



Dr. Margaret Weitekamp

Curator, National Air and Space Museum

1
00:00:09,040 --> 00:00:23,269

so

2
00:00:26,470 --> 00:00:24,710

good evening ladies and gentlemen i'm

3
00:00:28,710 --> 00:00:26,480

jack daly director of the smithsonian's

4
00:00:30,550 --> 00:00:28,720

national air and space museum and it's a

5
00:00:33,270 --> 00:00:30,560

pleasure to welcome you to the sixth

6
00:00:35,350 --> 00:00:33,280

annual john h glenn lecture

7
00:00:38,709 --> 00:00:35,360

the film you've been watching is newly

8
00:00:40,709 --> 00:00:38,719

restored video from the july 20th 1969

9
00:00:43,110 --> 00:00:40,719

live television broadcast

10
00:00:44,869 --> 00:00:43,120

of the apollo 11 moonwalk

11
00:00:46,790 --> 00:00:44,879

the release commemorates the 40th

12
00:00:48,549 --> 00:00:46,800

anniversary of the firm first moon

13
00:00:51,910 --> 00:00:48,559

mission

14

00:00:54,790 --> 00:00:51,920

to actually put astronauts on the moon

15

00:00:56,150 --> 00:00:54,800

since it was inaugurated in 2004

16

00:00:58,549 --> 00:00:56,160

the lecture has become one of the

17

00:01:00,630 --> 00:00:58,559

museum's most popular events

18

00:01:01,349 --> 00:01:00,640

in fact that's our problem tonight we've

19

00:01:04,149 --> 00:01:01,359

had

20

00:01:05,030 --> 00:01:04,159

7 000 requests for tickets for this

21

00:01:07,590 --> 00:01:05,040

event

22

00:01:08,550 --> 00:01:07,600

485 in this theater so we have folks

23

00:01:09,910 --> 00:01:08,560

that are

24

00:01:11,910 --> 00:01:09,920

watching from

25

00:01:14,469 --> 00:01:11,920

other locations in this museum and from

26

00:01:17,030 --> 00:01:14,479

home courtesy of nasa tv which is

27

00:01:18,710 --> 00:01:17,040

providing it both on television and the

28

00:01:21,670 --> 00:01:18,720

web so it's

29

00:01:25,510 --> 00:01:21,680

it's live just like it was back then

30

00:01:29,109 --> 00:01:27,030

before we begin the program though i'd

31

00:01:30,950 --> 00:01:29,119

like to remind you that photographs and

32

00:01:32,469 --> 00:01:30,960

filming are not allowed

33

00:01:34,310 --> 00:01:32,479

please turn off your cell phones and

34

00:01:36,230 --> 00:01:34,320

other devices

35

00:01:38,469 --> 00:01:36,240

the annual john glenn lecture supports

36

00:01:40,149 --> 00:01:38,479

the museum's mission in many ways

37

00:01:42,069 --> 00:01:40,159

it is named for an individual who is

38

00:01:43,910 --> 00:01:42,079

known throughout the world for the role

39

00:01:45,429 --> 00:01:43,920

he played in the history of aviation and

40

00:01:47,590 --> 00:01:45,439

space

41

00:01:49,510 --> 00:01:47,600

each year a figure or team distinguished

42

00:01:52,469 --> 00:01:49,520

in the fields of space exploration or

43

00:01:53,990 --> 00:01:52,479

space sciences is invited to deliver the

44

00:01:59,190 --> 00:01:54,000

lecture

45

00:02:00,950 --> 00:01:59,200

40th anniversary of apollo 11.

