230 --> 00:24:06,799

if not now then when are we going to

649

00:24:09,750 --> 00:24:08,240

turn it over to the commercial sector

650

00:24:12,070 --> 00:24:09,760

you've got an opportunity you have a

651
00:24:14,789 --> 00:24:12,080
turning point the shuttle is retiring in

652
00:24:15,830 --> 00:24:14,799
my mind it makes sense to do that now

653
00:24:16,630 --> 00:24:15,840
um

654
00:24:19,190 --> 00:24:16,640
the

655
00:24:20,630 --> 00:24:19,200
for

656
00:24:23,110 --> 00:24:20,640
a lot of people here is a little

657
00:24:24,950 --> 00:24:23,120
difficult to understand because not

658
00:24:26,710 --> 00:24:24,960
difficult to understand it's difficult

659
00:24:28,789 --> 00:24:26,720
it's a challenge to them because a

660
00:24:31,110 --> 00:24:28,799
robust commercial

661
00:24:33,350 --> 00:24:31,120
launch industry is not going to be a

662
00:24:35,830 --> 00:24:33,360
labor-intensive launch industry it's

663
00:24:37,269 --> 00:24:35,840

going to be efficient lean and what

664

00:24:39,590 --> 00:24:37,279

we're where we will make up the

665

00:24:41,350 --> 00:24:39,600

difference is in the market activity

666

00:24:43,350 --> 00:24:41,360

that will occur with ever increasing

667

00:24:45,350 --> 00:24:43,360

launches here if we are launching humans

668

00:24:47,190 --> 00:24:45,360

into space for nasa

669

00:24:49,590 --> 00:24:47,200

on a commercial vehicle if we're having

670

00:24:51,029 --> 00:24:49,600

a robust air force activity i know

671

00:24:53,269 --> 00:24:51,039

they'd like to have more launches and

672

00:24:56,070 --> 00:24:53,279

get their launch rate their launch costs

673

00:24:58,470 --> 00:24:56,080

down as well as the commercial sector

674

00:24:59,430 --> 00:24:58,480

the more you get that activity

675

00:25:01,350 --> 00:24:59,440

the more

676

00:25:03,350 --> 00:25:01,360

uh the you will lower

677

00:25:04,950 --> 00:25:03,360

as in any economic model the more you do

678

00:25:07,190 --> 00:25:04,960

something the lower is your cost going

679

00:25:09,430 --> 00:25:07,200

to be to do it the more we lower the

680

00:25:10,789 --> 00:25:09,440

cost of payloads into space

681

00:25:13,510 --> 00:25:10,799

the more people are going to want to put

682

00:25:15,510 --> 00:25:13,520

their payloads in space and it that then

683

00:25:17,350 --> 00:25:15,520

builds as if we start becoming the

684

00:25:18,630 --> 00:25:17,360

launch cluster that we want to be here

685

00:25:20,470 --> 00:25:18,640

in florida

686

00:25:22,230 --> 00:25:20,480

then that will attract additional second

687

00:25:23,909 --> 00:25:22,240

and third tier suppliers the vendors

688

00:25:26,310 --> 00:25:23,919

they'll all want to come here we created

689

00:25:28,630 --> 00:25:26,320

a standard economic cluster

690

00:25:34,070 --> 00:25:28,640

um that's very encouraging to us a lot

691

00:25:37,269 --> 00:25:35,990

i think it was i think it's safe to say

692

00:25:39,029 --> 00:25:37,279

more than 90 percent of all the

693

00:25:40,870 --> 00:25:39,039

commercial payloads in the count in the

694

00:25:43,029 --> 00:25:40,880

world for at least a free world were

695

00:25:45,110 --> 00:25:43,039

launched from florida now we're less

696

00:25:46,310 --> 00:25:45,120

than 10 i believe

697

00:25:47,830 --> 00:25:46,320

um

698

00:25:49,750 --> 00:25:47,840

it's you know we've been fighting that

699

00:25:51,190 --> 00:25:49,760

burden for a long time it's easy to

700

00:25:52,710 --> 00:25:51,200

point at the air force and say it's all

701
00:25:53,669 --> 00:25:52,720
your guys fault with the range problems

702
00:25:55,669 --> 00:25:53,679
that's that's not a fair

703
00:25:57,830 --> 00:25:55,679
characterization it's part of it

704
00:26:00,070 --> 00:25:57,840
but you know we managed to create an

705
00:26:02,789 --> 00:26:00,080
economic system that

706
00:26:05,110 --> 00:26:02,799
that wasn't good for us but created

707
00:26:07,269 --> 00:26:05,120
uh you know french guiana and the kuru

708
00:26:08,870 --> 00:26:07,279
launch station and and created an

709
00:26:11,269 --> 00:26:08,880
environment that was great for everybody

710
00:26:12,789 --> 00:26:11,279
but us and what we have now is a real

711
00:26:14,230 --> 00:26:12,799
opportunity i think the president's

712
00:26:16,549 --> 00:26:14,240
given us the opportunity and the

713
00:26:18,390 --> 00:26:16,559

resources and the initiative to go

714

00:26:20,230 --> 00:26:18,400

forward and start to recapture a large

715

00:26:22,230 --> 00:26:20,240

share of that commercial marketplace

716

00:26:24,710 --> 00:26:22,240

because they do want to launch here it's

717

00:26:26,230 --> 00:26:24,720

a lot more

718

00:26:28,310 --> 00:26:26,240

commercial providers are going to want

719

00:26:30,870 --> 00:26:28,320

to provide come to florida because it's

720

00:26:32,950 --> 00:26:30,880

much easier to spend a week or two with

721

00:26:34,630 --> 00:26:32,960

your payload on the beaches of cocoa

722

00:26:35,830 --> 00:26:34,640

beach than it is in the jungles of

723

00:26:37,590 --> 00:26:35,840

guyana

724

00:26:39,830 --> 00:26:37,600

it's just the business model will work

725

00:26:41,590 --> 00:26:39,840

for us if we can get over these critical

726
00:26:42,950 --> 00:26:41,600
compo and technical challenges but i

727
00:26:43,990 --> 00:26:42,960
think the president has given us the

728
00:26:46,710 --> 00:26:44,000
initiative

729
00:26:47,990 --> 00:26:46,720
the resources uh and and the direction

730
00:26:50,470 --> 00:26:48,000
to go do that so that that's

731
00:26:52,630 --> 00:26:50,480
particularly exciting to me i use the

732
00:26:55,430 --> 00:26:52,640
analogy of

733
00:26:56,950 --> 00:26:55,440
what we were resembles a mid 20th

734
00:26:58,230 --> 00:26:56,960
century detroit

735
00:27:02,789 --> 00:26:58,240
it was

736
00:27:05,029 --> 00:27:02,799
was very labor intensive and what the

737
00:27:07,029 --> 00:27:05,039
president is is hoping to allow us to do

738
00:27:08,950 --> 00:27:07,039

is transition into a more robust

739

00:27:12,070 --> 00:27:08,960

economic marketplace

740

00:27:14,070 --> 00:27:12,080

that resembles silicon valley now under

741

00:27:15,510 --> 00:27:14,080

understand this it's a commercial

742

00:27:17,190 --> 00:27:15,520

marketplace so we're going to have

743

00:27:18,710 --> 00:27:17,200

winners we're going to have losers we're

744

00:27:20,870 --> 00:27:18,720

going to have litigation we're going to

745

00:27:22,870 --> 00:27:20,880

have layoffs all the good stuff that

746

00:27:25,510 --> 00:27:22,880

comes with a robust capitalist

747

00:27:28,310 --> 00:27:25,520

environment but that is exactly the sort

748

00:27:30,950 --> 00:27:28,320

of pla environment that america does

749

00:27:33,430 --> 00:27:30,960

best in it's exactly sort of environment

750

00:27:35,269 --> 00:27:33,440

that we will best compete with the

751
00:27:37,590 --> 00:27:35,279
chinese and the indians and the russians

752
00:27:40,310 --> 00:27:37,600
and everybody else uh who's trying to

753
00:27:43,110 --> 00:27:40,320
get into this the space marketplace that

754
00:27:44,389 --> 00:27:43,120
that to me is who i want competing uh in

755
00:27:46,470 --> 00:27:44,399
getting into low earth orbit and

756
00:27:50,149 --> 00:27:46,480
capturing the commercial market place in

757
00:27:51,669 --> 00:27:50,159
the future um for ksc i think in again

758
00:27:54,310 --> 00:27:51,679
in particular and my guess is it's going

759
00:27:57,510 --> 00:27:54,320
to apply to centers across the board um

760
00:28:00,470 --> 00:27:57,520
ksc as a just a launch operator has been

761
00:28:03,590 --> 00:28:00,480
a rather over the generation

762
00:28:05,830 --> 00:28:03,600
that we've been here is has been rather

763
00:28:07,510 --> 00:28:05,840

insular the activity stays inside the

764

00:28:09,190 --> 00:28:07,520

fence i mean the people are very

765

00:28:10,630 --> 00:28:09,200

involved outside the fence involved with

766

00:28:12,149 --> 00:28:10,640

their communities their churches their

767

00:28:14,149 --> 00:28:12,159

not-for-profits

768

00:28:16,070 --> 00:28:14,159

but the business activity has been

769

00:28:17,830 --> 00:28:16,080

inside the fence and the contractors

770

00:28:19,350 --> 00:28:17,840

have responded accordingly

771

00:28:20,789 --> 00:28:19,360

i think what the president is proposing

772

00:28:22,710 --> 00:28:20,799

allows us to get more involved in

773

00:28:24,710 --> 00:28:22,720

research activity that will engage the

774

00:28:27,269 --> 00:28:24,720

local community on a more effective

775

00:28:28,389 --> 00:28:27,279

manner and integrate collectively all of

776

00:28:30,310 --> 00:28:28,399

us

777

00:28:32,310 --> 00:28:30,320

additionally the the conversations that

778

00:28:34,230 --> 00:28:32,320

we've been having to date talk about

779

00:28:36,870 --> 00:28:34,240

better integrating um there have been

780

00:28:38,950 --> 00:28:36,880

some pilot projects run through

781

00:28:41,669 --> 00:28:38,960

like the nasa shuttle logistics depot

782

00:28:44,950 --> 00:28:41,679

where they're trying to see if we can't

783

00:28:47,350 --> 00:28:44,960

aggregate the demand of the air force

784

00:28:49,430 --> 00:28:47,360

the army and nasa

785

00:28:51,029 --> 00:28:49,440

to address industrial base issues

786

00:28:53,990 --> 00:28:51,039

because the industrial base the united

787

00:28:56,070 --> 00:28:54,000

states is a big big problem

788

00:28:59,110 --> 00:28:56,080

the federal government is an appallingly

789

00:29:00,789 --> 00:28:59,120

bad customer to the contractor community

790

00:29:01,750 --> 00:29:00,799

because we're buying

791

00:29:03,909 --> 00:29:01,760

uh

792

00:29:06,789 --> 00:29:03,919

small pieces that are very expensive

793

00:29:07,909 --> 00:29:06,799

that are only ones and twos it's and

794

00:29:10,230 --> 00:29:07,919

you're the

795

00:29:12,630 --> 00:29:10,240

the prime contractor the private sector

796

00:29:14,389 --> 00:29:12,640

doesn't really know they don't have a

797

00:29:16,789 --> 00:29:14,399

stable sustained

798

00:29:19,029 --> 00:29:16,799

uh requirement that they can then you

799

00:29:21,350 --> 00:29:19,039

know let go out and finance to build the

800

00:29:22,710 --> 00:29:21,360

capability to meet that requirement

801
00:29:24,230 --> 00:29:22,720
office of secretary of defense is

802
00:29:26,310 --> 00:29:24,240
funding some programs that will allow us

803
00:29:27,510 --> 00:29:26,320
to look can we aggregate that demand so

804
00:29:29,830 --> 00:29:27,520
that

805
00:29:32,149 --> 00:29:29,840
the air force and the army and nasa and

806
00:29:34,070 --> 00:29:32,159
department of energy are

807
00:29:35,990 --> 00:29:34,080
are collectively knowing what they're

808
00:29:38,470 --> 00:29:36,000
going to be purchasing when and can

809
00:29:41,110 --> 00:29:38,480
provide a more sustained

810
00:29:42,789 --> 00:29:41,120
demand to the private sector

811
00:29:44,389 --> 00:29:42,799
so that they know what their needs are

812
00:29:46,630 --> 00:29:44,399
going to be what their their big

813
00:29:48,870 --> 00:29:46,640

customer is going to want in the in in

814

00:29:51,029 --> 00:29:48,880

the future that they can then go out and

815

00:29:52,630 --> 00:29:51,039

borrow money to prepare for and that's

816

00:29:54,950 --> 00:29:52,640

particularly important where that really

817

00:29:56,470 --> 00:29:54,960

gets in the industrial base issues

818

00:29:58,070 --> 00:29:56,480

is how that impacts not so much the

819

00:30:00,389 --> 00:29:58,080

primes but the second and third tier

820

00:30:02,230 --> 00:30:00,399

suppliers that's a big problem that's

821

00:30:04,630 --> 00:30:02,240

exactly why the shuttle logistics depot

822

00:30:06,549 --> 00:30:04,640

came into being because

823

00:30:07,750 --> 00:30:06,559

nasa told them do you want to build a

824

00:30:09,830 --> 00:30:07,760

piece of the shuttle because we're going

825

00:30:11,669 --> 00:30:09,840

to fly 50 times a year

826

00:30:14,070 --> 00:30:11,679

and you'll be able to build lots of them

827

00:30:15,909 --> 00:30:14,080

and they said sure

828

00:30:17,350 --> 00:30:15,919

and then when we ended up flying four or

829

00:30:19,190 --> 00:30:17,360

five times a year

830

00:30:20,710 --> 00:30:19,200

they said we don't want any part of this

831

00:30:22,230 --> 00:30:20,720

business because we're not making money

832

00:30:23,830 --> 00:30:22,240

and the shuttle logistics depot came

833

00:30:26,710 --> 00:30:23,840

about because

834

00:30:28,549 --> 00:30:26,720

nasa had to take over responsibility for

835

00:30:29,990 --> 00:30:28,559

manufacturing refurbishment all this

836

00:30:31,830 --> 00:30:30,000

equipment because the private sector

837

00:30:34,310 --> 00:30:31,840

said we don't want your business

838

00:30:36,710 --> 00:30:34,320

and that problem is growing nationally

839

00:30:38,549 --> 00:30:36,720

in terms of the federal government being

840

00:30:40,470 --> 00:30:38,559

an unattractive partner to the private

841

00:30:42,230 --> 00:30:40,480

sector and if the federal government if

842

00:30:44,230 --> 00:30:42,240

nasa and the air force are unattractive

843

00:30:46,070 --> 00:30:44,240

customers to the private sector we're

844

00:30:48,630 --> 00:30:46,080

all going to pay for it both with

845

00:30:50,710 --> 00:30:48,640

increased costs and also the industrial

846

00:30:52,149 --> 00:30:50,720

base which is our primary

847

00:30:54,630 --> 00:30:52,159

defense

848

00:30:56,470 --> 00:30:54,640

both militarily intelligence wise and

849

00:30:58,070 --> 00:30:56,480

economically we're undermining the

850

00:30:59,669 --> 00:30:58,080

primary thing that defends the united

851
00:31:01,190 --> 00:30:59,679
states of america i think what the

852
00:31:02,789 --> 00:31:01,200
president is proposing gives us an

853
00:31:05,350 --> 00:31:02,799
opportunity to better integrate those

854
00:31:07,509 --> 00:31:05,360
activities and that's good

855
00:31:09,750 --> 00:31:07,519
i would like to see

856
00:31:11,669 --> 00:31:09,760
florida lead the way because we are sort

857
00:31:13,909 --> 00:31:11,679
of the epicenter at least in space of

858
00:31:15,509 --> 00:31:13,919
both nasa activities the air force

859
00:31:18,950 --> 00:31:15,519
activities and now the commercial

860
00:31:20,789 --> 00:31:18,960
activities um it's going to take some

861
00:31:22,230 --> 00:31:20,799
imagination and some innovation but i

862
00:31:23,590 --> 00:31:22,240
think clearly we have a president an

863
00:31:25,029 --> 00:31:23,600

administration

864

00:31:26,549 --> 00:31:25,039

uh where we're going to have an

865

00:31:29,269 --> 00:31:26,559

opportunity to come forward with good

866

00:31:32,230 --> 00:31:30,630

and i guess i'll just

867

00:31:35,190 --> 00:31:32,240

shut up because i think the purpose of

868

00:31:38,310 --> 00:31:35,200

this is to get audience interaction

869

00:31:42,549 --> 00:31:40,950

thank you very much even though i am was

870

00:31:44,630 --> 00:31:42,559

raised in michigan in the mid 20th

871

00:31:46,630 --> 00:31:44,640

century and

872

00:31:48,789 --> 00:31:46,640

i won't take it personally but you know

873

00:31:50,870 --> 00:31:48,799

that i have not lived there in about 25

874

00:31:53,110 --> 00:31:50,880

years so that has something to do with

875

00:31:54,789 --> 00:31:53,120

it in fact that the job creation and

876

00:31:56,870 --> 00:31:54,799

capability there just did not happen in

877

00:31:59,350 --> 00:31:56,880

time to keep a lot of us

878

00:32:02,310 --> 00:31:59,360

our final speaker is dr may jamison with

879

00:32:03,830 --> 00:32:02,320

a phd from cornell university

880

00:32:09,029 --> 00:32:03,840

md

881

00:32:10,950 --> 00:32:09,039

spent two and a half years in the area

882

00:32:13,269 --> 00:32:10,960

peace corps as a medical officer for

883

00:32:16,789 --> 00:32:13,279

sierra leone she is a veteran of the

884

00:32:18,870 --> 00:32:16,799

space shuttle endeavour flight in 1992

885

00:32:20,149 --> 00:32:18,880

she's an advocate for the important role

886

00:32:22,630 --> 00:32:20,159

that the space program plays in

887

00:32:24,310 --> 00:32:22,640

inspiring a future generation of

888

00:32:26,789 --> 00:32:24,320

scientists and engineers in fact

889

00:32:29,669 --> 00:32:26,799

inspired me in a talk i believe in 1992

890

00:32:31,110 --> 00:32:29,679

after your flight in chicago once and

891

00:32:32,870 --> 00:32:31,120

she's the founder of the jemison group

892

00:32:34,389 --> 00:32:32,880

and helps lead projects to develop new

893

00:32:36,470 --> 00:32:34,399

technologies as well as bring those

894

00:32:38,389 --> 00:32:36,480

technologies to real people in the

895

00:32:39,350 --> 00:32:38,399

places where they can benefit from them

896

00:32:41,590 --> 00:32:39,360

the most

897

00:32:43,430 --> 00:32:41,600

so may welcome and we look forward to

898

00:32:45,830 --> 00:32:43,440

your remarks

899

00:32:48,149 --> 00:32:45,840

okay thank you i i'm going to tell you

900

00:32:49,509 --> 00:32:48,159

what i did was you're going to finally

901
00:32:51,590 --> 00:32:49,519
feel comfortable here at a nasa

902
00:32:53,110 --> 00:32:51,600
presentation because when i was told to

903
00:32:55,269 --> 00:32:53,120
speak they asked me where were my charts

904
00:32:59,269 --> 00:32:55,279
so of course i made charts and so i

905
00:33:03,669 --> 00:33:00,870
i feel really at home now i have to say

906
00:33:05,590 --> 00:33:03,679
a couple things because

907
00:33:07,590 --> 00:33:05,600
my first job with nasa was actually at

908
00:33:09,350 --> 00:33:07,600
kennedy space center as a c-squared

909
00:33:10,950 --> 00:33:09,360
coming down all the time

910
00:33:13,830 --> 00:33:10,960
following the vehicles and the thermal

911
00:33:14,630 --> 00:33:13,840
protection system and someone just said

912
00:33:16,230 --> 00:33:14,640
um

913
00:33:18,070 --> 00:33:16,240

greg just said you know about being

914

00:33:19,830 --> 00:33:18,080

heroes i just want to tell you the real

915

00:33:22,310 --> 00:33:19,840

heroes were the folks who strapped us in

916

00:33:23,590 --> 00:33:22,320

and people asked did you feel uh scared

917

00:33:25,830 --> 00:33:23,600

when you went up and i was like no

918

00:33:27,669 --> 00:33:25,840

because you've never had so many smart

919

00:33:29,110 --> 00:33:27,679

dedicated people looking after you in

920

00:33:32,710 --> 00:33:29,120

your life so i just want to say thank

921

00:33:35,269 --> 00:33:32,720

you about all that before i get started

922

00:33:37,830 --> 00:33:35,279

i was asked to speak about innovation

923

00:33:40,470 --> 00:33:37,840

science technology engineering and

924

00:33:43,029 --> 00:33:40,480

our stem education and how the space

925

00:33:44,549 --> 00:33:43,039

program helps to inspire these

926
00:33:46,950 --> 00:33:44,559
i want to start off by saying when you

927
00:33:49,029 --> 00:33:46,960
talk about innovation

928
00:33:50,630 --> 00:33:49,039
and go to the next slide we talk about

929
00:33:52,710 --> 00:33:50,640
innovation

930
00:33:54,470 --> 00:33:52,720
it's not just about

931
00:33:57,029 --> 00:33:54,480
doing something new

932
00:33:58,549 --> 00:33:57,039
innovation has to be different the quote

933
00:34:00,310 --> 00:33:58,559
that you see up there is while other

934
00:34:02,549 --> 00:34:00,320
nations are trying to reach the moon we

935
00:34:05,750 --> 00:34:02,559
are trying to reach the village that

936
00:34:07,830 --> 00:34:05,760
quote was in the 1960s by julius nieri

937
00:34:09,510 --> 00:34:07,840
who is the president of tanzania the

938
00:34:11,589 --> 00:34:09,520

reason i bring it up is because when i

939

00:34:13,349 --> 00:34:11,599

left nasa the first thing i did was a

940

00:34:14,950 --> 00:34:13,359

teacher course at dartmouth that was

941

00:34:16,950 --> 00:34:14,960

called space age technologies in

942

00:34:19,030 --> 00:34:16,960

developing countries i spent time

943

00:34:21,669 --> 00:34:19,040

overseas but people never started to

944

00:34:22,790 --> 00:34:21,679

think about again how these technologies

945

00:34:24,869 --> 00:34:22,800

impact

946

00:34:26,790 --> 00:34:24,879

us in lots of different ways and so i

947

00:34:27,750 --> 00:34:26,800

wanted my students

948

00:34:28,629 --> 00:34:27,760

to

949

00:34:31,030 --> 00:34:28,639

take

950

00:34:33,669 --> 00:34:31,040

advanced technologies and figure out how

951
00:34:35,109 --> 00:34:33,679
do we use them for development work

952
00:34:37,829 --> 00:34:35,119
place things that don't seem to go

953
00:34:39,990 --> 00:34:37,839
together so one of the students

954
00:34:41,349 --> 00:34:40,000
they worked on things like looking at

955
00:34:42,869 --> 00:34:41,359
can we use satellite-based

956
00:34:44,950 --> 00:34:42,879
telecommunications this sounds really

957
00:34:47,109 --> 00:34:44,960
easy right now but this was back in

958
00:34:49,750 --> 00:34:47,119
1993-94

959
00:34:50,790 --> 00:34:49,760
can we use satellite-based technologies

960
00:34:52,869 --> 00:34:50,800
to help

961
00:34:54,869 --> 00:34:52,879
look at delivering medical care or

962
00:34:56,470 --> 00:34:54,879
facilitating medical care so they design

963
00:34:59,750 --> 00:34:56,480

whole systems around it they have to

964

00:35:01,750 --> 00:34:59,760

learn about development work as well as

965

00:35:03,349 --> 00:35:01,760

being overseas we go to the next page

966

00:35:06,069 --> 00:35:03,359

and so what we've heard today i'm not

967

00:35:09,589 --> 00:35:06,079

going to talk about the amount of money

968

00:35:10,950 --> 00:35:09,599

and r d and what happens in terms of you

969

00:35:12,870 --> 00:35:10,960

know for every dollar that goes into

970

00:35:14,950 --> 00:35:12,880

nasa seven to ten here in the u.s

971

00:35:16,630 --> 00:35:14,960

economy we know those kind of statistics

972

00:35:19,750 --> 00:35:16,640

i've had people do a much better job

973

00:35:22,230 --> 00:35:19,760

here than i would do initially but let's

974

00:35:24,790 --> 00:35:22,240

say that it is not really sufficient

975

00:35:28,390 --> 00:35:24,800

just to think about space exploration in

976
00:35:29,270 --> 00:35:28,400
terms of its uh impact in economic terms

977
00:35:31,030 --> 00:35:29,280
space

978
00:35:33,030 --> 00:35:31,040
exploration benefits also have to be

979
00:35:35,349 --> 00:35:33,040
considered from the perspective of

980
00:35:36,710 --> 00:35:35,359
improving quality of life so we heard

981
00:35:39,109 --> 00:35:36,720
about some of the things called

982
00:35:40,870 --> 00:35:39,119
spin-offs and things like that

983
00:35:42,630 --> 00:35:40,880
but

984
00:35:44,390 --> 00:35:42,640
how do we bring it down so people

985
00:35:47,589 --> 00:35:44,400
understand that it improves quality of

986
00:35:49,990 --> 00:35:47,599
life well we can talk about things from

987
00:35:52,150 --> 00:35:50,000
medical imaging we can talk about things

988
00:35:54,310 --> 00:35:52,160

people take for granted like gps systems

989

00:35:55,990 --> 00:35:54,320

weather satellites and i'm in houston

990

00:35:58,069 --> 00:35:56,000

texas i know here in florida you guys

991

00:36:00,310 --> 00:35:58,079

know a whole lot more about hurricanes

992

00:36:02,390 --> 00:36:00,320

and sometimes i do in houston but just

993

00:36:03,990 --> 00:36:02,400

right now with hurricane ike some of the

994

00:36:05,349 --> 00:36:04,000

issues associated with getting people

995

00:36:06,870 --> 00:36:05,359

out on time understanding what was

996

00:36:08,390 --> 00:36:06,880

happening really came from weather

997

00:36:09,750 --> 00:36:08,400

satellites and people forget when

998

00:36:11,750 --> 00:36:09,760

they're looking at those images that