46

00:02:02,069 --> 00:02:00,960

the first human mission to land on the

47

00:02:03,749 --> 00:02:02,079

moon

48

00:02:06,709 --> 00:02:03,759

we are privileged to have the entire

49

00:02:08,949 --> 00:02:06,719

crew mission commander neil armstrong

50

00:02:11,750 --> 00:02:08,959

command module pilot and founding

51
00:02:14,630 --> 00:02:11,760
director of this museum michael collins

52
00:02:16,710 --> 00:02:14,640
and lunar module pilot bulges aldrin for

53
00:02:18,790 --> 00:02:16,720
the program here tonight the fourth

54
00:02:21,350 --> 00:02:18,800
member of the panel is dr christopher

55
00:02:23,270 --> 00:02:21,360
kraft who is known the world over for

56
00:02:25,750 --> 00:02:23,280
creating mission control

57
00:02:27,910 --> 00:02:25,760
and succeeded robert gilruth as director

58
00:02:30,070 --> 00:02:27,920
of the johnson space center

59
00:02:31,350 --> 00:02:30,080
tonight's program is being made possible

60
00:02:33,190 --> 00:02:31,360
through the generous support of the

61
00:02:34,869 --> 00:02:33,200
boeing company

62
00:02:37,190 --> 00:02:34,879
in addition to providing support for the

63
00:02:38,630 --> 00:02:37,200

glenn lecture since its inception

64

00:02:42,070 --> 00:02:38,640

the company has partnered with the

65

00:02:43,589 --> 00:02:42,080

smithsonian on many important projects

66

00:02:45,509 --> 00:02:43,599

construction of phase two of the

67

00:02:48,550 --> 00:02:45,519

museum's stephen f odhasey center in

68

00:02:50,390 --> 00:02:48,560

chantilly virginia is well underway

69

00:02:52,710 --> 00:02:50,400

in recognition of the boeing company's

70

00:02:54,470 --> 00:02:52,720

magnificent contribution to this effort

71

00:02:57,509 --> 00:02:54,480

we have named the facility's central

72

00:02:59,509 --> 00:02:57,519

hangar the boeing aviation hangar

73

00:03:01,910 --> 00:02:59,519

with us tonight is mr timothy keating

74

00:03:04,070 --> 00:03:01,920

senior vice president of public policy

75

00:03:08,149 --> 00:03:04,080

at boeing tim would you please rise and

76

00:03:08,159 --> 00:03:12,790

okay here we go

77

00:03:16,949 --> 00:03:14,790

without these sponsorships

78

00:03:19,430 --> 00:03:16,959

these lectures would not be possible so

79

00:03:21,190 --> 00:03:19,440

we are deeply indebted to boeing for

80

00:03:23,270 --> 00:03:21,200

this evening

81

00:03:25,910 --> 00:03:23,280

our audience tonight includes the who's

82

00:03:27,350 --> 00:03:25,920

who of aviation space flight including

83

00:03:29,670 --> 00:03:27,360

the largest gathering of apollo

84

00:03:31,350 --> 00:03:29,680

astronauts in many years

85

00:03:33,509 --> 00:03:31,360

there are too many individuals to single

86

00:03:34,910 --> 00:03:33,519

out by name but i'd like to acknowledge

87

00:03:37,670 --> 00:03:34,920

the crew of

88

00:03:40,309 --> 00:03:37,680

sts-125 who recently have flew aboard

89

00:03:41,750 --> 00:03:40,319

the space shuttle atlantis

90

00:03:42,949 --> 00:03:41,760

you won't be able to see them when i

91

00:03:45,030 --> 00:03:42,959

introduce them because they're not in

92

00:03:47,589 --> 00:03:45,040

the theater they're in milestones of

93

00:03:49,430 --> 00:03:47,599

flight and so the folks out there

94

00:03:51,110 --> 00:03:49,440

they'll be they will be able to see us

95

00:03:55,030 --> 00:03:51,120

though so be sure to

96

00:04:00,630 --> 00:03:56,789

hey you palucas are supposed to be out

97

00:04:05,429 --> 00:04:02,309

well let me

98

00:04:07,509 --> 00:04:05,439

let me apologize to the those of you who

99

00:04:09,509 --> 00:04:07,519

well those those reserve seats in the

100

00:04:10,630 --> 00:04:09,519

front row outside you're you can go

101
00:04:13,030 --> 00:04:10,640
ahead and sit on them folks because

102
00:04:15,110 --> 00:04:13,040
they're available

103
00:04:17,270 --> 00:04:15,120
well that kind of messes up this little

104
00:04:19,030 --> 00:04:17,280
part

105
00:04:22,469 --> 00:04:19,040
i'm not gonna even enter six of them are

106
00:04:22,479 --> 00:04:32,870
stand up

107
00:04:36,790 --> 00:04:34,710
i had a very clever series i was going

108
00:04:38,150 --> 00:04:36,800
to do at that point

109
00:04:41,189 --> 00:04:38,160
okay

110
00:04:43,430 --> 00:04:41,199
thank you this fall we look forward to

111
00:04:45,430 --> 00:04:43,440
having here in the museum

112
00:04:46,950 --> 00:04:45,440
two of the astronomical instruments that

113
00:04:48,790 --> 00:04:46,960

the crew brought back to earth from the

114

00:04:50,629 --> 00:04:48,800

hubble space telescope

115

00:04:53,590 --> 00:04:50,639

these instruments are the wide field

116

00:04:55,749 --> 00:04:53,600

planetary camera and the correct optics

117

00:04:57,030 --> 00:04:55,759

space telescope axial replace

118

00:04:59,350 --> 00:04:57,040

replacement

119

00:05:00,790 --> 00:04:59,360

better known as costar

120

00:05:02,629 --> 00:05:00,800

remember that those were the corrective

121

00:05:04,150 --> 00:05:02,639

lenses that had to be put on hubble and

122

00:05:06,790 --> 00:05:04,160

they're going to be here on display but

123

00:05:08,550 --> 00:05:06,800

also think about that

124

00:05:11,350 --> 00:05:08,560

it was it was determined that hubble had

125

00:05:13,830 --> 00:05:11,360

a lens problem once it was on orbit

126

00:05:16,230 --> 00:05:13,840

nasa analyzed the problem

127

00:05:17,909 --> 00:05:16,240

developed the collect the correction

128

00:05:20,150 --> 00:05:17,919

produced it here on earth launched it

129

00:05:22,469 --> 00:05:20,160

into space and installed it on orbiting

130

00:05:24,310 --> 00:05:22,479

spacecraft that's a perfect example of

131

00:05:26,390 --> 00:05:24,320

what nasa does the incredible things

132

00:05:28,710 --> 00:05:26,400

that nasa does on a regular basis my

133

00:05:30,629 --> 00:05:28,720

favorite comment there was if you can

134

00:05:32,550 --> 00:05:30,639

identify the problem nasa can solve it

135

00:05:34,390 --> 00:05:32,560

and i think this is a perfect example of

136

00:05:35,909 --> 00:05:34,400

that being but it's going to be those

137

00:05:38,550 --> 00:05:35,919

those boxes are going to be on display

138

00:05:41,189 --> 00:05:38,560

here in the museum very shortly and we'd

139

00:05:43,029 --> 00:05:41,199

invite you to uh to take a look

140

00:05:44,230 --> 00:05:43,039

they're not in the script tonight but

141

00:05:45,830 --> 00:05:44,240

something that happened that i think we

142

00:05:46,950 --> 00:05:45,840

need to mention is the passing of walter

143

00:05:49,909 --> 00:05:46,960

cronkite

144

00:05:52,469 --> 00:05:49,919

the uh truly a member of this team and

145

00:05:54,950 --> 00:05:52,479

uh and he's what really brought the rest

146

00:05:56,870 --> 00:05:54,960

of us into the the picture with his uh

147

00:05:58,150 --> 00:05:56,880

narrations of all of the activities and

148

00:06:00,070 --> 00:05:58,160

was clear that his commitment to the

149

00:06:01,990 --> 00:06:00,080

space program was total

150

00:06:03,670 --> 00:06:02,000

and uh so we'll all miss him and there

151
00:06:05,590 --> 00:06:03,680
will be tributes to him throughout the

152
00:06:08,550 --> 00:06:05,600
week there were many today

153
00:06:10,550 --> 00:06:08,560
also i'd like to mention that

154
00:06:12,150 --> 00:06:10,560
major general charles bolden the united

155
00:06:13,430 --> 00:06:12,160
states marine corps retired was

156
00:06:15,350 --> 00:06:13,440
confirmed by the president as

157
00:06:16,950 --> 00:06:15,360
administrator of nasa last week so

158
00:06:25,510 --> 00:06:16,960
charlie i know you're here stand up

159
00:06:28,469 --> 00:06:27,189
for those of you air force guys who are

160
00:06:32,950 --> 00:06:28,479
concerned that the marines are taking

161
00:06:38,629 --> 00:06:35,270
one year ago the smithsonian institution

162
00:06:39,909 --> 00:06:38,639
welcomed its 12th secretary gene wayne

163
00:06:41,830 --> 00:06:39,919

club

164

00:06:45,110 --> 00:06:41,840

over the past year dr clough has gotten

165

00:06:47,670 --> 00:06:45,120

to know the institution's 19 museums 20

166

00:06:49,029 --> 00:06:47,680

libraries nine research centers the

167

00:06:50,950 --> 00:06:49,039

national zoo

168

00:06:52,629 --> 00:06:50,960

and has traveled to smithsonian

169

00:06:55,430 --> 00:06:52,639

operations in other countries including

170

00:06:57,589 --> 00:06:55,440

panama chile and in kenya

171

00:06:59,510 --> 00:06:57,599

dr kluff's vision includes renewal and

172

00:07:02,309 --> 00:06:59,520

rethinking of the institution's role in

173

00:07:04,309 --> 00:07:02,319

the life of the nation and the world he

174

00:07:06,309 --> 00:07:04,319

is moving forward with a major strategic

175

00:07:08,790 --> 00:07:06,319

planning effort his priorities include

176
00:07:10,390 --> 00:07:08,800
engaging new audiences and harnessing

177
00:07:12,870 --> 00:07:10,400
latest technology to achieve the

178
00:07:15,589 --> 00:07:12,880
institution's founding mandate which is

179
00:07:17,350 --> 00:07:15,599
the increase in diffusion of knowledge

180
00:07:18,790 --> 00:07:17,360
dr clough has shown great support for

181
00:07:20,469 --> 00:07:18,800
the national air and space museum and

182
00:07:23,189 --> 00:07:20,479
has visited both this building and the

183
00:07:24,710 --> 00:07:23,199
stephen f udrahasi several times

184
00:07:26,710 --> 00:07:24,720
he has viewed exhibits met with the

185
00:07:28,629 --> 00:07:26,720
scientists and curators participated in

186
00:07:30,230 --> 00:07:28,639
programs toured collection storage

187
00:07:32,309 --> 00:07:30,240
facilities and even helped us break the

188
00:07:34,070 --> 00:07:32,319

wall through the udvr housing center

189

00:07:36,469 --> 00:07:34,080

with a bulldozer to begin construction

190

00:07:38,150 --> 00:07:36,479

of phase two it is my great honor to

191

00:07:40,790 --> 00:07:38,160

introduce the 12th secretary of the

192

00:07:50,309 --> 00:07:40,800

smithsonian institution dr g wayne

193

00:07:53,110 --> 00:07:51,350

good evening

194

00:07:54,469 --> 00:07:53,120

and thank you jack for that nice

195

00:07:56,309 --> 00:07:54,479

introduction and thank you for your

196

00:07:58,469 --> 00:07:56,319

exceptional leadership and to all your

197

00:08:00,150 --> 00:07:58,479

colleagues for what this museum and the

198

00:08:01,830 --> 00:08:00,160

hazard museum does for the american

199

00:08:03,510 --> 00:08:01,840

people it's a wonderful

200

00:08:05,749 --> 00:08:03,520

thing for all of us

201
00:08:07,350 --> 00:08:05,759
let me also say welcome to our special

202
00:08:08,869 --> 00:08:07,360
guests who are here and obviously there

203
00:08:11,110 --> 00:08:08,879
are many here tonight

204
00:08:13,909 --> 00:08:11,120
many who indeed were heroes

205
00:08:15,270 --> 00:08:13,919
and who have indeed made history

206
00:08:18,150 --> 00:08:15,280
thank you for coming to help us

207
00:08:18,950 --> 00:08:18,160
celebrate the annual john glenn lecture

208
00:08:21,830 --> 00:08:18,960
and

209
00:08:23,430 --> 00:08:21,840
the 40th anniversary of apollo 11 of the

210
00:08:24,629 --> 00:08:23,440
moon landing

211
00:08:26,469 --> 00:08:24,639
and welcome to all those who are

212
00:08:27,189 --> 00:08:26,479
watching courtesy of nasa through the

213
00:08:29,510 --> 00:08:27,199

web

214

00:08:31,589 --> 00:08:29,520

broadcast we appreciate that very much

215

00:08:33,750 --> 00:08:31,599

we love our partnership with nasa not

216

00:08:35,750 --> 00:08:33,760

only jointly do we celebrate the wonders

217

00:08:37,430 --> 00:08:35,760

and the accomplishments of the space

218

00:08:40,070 --> 00:08:37,440

program of this country

219

00:08:42,389 --> 00:08:40,080

but indeed we also share activities

220

00:08:43,829 --> 00:08:42,399

together such as operating the chandras

221

00:08:46,550 --> 00:08:43,839

orbiting satellite

222

00:08:48,230 --> 00:08:46,560

telescope as well as working with them

223

00:08:49,990 --> 00:08:48,240

in the new kepler mission looking for

224

00:08:53,269 --> 00:08:50,000

new planets

225

00:08:55,190 --> 00:08:53,279

well 1969 was an eventful year in art

226

00:08:58,389 --> 00:08:55,200

politics and culture

227

00:09:01,509 --> 00:08:58,399

but probably no event was more important

228

00:09:03,350 --> 00:09:01,519

more inspiring or more transforming

229

00:09:06,630 --> 00:09:03,360

than the moon landing

230

00:09:08,949 --> 00:09:06,640

the world changed forever that day

231

00:09:10,710 --> 00:09:08,959

and all of us at least of my generation

232

00:09:13,190 --> 00:09:10,720

remember where we were

233

00:09:14,470 --> 00:09:13,200

when it happened and when we saw it on

234

00:09:15,910 --> 00:09:14,480

television

235

00:09:17,670 --> 00:09:15,920

i was a student at the university of

236

00:09:19,350 --> 00:09:17,680

california at berkeley working on my

237

00:09:21,269 --> 00:09:19,360

ph.d degree

238

00:09:24,389 --> 00:09:21,279

and that particular day

239

00:09:26,870 --> 00:09:24,399

we were imbibing slightly on the side at

240

00:09:29,430 --> 00:09:26,880

a place called laval's beer garden

241

00:09:31,430 --> 00:09:29,440

celebrating the landing of these great

242

00:09:33,030 --> 00:09:31,440

astronauts and we raised one and hoisted

243

00:09:34,550 --> 00:09:33,040

one in your honor

244

00:09:36,070 --> 00:09:34,560

when it happened

245

00:09:37,910 --> 00:09:36,080

well tonight you will hear from those

246

00:09:40,230 --> 00:09:37,920

who actually did it

247

00:09:43,269 --> 00:09:40,240

we are honored they are here

248

00:09:45,269 --> 00:09:43,279

in a speech at rice university in 1962

249

00:09:46,790 --> 00:09:45,279

president john f kennedy described their

250

00:09:49,269 --> 00:09:46,800

mission as

251
00:09:52,949 --> 00:09:49,279
the most hazardous and dangerous and

252
00:09:54,790 --> 00:09:52,959
greatest adventure on which man has ever

253
00:09:57,190 --> 00:09:54,800
embarked

254
00:10:00,070 --> 00:09:57,200
here at the smithsonian we're dedicated

255
00:10:03,110 --> 00:10:00,080
to telling every expanding story of our

256
00:10:04,710 --> 00:10:03,120
fascination with flight and space

257
00:10:06,310 --> 00:10:04,720
exploration

258
00:10:08,150 --> 00:10:06,320
here we celebrate the incredible

259
00:10:10,710 --> 00:10:08,160
accomplishments of the courageous

260
00:10:13,829 --> 00:10:10,720
visionary men and women throughout our

261
00:10:16,389 --> 00:10:13,839
history who dare to divide the odds

262
00:10:19,430 --> 00:10:16,399
and gravity

263