999

00:36:13,510 --> 00:36:11,760

those weather satellites are in space

1000

00:36:17,430 --> 00:36:13,520

which is really interesting but those

1001
00:36:19,430 --> 00:36:17,440
change and affect our quality of life

1002
00:36:20,950 --> 00:36:19,440
those are the issues that people really

1003
00:36:22,950 --> 00:36:20,960
understand

1004
00:36:24,470 --> 00:36:22,960
it's nice when we say the really

1005
00:36:25,270 --> 00:36:24,480
big words and

1006
00:36:27,190 --> 00:36:25,280
but

1007
00:36:29,190 --> 00:36:27,200
it's the quality of life that makes a

1008
00:36:30,390 --> 00:36:29,200
difference and that's what we want to

1009
00:36:32,390 --> 00:36:30,400
talk about

1010
00:36:34,069 --> 00:36:32,400
while i was uh teaching i put together a

1011
00:36:35,510 --> 00:36:34,079
project called seeing the future science

1012
00:36:37,510 --> 00:36:35,520
engineering and education and that was

1013
00:36:39,190 --> 00:36:37,520

celebrating the 50th anniversary of the

1014

00:36:41,349 --> 00:36:39,200

national science foundation which

1015

00:36:42,790 --> 00:36:41,359

predated nasa a little bit

1016

00:36:44,550 --> 00:36:42,800

and

1017

00:36:46,390 --> 00:36:44,560

that one of the things that happened at

1018

00:36:48,870 --> 00:36:46,400

that program we had a bunch of

1019

00:36:50,710 --> 00:36:48,880

scientists from all over the place

1020

00:36:53,109 --> 00:36:50,720

national medal of technology national

1021

00:36:55,750 --> 00:36:53,119

medal of science winners

1022

00:36:57,589 --> 00:36:55,760

one of them won a nobel prize later

1023

00:37:01,270 --> 00:36:57,599

they were coming up id with ideas were

1024

00:37:03,750 --> 00:37:01,280

what are the best uses for science

1025

00:37:05,510 --> 00:37:03,760

and in and technology funding r d

1026
00:37:07,510 --> 00:37:05,520
funding from the government for basic

1027
00:37:09,589 --> 00:37:07,520
research they came up with a list of

1028
00:37:11,190 --> 00:37:09,599
things that it ought to do and questions

1029
00:37:13,829 --> 00:37:11,200
that ought to be applied to these kinds

1030
00:37:16,150 --> 00:37:13,839
of programs one of the things was does

1031
00:37:18,710 --> 00:37:16,160
it create a tool does this research or

1032
00:37:21,030 --> 00:37:18,720
this development does it create a tool

1033
00:37:22,950 --> 00:37:21,040
that allows other

1034
00:37:25,109 --> 00:37:22,960
scientists to do more work and in fact

1035
00:37:27,349 --> 00:37:25,119
the way one of the participants put it

1036
00:37:30,230 --> 00:37:27,359
is the one scientist tools becomes a

1037
00:37:33,030 --> 00:37:30,240
next scientist basic research we can ask

1038
00:37:35,030 --> 00:37:33,040

ourselves does nasa do that the other

1039

00:37:36,950 --> 00:37:35,040

question they asked was

1040

00:37:39,670 --> 00:37:36,960

does it impact

1041

00:37:42,150 --> 00:37:39,680

science and technology education

1042

00:37:44,550 --> 00:37:42,160

that research funding should impact

1043

00:37:45,990 --> 00:37:44,560

beneficially science and technology

1044

00:37:48,310 --> 00:37:46,000

education and they thought that that was

1045

00:37:49,750 --> 00:37:48,320

a requirement so i'm going to put start

1046

00:37:51,829 --> 00:37:49,760

to look at a couple of different

1047

00:37:53,829 --> 00:37:51,839

specifics that you might not have paid

1048

00:37:56,069 --> 00:37:53,839

attention to or thought had a lot to do

1049

00:37:58,390 --> 00:37:56,079

with nasa the reason i said md is

1050

00:37:59,910 --> 00:37:58,400

because the next slide is going to focus

1051
00:38:01,750 --> 00:37:59,920
in on life sciences and space

1052
00:38:04,069 --> 00:38:01,760
exploration i just want to take a little

1053
00:38:07,430 --> 00:38:04,079
area that we probably don't think about

1054
00:38:09,750 --> 00:38:07,440
very much and talk about how innovation

1055
00:38:11,510 --> 00:38:09,760
has you know from the space program has

1056
00:38:14,390 --> 00:38:11,520
affected life on earth and how it could

1057
00:38:16,390 --> 00:38:14,400
do more if we pay attention to it so

1058
00:38:17,750 --> 00:38:16,400
when you look at life sciences and space

1059
00:38:19,589 --> 00:38:17,760
exploration they're incredible

1060
00:38:21,510 --> 00:38:19,599
opportunities and challenges

1061
00:38:23,349 --> 00:38:21,520
but basically

1062
00:38:25,670 --> 00:38:23,359
what we pay attention to

1063
00:38:27,990 --> 00:38:25,680

for life sciences in space exploration

1064

00:38:30,790 --> 00:38:28,000

is the fact that we're putting people in

1065

00:38:33,270 --> 00:38:30,800

unusual environments you know

1066

00:38:35,109 --> 00:38:33,280

astronauts may not be olympic athlete

1067

00:38:37,510 --> 00:38:35,119

healthy but they're physiologically

1068

00:38:39,349 --> 00:38:37,520

healthy right so we're putting them in

1069

00:38:41,430 --> 00:38:39,359

usual environments seeing what happens

1070

00:38:43,589 --> 00:38:41,440

to their to their bodies they're

1071

00:38:44,870 --> 00:38:43,599

enclosed in isolated systems so now we

1072

00:38:47,349 --> 00:38:44,880

have to understand

1073

00:38:49,270 --> 00:38:47,359

from a life scientist perspective

1074

00:38:50,710 --> 00:38:49,280

how do we make sure that those you know

1075

00:38:51,910 --> 00:38:50,720

systems are refreshed how do we feed

1076
00:38:54,310 --> 00:38:51,920
them there's a whole bunch of things

1077
00:38:56,390 --> 00:38:54,320
that go on that are purely life science

1078
00:38:57,510 --> 00:38:56,400
driven in terms of getting people into

1079
00:38:59,510 --> 00:38:57,520
space

1080
00:39:00,550 --> 00:38:59,520
then we can talk about the vantage point

1081
00:39:02,550 --> 00:39:00,560
of space and that's what i'm going to

1082
00:39:04,150 --> 00:39:02,560
come back to the last one i have is

1083
00:39:05,990 --> 00:39:04,160
exobiology

1084
00:39:08,710 --> 00:39:06,000
you know when you go down to the basis

1085
00:39:10,390 --> 00:39:08,720
of life sciences what is life can we

1086
00:39:11,829 --> 00:39:10,400
identify it you know am i i could say

1087
00:39:13,990 --> 00:39:11,839
teasingly you know am i going to find

1088
00:39:16,310 --> 00:39:14,000

warf or mr spock depending on how we

1089

00:39:17,910 --> 00:39:16,320

look at it but can we actively

1090

00:39:19,829 --> 00:39:17,920

understand what are some of the basic

1091

00:39:23,030 --> 00:39:19,839

principles those things start to

1092

00:39:25,750 --> 00:39:23,040

fundamentally affect all that we do

1093

00:39:28,230 --> 00:39:25,760

what we look at but let's go to the idea

1094

00:39:30,630 --> 00:39:28,240

of the vantage point of space so all of

1095

00:39:33,109 --> 00:39:30,640

a sudden i'm here up in space and i can

1096

00:39:35,349 --> 00:39:33,119

look back down at the earth what can i

1097

00:39:37,349 --> 00:39:35,359

do with that we go to the next slide

1098

00:39:39,990 --> 00:39:37,359

there's a field called landscape

1099

00:39:41,349 --> 00:39:40,000

epidemiology and so i wanted to just

1100

00:39:43,750 --> 00:39:41,359

tell you something you might not think

1101
00:39:45,990 --> 00:39:43,760
about space-based remote sensing for

1102
00:39:47,030 --> 00:39:46,000
health on earth

1103
00:39:49,750 --> 00:39:47,040
you know

1104
00:39:51,750 --> 00:39:49,760
how am i going to be up on orbit and

1105
00:39:54,150 --> 00:39:51,760
actually understand some of the impacts

1106
00:39:55,910 --> 00:39:54,160
on earth think about it remote sensing i

1107
00:39:58,069 --> 00:39:55,920
know everybody in here there are a lot

1108
00:39:59,990 --> 00:39:58,079
of experts on remote sensing and things

1109
00:40:03,670 --> 00:40:00,000
remote sensing you look at some

1110
00:40:05,670 --> 00:40:03,680
characteristics of plants and

1111
00:40:07,349 --> 00:40:05,680
minerals and things on the ground and

1112
00:40:09,589 --> 00:40:07,359
you can infer a lot about the

1113
00:40:11,349 --> 00:40:09,599

environment or the climate from that

1114

00:40:13,829 --> 00:40:11,359

what some really innovative people have

1115

00:40:16,069 --> 00:40:13,839

been able to do is say let's look at

1116

00:40:18,710 --> 00:40:16,079

malaria transmission because mosquitoes

1117

00:40:20,510 --> 00:40:18,720

need very specific kinds of requirements

1118

00:40:23,589 --> 00:40:20,520

right so these are just a few

1119

00:40:25,030 --> 00:40:23,599

schistosomiasis a nasty disease that's

1120

00:40:26,950 --> 00:40:25,040

transmitted by snails but it's

1121

00:40:29,030 --> 00:40:26,960

associated with water and where water's

1122

00:40:30,870 --> 00:40:29,040

done you can understand a lot about the

1123

00:40:32,710 --> 00:40:30,880

transmission of the diseases

1124

00:40:34,710 --> 00:40:32,720

environmental determinants of lyme

1125

00:40:37,510 --> 00:40:34,720

disease when lyme disease one of those

1126

00:40:40,390 --> 00:40:37,520

things that we hear about every day

1127

00:40:43,510 --> 00:40:40,400

up in new england it it turns out that

1128

00:40:44,390 --> 00:40:43,520

you need sort of contiguous areas where

1129

00:40:46,309 --> 00:40:44,400

deer

1130

00:40:47,750 --> 00:40:46,319

get to be in contact with humans if you

1131

00:40:50,309 --> 00:40:47,760

don't have that it doesn't happen so you

1132

00:40:52,390 --> 00:40:50,319

can even try to expect where you would

1133

00:40:54,630 --> 00:40:52,400

have outbreaks of lyme disease less

1134

00:40:56,710 --> 00:40:54,640

maniasis and chagas disease remote

1135

00:40:58,550 --> 00:40:56,720

sensitive scrap tires

1136

00:41:01,510 --> 00:40:58,560

that doesn't fit in there yeah it does

1137

00:41:05,030 --> 00:41:01,520

because scrap tires become a reservoir

1138

00:41:07,829 --> 00:41:05,040

for all kinds of other pathogens so

1139

00:41:09,990 --> 00:41:07,839

just thinking of it here's a platform

1140

00:41:12,069 --> 00:41:10,000

space technologies remote sensing that

1141

00:41:14,150 --> 00:41:12,079

allows us to do something that we would

1142

00:41:16,069 --> 00:41:14,160

not have a good handle on imagine

1143

00:41:17,670 --> 00:41:16,079

standing down and counting mosquitoes to

1144

00:41:19,829 --> 00:41:17,680

find out whether or not

1145

00:41:21,829 --> 00:41:19,839

you're going to have an epidemic when

1146

00:41:23,109 --> 00:41:21,839

you could sort of look at the geography

1147

00:41:25,030 --> 00:41:23,119

you can look at the environment from

1148

00:41:27,109 --> 00:41:25,040

space the other one i thought was just

1149

00:41:28,790 --> 00:41:27,119

really interesting was tracking the the

1150

00:41:32,230 --> 00:41:28,800

spread of cholera and when you may have

1151

00:41:36,390 --> 00:41:34,069

so what you want to do is if you can

1152

00:41:37,510 --> 00:41:36,400

look at vibrio cholera it has this it's

1153

00:41:38,790 --> 00:41:37,520

one of the

1154

00:41:40,630 --> 00:41:38,800

you know when they're talking about the

1155

00:41:43,750 --> 00:41:40,640

cholera outbreaks that we expect after

1156

00:41:47,349 --> 00:41:43,760

earthquakes and various other things

1157

00:41:49,349 --> 00:41:47,359

it attaches to zooplankton small animals

1158

00:41:51,349 --> 00:41:49,359

i eat phytoplanktons and you can see

1159

00:41:52,870 --> 00:41:51,359

phytoplanktons from space you can see

1160

00:41:55,670 --> 00:41:52,880

blooms and they've been able to actually

1161

00:41:57,589 --> 00:41:55,680

predict cholera epidemics from that i

1162

00:41:59,510 --> 00:41:57,599

bring these up because that's these are

1163

00:42:01,510 --> 00:41:59,520

one of the areas that i don't think that

1164

00:42:02,950 --> 00:42:01,520

we necessarily pay attention to and

1165

00:42:05,030 --> 00:42:02,960

think have anything to do with

1166

00:42:07,589 --> 00:42:05,040

innovation in space

1167

00:42:10,069 --> 00:42:07,599

so innovation comes in many different

1168

00:42:12,309 --> 00:42:10,079

forms and fashions but one of the things

1169

00:42:14,309 --> 00:42:12,319

that we also need to do with our

1170

00:42:17,430 --> 00:42:14,319

space program and that one of the things

1171

00:42:19,990 --> 00:42:17,440

that does very well is support support

1172

00:42:21,510 --> 00:42:20,000

science education stems science

1173

00:42:23,750 --> 00:42:21,520

technology engineering mathematics

1174

00:42:25,030 --> 00:42:23,760

education if we look at the next slide

1175

00:42:27,910 --> 00:42:25,040

this quote

1176
00:42:29,750 --> 00:42:27,920
is about a meaningful science education

1177
00:42:31,430 --> 00:42:29,760
it integrates a student's intellects

1178
00:42:33,430 --> 00:42:31,440
their emotions their interests and their

1179
00:42:35,270 --> 00:42:33,440
skills to reproduce a significant sense

1180
00:42:37,190 --> 00:42:35,280
of achievement and growth

1181
00:42:39,109 --> 00:42:37,200
it bolsters the students confidence in

1182
00:42:40,950 --> 00:42:39,119
their own ability to think to feel to

1183
00:42:43,670 --> 00:42:40,960
take action and to cope with future

1184
00:42:45,910 --> 00:42:43,680
challenges it promotes self-esteem

1185
00:42:48,390 --> 00:42:45,920
i put this quote here because dr cheryl

1186
00:42:50,470 --> 00:42:48,400
morrow was actually an astrophysicist

1187
00:42:52,470 --> 00:42:50,480
who was at nasa in their education

1188
00:42:54,470 --> 00:42:52,480

department when she was looking what

1189

00:42:57,430 --> 00:42:54,480

should we do for science education this

1190

00:42:59,430 --> 00:42:57,440

was way back in the the um

1191

00:43:00,710 --> 00:42:59,440

in like 1994

1192

00:43:03,349 --> 00:43:00,720

and so

1193

00:43:04,550 --> 00:43:03,359

nasa's programs do that i'm sitting here

1194

00:43:06,390 --> 00:43:04,560

and i have the pleasure of being here

1195

00:43:08,870 --> 00:43:06,400

with bob gabbana

1196

00:43:11,030 --> 00:43:08,880

who was an astronaut in fact he's one of

1197

00:43:13,030 --> 00:43:11,040

my one of my bosses also when i was in

1198

00:43:14,470 --> 00:43:13,040

the astronaut program who's here now as

1199

00:43:16,550 --> 00:43:14,480

the center director

1200

00:43:18,390 --> 00:43:16,560

leland melvin i believe is in the room

1201

00:43:19,829 --> 00:43:18,400

one of the things astronauts are

1202

00:43:22,230 --> 00:43:19,839

required to do and pay a lot of

1203

00:43:24,550 --> 00:43:22,240

attention to is science education and

1204

00:43:27,750 --> 00:43:24,560

how do we do outreach and that actually

1205

00:43:30,069 --> 00:43:27,760

sticks with us nasa has very

1206

00:43:32,950 --> 00:43:30,079

interesting programs

1207

00:43:36,230 --> 00:43:34,710

outreach to people

1208

00:43:37,349 --> 00:43:36,240

if we go to the next slide i want to

1209

00:43:38,550 --> 00:43:37,359

tell you about a couple of those

1210

00:43:39,589 --> 00:43:38,560

programs and then i'm going to tell you

1211

00:43:41,430 --> 00:43:39,599

about

1212

00:43:44,950 --> 00:43:41,440

programs that i've been doing afterwards

1213

00:43:47,430 --> 00:43:44,960

because charlie bolton asked me to

1214

00:43:49,589 --> 00:43:47,440

this is one program that's interesting

1215

00:43:51,670 --> 00:43:49,599

it's the nasa spelman college women in

1216

00:43:53,190 --> 00:43:51,680

science and engineering program you see

1217

00:43:54,870 --> 00:43:53,200

on the side that there are two studies

1218

00:43:56,950 --> 00:43:54,880

that i'm mentioning here one is american

1219

00:43:59,190 --> 00:43:56,960

association of university women's study

1220

00:44:01,510 --> 00:43:59,200

that's called why so few why we don't

1221

00:44:03,430 --> 00:44:01,520

take advantage full advantage of the

1222

00:44:05,829 --> 00:44:03,440

kinds of people that we have in this

1223

00:44:07,510 --> 00:44:05,839

country women in terms of being

1224

00:44:09,270 --> 00:44:07,520

scientists and engineers and then

1225

00:44:11,109 --> 00:44:09,280

there's a bare facts of science which is

1226
00:44:13,430 --> 00:44:11,119
a survey of women and underrepresented

1227
00:44:15,589 --> 00:44:13,440
minority chemists and chemical engineers

1228
00:44:16,710 --> 00:44:15,599
those studies came out on about the same

1229
00:44:19,990 --> 00:44:16,720
day

1230
00:44:22,470 --> 00:44:20,000
last month those studies said that

1231
00:44:24,470 --> 00:44:22,480
if we want to improve

1232
00:44:26,630 --> 00:44:24,480
the diversity of our scientific

1233
00:44:28,710 --> 00:44:26,640
workforce then we need to do a number of

1234
00:44:31,349 --> 00:44:28,720
things this is when you all boil it down

1235
00:44:32,230 --> 00:44:31,359
those studies said that we can and we

1236
00:44:33,829 --> 00:44:32,240
can

1237
00:44:36,630 --> 00:44:33,839
recruit more people but we have to make

1238
00:44:39,190 --> 00:44:36,640

sure that they have the exposure to the

1239

00:44:41,589 --> 00:44:39,200

science fields they have experience in

1240

00:44:44,069 --> 00:44:41,599

those fields and there's an expectation

1241

00:44:44,950 --> 00:44:44,079

that they're going to do well

1242

00:44:48,150 --> 00:44:44,960

and

1243

00:44:51,270 --> 00:44:48,160

so i bring up this wise program because

1244

00:44:53,510 --> 00:44:51,280

since 1987 it's been able to graduate

1245

00:44:55,589 --> 00:44:53,520

380 women from spelman college spelman

1246

00:44:57,030 --> 00:44:55,599

college if you don't know is one of the

1247

00:44:59,829 --> 00:44:57,040

best liberal arts colleges in the

1248

00:45:00,790 --> 00:44:59,839

country um but it's a small

1249

00:45:02,630 --> 00:45:00,800

college

1250

00:45:05,670 --> 00:45:02,640

founded for african-american women a

1251
00:45:07,510 --> 00:45:05,680
number of years ago and this program in

1252
00:45:09,910 --> 00:45:07,520
connection with georgia tech has

1253
00:45:11,109 --> 00:45:09,920
graduated over 380

1254
00:45:13,750 --> 00:45:11,119
women

1255
00:45:15,670 --> 00:45:13,760
who have gone on 60 of them going on to

1256
00:45:18,790 --> 00:45:15,680
get graduate degrees in engineering are

1257
00:45:21,109 --> 00:45:18,800
the sciences and 40 have become

1258
00:45:23,750 --> 00:45:21,119
gotten their phds and on top of that

1259
00:45:25,829 --> 00:45:23,760
they have presidential early career

1260
00:45:27,349 --> 00:45:25,839
award winners and number of other things

1261
00:45:31,990 --> 00:45:27,359
this program has been really exciting

1262
00:45:34,470 --> 00:45:32,000
and in fact uh dr kelly bolden who is

1263
00:45:36,230 --> 00:45:34,480

general bolden's daughter administrator

1264

00:45:37,910 --> 00:45:36,240

boulder's daughter went through that

1265

00:45:40,309 --> 00:45:37,920

program a number of years ago and

1266

00:45:42,950 --> 00:45:40,319

graduated as a chemical engineer and

1267

00:45:44,470 --> 00:45:42,960

went on to become a plastic surgeon so i

1268

00:45:46,470 --> 00:45:44,480

bring this program up because it

1269

00:45:48,390 --> 00:45:46,480

provides internships

1270

00:45:50,870 --> 00:45:48,400

because nasa is there it says that we're

1271

00:45:53,510 --> 00:45:50,880

expecting that these students that these

1272

00:45:56,870 --> 00:45:53,520

girls will do well in the sciences

1273

00:45:59,910 --> 00:45:56,880

right and it exposes them to a number of

1274

00:46:01,750 --> 00:45:59,920

the myriad of careers that are available

1275

00:46:04,069 --> 00:46:01,760

i want to say one other thing about stem

1276

00:46:05,510 --> 00:46:04,079

education and nasa's ability to improve

1277

00:46:07,990 --> 00:46:05,520

diversity i want to go back to the

1278

00:46:09,670 --> 00:46:08,000

beginning of nasa i had the pleasure of

1279

00:46:10,550 --> 00:46:09,680

narrating this program

1280

00:46:14,710 --> 00:46:10,560

on

1281

00:46:18,790 --> 00:46:14,720

and the space race the unlikely story of

1282

00:46:22,710 --> 00:46:21,349

what's going on here because nasa was in

1283

00:46:24,309 --> 00:46:22,720

the south

1284

00:46:26,470 --> 00:46:24,319

primarily its headquarters its

1285

00:46:29,670 --> 00:46:26,480

facilities were in the south nasa also

1286

00:46:31,750 --> 00:46:29,680

had a mandate to make sure that they

1287

00:46:35,430 --> 00:46:31,760

brought in

1288

00:46:36,710 --> 00:46:35,440

other kinds of folks right and so nasa

1289

00:46:39,829 --> 00:46:36,720

sort of

1290

00:46:40,950 --> 00:46:39,839

required that communities right here in

1291

00:46:43,510 --> 00:46:40,960

you know

1292

00:46:46,230 --> 00:46:43,520

broward county other places that they

1293

00:46:48,230 --> 00:46:46,240

have african-americans and others in the

1294

00:46:50,309 --> 00:46:48,240

program so

1295

00:46:52,870 --> 00:46:50,319

it really caused

1296

00:46:54,950 --> 00:46:52,880

communities and

1297

00:46:57,190 --> 00:46:54,960

installations to change the way they do

1298

00:46:59,750 --> 00:46:57,200

things even in marshall space flight

1299

00:47:01,510 --> 00:46:59,760

center at johnson space flight center

1300

00:47:03,430 --> 00:47:01,520

it was something that pushed the

1301
00:47:05,750 --> 00:47:03,440
barriers

1302
00:47:07,270 --> 00:47:05,760
when you know perhaps we weren't even

1303
00:47:10,150 --> 00:47:07,280
thinking that they could be pushed in

1304
00:47:12,069 --> 00:47:10,160
that same way so i bring that up because

1305
00:47:13,910 --> 00:47:12,079
it's important so

1306
00:47:15,670 --> 00:47:13,920
i also said that

1307
00:47:17,109 --> 00:47:15,680
you know once you pay attention to this

1308
00:47:18,710 --> 00:47:17,119
stuff

1309
00:47:21,349 --> 00:47:18,720
it sort of sticks to your hits and

1310
00:47:23,109 --> 00:47:21,359
sticks so when i left nasa besides some

1311
00:47:24,950 --> 00:47:23,119
of the other things i did one of the

1312
00:47:28,390 --> 00:47:24,960
things i was committed to was science

1313
00:47:30,549 --> 00:47:28,400

and technology uh education and i always

1314

00:47:32,870 --> 00:47:30,559

was interested in science literacy so i

1315

00:47:34,069 --> 00:47:32,880

want to just talk about programs charlie

1316

00:47:36,150 --> 00:47:34,079

asked me to make sure i talk about a

1317

00:47:37,670 --> 00:47:36,160

couple okay a couple of programs i have

1318

00:47:39,109 --> 00:47:37,680

one is called the earth we share you can

1319

00:47:41,190 --> 00:47:39,119

put on the next slide and you can just

1320

00:47:42,870 --> 00:47:41,200

gonna cycle through some of the pictures

1321

00:47:44,710 --> 00:47:42,880

of students who come from all around the

1322

00:47:46,309 --> 00:47:44,720

world and they work on global dilemmas

1323

00:47:48,069 --> 00:47:46,319

like predict the hot public stocks the

1324

00:47:49,829 --> 00:47:48,079

year 2030 design the world's perfect

1325

00:47:51,349 --> 00:47:49,839

house i'm not sure how the pictures are

1326

00:47:53,510 --> 00:47:51,359

going through you can just keep flipping

1327

00:47:56,390 --> 00:47:53,520

through them but what the students do is

1328

00:47:58,790 --> 00:47:56,400

they actually have to come and they work

1329

00:48:00,309 --> 00:47:58,800

for four weeks and we train teachers the

1330

00:48:01,990 --> 00:48:00,319

reason why this is really important and

1331

00:48:04,710 --> 00:48:02,000

charlie wanted me to tell you about it

1332

00:48:06,470 --> 00:48:04,720

is because it's about science literacy

1333

00:48:08,390 --> 00:48:06,480

it's about all students becoming

1334

00:48:09,750 --> 00:48:08,400

literate in science not just about the

1335

00:48:12,150 --> 00:48:09,760

next generation of professional

1336

00:48:13,030 --> 00:48:12,160

scientists and the last if we go to the

1337

00:48:14,309 --> 00:48:13,040

next

1338

00:48:15,910 --> 00:48:14,319

slide if we go all the way through it

1339

00:48:17,349 --> 00:48:15,920

this young man was

1340

00:48:19,430 --> 00:48:17,359

someone who could have gone to a

1341

00:48:22,069 --> 00:48:19,440

basketball camp he was a basketball star