00:10:20,389 --> 00:10:19,440

pilot and inventor igor saskorsky once

264

00:10:22,949 --> 00:10:20,399

wrote

265

00:10:23,990 --> 00:10:22,959

aeronautics is neither an industry nor a

266

00:10:26,790 --> 00:10:24,000

science

267

00:10:28,389 --> 00:10:26,800

it is a miracle

268

00:10:31,430 --> 00:10:28,399

and it's here at the smithsonian that

269

00:10:33,910 --> 00:10:31,440

you see the whole story of that miracle

270

00:10:36,949 --> 00:10:33,920

how astronauts pilots politicians

271

00:10:40,310 --> 00:10:36,959

scientists engineers inventors and many

272

00:10:42,550 --> 00:10:40,320

other made it possible to soar

273

00:10:43,509 --> 00:10:42,560

the apollo 11 mission illustrates the

274

00:10:45,110 --> 00:10:43,519

best

275

00:10:46,949 --> 00:10:45,120

of that story

276

00:10:48,870 --> 00:10:46,959

it took many years of hard work to make

277

00:10:50,150 --> 00:10:48,880

it happen and there have been many years

278

00:10:51,990 --> 00:10:50,160

of hard work

279

00:10:54,150 --> 00:10:52,000

since then

280

00:10:56,069 --> 00:10:54,160

so last year at our annual folklife

281

00:10:58,310 --> 00:10:56,079

festival we celebrated the 50th

282

00:11:00,790 --> 00:10:58,320

anniversary of nasa

283

00:11:03,190 --> 00:11:00,800

and thousands of dedicated professionals

284

00:11:05,590 --> 00:11:03,200

who make our space exploration possible

285

00:11:06,949 --> 00:11:05,600

well over a million people came to view

286

00:11:09,350 --> 00:11:06,959

the exhibits

287

00:11:10,870 --> 00:11:09,360

and i personally visited at that time

288

00:11:13,350 --> 00:11:10,880

and i'll never forget the look on the

289

00:11:14,870 --> 00:11:13,360

faces of the children and the adults as

290

00:11:17,910 --> 00:11:14,880

they saw the many dazzling

291

00:11:19,509 --> 00:11:17,920

demonstrations about space flight

292

00:11:21,750 --> 00:11:19,519

we also at that particular time

293

00:11:23,509 --> 00:11:21,760

celebrated the country of bhutan

294

00:11:25,590 --> 00:11:23,519

and many of the monks who came to

295

00:11:28,870 --> 00:11:25,600

participate had never been out of their

296

00:11:30,550 --> 00:11:28,880

monastery much less been on a plane

297

00:11:32,790 --> 00:11:30,560

and when they had the opportunity to see

298

00:11:35,030 --> 00:11:32,800

what was going on in the nasa provision

299

00:11:35,910 --> 00:11:35,040

they were amazed and it was wonderful to

300

00:11:38,310 --> 00:11:35,920

see

301
00:11:40,389 --> 00:11:38,320
their inspiration when they saw it

302
00:11:42,949 --> 00:11:40,399
well the national air and space museum

303
00:11:44,150 --> 00:11:42,959
hosts more than 7 million visitors

304
00:11:45,990 --> 00:11:44,160
annually

305
00:11:46,949 --> 00:11:46,000
and the smithsonian though is in a new

306
00:11:48,949 --> 00:11:46,959
era

307
00:11:50,949 --> 00:11:48,959
we want to reach not just the millions

308
00:11:53,910 --> 00:11:50,959
who visit here on the mall but the

309
00:11:56,870 --> 00:11:53,920
billions who we can reach using digital

310
00:11:59,269 --> 00:11:56,880
technology to inspire young people

311
00:12:02,150 --> 00:11:59,279
themselves so that they will want to be

312
00:12:04,150 --> 00:12:02,160
scientists and astronauts and nasa

313
00:12:06,069 --> 00:12:04,160

participants scientists

314

00:12:07,670 --> 00:12:06,079

science history and art and culture come

315

00:12:09,590 --> 00:12:07,680

together at the smithsonian to tell the

316

00:12:12,150 --> 00:12:09,600

story of what it can mean to be what it

317

00:12:14,710 --> 00:12:12,160

means to be an american

318

00:12:16,870 --> 00:12:14,720

astronaut alan bean of course right now

319

00:12:19,030 --> 00:12:16,880

has a wonderful art exhibit in this

320

00:12:20,629 --> 00:12:19,040

museum it's a great example of how

321

00:12:22,470 --> 00:12:20,639

science and art

322

00:12:24,230 --> 00:12:22,480

come together

323

00:12:27,030 --> 00:12:24,240

well all of these stories speak to the

324

00:12:27,910 --> 00:12:27,040

great american spirit and what we stand

325

00:12:29,750 --> 00:12:27,920

for

326

00:12:31,590 --> 00:12:29,760

as a nation

327

00:12:34,389 --> 00:12:31,600

the best of what we stand for is

328

00:12:37,190 --> 00:12:34,399

exemplified in our next speaker and it

329

00:12:39,269 --> 00:12:37,200

is my distinct honor to introduce him

330

00:12:41,910 --> 00:12:39,279

please welcome a true friend of the

331

00:12:44,230 --> 00:12:41,920

smithsonian for decades the man for whom

332

00:12:48,470 --> 00:12:44,240

this lecture series is named an

333

00:12:51,430 --> 00:12:48,480

astronaut a senator a marine a pioneer

334

00:13:02,470 --> 00:12:51,440

and a above all a great american patriot

335

00:13:08,310 --> 00:13:06,230

thank you all very much thank you

336

00:13:09,750 --> 00:13:08,320

thank you secretary cliff very much

337

00:13:12,389 --> 00:13:09,760

thank you

338

00:13:14,790 --> 00:13:12,399

the summer of 1969 was a

339

00:13:17,590 --> 00:13:14,800

defining time in america because of the

340

00:13:18,829 --> 00:13:17,600

milestone that we're recognizing tonight

341

00:13:21,430 --> 00:13:18,839

apollo

342

00:13:23,590 --> 00:13:21,440

11. you could ask anyone over the age of

343

00:13:25,030 --> 00:13:23,600

50 what she he or she was doing when we

344

00:13:26,790 --> 00:13:25,040

landed on the moon and they can tell you

345

00:13:28,790 --> 00:13:26,800

and that's me too

346

00:13:31,430 --> 00:13:28,800

i was fortunate to be i had left nasa by

347

00:13:33,269 --> 00:13:31,440

that time but i had uh was back in the

348

00:13:35,590 --> 00:13:33,279

observation area in the control center

349

00:13:37,590 --> 00:13:35,600

and watch the whole thing unfold there

350

00:13:39,110 --> 00:13:37,600

and something i certainly will uh never

351
00:13:41,590 --> 00:13:39,120
ever forget

352
00:13:43,189 --> 00:13:41,600
along with you and people all over the

353
00:13:45,030 --> 00:13:43,199
world

354
00:13:46,870 --> 00:13:45,040
in 61 president kennedy had made a

355
00:13:49,030 --> 00:13:46,880
public commitment to land on the moon by

356
00:13:51,910 --> 00:13:49,040
the end of the decade

357
00:13:53,430 --> 00:13:51,920
this was not just some idle objective

358
00:13:55,829 --> 00:13:53,440
i think a lot of people forget what the

359
00:13:57,829 --> 00:13:55,839
drive was back at that time

360
00:13:59,269 --> 00:13:57,839
a lot of the drive behind our efforts at

361
00:14:01,430 --> 00:13:59,279
that time

362
00:14:03,189 --> 00:14:01,440
was a cold war

363
00:14:04,470 --> 00:14:03,199

this wasn't just some scientific uh

364

00:14:07,590 --> 00:14:04,480

stunt or

365

00:14:09,509 --> 00:14:07,600

or effort to exceed just for the just

366

00:14:11,750 --> 00:14:09,519

for the doing of it

367

00:14:14,069 --> 00:14:11,760

he was inspired by the cold war and the

368

00:14:16,389 --> 00:14:14,079

competition we had the soviet claims of

369

00:14:17,990 --> 00:14:16,399

research superiority to us

370

00:14:19,750 --> 00:14:18,000

they were taking thousands of students

371

00:14:22,069 --> 00:14:19,760

to the soviet union training them

372

00:14:23,750 --> 00:14:22,079

sending them back to their own countries

373

00:14:25,590 --> 00:14:23,760

and they had been ahead of us a while in

374

00:14:27,509 --> 00:14:25,600

the earlier days of that

375

00:14:29,269 --> 00:14:27,519

of the space program when they were

376

00:14:31,110 --> 00:14:29,279

actually launching and successfully

377

00:14:33,110 --> 00:14:31,120

while some of ours were blowing up on

378

00:14:34,629 --> 00:14:33,120

the mission or

379

00:14:35,990 --> 00:14:34,639

boosters were blowing up on the launch

380

00:14:38,710 --> 00:14:36,000

pad

381

00:14:40,870 --> 00:14:38,720

but the years rolled by after the

382

00:14:42,230 --> 00:14:40,880

president made that decision to go and

383

00:14:45,670 --> 00:14:42,240

announce it

384

00:14:47,990 --> 00:14:45,680

and the 60s drew toward a close

385

00:14:49,670 --> 00:14:48,000

in 1968 we have to remember some of the

386

00:14:51,269 --> 00:14:49,680

things that happened at that time we had

387

00:14:54,150 --> 00:14:51,279

great turmoil over the

388

00:14:58,470 --> 00:14:54,160

the vietnam war and we had had

389

00:15:01,110 --> 00:14:58,480

actual riots in chicago over this we had

390

00:15:02,790 --> 00:15:01,120

the assassination of martin luther king

391

00:15:05,430 --> 00:15:02,800

and bobby kennedy

392

00:15:07,910 --> 00:15:05,440

and at the time america stood at sort of

393

00:15:10,310 --> 00:15:07,920

a critical crossroads

394

00:15:11,829 --> 00:15:10,320

and i think you know that apollo 11 did

395

00:15:14,389 --> 00:15:11,839

a lot to bring this country back

396

00:15:15,990 --> 00:15:14,399

together again

397

00:15:17,750 --> 00:15:16,000

people suddenly had a feeling that we

398

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

were all one again

399

00:15:23,430 --> 00:15:20,000

and we could go ahead and move ahead

400

00:15:24,790 --> 00:15:23,440

like we hadn't felt for a long time

401
00:15:26,230 --> 00:15:24,800
and i thought it was interesting a few

402
00:15:27,829 --> 00:15:26,240
days ago there was an article in the new

403
00:15:30,870 --> 00:15:27,839
york times i think it was the wolford

404
00:15:33,189 --> 00:15:30,880
article about the the anniversary

405
00:15:35,110 --> 00:15:33,199
when he talked about people americans

406
00:15:36,790 --> 00:15:35,120
around the world where foreigners were

407
00:15:38,230 --> 00:15:36,800
coming up to them in different capitals

408
00:15:42,150 --> 00:15:38,240
around the world

409
00:15:43,990 --> 00:15:42,160
and saying we did it we did it we did it

410
00:15:45,749 --> 00:15:44,000
and congratulating americans but it was

411
00:15:47,269 --> 00:15:45,759
we did it

412
00:15:49,030 --> 00:15:47,279
and they were talking about themselves

413
00:15:50,790 --> 00:15:49,040

along with us the way they viewed this

414

00:15:52,870 --> 00:15:50,800

whole thing

415

00:15:55,590 --> 00:15:52,880

and showed that i think for the first

416

00:15:57,189 --> 00:15:55,600

time maybe in human history

417

00:15:58,629 --> 00:15:57,199

we had the people of the whole world

418

00:16:01,749 --> 00:15:58,639

with a sense of

419

00:16:03,749 --> 00:16:01,759

it was a major time for all mankind

420

00:16:05,829 --> 00:16:03,759

that this was a step that nobody had

421

00:16:07,269 --> 00:16:05,839

ever done before

422

00:16:09,430 --> 00:16:07,279

and it was something that meant a lot to

423

00:16:11,110 --> 00:16:09,440

people all over the world

424

00:16:14,310 --> 00:16:11,120

now it's too bad of course we can't keep

425

00:16:15,990 --> 00:16:14,320

that same kind of dedication because

426

00:16:17,590 --> 00:16:16,000

everyone shared the success of this

427

00:16:20,150 --> 00:16:17,600

historic mission is too bad we just

428

00:16:23,350 --> 00:16:20,160

can't continue that attitude day in and

429

00:16:25,030 --> 00:16:23,360

day out people often wonder if younger

430

00:16:26,790 --> 00:16:25,040

generations who have no memory of the

431

00:16:28,389 --> 00:16:26,800

moon landings recognize the importance

432

00:16:30,949 --> 00:16:28,399

of these events

433

00:16:33,670 --> 00:16:30,959

and perhaps there is a resurgence now of

434

00:16:37,110 --> 00:16:33,680

interest in public service as there was

435

00:16:38,949 --> 00:16:37,120

back after those days of apollo 11.

436

00:16:40,710 --> 00:16:38,959

the 40th anniversary reminds us of how

437

00:16:41,990 --> 00:16:40,720

the work of many people in the lives of

438

00:16:43,990 --> 00:16:42,000

many people

439

00:16:46,389 --> 00:16:44,000

went into sending these people to the

440

00:16:48,310 --> 00:16:46,399

moon on that day

441

00:16:50,550 --> 00:16:48,320

neal many times has mentioned about this

442

00:16:51,430 --> 00:16:50,560

about what a team effort it was a giant

443

00:16:53,350 --> 00:16:51,440

team

444

00:16:54,550 --> 00:16:53,360

hundreds of thousands of people involved

445

00:16:56,150 --> 00:16:54,560

with this

446

00:16:58,150 --> 00:16:56,160

all over the country

447

00:17:00,150 --> 00:16:58,160

and it was indeed that

448

00:17:02,150 --> 00:17:00,160

in remembering the apollo program as a

449

00:17:03,269 --> 00:17:02,160

tribute to what americans can do an

450

00:17:04,549 --> 00:17:03,279

example

451
00:17:06,710 --> 00:17:04,559
of what yet

452
00:17:08,230 --> 00:17:06,720
can be done

453
00:17:10,150 --> 00:17:08,240
to get the discussion underway this

454
00:17:11,350 --> 00:17:10,160
evening i'd like to introduce margaret

455
00:17:13,669 --> 00:17:11,360
weidekamp

456
00:17:15,590 --> 00:17:13,679
she's the curator in the museum division

457
00:17:17,669 --> 00:17:15,600
of space history here

458
00:17:19,990 --> 00:17:17,679
she has a number of graduate degrees has

459
00:17:20,870 --> 00:17:20,000
received numerous awards

460
00:17:23,110 --> 00:17:20,880
and

461
00:17:25,189 --> 00:17:23,120
dr weidekamp oversees the collections of

462
00:17:26,390 --> 00:17:25,199
space memorabilia and space science

463
00:17:31,590 --> 00:17:26,400

objects

464

00:17:33,510 --> 00:17:31,600

she has a job i wouldn't have for any

465

00:17:35,430 --> 00:17:33,520

amount of money

466

00:17:37,430 --> 00:17:35,440

how do you go out how do you have a

467

00:17:39,350 --> 00:17:37,440

flight come back from space

468

00:17:42,150 --> 00:17:39,360

and make the decisions on what is

469

00:17:44,070 --> 00:17:42,160

historically significant to hang on to

470

00:17:46,630 --> 00:17:44,080

and what turns up as a heap of space

471

00:17:48,630 --> 00:17:46,640

junk it just came back and that's what

472

00:17:50,470 --> 00:17:48,640

her job is to determine what's important

473

00:17:51,350 --> 00:17:50,480

on this or not she does a great job with

474

00:17:53,270 --> 00:17:51,360

it

475

00:17:55,750 --> 00:17:53,280

among her duties is coordination of this

476

00:17:57,909 --> 00:17:55,760

annual lecture series also margaret we

477

00:18:08,470 --> 00:17:57,919

appreciate your efforts dr margaret at

478

00:18:08,480 --> 00:18:12,390

thank you very much senator glenn

479

00:18:16,150 --> 00:18:14,630

it is indeed an honor a privilege to

480

00:18:17,510 --> 00:18:16,160

coordinate the glenn lecture in space

481

00:18:19,510 --> 00:18:17,520

history this year

482

00:18:21,270 --> 00:18:19,520

as we commemorate the 40th anniversary

483

00:18:23,029 --> 00:18:21,280

of apollo 11.

484

00:18:25,190 --> 00:18:23,039

our speakers this evening the crew of

485

00:18:27,190 --> 00:18:25,200

that historic mission and dr christopher

486

00:18:28,950 --> 00:18:27,200

kraft have graciously agreed to share

487

00:18:31,510 --> 00:18:28,960

with us their thoughts on the

488

00:18:33,669 --> 00:18:31,520

significance of apollo 11 and american

489

00:18:35,750 --> 00:18:33,679

space flights to the moon

490

00:18:37,990 --> 00:18:35,760

our first speaker this evening will be

491

00:18:39,909 --> 00:18:38,000

dr kraft

492

00:18:42,630 --> 00:18:39,919

as nasa's first flight director for

493

00:18:45,110 --> 00:18:42,640

human space flights christopher c kraft

494

00:18:47,350 --> 00:18:45,120

jr enjoyed a firsthand perspective on

495

00:18:48,470 --> 00:18:47,360

the early years of american human space

496

00:18:50,230 --> 00:18:48,480

flight

497

00:18:52,230 --> 00:18:50,240

many of you have probably enjoyed his

498

00:18:55,909 --> 00:18:52,240

insight since nasa's early history in

499

00:18:57,750 --> 00:18:55,919

his 2001 autobiography flight my life in

500

00:19:00,390 --> 00:18:57,760

mission control

501

00:19:02,230 --> 00:19:00,400

dr kraft served as director of nasa's

502

00:19:05,590 --> 00:19:02,240

johnson space center in houston from

503

00:19:07,510 --> 00:19:05,600

1972 to 1982 and then worked as an

504

00:19:09,669 --> 00:19:07,520

aerospace consultant after his

505

00:19:11,990 --> 00:19:09,679

retirement from nasa

506

00:19:13,590 --> 00:19:12,000

he has spoken at the museum before

507

00:19:15,350 --> 00:19:13,600

and we are honored to have him back with

508

00:19:29,350 --> 00:19:15,360

us again this evening

509

00:19:32,070 --> 00:19:31,110

i'm gonna see if i can do that without

510

00:19:34,710 --> 00:19:32,080

this

511

00:19:36,630 --> 00:19:34,720

stuff that's in front of me

512

00:19:38,549 --> 00:19:36,640

uh it's indeed an honor to be here

513

00:19:40,470 --> 00:19:38,559

tonight

514

00:19:42,710 --> 00:19:40,480

it was a great day

515

00:19:45,110 --> 00:19:42,720

40 years ago

516

00:19:47,909 --> 00:19:45,120

it's an honor to be involved in this

517

00:19:50,630 --> 00:19:47,919

great evening with the three men who did

518

00:19:54,150 --> 00:19:50,640

the job they are great americans and

519

00:20:00,150 --> 00:19:56,470

my job supposed to be tonight to set the

520

00:20:03,909 --> 00:20:00,160

stage so i'll try to do that

521

00:20:05,590 --> 00:20:03,919

the russians in 1957 as we all know

522

00:20:07,830 --> 00:20:05,600

started this whole business with

523

00:20:10,149 --> 00:20:07,840

orbiting a satellite

524

00:20:12,710 --> 00:20:10,159

known as sputnik

525

00:20:15,750 --> 00:20:12,720

they had it on page 37

526

00:20:18,630 --> 00:20:15,760

of their newspaper

527

00:20:21,029 --> 00:20:18,640

the sec next day after every newspaper

528

00:20:24,549 --> 00:20:21,039

in the world had it on the front page

529

00:20:28,230 --> 00:20:24,559

they put it on the front page

530

00:20:30,549 --> 00:20:28,240

and in the spring of 1961

531

00:20:33,110 --> 00:20:30,559

following that there was a great deal

532

00:20:34,549 --> 00:20:33,120

turmoil in the space program

533

00:20:37,270 --> 00:20:34,559

but even more

534

00:20:42,310 --> 00:20:39,909

everyone was concerned about what was

535

00:20:44,789 --> 00:20:42,320

happening with the russians

536

00:20:47,110 --> 00:20:44,799

the president was having sleepless

537

00:20:50,630 --> 00:20:47,120

nights

538

00:20:52,710 --> 00:20:50,640

and in 1961 the u.s space program was

539

00:20:54,950 --> 00:20:52,720

also

540

00:20:58,310 --> 00:20:54,960

which was created to start

541

00:21:01,190 --> 00:20:58,320

man's advancement into space

542

00:21:04,549 --> 00:21:01,200

was attempting to launch the first human

543

00:21:07,510 --> 00:21:04,559

into space alan shepard

544

00:21:11,430 --> 00:21:07,520

it was a competition with the russians

545

00:21:13,270 --> 00:21:11,440

the press drove that immensely

546

00:21:15,510 --> 00:21:13,280

many times we were very unhappy about

547

00:21:17,909 --> 00:21:15,520

that but nevertheless we were struggling

548

00:21:22,070 --> 00:21:17,919

to make a safe launch of the first

549

00:21:24,870 --> 00:21:22,080

astronaut into a suborbital flight

550

00:21:25,669 --> 00:21:24,880

now the second flight in project mercury

551
00:21:28,390 --> 00:21:25,679
which

552
00:21:31,990 --> 00:21:28,400
was previous to that

553
00:21:33,990 --> 00:21:32,000
was a very interesting flight because

554
00:21:37,909 --> 00:21:34,000
uh on the sitting on the top of a

555
00:21:41,510 --> 00:21:37,919
redstone was a chimpanzee named ham

556
00:21:44,230 --> 00:21:41,520
and he was there because we had to prove

557
00:21:46,390 --> 00:21:44,240
before we could put humans in space that

558
00:21:49,830 --> 00:21:46,400
we would indeed would not kill the

559
00:21:55,909 --> 00:21:51,909
unfortunately

560
00:21:59,270 --> 00:21:57,029
on a

561
00:22:01,510 --> 00:21:59,280
rocket built by german engineers in the

562
00:22:04,630 --> 00:22:01,520
u.s army

563
00:22:05,669 --> 00:22:04,640

the rocket cut off early

564

00:22:07,909 --> 00:22:05,679

and

565

00:22:12,310 --> 00:22:07,919

as a result the

566

00:22:13,430 --> 00:22:12,320

escape system created 17 g-force on both

567

00:22:22,310 --> 00:22:13,440

the

568

00:22:28,149 --> 00:22:24,310

and unfortunately

569

00:22:30,470 --> 00:22:28,159

at the same time it ruined the mechanism

570

00:22:31,590 --> 00:22:30,480

of the device that was supposed to test

571

00:22:33,510 --> 00:22:31,600

him

572

00:22:36,549 --> 00:22:33,520

so that we could when he got through

573

00:22:38,470 --> 00:22:36,559

proved that he could do a job in space

574

00:22:40,549 --> 00:22:38,480

and as a result

575

00:22:42,950 --> 00:22:40,559

even though he continued it was a slight

576

00:22:44,950 --> 00:22:42,960

interruption in his work but even though

577

00:22:47,029 --> 00:22:44,960

he continued

578

00:22:49,270 --> 00:22:47,039

he was supposed to get a shock if he did

579

00:22:51,990 --> 00:22:49,280

the wrong thing and a banana pellet if

580

00:22:54,470 --> 00:22:52,000

he did it did the right thing

581

00:22:58,230 --> 00:22:54,480

and no matter what he did and he did it

582

00:23:03,750 --> 00:23:01,590

and as a result of landing 100 miles

583

00:23:05,750 --> 00:23:03,760

downrange and a slight hole in the

584

00:23:07,669 --> 00:23:05,760

bottom of his spacecraft

585

00:23:12,549 --> 00:23:07,679

by the time he got there he was pretty

586

00:23:15,430 --> 00:23:14,470

now

587

00:23:17,990 --> 00:23:15,440

we

588

00:23:22,789 --> 00:23:18,000

in operations considered that to be a

589

00:23:28,310 --> 00:23:26,070

we did everything we were there to do

590

00:23:30,470 --> 00:23:28,320

we got the chimpanzee back

591

00:23:32,470 --> 00:23:30,480

and he'd done a very good job

592

00:23:34,710 --> 00:23:32,480

but a lot of people didn't see it that

593

00:23:35,750 --> 00:23:34,720

way and particularly

594

00:23:37,909 --> 00:23:35,760

the

595

00:23:39,750 --> 00:23:37,919

medical community who had not yet

596

00:23:41,909 --> 00:23:39,760

believed that man could do a job in

597

00:23:44,390 --> 00:23:41,919

space and as a result

598

00:23:46,789 --> 00:23:44,400

they said we want you to test a certain

599

00:23:48,549 --> 00:23:46,799

number of chimpanzees at the johns hill

600

00:23:50,390 --> 00:23:48,559

centrifuge

601
00:23:54,630 --> 00:23:50,400
to destruction

602
00:23:57,269 --> 00:23:54,640
before we'll let you fly alan shepard

603
00:23:59,029 --> 00:23:57,279
now fortunately or unfortunately

604
00:24:01,110 --> 00:23:59,039
whichever way you look at it

605
00:24:02,870 --> 00:24:01,120
several weeks later a gentleman named

606
00:24:05,190 --> 00:24:02,880
yuri gagarin

607
00:24:07,590 --> 00:24:05,200
flew in space

608
00:24:10,230 --> 00:24:07,600
and not only did he not do a subrbal

609
00:24:12,630 --> 00:24:10,240
flight he did an orbital flight

610
00:24:15,590 --> 00:24:12,640
and fortunately the part was fortunate

611
00:24:17,669 --> 00:24:15,600
about it the doctors quickly

612
00:24:19,830 --> 00:24:17,679
decided that it was okay for us to put

613
00:24:21,590 --> 00:24:19,840

alan shepard in space in a sub-orbital

614

00:24:22,950 --> 00:24:21,600

flight

615

00:24:24,710 --> 00:24:22,960

and by the way

616

00:24:26,390 --> 00:24:24,720

that was done

617

00:24:30,070 --> 00:24:26,400

in the glare

618

00:24:36,390 --> 00:24:33,669

so while all of that was taking place

619

00:24:39,190 --> 00:24:36,400

the russians indeed

620

00:24:41,190 --> 00:24:39,200

scored a coup as far as the u.s space

621

00:24:43,430 --> 00:24:41,200

program was concerned

622

00:24:44,310 --> 00:24:43,440

however

623

00:24:47,750 --> 00:24:44,320

several

624

00:24:50,149 --> 00:24:47,760

weeks later we flew alan shepard

625

00:24:52,549 --> 00:24:50,159

and that was truly a successful flight

626
00:24:54,390 --> 00:24:52,559
but it was also

627
00:24:56,070 --> 00:24:54,400
a surprise

628
00:24:57,669 --> 00:24:56,080
to the president of the united states

629
00:25:00,390 --> 00:24:57,679
and a lot of other people that the

630
00:25:01,830 --> 00:25:00,400
response of the united states was

631
00:25:03,430 --> 00:25:01,840
high praise

632
00:25:05,669 --> 00:25:03,440
they thought it was a wonderful thing

633
00:25:07,590 --> 00:25:05,679
and it was a hell of a propaganda coup

634