1342

00:48:23,910 --> 00:48:22,079

in new york city but

1343

00:48:25,349 --> 00:48:23,920

he wanted to go to a science program

1344

00:48:27,270 --> 00:48:25,359

because he thought that was important

1345

00:48:29,510 --> 00:48:27,280

but we needed to have it there and if we

1346

00:48:31,430 --> 00:48:29,520

go to the final slide with and flip

1347

00:48:33,030 --> 00:48:31,440

through this this was a program called

1348

00:48:35,670 --> 00:48:33,040

celebrating women of color in flight

1349

00:48:38,150 --> 00:48:35,680

girls day out we were talking about

1350

00:48:40,470 --> 00:48:38,160

changing our adding to the face of who

1351
00:48:42,390 --> 00:48:40,480
does aviation in aerospace so many times

1352
00:48:44,069 --> 00:48:42,400
people don't think of women as being

1353
00:48:46,069 --> 00:48:44,079
involved in aviation and aerospace and

1354
00:48:49,109 --> 00:48:46,079
they also think of the jobs as only

1355
00:48:51,910 --> 00:48:49,119
being those that are phds and

1356
00:48:53,829 --> 00:48:51,920
and graduate degrees but the people who

1357
00:48:55,270 --> 00:48:53,839
i counted on to keep me safe from

1358
00:48:58,069 --> 00:48:55,280
because they put on the tile on the

1359
00:49:00,150 --> 00:48:58,079
shuttle or dressed me in my suit they

1360
00:49:02,150 --> 00:49:00,160
were high school graduates and so what

1361
00:49:04,309 --> 00:49:02,160
we wanted to do was to change the ideas

1362
00:49:06,309 --> 00:49:04,319
of who could do space exploration and

1363
00:49:09,030 --> 00:49:06,319

what kinds of jobs you could be involved

1364

00:49:10,790 --> 00:49:09,040

with so we had people from a woman who

1365

00:49:12,549 --> 00:49:10,800

was the second highest ranking person in

1366

00:49:14,549 --> 00:49:12,559

indian air force all the way to the

1367

00:49:16,710 --> 00:49:14,559

woman who actually was my suit tech at

1368

00:49:18,630 --> 00:49:16,720

kennedy space center and they all came

1369

00:49:20,870 --> 00:49:18,640

and helped to change the face of what we

1370

00:49:23,430 --> 00:49:20,880

think of aviation aerospace and so if we

1371

00:49:26,950 --> 00:49:23,440

find it finally end up with the last

1372

00:49:28,470 --> 00:49:26,960

slide what i would say is

1373

00:49:30,069 --> 00:49:28,480

i guess we didn't change the girls day

1374

00:49:32,390 --> 00:49:30,079

out okay it's gonna you can flip through

1375

00:49:33,829 --> 00:49:32,400

those really quickly

1376

00:49:35,670 --> 00:49:33,839

that's what happens when you don't have

1377

00:49:37,430 --> 00:49:35,680

control of your own

1378

00:49:39,430 --> 00:49:37,440

uh you can keep going

1379

00:49:40,710 --> 00:49:39,440

it's just like nice pictures of people

1380

00:49:42,630 --> 00:49:40,720

see i can't

1381

00:49:44,549 --> 00:49:42,640

can you all see okay

1382

00:49:46,230 --> 00:49:44,559

and but nasa was one of the things that

1383

00:49:48,630 --> 00:49:46,240

really supported that got them excited

1384

00:49:49,750 --> 00:49:48,640

about it so julius nery said while

1385

00:49:51,349 --> 00:49:49,760

other people are trying to reach the

1386

00:49:53,030 --> 00:49:51,359

moon they're trying to reach the village

1387

00:49:55,109 --> 00:49:53,040

i think that by not only reaching for

1388

00:49:57,190 --> 00:49:55,119

the moon but beyond we can make the

1389

00:49:59,430 --> 00:49:57,200

quality of life better in the village

1390

00:50:01,510 --> 00:49:59,440

whether we talk about here in the small

1391

00:50:03,829 --> 00:50:01,520

places here in the u.s large village

1392

00:50:06,470 --> 00:50:03,839

villages like new york city or if we go

1393

00:50:09,430 --> 00:50:06,480

overseas it's how we apply it it's the

1394

00:50:17,829 --> 00:50:09,440

innovation the stem education and the

1395

00:50:21,910 --> 00:50:19,670

thank you so much may the societal

1396

00:50:24,470 --> 00:50:21,920

benefits that you mention are definitely

1397

00:50:26,549 --> 00:50:24,480

a key part of the president's plan

1398

00:50:28,549 --> 00:50:26,559

moving forward and if i can in our

1399

00:50:31,109 --> 00:50:28,559

remaining time try

1400

00:50:33,349 --> 00:50:31,119

to allow a couple of you to be able to

1401

00:50:37,349 --> 00:50:33,359

participate with us i want to highlight

1402

00:50:39,109 --> 00:50:37,359

some of the specific areas for florida

1403

00:50:41,589 --> 00:50:39,119

in addition to what dale talked about

1404

00:50:43,430 --> 00:50:41,599

specifically we have several aspects of

1405

00:50:45,910 --> 00:50:43,440

our plan and our budget going forward

1406

00:50:47,510 --> 00:50:45,920

the first being the 21st century launch

1407

00:50:49,510 --> 00:50:47,520

complex and a lot of what talk was

1408

00:50:50,790 --> 00:50:49,520

talked about here are things that will

1409

00:50:55,430 --> 00:50:50,800

be

1410

00:50:57,349 --> 00:50:55,440

investment and we uniquely have the head

1411

00:51:00,549 --> 00:50:57,359

of the kennedy space center here so i'm

1412

00:51:02,790 --> 00:51:00,559

interested in uh getting a microphone up

1413

00:51:05,349 --> 00:51:02,800

front first of all for

1414

00:51:07,109 --> 00:51:05,359

bob cabana if you could talk to us a

1415

00:51:09,270 --> 00:51:07,119

little bit bob about

1416

00:51:11,270 --> 00:51:09,280

nasa's investment over the next five

1417

00:51:14,309 --> 00:51:11,280

years in the 21st century launch complex

1418

00:51:15,589 --> 00:51:14,319

the 1.9 billion here in florida

1419

00:51:18,309 --> 00:51:15,599

what do you think the benefits are going

1420

00:51:20,150 --> 00:51:18,319

to be of this investment and

1421

00:51:22,069 --> 00:51:20,160

what will they have both for launch

1422

00:51:24,870 --> 00:51:22,079

operations on the space coast and if i

1423

00:51:26,630 --> 00:51:24,880

could after um since we have also uh

1424

00:51:28,790 --> 00:51:26,640

general taylor here having him respond

1425

00:51:30,309 --> 00:51:28,800

as well sure lori well as soon as the

1426

00:51:32,150 --> 00:51:30,319

president's budget came out we started

1427

00:51:34,870 --> 00:51:32,160

looking at what can we do to become more

1428

00:51:36,630 --> 00:51:34,880

efficient and improve our facilities and

1429

00:51:38,069 --> 00:51:36,640

we need to do it for a number of reasons

1430

00:51:39,589 --> 00:51:38,079

first off as dale said we have to

1431

00:51:41,750 --> 00:51:39,599

diversify but if we're going to attract

1432

00:51:44,309 --> 00:51:41,760

business into the future and really have

1433

00:51:45,750 --> 00:51:44,319

a vibrant space program we have to learn

1434

00:51:48,150 --> 00:51:45,760

how to be more efficient and do it

1435

00:51:50,230 --> 00:51:48,160

better and we've got 1960s architecture

1436

00:51:51,990 --> 00:51:50,240

down here there's a lot of improvements

1437

00:51:53,990 --> 00:51:52,000

we can make to the pad a lot of ways

1438

00:51:55,670 --> 00:51:54,000

that we can do things better and if you

1439

00:51:57,109 --> 00:51:55,680

look at the range and

1440

00:51:59,109 --> 00:51:57,119

you know what we run into trying to

1441

00:52:01,270 --> 00:51:59,119

schedule and how we can work better in

1442

00:52:02,710 --> 00:52:01,280

that regard too with today's technology

1443

00:52:04,710 --> 00:52:02,720

i think there's a lot a lot of

1444

00:52:06,230 --> 00:52:04,720

opportunity for us to

1445

00:52:07,430 --> 00:52:06,240

cooperate with the air force and we have

1446

00:52:09,349 --> 00:52:07,440

a tremendous

1447

00:52:11,910 --> 00:52:09,359

working relationship with the 45th space

1448

00:52:13,670 --> 00:52:11,920

wing i think it's really good and if you

1449

00:52:15,990 --> 00:52:13,680

don't just look at kennedy but look back

1450

00:52:17,829 --> 00:52:16,000

at the launch complex as a whole i think

1451
00:52:19,910 --> 00:52:17,839
that's really important and having this

1452
00:52:22,069 --> 00:52:19,920
money to not only look at how we can

1453
00:52:23,750 --> 00:52:22,079
improve the facilities but improve the

1454
00:52:25,349 --> 00:52:23,760
payload processing the facilities that

1455
00:52:27,589 --> 00:52:25,359
we have available to move payloads

1456
00:52:28,950 --> 00:52:27,599
through at the cape um to take care of

1457
00:52:30,549 --> 00:52:28,960
some of the environmental concerns that

1458
00:52:33,190 --> 00:52:30,559
we've had over the years

1459
00:52:35,349 --> 00:52:33,200
at the different sites it's really going

1460
00:52:38,309 --> 00:52:35,359
to be good overall for kennedy space

1461
00:52:40,230 --> 00:52:38,319
center and i think for our nation if we

1462
00:52:43,109 --> 00:52:40,240
can move forward have a commercial

1463
00:52:45,190 --> 00:52:43,119

capability have a robust uh range and

1464

00:52:47,270 --> 00:52:45,200

processing capability for launching

1465

00:52:49,510 --> 00:52:47,280

working together to improve our future

1466

00:52:52,950 --> 00:52:49,520

so i see it as very positive for the

1467

00:52:54,870 --> 00:52:52,960

kennedy space center and for the nation

1468

00:52:56,470 --> 00:52:54,880

thanks general kaler well a couple of

1469

00:53:02,470 --> 00:52:56,480

things let me make a few observations

1470

00:53:05,990 --> 00:53:04,710

i watched the nasa channel

1471

00:53:07,030 --> 00:53:06,000

and i've always wanted to be on the nasa

1472

00:53:09,349 --> 00:53:07,040

channel so

1473

00:53:11,430 --> 00:53:09,359

um you know that's the first observation

1474

00:53:12,710 --> 00:53:11,440

i would make yeah exactly

1475

00:53:16,069 --> 00:53:12,720

exactly

1476

00:53:18,710 --> 00:53:16,079

yeah uh sec second thing uh that i would

1477

00:53:20,790 --> 00:53:18,720

say is i would just pile on to the

1478

00:53:23,190 --> 00:53:20,800

comments that have been made about how

1479

00:53:24,309 --> 00:53:23,200

space is woven into the fabric of how we

1480

00:53:25,670 --> 00:53:24,319

live today

1481

00:53:27,990 --> 00:53:25,680

uh

1482

00:53:29,990 --> 00:53:28,000

you you only have to look as far as gps

1483

00:53:32,230 --> 00:53:30,000

to see something that was

1484

00:53:34,870 --> 00:53:32,240

built and intended for national security

1485

00:53:36,790 --> 00:53:34,880

purposes that has now found itself

1486

00:53:39,190 --> 00:53:36,800

woven through

1487

00:53:40,870 --> 00:53:39,200

everything we do literally and you know

1488

00:53:43,349 --> 00:53:40,880

the u.s air force finds itself a very

1489

00:53:45,670 --> 00:53:43,359

interesting position with gps that we

1490

00:53:47,670 --> 00:53:45,680

are now doing something for planet earth

1491

00:53:49,510 --> 00:53:47,680

and uh it's not a position that a

1492

00:53:51,349 --> 00:53:49,520

service always finds itself in but we've

1493

00:53:53,589 --> 00:53:51,359

embraced that and and we think that

1494

00:53:55,670 --> 00:53:53,599

we've become pretty good stewards of all

1495

00:53:58,309 --> 00:53:55,680

of that uh and so that leads me to the

1496

00:53:59,190 --> 00:53:58,319

third point which is partnerships

1497

00:54:01,430 --> 00:53:59,200

since

1498

00:54:03,510 --> 00:54:01,440

the beginning of the space age in the

1499

00:54:05,670 --> 00:54:03,520

united states the united states air

1500

00:54:07,990 --> 00:54:05,680

force and nasa have been partners

1501
00:54:08,870 --> 00:54:08,000
and we see that partnership

1502
00:54:11,030 --> 00:54:08,880
being

1503
00:54:13,190 --> 00:54:11,040
enduring and and we think we've been

1504
00:54:14,470 --> 00:54:13,200
pretty good partners together over the

1505
00:54:17,510 --> 00:54:14,480
years so

1506
00:54:18,390 --> 00:54:17,520
i would just uh make as an observation

1507
00:54:22,790 --> 00:54:18,400
that

1508
00:54:26,150 --> 00:54:22,800
to resonate with all of us

1509
00:54:27,829 --> 00:54:26,160
partnership because i do believe that

1510
00:54:29,430 --> 00:54:27,839
that this continued partnership is going

1511