00:25:10,870 --> 00:25:07,600
for the united states

635
00:25:15,590 --> 00:25:12,870
the president

636
00:25:17,990 --> 00:25:15,600
called nasa to i'm paraphrasing here a

637
00:25:20,710 --> 00:25:18,000
little bit called nasa to his own

638
00:25:23,830 --> 00:25:20,720

to his offices and he'd been asking his

639

00:25:26,470 --> 00:25:23,840

staff well what might we do in space

640

00:25:27,669 --> 00:25:26,480

that would ace the russians

641

00:25:30,470 --> 00:25:27,679

and so

642

00:25:33,029 --> 00:25:30,480

the learned fathers of nasa

643

00:25:36,630 --> 00:25:33,039

said well we could probably fly around

644

00:25:39,029 --> 00:25:36,640

the moon in about 10 years

645

00:25:41,350 --> 00:25:39,039

and the president's response for that

646

00:25:43,510 --> 00:25:41,360

that's not very exciting why don't you

647

00:25:46,789 --> 00:25:43,520

land on the moon

648

00:25:49,350 --> 00:25:46,799

and so two weeks later

649

00:25:51,830 --> 00:25:49,360

all the nasa people got their

650

00:25:54,149 --> 00:25:51,840

slide rules out and whatever they had

651
00:25:55,830 --> 00:25:54,159
and said okay that's what we were

652
00:25:57,510 --> 00:25:55,840
proposing to do if that's what you want

653
00:26:00,710 --> 00:25:57,520
us to do if you are willing to make that

654
00:26:07,269 --> 00:26:02,789
now

655
00:26:10,470 --> 00:26:07,279
response to that was but frankly it

656
00:26:11,590 --> 00:26:10,480
scared the hell out of me

657
00:26:13,750 --> 00:26:11,600
uh

658
00:26:14,710 --> 00:26:13,760
we didn't know anything

659
00:26:16,390 --> 00:26:14,720
about

660
00:26:21,909 --> 00:26:16,400
space flight at that point in time we

661
00:26:25,350 --> 00:26:23,669
we didn't know how to do orbit

662
00:26:27,590 --> 00:26:25,360
determination

663
00:26:29,830 --> 00:26:27,600

with the radar data we had but suddenly

664

00:26:31,669 --> 00:26:29,840

somebody was asking us to do the orbital

665

00:26:33,430 --> 00:26:31,679

mechanics associated with going to the

666

00:26:35,990 --> 00:26:33,440

moon

667

00:26:38,390 --> 00:26:36,000

we had to do tracking and communications

668

00:26:40,789 --> 00:26:38,400

at lunar distances

669

00:26:42,950 --> 00:26:40,799

the surface properties of the moon were

670

00:26:45,029 --> 00:26:42,960

totally unknown and many scientists in

671

00:26:47,350 --> 00:26:45,039

this country thought you would sink into

672

00:26:48,630 --> 00:26:47,360

six feet of dust

673

00:26:50,310 --> 00:26:48,640

and then i thought it would caught on

674

00:26:52,789 --> 00:26:50,320

catch on fire

675

00:26:54,630 --> 00:26:52,799

due to the flame that came from the

676
00:26:56,630 --> 00:26:54,640
devices

677
00:27:00,870 --> 00:26:56,640
and we had to figure out how to do a

678
00:27:03,750 --> 00:27:02,149
now

679
00:27:08,710 --> 00:27:03,760
it also

680
00:27:12,710 --> 00:27:11,110
because we didn't know really how to go

681
00:27:14,470 --> 00:27:12,720
into space

682
00:27:17,190 --> 00:27:14,480
and

683
00:27:19,669 --> 00:27:17,200
many people had great ideas the two two

684
00:27:20,710 --> 00:27:19,679
ideas that came into view were direct

685
00:27:23,269 --> 00:27:20,720
descent

686
00:27:25,430 --> 00:27:23,279
as we fired a big rocket from the earth

687
00:27:28,230 --> 00:27:25,440
and shot it at the moon just like jules

688
00:27:29,830 --> 00:27:28,240

verne did and land

689

00:27:32,389 --> 00:27:29,840

the other technique was you'd put

690

00:27:34,950 --> 00:27:32,399

everything into earth orbit rendezvous

691

00:27:37,029 --> 00:27:34,960

put it all together and then fire it

692

00:27:39,110 --> 00:27:37,039

to the moon and land

693

00:27:40,870 --> 00:27:39,120

and as we began to look at that and

694

00:27:43,430 --> 00:27:40,880

everybody in the country did that had

695

00:27:46,149 --> 00:27:43,440

anything to do with thinking about going

696

00:27:49,110 --> 00:27:46,159

into space many of the universities

697

00:27:51,909 --> 00:27:49,120

we all came up with these great huge

698

00:27:53,669 --> 00:27:51,919

rockets called nova

699

00:27:56,870 --> 00:27:53,679

and there were many rocket systems that

700

00:27:58,630 --> 00:27:56,880

were being thought of well fortunately

701
00:28:00,870 --> 00:27:58,640

a small group of

702
00:28:02,789 --> 00:28:00,880

very smart guys at the langley research

703
00:28:04,870 --> 00:28:02,799

center started looking at what they

704
00:28:06,310 --> 00:28:04,880

might do to overcome this tremendous

705
00:28:08,870 --> 00:28:06,320

amount of mass that would have to be

706
00:28:11,269 --> 00:28:08,880

sent towards the moon

707
00:28:13,269 --> 00:28:11,279

and they decided that the best way to do

708
00:28:15,269 --> 00:28:13,279

that was to take a bug

709
00:28:18,710 --> 00:28:15,279

as they call it

710
00:28:21,350 --> 00:28:18,720

and orbit it around the moon with

711
00:28:22,230 --> 00:28:21,360

a mothership send it down to the moon

712
00:28:24,710 --> 00:28:22,240

land

713
00:28:26,470 --> 00:28:24,720

and take off again in the bug and then

714

00:28:27,590 --> 00:28:26,480

re-rendezvous

715

00:28:30,310 --> 00:28:27,600

with the

716

00:28:32,389 --> 00:28:30,320

spaceship called the mothership at that

717

00:28:34,549 --> 00:28:32,399

point in time

718

00:28:35,990 --> 00:28:34,559

now as it was first thought of by all

719

00:28:38,389 --> 00:28:36,000

these people had been thinking the other

720

00:28:39,830 --> 00:28:38,399

way they thought they were crazy they

721

00:28:42,310 --> 00:28:39,840

literally thought those people were

722

00:28:44,310 --> 00:28:42,320

crazy to think that we could do

723

00:28:46,389 --> 00:28:44,320

rendezvous around the moon but as they

724

00:28:47,510 --> 00:28:46,399

began to recognize the reduction in

725

00:28:49,430 --> 00:28:47,520

weight

726

00:28:52,470 --> 00:28:49,440

and set a certain amount of

727

00:28:54,230 --> 00:28:52,480

intrigue to it and eventually

728

00:28:56,870 --> 00:28:54,240

that's how all the people decided that

729

00:28:59,190 --> 00:28:56,880

we would do it and call it lunar orbit

730

00:29:00,950 --> 00:28:59,200

rendezvous

731

00:29:03,590 --> 00:29:00,960

the men sitting here tonight thankful

732

00:29:06,310 --> 00:29:03,600

that that happened

733

00:29:08,230 --> 00:29:06,320

now as we begin to begin to think about

734

00:29:10,630 --> 00:29:08,240

that however

735

00:29:14,630 --> 00:29:10,640

and yet had not flown

736

00:29:16,710 --> 00:29:14,640

the first man in orbit with mercury

737

00:29:18,710 --> 00:29:16,720

we recognized that we probably had to do

738

00:29:21,110 --> 00:29:18,720

a lot of learning and that's when we

739

00:29:23,430 --> 00:29:21,120

conceived the germany spacecraft it was

740

00:29:25,269 --> 00:29:23,440

actually a two-man version of the

741

00:29:27,510 --> 00:29:25,279

mercury spacecraft

742

00:29:29,269 --> 00:29:27,520

it would allow us to do

743

00:29:31,590 --> 00:29:29,279

hopefully rendezvous and docking in

744

00:29:32,789 --> 00:29:31,600

space for the first time it would allow

745

00:29:36,470 --> 00:29:32,799

us to

746

00:29:38,789 --> 00:29:36,480

use something besides batteries as power

747

00:29:41,510 --> 00:29:38,799

known as a fuel cell

748

00:29:44,149 --> 00:29:41,520

it would help us to

749

00:29:46,549 --> 00:29:44,159

find out if man could survive for 14

750

00:29:49,430 --> 00:29:46,559

days at zero gravity

751
00:29:52,549 --> 00:29:49,440
it would help us to do eva

752
00:29:55,269 --> 00:29:52,559
which mr aldrin here practiced valiantly

753
00:29:57,110 --> 00:29:55,279
on germany 12 and proved it could be

754
00:29:59,110 --> 00:29:57,120
done

755
00:30:01,590 --> 00:29:59,120
it developed we had to develop new

756
00:30:03,269 --> 00:30:01,600
spacesuits which will allow the men to

757
00:30:05,990 --> 00:30:03,279
survive and

758
00:30:08,549 --> 00:30:06,000
while working in space

759
00:30:11,430 --> 00:30:08,559
and all of these new requirements

760
00:30:13,269 --> 00:30:11,440
uh were operations that eventually we

761
00:30:15,350 --> 00:30:13,279
would have to do around the moon and in

762
00:30:17,990 --> 00:30:15,360
a sense then

763
00:30:19,830 --> 00:30:18,000

germany was a proving ground

764

00:30:21,510 --> 00:30:19,840

for apollo

765

00:30:24,630 --> 00:30:21,520

now i don't have enough time to describe

766

00:30:29,669 --> 00:30:26,950

and i want to talk about however how we

767

00:30:32,070 --> 00:30:29,679

got to apollo because while many of us

768

00:30:34,149 --> 00:30:32,080

in the operations world and some

769

00:30:37,110 --> 00:30:34,159

engineers were still working on gemini

770

00:30:39,029 --> 00:30:37,120

and apollo the apollo program came into

771

00:30:40,470 --> 00:30:39,039

being

772

00:30:42,870 --> 00:30:40,480

and

773

00:30:44,710 --> 00:30:42,880

this was a whole new concept to these

774

00:30:47,750 --> 00:30:44,720

people many of these people had never

775

00:30:49,669 --> 00:30:47,760

had any experience in space flight

776

00:30:52,789 --> 00:30:49,679

they came from all kinds of other

777

00:30:55,110 --> 00:30:52,799

engineering walks of life

778

00:30:56,230 --> 00:30:55,120

but they had been given the task to very

779

00:30:58,070 --> 00:30:56,240

quickly

780

00:31:00,070 --> 00:30:58,080

come up to speed and start building a

781

00:31:01,509 --> 00:31:00,080

spacecraft

782

00:31:05,430 --> 00:31:01,519

and frankly

783

00:31:07,750 --> 00:31:05,440

they built a damn lousy spacecraft

784

00:31:09,350 --> 00:31:07,760

they were running like the devil trying

785

00:31:11,350 --> 00:31:09,360

to get it done

786

00:31:13,590 --> 00:31:11,360

they didn't have time to listen to

787

00:31:15,110 --> 00:31:13,600

lessons learned

788

00:31:19,750 --> 00:31:15,120

and it was

789

00:31:21,830 --> 00:31:19,760

quite a turmoil in 1967 when it we sent

790

00:31:23,110 --> 00:31:21,840

three men to their death

791

00:31:26,630 --> 00:31:23,120

on a pad

792

00:31:30,470 --> 00:31:26,640

at cape canaveral it was a terrible day

793

00:31:32,789 --> 00:31:30,480

a very terrible day to watch that happen

794

00:31:34,310 --> 00:31:32,799

and we had a nasa committee that looked

795

00:31:36,630 --> 00:31:34,320

at what was wrong

796

00:31:38,230 --> 00:31:36,640

and everything was wrong it was poor

797

00:31:39,990 --> 00:31:38,240

workmanship

798

00:31:41,190 --> 00:31:40,000

poor wiring

799

00:31:43,430 --> 00:31:41,200

poor

800

00:31:45,029 --> 00:31:43,440

redundancy concepts

801
00:31:49,590 --> 00:31:45,039
etc

802
00:31:50,630 --> 00:31:49,600
and so we had a re regrouping of nasa

803
00:31:54,549 --> 00:31:50,640
following

804
00:31:55,590 --> 00:31:54,559
mr thompson's review of that program

805
00:31:57,590 --> 00:31:55,600
and

806
00:32:00,149 --> 00:31:57,600
one of the first meetings we had with

807
00:32:02,710 --> 00:32:00,159
george lowe as the new program manager

808
00:32:06,149 --> 00:32:02,720
was a meeting to decide what we needed

809
00:32:08,470 --> 00:32:06,159
to do and we listed 125

810
00:32:10,389 --> 00:32:08,480
things that had to be done to make that

811
00:32:12,149 --> 00:32:10,399
spacecraft viable

812
00:32:14,870 --> 00:32:12,159
and we did that

813
00:32:17,909 --> 00:32:14,880

we worked our fannies off and we got it

814

00:32:19,669 --> 00:32:17,919

done along with the many contractors in

815

00:32:24,630 --> 00:32:19,679

this country

816

00:32:28,389 --> 00:32:26,470

after having done that

817

00:32:29,430 --> 00:32:28,399

and getting getting ourselves ready to

818

00:32:31,750 --> 00:32:29,440

go

819

00:32:33,990 --> 00:32:31,760

it took a lot of guts frankly

820

00:32:36,549 --> 00:32:34,000

we had to rebuild the industry had to

821

00:32:38,710 --> 00:32:36,559

rebuild ourselves and we had to rebuild

822

00:32:41,750 --> 00:32:38,720

the spacecraft

823

00:32:46,710 --> 00:32:41,760

and fortunately in

824

00:32:51,110 --> 00:32:48,389

68

825

00:32:53,509 --> 00:32:51,120

after recognizing that we

826
00:32:55,430 --> 00:32:53,519
were ready to fly the spacecraft we flew

827
00:33:05,509 --> 00:32:55,440
apollo

828
00:33:08,630 --> 00:33:05,519
have been

829
00:33:11,029 --> 00:33:08,640
hard pushed to learn how to do apollo 11

830
00:33:12,310 --> 00:33:11,039
in the time we did

831
00:33:14,230 --> 00:33:12,320
and also

832
00:33:15,909 --> 00:33:14,240
i want to say

833
00:33:17,110 --> 00:33:15,919
that although the death of those three

834
00:33:19,509 --> 00:33:17,120
men

835
00:33:21,350 --> 00:33:19,519
was a terrible thing in our memory

836
00:33:23,750 --> 00:33:21,360
without the fire

837
00:33:26,310 --> 00:33:23,760
i guarantee you we would still be trying

838
00:33:27,509 --> 00:33:26,320

to get to the moon because that was not

839

00:33:30,470 --> 00:33:27,519

going to happen

840

00:33:31,350 --> 00:33:30,480

with the hardware we had

841

00:33:34,630 --> 00:33:31,360

so

842

00:33:35,990 --> 00:33:34,640

we quickly done did apollo 9 in apollo

843

00:33:38,710 --> 00:33:36,000

10

844

00:33:41,509 --> 00:33:38,720

and apollo 11 happened and the gentleman

845

00:33:43,190 --> 00:33:41,519

here tonight will tell you about that

846

00:33:45,509 --> 00:33:43,200

i want to spend the rest of my time

847

00:33:47,830 --> 00:33:45,519

tonight

848

00:33:51,590 --> 00:33:47,840

talking a little bit about the problems

849

00:33:54,149 --> 00:33:51,600

that nasa is struggling with today

850

00:33:56,310 --> 00:33:54,159

because i think that's important

851
00:33:58,870 --> 00:33:56,320
first

852
00:34:01,430 --> 00:33:58,880
in 1915

853
00:34:04,870 --> 00:34:01,440
the naca was established the national

854
00:34:06,470 --> 00:34:04,880
advisory committee for aeronautics

855
00:34:11,030 --> 00:34:06,480
and i want you to know

856
00:34:14,550 --> 00:34:11,040
that something like 80 to 100

857
00:34:16,470 --> 00:34:14,560
of the vehicles that are in this museum

858
00:34:19,109 --> 00:34:16,480
had their roots

859
00:34:22,069 --> 00:34:19,119
in the naca

860
00:34:24,310 --> 00:34:22,079
i want to think about that

861
00:34:27,510 --> 00:34:24,320
all of these flying machines that you

862
00:34:30,389 --> 00:34:27,520
see around you had their roots

863
00:34:33,030 --> 00:34:30,399

in the naca

864

00:34:35,510 --> 00:34:33,040

now the nasa programs that we did in the

865

00:34:39,430 --> 00:34:35,520

60s

866

00:34:42,389 --> 00:34:39,440

had a great deal of payoff

867

00:34:44,310 --> 00:34:42,399

we didn't invent everything

868

00:34:46,869 --> 00:34:44,320

that happened in apollo

869

00:34:50,389 --> 00:34:46,879

but it was the demands

870

00:34:52,389 --> 00:34:50,399

a product of proto of the products

871

00:34:54,550 --> 00:34:52,399

of the perfection

872

00:34:57,910 --> 00:34:54,560

of the reliability

873

00:35:00,550 --> 00:34:57,920

of the performance of the mass

874

00:35:03,510 --> 00:35:00,560

of the reduction in power

875

00:35:05,030 --> 00:35:03,520

that brought about a spike

876

00:35:06,870 --> 00:35:05,040

and in my opinion the greatest

877

00:35:10,950 --> 00:35:06,880

advancement in the state of the art in

878

00:35:13,750 --> 00:35:10,960

technology in the history of man

879

00:35:14,829 --> 00:35:13,760

it was the nasa programs

880

00:35:18,870 --> 00:35:14,839

that drove

881

00:35:20,550 --> 00:35:18,880

that so i say

882

00:35:23,190 --> 00:35:20,560

we can call that

883

00:35:25,109 --> 00:35:23,200

return on investment

884

00:35:27,109 --> 00:35:25,119

every company

885

00:35:28,470 --> 00:35:27,119

in the united states has a capital

886

00:35:30,790 --> 00:35:28,480

expenditure

887

00:35:32,790 --> 00:35:30,800

i've served on a number of boards and

888

00:35:35,750 --> 00:35:32,800

that's our whole life their whole future

889

00:35:38,230 --> 00:35:35,760

depends on making an investment

890

00:35:40,069 --> 00:35:38,240

with capital funds every year

891

00:35:41,990 --> 00:35:40,079

and they're looking for return on

892

00:35:45,589 --> 00:35:42,000

investment nasa

893

00:35:48,310 --> 00:35:45,599

is the best return on investment

894

00:35:50,150 --> 00:35:48,320

that this country has ever seen

895

00:35:52,630 --> 00:35:50,160

and is today

896

00:35:54,710 --> 00:35:52,640

the best government agency to get a

897

00:35:58,950 --> 00:35:54,720

return on investment

898

00:36:01,589 --> 00:35:58,960

and it is where our future lies

899

00:36:01,599 --> 00:36:05,430

the point i want to make is

900

00:36:11,510 --> 00:36:08,150

that we need to make an investment in

901
00:36:13,990 --> 00:36:11,520
new technology and nasa

902
00:36:16,470 --> 00:36:14,000
there are all kinds of ways to use that

903
00:36:17,910 --> 00:36:16,480
technology everybody's got his ideas and

904
00:36:20,150 --> 00:36:17,920
buzz will tell you a bunch of them

905
00:36:22,069 --> 00:36:20,160
tonight about how to get there

906
00:36:24,150 --> 00:36:22,079
and how to use it there are a lot of

907
00:36:27,270 --> 00:36:24,160
other people that do that but what we

908
00:36:28,870 --> 00:36:27,280
need is new technology we have not made

909
00:36:30,390 --> 00:36:28,880
that investment

910
00:36:32,870 --> 00:36:30,400
since apollo

911
00:36:34,630 --> 00:36:32,880
all the programs that nasa has had has

912
00:36:37,270 --> 00:36:34,640
demanded that they spend the money on

913
00:36:40,069 --> 00:36:37,280

the programs as opposed to spending

914

00:36:41,270 --> 00:36:40,079

putting money into technology for the

915

00:36:44,150 --> 00:36:41,280

future

916

00:36:45,910 --> 00:36:44,160

in in mercury germany and apollo we

917

00:36:49,430 --> 00:36:45,920

spent about 10

918

00:36:51,270 --> 00:36:49,440

of our monies on the future

919

00:36:54,390 --> 00:36:51,280

fuel cells

920

00:36:56,950 --> 00:36:54,400

thermal protection systems

921

00:36:59,750 --> 00:36:56,960

the communication satellite and

922

00:37:01,910 --> 00:36:59,760

computers change the whole world in

923

00:37:03,910 --> 00:37:01,920

which we live

924

00:37:06,790 --> 00:37:03,920

that's what we need today

925

00:37:09,349 --> 00:37:06,800

we need an investment in the future and

926
00:37:10,230 --> 00:37:09,359
a return on investment which we could

927
00:37:12,470 --> 00:37:10,240
see

928
00:37:14,230 --> 00:37:12,480
and provide to the country

929
00:37:16,550 --> 00:37:14,240
so i say

930
00:37:18,470 --> 00:37:16,560
to mr obama

931
00:37:35,109 --> 00:37:18,480
let's get on with it

932
00:37:35,119 --> 00:37:38,230
thank you dr craft

933
00:37:43,349 --> 00:37:40,230
our spec second speaker this evening

934
00:37:44,710 --> 00:37:43,359
will be apollo 11 lunar module pilot dr

935
00:37:47,190 --> 00:37:44,720
buzz aldrin

936
00:37:49,670 --> 00:37:47,200
a west point graduate dr aldrin joined

937
00:37:52,230 --> 00:37:49,680
the air force in 1951.

938
00:37:54,069 --> 00:37:52,240

flew combat missions in korea and then

939

00:37:56,950 --> 00:37:54,079

earned his doctorate in astronautics

940

00:37:58,950 --> 00:37:56,960

from mit in 1963.