00:54:31,589 --> 00:54:29,440
to be very important for us so that

1512
00:54:33,109 --> 00:54:31,599
leads me to the next observation which

1513
00:54:33,910 --> 00:54:33,119

is opportunity

1514

00:54:34,870 --> 00:54:33,920

and

1515

00:54:37,109 --> 00:54:34,880

i would

1516

00:54:40,150 --> 00:54:37,119

echo what bob said particularly with

1517

00:54:42,309 --> 00:54:40,160

investment opportunity in this 21st

1518

00:54:43,750 --> 00:54:42,319

century launch complex

1519

00:54:45,990 --> 00:54:43,760

you know the partnership that we have

1520

00:54:47,510 --> 00:54:46,000

over the years and certainly the one

1521

00:54:48,470 --> 00:54:47,520

that we've developed here

1522

00:54:50,390 --> 00:54:48,480

you can go out and see where the

1523

00:54:51,829 --> 00:54:50,400

boundaries are between cape canaveral

1524

00:54:55,190 --> 00:54:51,839

air force station and kennedy space

1525

00:54:56,950 --> 00:54:55,200

center but it's a fence boundary only we

1526
00:54:59,190 --> 00:54:56,960
can't view that as a boundary as we look

1527
00:55:01,030 --> 00:54:59,200
to the future i think that there's more

1528
00:55:02,390 --> 00:55:01,040
advantage and opportunity in not seeing

1529
00:55:04,549 --> 00:55:02,400
that as a boundary than there is in

1530
00:55:07,670 --> 00:55:04,559
seeing it as a boundary so we're

1531
00:55:10,549 --> 00:55:07,680
encouraged by the investment opportunity

1532
00:55:12,549 --> 00:55:10,559
that that i think we've seen out of out

1533
00:55:14,549 --> 00:55:12,559
of nasa

1534
00:55:16,390 --> 00:55:14,559
and how we might leverage that with

1535
00:55:18,390 --> 00:55:16,400
investment that the air force can make

1536
00:55:19,990 --> 00:55:18,400
and how we can go forward together the

1537
00:55:21,430 --> 00:55:20,000
final thing that i would say and the

1538
00:55:24,069 --> 00:55:21,440

final observation i would make though is

1539

00:55:26,150 --> 00:55:24,079

there's there are challenges and uh

1540

00:55:29,510 --> 00:55:26,160

someone talked about the industrial base

1541

00:55:31,589 --> 00:55:29,520

and uh my view is that as we go forward

1542

00:55:33,670 --> 00:55:31,599

together we've got to be mindful that

1543

00:55:35,430 --> 00:55:33,680

this partnership and this opportunity

1544

00:55:38,069 --> 00:55:35,440

that we have has got to make our

1545

00:55:39,829 --> 00:55:38,079

industrial base better because we do

1546

00:55:41,190 --> 00:55:39,839

have some really significant challenges

1547

00:55:42,870 --> 00:55:41,200

here you know we have the air force and

1548

00:55:46,230 --> 00:55:42,880

nasa have leveraged one another over the

1549

00:55:47,910 --> 00:55:46,240

years in investment nasa has invested in

1550

00:55:50,309 --> 00:55:47,920

certain kind of propulsion or the air

1551
00:55:52,549 --> 00:55:50,319
force has invested in something uh and

1552
00:55:54,950 --> 00:55:52,559
and we have we have fed off of one

1553
00:55:56,470 --> 00:55:54,960
another as the years have gone by and i

1554
00:55:57,990 --> 00:55:56,480
think that will be very important as we

1555
00:56:00,710 --> 00:55:58,000
meet this industrial-based challenge as

1556
00:56:03,670 --> 00:56:00,720
we look to the future and and make sure

1557
00:56:05,109 --> 00:56:03,680
that we are being mindful of this

1558
00:56:06,470 --> 00:56:05,119
partnership that we've had for all this

1559
00:56:08,710 --> 00:56:06,480
time

1560
00:56:10,789 --> 00:56:08,720
great thank you very much and just a

1561
00:56:13,670 --> 00:56:10,799
follow-up to that to stick with the

1562
00:56:15,349 --> 00:56:13,680
local theme is that as i think folks

1563
00:56:17,190 --> 00:56:15,359

have recognized that the president has

1564

00:56:18,870 --> 00:56:17,200

announced this economic development

1565

00:56:20,630 --> 00:56:18,880

action plan for florida we're going to

1566

00:56:23,030 --> 00:56:20,640

be focusing 40 million dollars in the

1567

00:56:24,630 --> 00:56:23,040

administration's uh budget on this with

1568

00:56:27,270 --> 00:56:24,640

this task force that he just mentioned

1569

00:56:29,190 --> 00:56:27,280

due on his death august 25th john

1570

00:56:30,309 --> 00:56:29,200

fernandez is here from the department of

1571

00:56:32,950 --> 00:56:30,319

commerce if we could get him a

1572

00:56:35,109 --> 00:56:32,960

microphone i just want to

1573

00:56:37,990 --> 00:56:35,119

mainly have people see him and have him

1574

00:56:39,589 --> 00:56:38,000

give us a few more details about how the

1575

00:56:41,190 --> 00:56:39,599

commerce department is going to work

1576
00:56:42,309 --> 00:56:41,200
with the local communities here john is

1577
00:56:44,789 --> 00:56:42,319
the assistant secretary at the

1578
00:56:46,309 --> 00:56:44,799
department of commerce for economic

1579
00:56:48,870 --> 00:56:46,319
development

1580
00:56:51,510 --> 00:56:48,880
great thanks floyd excuse me

1581
00:56:53,670 --> 00:56:51,520
i'll be brief i think the

1582
00:56:54,710 --> 00:56:53,680
most important part about moving forward

1583
00:56:56,309 --> 00:56:54,720
with

1584
00:56:58,950 --> 00:56:56,319
this part of the plan is really that

1585
00:57:01,109 --> 00:56:58,960
it's going to be the region's plan

1586
00:57:02,870 --> 00:57:01,119
to respond to the changes that are going

1587
00:57:04,950 --> 00:57:02,880
to occur here

1588
00:57:06,470 --> 00:57:04,960

to absorb some of the employment issues

1589

00:57:09,030 --> 00:57:06,480

but also to accelerate the

1590

00:57:10,870 --> 00:57:09,040

commercialization business creation job

1591

00:57:13,030 --> 00:57:10,880

creation elements of what's going to

1592

00:57:14,789 --> 00:57:13,040

happen here is it really has to be from

1593

00:57:16,069 --> 00:57:14,799

a much broader regional

1594

00:57:18,470 --> 00:57:16,079

perspective

1595

00:57:20,870 --> 00:57:18,480

and uh you know in the coming days as we

1596

00:57:23,109 --> 00:57:20,880

map out our team

1597

00:57:24,789 --> 00:57:23,119

and start accelerating the development

1598

00:57:25,910 --> 00:57:24,799

of the plan that the president's asked

1599

00:57:27,589 --> 00:57:25,920

for

1600

00:57:29,190 --> 00:57:27,599

you certainly can expect to see me

1601
00:57:30,549 --> 00:57:29,200
around here and i need to need all of

1602
00:57:32,470 --> 00:57:30,559
your help it's really going to be the

1603
00:57:34,069 --> 00:57:32,480
region's plan not ours

1604
00:57:36,150 --> 00:57:34,079
we can't parachute in here and tell you

1605
00:57:37,270 --> 00:57:36,160
what that plan is but we certainly can

1606
00:57:38,230 --> 00:57:37,280
help

1607
00:57:40,470 --> 00:57:38,240
you

1608
00:57:42,390 --> 00:57:40,480
help us as we put together this kind of

1609
00:57:43,829 --> 00:57:42,400
strategy to move forward so i look

1610
00:57:47,109 --> 00:57:43,839
forward to working with you all as we go

1611
00:57:49,190 --> 00:57:47,119
forward thank you very much john and and

1612
00:57:51,510 --> 00:57:49,200
now i'd just like to rise it up a bit to

1613
00:57:54,150 --> 00:57:51,520

that general economic development and

1614

00:57:56,710 --> 00:57:54,160

innovation uh issue that really

1615

00:57:59,270 --> 00:57:56,720

underpins this uh budget and our whole

1616

00:58:00,309 --> 00:57:59,280

space economy that we're hoping to help

1617

00:58:02,390 --> 00:58:00,319

create

1618

00:58:05,270 --> 00:58:02,400

with esther dyson i see you here and

1619

00:58:07,349 --> 00:58:05,280

you're the chair of our innovation

1620

00:58:08,630 --> 00:58:07,359

and technology subcommittee of our nasa

1621

00:58:11,829 --> 00:58:08,640

advisory council so if i could get a

1622

00:58:13,829 --> 00:58:11,839

microphone up front you have worked past

1623

00:58:15,190 --> 00:58:13,839

with uh sectors that have been

1624

00:58:16,470 --> 00:58:15,200

transitioning from government to the

1625

00:58:18,870 --> 00:58:16,480

private sector and i wonder if you have

1626
00:58:20,870 --> 00:58:18,880
any advice for us and things that we can

1627
00:58:23,750 --> 00:58:20,880
do to do this more successfully

1628
00:58:26,069 --> 00:58:23,760
thanks lori yeah not only have i worked

1629
00:58:28,630 --> 00:58:26,079
i watched the transition

1630
00:58:30,789 --> 00:58:28,640
not the end of mainframes but the rise

1631
00:58:33,270 --> 00:58:30,799
of the pcs which became an incredibly

1632
00:58:34,870 --> 00:58:33,280
vibrant industry i watched the internet

1633
00:58:37,349 --> 00:58:34,880
turn commercial

1634
00:58:40,150 --> 00:58:37,359
and i've seen a lot of things i'm also a

1635
00:58:41,109 --> 00:58:40,160
journalist and so my natural instinct is

1636
00:58:42,470 --> 00:58:41,119
to

1637
00:58:45,349 --> 00:58:42,480
disagree

1638
00:58:46,870 --> 00:58:45,359

and to be cynical but this

1639

00:58:48,870 --> 00:58:46,880

this stuff is all believable and the

1640

00:58:51,270 --> 00:58:48,880

reason it's believable is because i have

1641

00:58:52,470 --> 00:58:51,280

seen it happen before specifically with

1642

00:58:54,549 --> 00:58:52,480

the internet

1643

00:58:56,630 --> 00:58:54,559

when when it started to go commercial

1644

00:58:57,990 --> 00:58:56,640

when the government said look we'll

1645

00:59:00,470 --> 00:58:58,000

we'll we've done the fundamental

1646

00:59:02,230 --> 00:59:00,480

research but you guys you turn this

1647

00:59:04,150 --> 00:59:02,240

stuff commercial send it sell it to

1648

00:59:06,390 --> 00:59:04,160

normal people

1649

00:59:08,150 --> 00:59:06,400

the equivalent of space tourists were

1650

00:59:09,430 --> 00:59:08,160

companies that used the internet to

1651
00:59:12,150 --> 00:59:09,440
promote

1652
00:59:14,710 --> 00:59:12,160
sales seminars and there was a huge

1653
00:59:17,349 --> 00:59:14,720
controversy that the sacred internet was

1654
00:59:22,069 --> 00:59:19,510
used by these sleazy commercial people

1655
00:59:24,069 --> 00:59:22,079
to do marketing things how disgusting

1656
00:59:25,030 --> 00:59:24,079
and i'm here wearing a space adventures

1657
00:59:27,349 --> 00:59:25,040
jacket

1658
00:59:28,390 --> 00:59:27,359
people would put logos on spacecraft how

1659
00:59:29,750 --> 00:59:28,400
terrible

1660
00:59:32,390 --> 00:59:29,760
but in fact

1661
00:59:34,789 --> 00:59:32,400
these commercial energies are what

1662
00:59:36,230 --> 00:59:34,799
create new industries uh everything

1663
00:59:38,470 --> 00:59:36,240

we've described today is stuff we

1664

00:59:39,990 --> 00:59:38,480

already know about what's exciting

1665

00:59:41,349 --> 00:59:40,000

is things are going to happen that we

1666

00:59:43,190 --> 00:59:41,359

don't know about we're going to start

1667

00:59:46,069 --> 00:59:43,200

mining asteroids we're going to start

1668

00:59:47,829 --> 00:59:46,079

creating pharmaceuticals in space we're

1669

00:59:50,150 --> 00:59:47,839

going to discover all kinds of things

1670

00:59:53,990 --> 00:59:50,160

and a lot of it may be frivolous people

1671

00:59:57,270 --> 00:59:55,750

buzz aldrin danced on whatever it was

1672

00:59:59,589 --> 00:59:57,280

dancing with the stars pretty soon

1673

01:00:01,589 --> 00:59:59,599

somebody will be dancing in the stars

1674

01:00:04,150 --> 01:00:01,599

and they'll spend money and other people

1675

01:00:05,349 --> 01:00:04,160

will get jobs allowing people to do

1676
01:00:06,630 --> 01:00:05,359
things that are both scientific and

1677
01:00:07,829 --> 01:00:06,640
useful but also things that are

1678
01:00:10,789 --> 01:00:07,839
frivolous

1679
01:00:11,750 --> 01:00:10,799
and i love it i fund these companies and

1680
01:00:13,910 --> 01:00:11,760
i think

1681
01:00:15,910 --> 01:00:13,920
when we talk about jobs they're going to

1682
01:00:18,150 --> 01:00:15,920
be lots of jobs created by small

1683
01:00:19,750 --> 01:00:18,160
companies you've never heard of that

1684
01:00:21,910 --> 01:00:19,760
don't even want government funding

1685
01:00:23,990 --> 01:00:21,920