941

00:38:00,150 --> 00:37:58,960

he dedicated his dissertation and i want

942

00:38:02,310 --> 00:38:00,160

to quote this

943

00:38:05,190 --> 00:38:02,320

to the crew members of this country's

944

00:38:07,190 --> 00:38:05,200

present and future manned space programs

945

00:38:09,430 --> 00:38:07,200

if only i could join them in their

946

00:38:12,069 --> 00:38:09,440

exciting endeavors

947

00:38:14,150 --> 00:38:12,079

he soon did becoming a nasa astronaut

948

00:38:16,870 --> 00:38:14,160

later that same year

949

00:38:19,349 --> 00:38:16,880

his successes flying gemini 12 and as

950

00:38:22,470 --> 00:38:19,359

the lunar module pilot for apollo 11

951

00:38:24,950 --> 00:38:22,480

cemented his place in history

952

00:38:27,589 --> 00:38:24,960

with a long career in public life dr

953

00:38:30,150 --> 00:38:27,599

aldrin continues to be an active figure

954

00:38:33,829 --> 00:38:30,160

lending his experience and his energy

955

00:38:35,910 --> 00:38:33,839

to books conferences documentary films

956

00:38:39,190 --> 00:38:35,920

and even this year recording a music

957

00:38:41,910 --> 00:38:39,200

video with rapper snoop dogg

958

00:39:02,710 --> 00:38:41,920

it is my pleasure to welcome dr buzz

959

00:39:06,150 --> 00:39:04,470

somebody was going to put a slide up

960

00:39:07,670 --> 00:39:06,160

there that i was going to dazzle you

961

00:39:15,670 --> 00:39:07,680

with

962

00:39:21,750 --> 00:39:18,470

and i know that it's a little daunting

963

00:39:23,510 --> 00:39:21,760

to uh to view progressive ways into the

964

00:39:27,430 --> 00:39:23,520

future

965

00:39:31,670 --> 00:39:27,440

that's not the only thing i'm going to

966

00:39:35,829 --> 00:39:33,829

but that's what i have really always

967

00:39:37,750 --> 00:39:35,839

been looking at

968

00:39:39,510 --> 00:39:37,760

what can we do that's a little bit

969

00:39:41,109 --> 00:39:39,520

better

970

00:39:42,630 --> 00:39:41,119

and i'm going to leave this up for just

971

00:39:44,550 --> 00:39:42,640

a couple of seconds

972

00:39:48,230 --> 00:39:44,560

and then later on it's going to come on

973

00:39:50,230 --> 00:39:48,240

when i begin to talk about a few things

974

00:39:53,190 --> 00:39:50,240

that are that are on this

975

00:39:58,470 --> 00:39:55,750

if i don't talk too long we might get to

976
00:40:00,790 --> 00:39:58,480
look at it again

977
00:40:02,310 --> 00:40:00,800
we are here

978
00:40:06,470 --> 00:40:02,320
and i think

979
00:40:13,829 --> 00:40:09,349
from the wright brothers in kitty hawk

980
00:40:15,829 --> 00:40:13,839
to tranquility base was 66 years

981
00:40:18,470 --> 00:40:15,839
from tranquility base

982
00:40:21,990 --> 00:40:18,480
66 years in the future

983
00:40:24,550 --> 00:40:22,000
takes us to 2035

984
00:40:28,790 --> 00:40:24,560
i believe we deserve to do a little bit

985
00:40:30,309 --> 00:40:28,800
more than footprints on the moon

986
00:40:32,870 --> 00:40:30,319
and i believe that

987
00:40:37,030 --> 00:40:32,880
there is a timeline there are many of

988
00:40:40,550 --> 00:40:37,040

them but i believe we can do that

989

00:40:44,630 --> 00:40:43,190

you turn up the slide please

990

00:40:47,030 --> 00:40:44,640

thank you

991

00:40:49,190 --> 00:40:47,040

and good evening everyone i'd also like

992

00:40:52,069 --> 00:40:49,200

of course to thank the smithsonian and

993

00:40:53,589 --> 00:40:52,079

my former colleagues for the opportunity

994

00:40:55,030 --> 00:40:53,599

to be with you all

995

00:40:57,589 --> 00:40:55,040

this evening

996

00:40:59,910 --> 00:40:57,599

four decades ago

997

00:41:02,550 --> 00:40:59,920

have passed since neil mike and i

998

00:41:03,910 --> 00:41:02,560

traveled across the blackness of space

999

00:41:06,550 --> 00:41:03,920

to win

1000

00:41:09,349 --> 00:41:06,560

a peaceful race

1001
00:41:11,109 --> 00:41:09,359
it was then and still is today an honor

1002
00:41:14,150 --> 00:41:11,119
and a privilege

1003
00:41:16,950 --> 00:41:14,160
to be a part of apollo 11

1004
00:41:19,670 --> 00:41:16,960
and the entire apollo program

1005
00:41:21,510 --> 00:41:19,680
tonight you may well ask

1006
00:41:24,470 --> 00:41:21,520
what did it mean

1007
00:41:28,309 --> 00:41:24,480
that america was first on the moon and

1008
00:41:32,550 --> 00:41:28,319
what can america do next in space

1009
00:41:36,309 --> 00:41:32,560
to build upon that long ago achievement

1010
00:41:39,510 --> 00:41:36,319
apollo 11 was about exploration

1011
00:41:42,550 --> 00:41:39,520
about taking risks for great rewards in

1012
00:41:44,309 --> 00:41:42,560
science and engineering about setting an

1013
00:41:46,309 --> 00:41:44,319

ambitious goal

1014

00:41:49,430 --> 00:41:46,319

before the world

1015

00:41:52,470 --> 00:41:49,440

and then finding the political will and

1016

00:41:55,589 --> 00:41:52,480

the national means to achieve it

1017

00:41:57,270 --> 00:41:55,599

indelibly oppress impressed upon our

1018

00:41:59,349 --> 00:41:57,280

nation's memory

1019

00:42:00,829 --> 00:41:59,359

the voyage of apollo

1020

00:42:02,630 --> 00:42:00,839

still seem

1021

00:42:05,430 --> 00:42:02,640

incredible

1022

00:42:07,349 --> 00:42:05,440

we are inspired by the magnitude and

1023

00:42:10,470 --> 00:42:07,359

teaming efforts

1024

00:42:12,390 --> 00:42:10,480

of people from all walks of life

1025

00:42:13,589 --> 00:42:12,400

from industries big

1026

00:42:16,950 --> 00:42:13,599

and small

1027

00:42:19,670 --> 00:42:16,960

who worked in tandem to attain a

1028

00:42:21,109 --> 00:42:19,680

long-term goal of magnificent

1029

00:42:22,790 --> 00:42:21,119

achievement

1030

00:42:25,349 --> 00:42:22,800

while neil and i

1031

00:42:26,950 --> 00:42:25,359

stood on the lunar surface with mike

1032

00:42:29,349 --> 00:42:26,960

orbiting above

1033

00:42:32,150 --> 00:42:29,359

supporting the three of us were hundreds

1034

00:42:34,309 --> 00:42:32,160

of thousands of american workers

1035

00:42:37,030 --> 00:42:34,319

who comprise what may be called the

1036

00:42:39,430 --> 00:42:37,040

greatest team ever assembled

1037

00:42:41,750 --> 00:42:39,440

they are often overlooked at a time like

1038

00:42:44,069 --> 00:42:41,760

this so i would like to pause tonight

1039

00:42:46,870 --> 00:42:44,079

and look backwards not through the eyes

1040

00:42:49,270 --> 00:42:46,880

of a lucky pilot and astronaut but

1041

00:42:52,309 --> 00:42:49,280

through the eyes of these hard-working

1042

00:42:54,710 --> 00:42:52,319

americans the scientists and engineers

1043

00:42:56,550 --> 00:42:54,720

metallurgist and meteoroid

1044

00:43:00,630 --> 00:42:56,560

meteorologists

1045

00:43:03,589 --> 00:43:00,640

policy makers and flight directors

1046

00:43:06,790 --> 00:43:03,599

navigators and suit testers and all

1047

00:43:11,030 --> 00:43:06,800

those in the shop floor such as the

1048

00:43:14,550 --> 00:43:11,040

seamstress who stitched the 21 layers

1049

00:43:16,150 --> 00:43:14,560

for each custom tailored spacesuit

1050

00:43:18,950 --> 00:43:16,160

we cannot ever

1051
00:43:22,309 --> 00:43:18,960
adequately thank them for committing

1052
00:43:25,109 --> 00:43:22,319
their lives and professional energies

1053
00:43:27,990 --> 00:43:25,119
minds and hearts to this mission

1054
00:43:30,950 --> 00:43:28,000
and to the other apollo mission tonight

1055
00:43:32,390 --> 00:43:30,960
while we think about missions past and

1056
00:43:34,710 --> 00:43:32,400
future

1057
00:43:37,829 --> 00:43:34,720
i also want to think about and thank

1058
00:43:40,230 --> 00:43:37,839
those without whom we would never have

1059
00:43:41,750 --> 00:43:40,240
walked on the moon

1060
00:43:44,790 --> 00:43:41,760
ed white

1061
00:43:46,710 --> 00:43:44,800
roger jaffe gus grissom

1062
00:43:49,190 --> 00:43:46,720
the americans who came

1063
00:43:52,829 --> 00:43:49,200

committed believed and conquered the

1064

00:43:56,870 --> 00:43:52,839

unknowns with us apollo 11 was also

1065

00:44:01,030 --> 00:43:58,790

we are moved by a young american

1066

00:44:01,990 --> 00:44:01,040

president who challenged himself and all

1067

00:44:05,589 --> 00:44:02,000

of us

1068

00:44:09,510 --> 00:44:05,599

to think boldly and not retreat from our

1069

00:44:11,829 --> 00:44:09,520

vision of what we could do in space the

1070

00:44:12,870 --> 00:44:11,839

path that john f kennedy inspired us to

1071

00:44:16,150 --> 00:44:12,880

choose

1072

00:44:18,230 --> 00:44:16,160

was not easy

1073

00:44:19,750 --> 00:44:18,240

in fact it was

1074

00:44:22,630 --> 00:44:19,760

very hard

1075

00:44:25,510 --> 00:44:22,640

but it served the betterment of america

1076

00:44:27,829 --> 00:44:25,520

and ultimately the ending of the cold

1077

00:44:30,069 --> 00:44:27,839

war

1078

00:44:32,470 --> 00:44:30,079

all of these lessons are worth learning

1079

00:44:34,950 --> 00:44:32,480

anew today in the difficult times we

1080

00:44:37,349 --> 00:44:34,960

face together

1081

00:44:40,230 --> 00:44:37,359

i believe that bold achievements in

1082

00:44:44,230 --> 00:44:40,240

space not only reflect our country's

1083

00:44:47,430 --> 00:44:44,240

greatness but beckon us to discoveries

1084

00:44:50,069 --> 00:44:47,440

that can improve our lives on earth i

1085

00:44:52,309 --> 00:44:50,079

also believe that national leadership

1086

00:44:53,910 --> 00:44:52,319

and the coming together of the american

1087

00:44:56,309 --> 00:44:53,920

people

1088

00:44:57,750 --> 00:44:56,319

are the ingredients that make

1089

00:45:00,470 --> 00:44:57,760

overwhelming

1090

00:45:04,150 --> 00:45:00,480

obstacles possible

1091

00:45:05,510 --> 00:45:04,160

this was how progress was achieved 40

1092

00:45:07,589 --> 00:45:05,520

years ago

1093

00:45:09,589 --> 00:45:07,599

this is how we can rise from our

1094

00:45:13,030 --> 00:45:09,599

challenges today

1095

00:45:15,829 --> 00:45:13,040

apollo 11 is a symbol of what a great

1096

00:45:18,950 --> 00:45:15,839

nation and a great people can do

1097

00:45:22,309 --> 00:45:18,960

if we work hard work together

1098

00:45:26,630 --> 00:45:22,319

and have strong leaders with vision

1099

00:45:28,150 --> 00:45:26,640

and determination that is what apollo 11

1100

00:45:31,910 --> 00:45:28,160

means

1101
00:45:35,190 --> 00:45:31,920
to us today to me today realizing the

1102
00:45:37,030 --> 00:45:35,200
dream of exploration by way

1103
00:45:39,990 --> 00:45:37,040
of determination

1104
00:45:43,190 --> 00:45:40,000
what we did 40 years ago was a great

1105
00:45:45,510 --> 00:45:43,200
mission of exploration tonight i'd like

1106
00:45:48,630 --> 00:45:45,520
to share with you a glimpse of where we

1107
00:45:51,829 --> 00:45:48,640
can go in the next 40 years if only we

1108
00:45:54,069 --> 00:45:51,839
are willing to be truly bold

1109
00:45:56,230 --> 00:45:54,079
the best way to honor and remember all

1110
00:45:57,430 --> 00:45:56,240
those who were part of the apollo

1111
00:45:58,870 --> 00:45:57,440
program

1112
00:46:01,510 --> 00:45:58,880
is to

1113
00:46:03,910 --> 00:46:01,520

follow in our footsteps

1114

00:46:08,150 --> 00:46:03,920

to boldly go again

1115

00:46:10,470 --> 00:46:08,160

on a great new mission of exploration

1116

00:46:13,510 --> 00:46:10,480

if our leaders are as wise today as

1117

00:46:16,309 --> 00:46:13,520

president kennedy was in our time a

1118

00:46:17,510 --> 00:46:16,319

strong and visionary space program can

1119

00:46:20,790 --> 00:46:17,520

once again

1120

00:46:23,030 --> 00:46:20,800

inspire us to great achievement my

1121

00:46:26,069 --> 00:46:23,040

mission vision for the future of the

1122

00:46:28,390 --> 00:46:26,079

space program is very much in keeping

1123

00:46:31,589 --> 00:46:28,400

with our apollo tradition

1124

00:46:34,630 --> 00:46:31,599

but this time instead of a moon race we

1125

00:46:36,390 --> 00:46:34,640

can help make the moon a true

1126

00:46:39,349 --> 00:46:36,400

stepping stone