they're just going to be out going

1686
01:00:26,150 --> 01:00:24,000
doing new things

1687
01:00:28,069 --> 01:00:26,160
okay thank you that's that's really

1688
01:00:31,030 --> 01:00:28,079

interesting i do think that there are a

1689

01:00:32,470 --> 01:00:31,040

lot of similarities in space has we've

1690

01:00:34,230 --> 01:00:32,480

protected ourselves thinking we're

1691

01:00:35,589 --> 01:00:34,240

special and we are special but that

1692

01:00:37,589 --> 01:00:35,599

means we can

1693

01:00:39,750 --> 01:00:37,599

uh even do those things as you mentioned

1694

01:00:41,430 --> 01:00:39,760

that we can't even dream of yet but on

1695

01:00:42,789 --> 01:00:41,440

the jobs topic let me just while i have

1696

01:00:45,270 --> 01:00:42,799

karissa christensen who's the head of

1697

01:00:47,670 --> 01:00:45,280

the tory group who i know recently did

1698

01:00:49,829 --> 01:00:47,680

the research uh that

1699

01:00:51,109 --> 01:00:49,839

where um i believe it was released a

1700

01:00:54,230 --> 01:00:51,119

couple days ago that talks about the

1701

01:00:57,430 --> 01:00:54,240

president's plan thanks and how uh

1702

01:00:59,349 --> 01:00:57,440

job creation with this uh budget exceeds

1703

01:01:02,069 --> 01:00:59,359

the previous plan could you talk about

1704

01:01:04,309 --> 01:01:02,079

that study i i would be delighted to

1705

01:01:06,470 --> 01:01:04,319

laurie what we looked at specifically

1706

01:01:08,390 --> 01:01:06,480

was the number of jobs that would be

1707

01:01:09,349 --> 01:01:08,400

associated with nasa's expenditure of

1708

01:01:10,870 --> 01:01:09,359

the new

1709

01:01:13,430 --> 01:01:10,880

the budget line item associated with

1710

01:01:16,309 --> 01:01:13,440

commercial crew and commercial cargo

1711

01:01:17,910 --> 01:01:16,319

it was an arm's length study independent

1712

01:01:19,589 --> 01:01:17,920

uh estimate

1713

01:01:22,390 --> 01:01:19,599

people come to us when they want good

1714

01:01:24,789 --> 01:01:22,400

information for decision making we

1715

01:01:27,190 --> 01:01:24,799

developed the numbers using a federal

1716

01:01:29,910 --> 01:01:27,200

economic input output model what would

1717

01:01:32,470 --> 01:01:29,920

you mean accurate oh that is our intent

1718

01:01:34,870 --> 01:01:32,480

absolutely and neil neil knows me well

1719

01:01:37,190 --> 01:01:34,880

and uh has heard me speak many times on

1720

01:01:39,510 --> 01:01:37,200

the fact that the firm that i found it

1721

01:01:42,150 --> 01:01:39,520

its purpose is to provide objective

1722

01:01:45,270 --> 01:01:42,160

input to decision makers so that meal

1723

01:01:46,390 --> 01:01:45,280

means not good as in desirable in terms

1724

01:01:48,230 --> 01:01:46,400

of the

1725

01:01:51,030 --> 01:01:48,240

the output was known before we started

1726

01:01:53,030 --> 01:01:51,040

but accurate uh methodologically

1727

01:01:54,630 --> 01:01:53,040

rigorous you can go to our website and

1728

01:01:56,470 --> 01:01:54,640

see a presentation that for almost all

1729

01:01:58,549 --> 01:01:56,480

of you will be deeply boring but i

1730

01:02:00,309 --> 01:01:58,559

believe satisfying in terms of the

1731

01:02:01,990 --> 01:02:00,319

specifics of the methodology that we

1732

01:02:04,230 --> 01:02:02,000

used the model that we used the

1733

01:02:05,589 --> 01:02:04,240

scenarios that we looked at so the

1734

01:02:09,349 --> 01:02:05,599

question was

1735

01:02:11,670 --> 01:02:09,359

for this 6.11 billion dollars over five

1736

01:02:13,510 --> 01:02:11,680

years what would be the jobs that would

1737

01:02:15,349 --> 01:02:13,520

result from that the numbers uh that

1738

01:02:17,750 --> 01:02:15,359

came out from that were on average of

1739

01:02:19,829 --> 01:02:17,760

each year as you spend that money just

1740

01:02:22,150 --> 01:02:19,839

from spending that money about eleven

1741

01:02:24,710 --> 01:02:22,160

thousand eight hundred jobs the spending

1742

01:02:27,589 --> 01:02:24,720

profile of the budget varies so the jobs

1743

01:02:29,990 --> 01:02:27,599

vary uh from an initial ramp up year of

1744

01:02:33,349 --> 01:02:30,000

about seventy five hundred to a peak of

1745

01:02:34,789 --> 01:02:33,359

about of um more than fourteen thousand

1746

01:02:36,870 --> 01:02:34,799

the other point that i want to make that

1747

01:02:38,870 --> 01:02:36,880

i think is very important here is that

1748

01:02:41,589 --> 01:02:38,880

this represents that direct spending by

1749

01:02:44,710 --> 01:02:41,599

nasa on commercial providers private

1750

01:02:46,390 --> 01:02:44,720

sector providers it does not uh attempt

1751

01:02:48,150 --> 01:02:46,400

to estimate the jobs that will be

1752

01:02:49,990 --> 01:02:48,160

developed that will result from the

1753

01:02:52,309 --> 01:02:50,000

attraction of additional investment in

1754

01:02:55,190 --> 01:02:52,319

those companies so i think that it's our

1755

01:02:57,589 --> 01:02:55,200

intent was to provide a a very credible

1756

01:02:59,910 --> 01:02:57,599

number specifically associated with that

1757

01:03:01,430 --> 01:02:59,920

budget to support decision making

1758

01:03:03,670 --> 01:03:01,440

very interesting i can't help it since

1759

01:03:05,750 --> 01:03:03,680

neil chimed in and neil was due to be at

1760

01:03:08,230 --> 01:03:05,760

one of the other panels but cared the

1761

01:03:11,670 --> 01:03:08,240

most about harnessing space to expand

1762

01:03:14,150 --> 01:03:11,680

economic opportunity so tell me neil why

1763

01:03:17,190 --> 01:03:14,160

uh for this panel i i have heard you

1764

01:03:19,190 --> 01:03:17,200

speak on this uh topic in the past and i

1765

01:03:21,910 --> 01:03:19,200

i know you have strong views about it

1766

01:03:24,710 --> 01:03:21,920

i yes i do have some strong views and

1767

01:03:26,069 --> 01:03:24,720

many in fact i think are unorthodox so

1768

01:03:27,589 --> 01:03:26,079

if i may share them

1769

01:03:30,390 --> 01:03:27,599

with this panel

1770

01:03:33,589 --> 01:03:30,400

uh and and this audience uh first of all

1771

01:03:35,990 --> 01:03:33,599

i think uh may you speak

1772

01:03:39,109 --> 01:03:36,000

you speak marvelously about all of the

1773

01:03:40,950 --> 01:03:39,119

impact that spinoff products can have

1774

01:03:42,230 --> 01:03:40,960

spinoff technologies can have on the

1775

01:03:43,750 --> 01:03:42,240

quality of life on earth there's no

1776

01:03:44,789 --> 01:03:43,760

doubt about that

1777

01:03:46,549 --> 01:03:44,799

however

1778

01:03:48,710 --> 01:03:46,559

there are other sort of spin-offs from

1779

01:03:50,789 --> 01:03:48,720

other industries that also improve the

1780

01:03:52,950 --> 01:03:50,799

quality of life and so what you've

1781

01:03:54,470 --> 01:03:52,960

described while it happens to come from

1782

01:03:57,109 --> 01:03:54,480

space technologies

1783

01:03:58,950 --> 01:03:57,119

does not sit uniquely among things that

1784

01:04:01,029 --> 01:03:58,960

can change people's lives because they

1785

01:04:03,270 --> 01:04:01,039

can look to other places for things that

1786

01:04:04,470 --> 01:04:03,280

change their lives i guess the point i'm

1787

01:04:06,789 --> 01:04:04,480

making is

1788

01:04:08,390 --> 01:04:06,799

that here

1789

01:04:10,870 --> 01:04:08,400

how does the public

1790

01:04:12,870 --> 01:04:10,880

distinguish nasa as a means of improving

1791

01:04:15,510 --> 01:04:12,880

their lives from anything else that goes

1792

01:04:16,630 --> 01:04:15,520

on in a in a funded society from

1793

01:04:18,069 --> 01:04:16,640

improving their lives because we're

1794

01:04:20,150 --> 01:04:18,079

trying to make that distinction and if

1795

01:04:22,950 --> 01:04:20,160

we can't make that distinction we cannot

1796

01:04:24,630 --> 01:04:22,960

justify in congress to have nasa get

1797

01:04:27,589 --> 01:04:24,640

more money than some other agency that

1798

01:04:29,910 --> 01:04:27,599

claims to be stimulating the economy for

1799

01:04:31,829 --> 01:04:29,920

example the national science foundation

1800

01:04:33,349 --> 01:04:31,839

or the national institutes

1801

01:04:35,589 --> 01:04:33,359

where science is getting funded and

1802

01:04:38,150 --> 01:04:35,599

there's tech transfer in those pro in

1803

01:04:39,750 --> 01:04:38,160

those in the in those funding umbrellas

1804

01:04:41,910 --> 01:04:39,760

so what i claim

1805

01:04:43,270 --> 01:04:41,920

that's behind all of this

1806

01:04:45,510 --> 01:04:43,280

is that

1807

01:04:47,190 --> 01:04:45,520

it's not simply that you have a spin-off

1808

01:04:50,069 --> 01:04:47,200

technology

1809

01:04:52,710 --> 01:04:50,079

it's that you stimulate somebody to want

1810

01:04:54,710 --> 01:04:52,720

to be a scientist in the first place

1811

01:04:57,029 --> 01:04:54,720

and no one's really mentioned that

1812

01:04:59,270 --> 01:04:57,039

we say well there's a program and yeah

1813

01:05:00,390 --> 01:04:59,280

sorry you say well here's some here's a

1814

01:05:01,829 --> 01:05:00,400

um

1815

01:05:03,670 --> 01:05:01,839

here's a program that'll help people

1816

01:05:05,190 --> 01:05:03,680

become scientists

1817

01:05:07,270 --> 01:05:05,200

i submit

1818

01:05:10,150 --> 01:05:07,280

that there's a more powerful force that

1819

01:05:11,829 --> 01:05:10,160

no one is identifying here it's not that

1820

01:05:13,750 --> 01:05:11,839

you funded a program that promotes

1821

01:05:15,910 --> 01:05:13,760

scientists it's that

1822

01:05:17,910 --> 01:05:15,920

nasa does something that makes people

1823

01:05:20,309 --> 01:05:17,920

want to become scientists even without

1824

01:05:23,109 --> 01:05:20,319

programs and when you have when you

1825

01:05:24,069 --> 01:05:23,119

infuse when you when you

1826
01:05:27,589 --> 01:05:24,079
when you

1827
01:05:30,710 --> 01:05:27,599
ignite an entire educational pipeline of

1828
01:05:33,190 --> 01:05:30,720
ambition because nasa has the ambition

1829
01:05:34,870 --> 01:05:33,200
then everything else falls into place

1830
01:05:36,630 --> 01:05:34,880
everything because you have people who

1831
01:05:37,349 --> 01:05:36,640
want to be scientists and they'll dig up

1832
01:05:43,670 --> 01:05:37,359
the

1833
01:05:46,150 --> 01:05:43,680
to talk to

1834
01:05:47,589 --> 01:05:46,160
um in the 1960s i don't know that we had

1835
01:05:49,109 --> 01:05:47,599
all these programs that everybody's

1836
01:05:50,549 --> 01:05:49,119
talking about to try to stimulate

1837
01:05:52,710 --> 01:05:50,559
interest in science because you didn't

1838
01:05:53,990 --> 01:05:52,720

have to try to stimulate it it was in

1839

01:05:55,829 --> 01:05:54,000

our face

1840

01:05:58,069 --> 01:05:55,839

everybody wanted to do it because there

1841

01:05:59,270 --> 01:05:58,079

was a bold mission that nasa had laid

1842

01:06:01,829 --> 01:05:59,280

out in front of it

1843

01:06:04,150 --> 01:06:01,839

so i want at some point somebody to say

1844

01:06:06,390 --> 01:06:04,160

that when we're ready to go to mars we

1845

01:06:08,309 --> 01:06:06,400

start selecting that astronaut class and

1846

01:06:10,309 --> 01:06:08,319

maybe that astronaut class are

1847

01:06:13,029 --> 01:06:10,319

middle school children at that time

1848

01:06:15,910 --> 01:06:13,039

given the time delay and then the media

1849

01:06:17,349 --> 01:06:15,920

or even elementary school okay and if

1850

01:06:19,589 --> 01:06:17,359

that's the case then you start picking

1851
01:06:20,870 --> 01:06:19,599
who those kids might be and then the

1852
01:06:22,309 --> 01:06:20,880
press follows them it looks at their

1853
01:06:23,990 --> 01:06:22,319
grades and all of a sudden the whole

1854
01:06:27,109 --> 01:06:24,000
country gets involved and everybody

1855
01:06:28,470 --> 01:06:27,119
wants to become a scientist that force

1856
01:06:30,950 --> 01:06:28,480
transcends

1857
01:06:32,870 --> 01:06:30,960
any program that you can just sit there

1858
01:06:35,029 --> 01:06:32,880
and say here's to stimulate here and the

1859
01:06:36,870 --> 01:06:35,039
minorities here and the college here

1860
01:06:39,029 --> 01:06:36,880
it's bigger than that

1861
01:06:39,910 --> 01:06:39,039
and when that program becomes visible

1862
01:06:42,230 --> 01:06:39,920
then

1863
01:06:44,470 --> 01:06:42,240

it's an easy sell to congress it's an

1864

01:06:46,470 --> 01:06:44,480

easy sell to the public

1865

01:06:48,390 --> 01:06:46,480

oh and this is what i said can i can i

1866

01:06:50,390 --> 01:06:48,400

can i jump in there and jump on the

1867

01:06:52,150 --> 01:06:50,400

bandwagon with you because unfortunately

1868

01:06:53,910 --> 01:06:52,160

the inspiration part i didn't really get

1869

01:06:56,069 --> 01:06:53,920

to because i was being truncated i think

1870

01:06:58,150 --> 01:06:56,079

that's exactly what happens and growing

1871

01:07:01,109 --> 01:06:58,160

up in the 60s as well

1872

01:07:02,630 --> 01:07:01,119

we saw that there was a i was not

1873

01:07:04,789 --> 01:07:02,640

i didn't wasn't any of some of the there

1874

01:07:06,230 --> 01:07:04,799

were programs out there but i wanted to

1875

01:07:08,309 --> 01:07:06,240

be a scientist and nobody was

1876

01:07:10,549 --> 01:07:08,319

necessarily telling me how to be it so i

1877

01:07:12,390 --> 01:07:10,559

absolutely agree and you see that there

1878

01:07:14,069 --> 01:07:12,400

was a rise in folks who wanted to go in

1879

01:07:16,630 --> 01:07:14,079

the sciences as a direct result it's

1880

01:07:18,630 --> 01:07:16,640

that that challenge that we get i think

1881

01:07:20,870 --> 01:07:18,640

that it's absolutely there and we do

1882

01:07:22,630 --> 01:07:20,880

need to say it more loudly and more more

1883

01:07:24,870 --> 01:07:22,640

often sometimes we get stuck in the

1884

01:07:26,630 --> 01:07:24,880

woods with with the pieces that we have

1885

01:07:29,109 --> 01:07:26,640

but i absolutely agree with you it's

1886

01:07:30,630 --> 01:07:29,119

that inspiration and i just do one thing

1887

01:07:32,950 --> 01:07:30,640

when i went to china i went to china in

1888

01:07:35,109 --> 01:07:32,960

their space program the kids were going

1889

01:07:37,029 --> 01:07:35,119

wild because they had their space at

1890

01:07:38,950 --> 01:07:37,039

their astronaut there and i think we

1891

01:07:40,390 --> 01:07:38,960

went wild the same way and we wanted to

1892

01:07:42,789 --> 01:07:40,400

follow in their footsteps so i agree

1893

01:07:44,950 --> 01:07:42,799

with you 100 and thank you for

1894

01:07:47,510 --> 01:07:44,960

for clarifying that uh lori if i have

1895

01:07:50,390 --> 01:07:47,520

one other quick note uh about the

1896

01:07:51,349 --> 01:07:50,400

the the collaboration that you uh spoke

1897

01:07:54,069 --> 01:07:51,359

of

1898

01:07:55,589 --> 01:07:54,079

uh i i ask the question because i come

1899

01:07:57,589 --> 01:07:55,599

to this kind of as an academic and so

1900

01:07:59,670 --> 01:07:57,599

when i see potential problems i think

1901

01:08:01,750 --> 01:07:59,680

they're kind of cool to solve not that

1902

01:08:03,430 --> 01:08:01,760

they're problems

1903

01:08:05,510 --> 01:08:03,440

to worry about but problems to bring

1904

01:08:06,950 --> 01:08:05,520

smart people to what does it look like

1905

01:08:08,470 --> 01:08:06,960

to another country

1906

01:08:10,390 --> 01:08:08,480

when we say

1907

01:08:11,990 --> 01:08:10,400

our civilian space agency is partnering

1908

01:08:13,990 --> 01:08:12,000

with the military branch of the

1909

01:08:14,950 --> 01:08:14,000

government what does that look like to

1910

01:08:16,470 --> 01:08:14,960

them

1911

01:08:17,430 --> 01:08:16,480

to us it looks fine because you're

1912

01:08:19,990 --> 01:08:17,440

sitting right next to me and you're a

1913

01:08:21,590 --> 01:08:20,000

nice guy and way and you bring security

1914

01:08:23,829 --> 01:08:21,600

to our country and so of course it'll be

1915

01:08:27,030 --> 01:08:23,839

a collaboration to another country it's

1916

01:08:29,430 --> 01:08:27,040

the military marrying a civil agency and

1917

01:08:31,030 --> 01:08:29,440

i ask if we see another country

1918

01:08:33,269 --> 01:08:31,040

start a space program and then they say

1919

01:08:34,950 --> 01:08:33,279

oh by the way there's an entire military

1920

01:08:37,189 --> 01:08:34,960

branch that's going to be married to

1921

01:08:39,749 --> 01:08:37,199

that how do you react if you see that

1922

01:08:41,829 --> 01:08:39,759

happen in another land

1923

01:08:42,950 --> 01:08:41,839

i'm sorry does that rhetorical question

1924

01:08:48,309 --> 01:08:42,960

okay

1925

01:08:51,829 --> 01:08:50,870

let me let dale respond real quick

1926

01:08:53,110 --> 01:08:51,839

i guess

1927

01:08:56,470 --> 01:08:53,120

following on the point you just last

1928

01:08:58,709 --> 01:08:56,480

made i guess i see us needing to

1929

01:09:01,110 --> 01:08:58,719

industrial base issues i i think we're

1930

01:09:02,550 --> 01:09:01,120

going to require a certain level of of

1931

01:09:04,070 --> 01:09:02,560

integration between the civilian and the

1932

01:09:05,990 --> 01:09:04,080

military agency but

1933

01:09:07,189 --> 01:09:06,000

i i guess i was more inspired by the

1934

01:09:09,829 --> 01:09:07,199

charming young lady who had to leave

1935

01:09:11,189 --> 01:09:09,839

with the space adventures t-shirt or

1936

01:09:13,510 --> 01:09:11,199

jacket that

1937

01:09:16,789 --> 01:09:13,520

uh it dawned on me that maybe a way to

1938

01:09:19,510 --> 01:09:16,799

deal with the perception in this uh out

1939

01:09:21,110 --> 01:09:19,520

the third world or whoever of of

1940

01:09:22,870 --> 01:09:21,120

because i know it will arise and and i

1941

01:09:24,789 --> 01:09:22,880

hope somebody questions it somebody's

1942

01:09:26,470 --> 01:09:24,799

paying attention about the military

1943

01:09:28,470 --> 01:09:26,480

joining with the civilians

1944

01:09:31,110 --> 01:09:28,480

but a dear friend mentioned to me

1945

01:09:32,550 --> 01:09:31,120

yesterday when i was talking about being

1946

01:09:34,550 --> 01:09:32,560

in colorado and other things like that

1947

01:09:35,910 --> 01:09:34,560

and and bringing in the commercial and

1948

01:09:38,070 --> 01:09:35,920

he said

1949

01:09:40,309 --> 01:09:38,080

people have got to understand that space

1950

01:09:41,749 --> 01:09:40,319

is way too important to leave it to the

1951

01:09:45,349 --> 01:09:41,759

federal government

1952

01:09:47,189 --> 01:09:45,359

and that i think one way we deal with

1953

01:09:49,910 --> 01:09:47,199

that issue is

1954

01:09:52,309 --> 01:09:49,920

we're not only joining the civilian with

1955

01:09:53,269 --> 01:09:52,319

the military but more importantly we're

1956

01:09:55,830 --> 01:09:53,279

bringing

1957

01:09:58,149 --> 01:09:55,840

the larger ultimately more innovative

1958

01:09:59,830 --> 01:09:58,159

ultimately more resourced capabilities

1959

01:10:02,870 --> 01:09:59,840

of the commercial sector

1960

01:10:05,189 --> 01:10:02,880

so that we're getting the frivolous the

1961

01:10:07,669 --> 01:10:05,199

the the goofy um

1962

01:10:10,070 --> 01:10:07,679

the money making uh

1963

01:10:12,390 --> 01:10:10,080

involved in it and i think that to me is

1964

01:10:14,310 --> 01:10:12,400

what i find most inspiring by what the

1965

01:10:16,070 --> 01:10:14,320

president's rolling out is he's really

1966

01:10:19,270 --> 01:10:16,080

trying to change the paradigm god i hate

1967

01:10:22,550 --> 01:10:19,280

that word change the the concept of how

1968

01:10:24,630 --> 01:10:22,560

we even look at space and to me your

1969

01:10:26,390 --> 01:10:24,640

comments earlier about

1970

01:10:28,550 --> 01:10:26,400

in the 60s we didn't have to have

1971

01:10:30,070 --> 01:10:28,560

programs and i agree because i grew up

1972

01:10:32,149 --> 01:10:30,080

here

1973

01:10:33,590 --> 01:10:32,159

and and i think we've lost that as a

1974

01:10:35,510 --> 01:10:33,600

nation

1975

01:10:37,990 --> 01:10:35,520

i see it still is viable in brevard

1976

01:10:39,830 --> 01:10:38,000

county but because brevard county

1977

01:10:41,350 --> 01:10:39,840

our school system here because of the

1978

01:10:44,390 --> 01:10:41,360

space program

1979

01:10:45,830 --> 01:10:44,400

is vastly superior to any other major

1980

01:10:47,830 --> 01:10:45,840

county in the state of florida and

1981

01:10:50,950 --> 01:10:47,840

that's in no small measure because the

1982

01:10:52,310 --> 01:10:50,960

kids who go to school here their parents

1983

01:10:53,830 --> 01:10:52,320

you know work in the space program they

1984

01:10:55,189 --> 01:10:53,840

go when they sit around the dinner table

1985

01:10:56,709 --> 01:10:55,199

they're talking about space related

1986

01:10:58,550 --> 01:10:56,719

things and i think

1987

01:11:01,030 --> 01:10:58,560

absolutely absolutely

1988

01:11:02,870 --> 01:11:01,040

and and what we need to do is as as you

1989

01:11:04,630 --> 01:11:02,880

said is broaden that so that other

1990

01:11:06,630 --> 01:11:04,640

people at other dinner tables in in

1991

01:11:08,310 --> 01:11:06,640

nebraska lincoln nebraska and elsewhere

1992

01:11:11,350 --> 01:11:08,320

are talking about this issue

1993

01:11:13,830 --> 01:11:11,360

okay thank you we've gone over but i

1994

01:11:15,350 --> 01:11:13,840

appreciate you being here i do um think

1995

01:11:17,350 --> 01:11:15,360

that in the future you'll have to remind

1996

01:11:19,590 --> 01:11:17,360

me neil can stay in the panel that he

1997

01:11:22,790 --> 01:11:19,600

intended to so

1998

01:11:24,630 --> 01:11:22,800

actually i do uh want to address your

1999

01:11:26,950 --> 01:11:24,640

your concern about the partnership as i

2000

01:11:29,510 --> 01:11:26,960

think both

2001
01:11:31,189 --> 01:11:29,520
director cabana and general kaler stated

2002
01:11:33,270 --> 01:11:31,199
this is not a new partnership this

2003
01:11:35,910 --> 01:11:33,280
partnership has existed for and it is

2004
01:11:38,070 --> 01:11:35,920
not emerging of our of our programs at

2005
01:11:41,110 --> 01:11:38,080
all we have extremely distinct budgets i

2006
01:11:42,630 --> 01:11:41,120
do not think this any concern in fact as

2007
01:11:44,470 --> 01:11:42,640
a nation we believe

2008
01:11:46,790 --> 01:11:44,480
as has been stated this is an important

2009
01:11:48,950 --> 01:11:46,800
way to collaborate to get a better value

2010
01:11:51,030 --> 01:11:48,960
for the taxpayers so that we can do more

2011
01:11:52,229 --> 01:11:51,040
and provide the economic growth as the

2012
01:11:54,310 --> 01:11:52,239
commercial

2013
01:11:55,910 --> 01:11:54,320

sector leads into this and as far as

2014

01:11:57,830 --> 01:11:55,920

inspiration no one can say it better

2015

01:11:59,750 --> 01:11:57,840

than the president did today that that

2016

01:12:01,110 --> 01:11:59,760

is ultimately as you said you know why

2017

01:12:03,510 --> 01:12:01,120

we are doing this

2018

01:12:05,750 --> 01:12:03,520

and ultimately we believe that will be

2019

01:12:07,189 --> 01:12:05,760

the important way we draw

2020

01:12:09,750 --> 01:12:07,199

students and

2021

01:12:13,110 --> 01:12:09,760

i think adults alike into recognizing

2022

01:12:15,189 --> 01:12:13,120

that we are leaders and our great nation

2023

01:12:17,270 --> 01:12:15,199

ex great nations explore and we intend

2024

01:12:19,350 --> 01:12:17,280

to be one of those and to the extent

2025

01:12:21,510 --> 01:12:19,360

that that is helping to develop our

2026

01:12:23,110 --> 01:12:21,520

economic base all the better so thank

2027

01:12:24,709 --> 01:12:23,120

you very much for being here we're all