1127

00:46:42,390 --> 00:46:39,359

to more exciting and habitable

1128

00:46:44,390 --> 00:46:42,400

destinations with the moon acting as a

1129

00:46:45,510 --> 00:46:44,400

new global

1130

00:46:47,510 --> 00:46:45,520

commons

1131

00:46:50,470 --> 00:46:47,520

for all nations

1132

00:46:52,550 --> 00:46:50,480

we can venture outward to mars for

1133

00:46:54,870 --> 00:46:52,560

america's future

1134

00:46:58,230 --> 00:46:54,880

it may sound like a distant destination

1135

00:47:02,550 --> 00:46:58,240

beyond our reach but that's what some

1136

00:47:05,670 --> 00:47:02,560

called apollo's goal to reach the moon

1137

00:47:07,109 --> 00:47:05,680

and they were wrong

1138

00:47:09,109 --> 00:47:07,119

let me share with you where i think

1139

00:47:10,390 --> 00:47:09,119

america must go in space during the next

1140

00:47:12,390 --> 00:47:10,400

half century

1141

00:47:14,870 --> 00:47:12,400

come travel with me on a journey of the

1142

00:47:17,750 --> 00:47:14,880

imagination it begins in earth orbit

1143

00:47:20,870 --> 00:47:17,760

where america's space interpreters have

1144

00:47:22,790 --> 00:47:20,880

opened up the space ways to

1145

00:47:25,910 --> 00:47:22,800

adventure travel

1146

00:47:28,230 --> 00:47:25,920

for hundreds of ordinary folk

1147

00:47:30,390 --> 00:47:28,240

it builds upon the great international

1148

00:47:33,510 --> 00:47:30,400

space station which has become an

1149

00:47:35,190 --> 00:47:33,520

orbiting research center and laboratory

1150

00:47:36,829 --> 00:47:35,200

for all nations

1151
00:47:38,790 --> 00:47:36,839
and including

1152
00:47:41,270 --> 00:47:38,800
india china

1153
00:47:44,549 --> 00:47:41,280
south korea and all other nations that

1154
00:47:47,589 --> 00:47:44,559
aspire to explore space we travel to

1155
00:47:50,870 --> 00:47:47,599
earth's orbit aboard a new reusable

1156
00:47:52,390 --> 00:47:50,880
spacecraft successors to the magnificent

1157
00:47:54,950 --> 00:47:52,400
space shuttle fleet

1158
00:47:57,270 --> 00:47:54,960
multi-purpose international and

1159
00:48:00,870 --> 00:47:57,280
commercial ships

1160
00:48:02,630 --> 00:48:00,880
capable of runway landings and a variety

1161
00:48:06,150 --> 00:48:02,640
of other missions

1162
00:48:08,870 --> 00:48:06,160
we test long duration life support

1163
00:48:11,430 --> 00:48:08,880

exploration modules

1164

00:48:14,950 --> 00:48:11,440

at the space station combine them with

1165

00:48:16,950 --> 00:48:14,960

orion type crew modules for missions

1166

00:48:18,950 --> 00:48:16,960

that cycle back and forth between the

1167

00:48:21,670 --> 00:48:18,960

earth and the moon and then

1168

00:48:24,549 --> 00:48:21,680

stationed in the lunar vicinity to act

1169

00:48:27,589 --> 00:48:24,559

as communication relays man tended and

1170

00:48:29,670 --> 00:48:27,599

to serve as refueling depots

1171

00:48:30,630 --> 00:48:29,680

not just in low earth orbit one would be

1172

00:48:33,270 --> 00:48:30,640

there but

1173

00:48:37,750 --> 00:48:33,280

at the libration point close to the moon

1174

00:48:40,870 --> 00:48:37,760

we fly by comets and intercept asteroids

1175

00:48:45,349 --> 00:48:40,880

with dual missions for redundancy

1176

00:48:47,270 --> 00:48:45,359

the comets have names like virtanon

1177

00:48:50,549 --> 00:48:47,280

hartley iii

1178

00:48:53,430 --> 00:48:50,559

and the earth-threatening

1179

00:48:57,109 --> 00:48:53,440

near-earth object apophis

1180

00:49:02,230 --> 00:48:57,119

swinging by in 2011

1181

00:49:05,430 --> 00:49:02,240

in 2023 and in 2029 pretty damn close

1182

00:49:10,150 --> 00:49:05,440

and if it just goes the right place in

1183

00:49:11,109 --> 00:49:10,160

friday the 13th of april 2029

1184

00:49:56,150 --> 00:49:11,119

a

1185

00:49:59,910 --> 00:49:56,160

of

1186

00:50:01,510 --> 00:49:59,920

and then bring it back to our home world

1187

00:50:04,950 --> 00:50:01,520

for study

1188

00:50:08,309 --> 00:50:04,960

step by step just as mercury

1189

00:50:11,510 --> 00:50:08,319

and gemini and apollo

1190

00:50:14,710 --> 00:50:11,520

made apollo possible made the landings

1191

00:50:17,109 --> 00:50:14,720

up possible we moved deeper into space

1192

00:50:21,589 --> 00:50:17,119

for several manned landings

1193

00:50:24,230 --> 00:50:21,599

on bobus the inner moon of mars all

1194

00:50:25,589 --> 00:50:24,240

in a prelude to our historic mission to

1195

00:50:27,670 --> 00:50:25,599

homestead

1196

00:50:30,470 --> 00:50:27,680

the red planet itself

1197

00:50:33,109 --> 00:50:30,480

such bold missions of exploration will

1198

00:50:34,950 --> 00:50:33,119

require determination support

1199

00:50:37,190 --> 00:50:34,960

and political will

1200

00:50:40,630 --> 00:50:37,200

as did our mission

1201
00:50:41,910 --> 00:50:40,640
to the moon four decades ago

1202
00:50:43,190 --> 00:50:41,920
we have

1203
00:50:45,829 --> 00:50:43,200
the vision

1204
00:50:49,349 --> 00:50:45,839
we can reach these destinations on the

1205
00:50:51,349 --> 00:50:49,359
pathways to mars within the next two

1206
00:50:54,150 --> 00:50:51,359
decades

1207
00:50:58,069 --> 00:50:54,160
and if we preserve persevere the

1208
00:51:01,190 --> 00:50:58,079
pathways we can reach mars itself

1209
00:51:04,790 --> 00:51:01,200
before that 2035.

1210
00:51:08,630 --> 00:51:04,800
66 years after tranquility base

1211
00:51:11,349 --> 00:51:08,640
which was 66 years after kitty hawk

1212
00:51:14,150 --> 00:51:11,359
to realize the dream of humans on mars

1213
00:51:16,630 --> 00:51:14,160

we need a unified

1214

00:51:19,750 --> 00:51:16,640

space vision

1215

00:51:20,870 --> 00:51:19,760

we need to focus on pathways to the

1216

00:51:23,190 --> 00:51:20,880

prize

1217

00:51:26,069 --> 00:51:23,200

even now russia and china

1218

00:51:29,670 --> 00:51:26,079

and france will soon embark on a phobos

1219

00:51:31,430 --> 00:51:29,680

soil sample return mission

1220

00:51:34,069 --> 00:51:31,440

very complex

1221

00:51:36,870 --> 00:51:34,079

and they will share the soil sample with

1222

00:51:39,670 --> 00:51:36,880

the french by agreement

1223

00:51:42,390 --> 00:51:39,680

the greatest challenge for us is this

1224

00:51:44,950 --> 00:51:42,400

america do you still dream

1225

00:51:47,910 --> 00:51:44,960

great dreams

1226

00:51:50,790 --> 00:51:47,920

do you still believe in yourself

1227

00:51:52,150 --> 00:51:50,800

are you ready for a great national

1228

00:51:54,790 --> 00:51:52,160

challenge

1229

00:51:57,510 --> 00:51:54,800

i call on the next generation

1230

00:52:00,870 --> 00:51:57,520

and our political leaders to give this

1231

00:52:07,750 --> 00:52:02,870

yes we can

1232

00:52:10,549 --> 00:52:07,760

a quarter of a million miles from where

1233

00:52:13,109 --> 00:52:10,559

we are tonight on the dusty surface of

1234

00:52:15,430 --> 00:52:13,119

our luminous moon are the traces of that

1235

00:52:17,270 --> 00:52:15,440

first pioneering adventure

1236

00:52:20,150 --> 00:52:17,280

and we've just seen them

1237

00:52:22,309 --> 00:52:20,160

on films just brought back

1238

00:52:24,950 --> 00:52:22,319

attached to the lunar lander the eagle

1239

00:52:27,030 --> 00:52:24,960

that brought neil and me to the surface

1240

00:52:29,030 --> 00:52:27,040

is a plaque with the words that can

1241

00:52:30,150 --> 00:52:29,040

still be read today

1242

00:52:34,309 --> 00:52:30,160

it says

1243

00:52:35,829 --> 00:52:34,319

we came in peace for all mankind

1244

00:52:38,390 --> 00:52:35,839

yes we did

1245

00:52:40,950 --> 00:52:38,400

and yes we will again

1246

00:52:44,069 --> 00:52:40,960

it was a great personal honor to walk on

1247

00:52:45,510 --> 00:52:44,079

the moon but as neil once observed there

1248

00:52:48,549 --> 00:52:45,520

are still

1249

00:52:50,950 --> 00:52:48,559

places to go beyond belief

1250

00:52:53,589 --> 00:52:50,960

my call is to the next generation of

1251
00:52:57,349 --> 00:52:53,599
space explorers and their leaders

1252
00:52:58,870 --> 00:52:57,359
isn't it time we continued our journey

1253
00:53:01,109 --> 00:52:58,880
outward

1254
00:53:03,030 --> 00:53:01,119
past the moon

1255
00:53:05,270 --> 00:53:03,040
thank you for listening to me and may

1256
00:53:19,990 --> 00:53:05,280
god always bless the united states of

1257
00:53:20,000 --> 00:53:23,589
thank you very much dr aldrin

1258
00:53:28,230 --> 00:53:25,430
our third speaker this evening will be

1259
00:53:29,750 --> 00:53:28,240
apollo 11 command module pilot michael

1260
00:53:34,150 --> 00:53:29,760
collins

1261
00:53:36,309 --> 00:53:34,160
albans school here in dc and then from

1262
00:53:38,309 --> 00:53:36,319
west point before entering the air force

1263
00:53:40,549 --> 00:53:38,319

in 1952

1264

00:53:43,430 --> 00:53:40,559

he flew as an experimental flight test

1265

00:53:45,589 --> 00:53:43,440

officer then joined nasa as an astronaut

1266

00:53:48,309 --> 00:53:45,599

in 1963.

1267

00:53:51,430 --> 00:53:48,319

in his career at nasa he flew on gemini

1268

00:53:54,230 --> 00:53:51,440

10 and then as the command module pilot

1269

00:53:57,109 --> 00:53:54,240

for apollo 11 circling the moon while

1270

00:53:59,430 --> 00:53:57,119

neil armstrong and buzz aldrin landed

1271

00:54:01,190 --> 00:53:59,440

after leaving nasa general collins

1272

00:54:03,109 --> 00:54:01,200

became the director of this museum

1273

00:54:05,349 --> 00:54:03,119

overseeing its construction and its

1274

00:54:07,270 --> 00:54:05,359

opening during the nation's bicentennial

1275

00:54:09,430 --> 00:54:07,280

of 1976.

1276

00:54:11,990 --> 00:54:09,440

he also served as an undersecretary of

1277

00:54:13,910 --> 00:54:12,000

the smithsonian institution

1278

00:54:15,430 --> 00:54:13,920

when we were planning this evening i did

1279

00:54:17,190 --> 00:54:15,440

what the coordinator supposed to do

1280

00:54:18,790 --> 00:54:17,200

which is to offer each of the speakers a

1281

00:54:21,109 --> 00:54:18,800

chance to have a little rehearsal or a

1282

00:54:22,829 --> 00:54:21,119

walk-through to familiarize themselves

1283

00:54:26,069 --> 00:54:22,839

with the room to get a sense of the

1284

00:54:27,750 --> 00:54:26,079

space general collins politely declined

1285

00:54:29,589 --> 00:54:27,760

he knows this space

1286

00:54:30,790 --> 00:54:29,599

in fact he probably approved the plans

1287

00:54:32,390 --> 00:54:30,800

for the seat that you're sitting in

1288

00:54:34,230 --> 00:54:32,400

right now

1289

00:54:36,710 --> 00:54:34,240

we're delighted this evening to have him

1290

00:54:50,470 --> 00:54:36,720

back on such familiar territory

1291

00:54:54,710 --> 00:54:53,190

thank you thank you margaret you're

1292

00:54:56,950 --> 00:54:54,720

right i've spent a lot of time in this

1293

00:55:00,230 --> 00:54:56,960

room and i apologize in some ways for

1294

00:55:03,670 --> 00:55:00,240

its design it's designed for uh imacs

1295

00:55:05,990 --> 00:55:03,680

not for live speeches not sure anybody's

1296

00:55:08,230 --> 00:55:06,000

up there out there i'm down here in the

1297

00:55:11,910 --> 00:55:08,240

bottom of a black hole about to be

1298

00:55:14,150 --> 00:55:11,920

sucked in by gravity but uh

1299

00:55:17,349 --> 00:55:14,160

anyway it's very nice to be back here

1300

00:55:20,230 --> 00:55:17,359

and um it's it's always nice to talk

1301
00:55:21,589 --> 00:55:20,240
about apollo a great success story i

1302
00:55:24,789 --> 00:55:21,599
think

1303
00:55:28,309 --> 00:55:26,230
that because it's better than looking at

1304
00:55:30,470 --> 00:55:28,319
the black

1305
00:55:32,309 --> 00:55:30,480
imac screen

1306
00:55:34,549 --> 00:55:32,319
and i like that

1307
00:55:35,670 --> 00:55:34,559
photo it's my favorite one you see in

1308
00:55:49,589 --> 00:55:35,680
the

1309
00:55:51,349 --> 00:55:49,599
remains discreetly out of view

1310
00:55:55,030 --> 00:55:51,359
it's uh

1311
00:55:59,270 --> 00:55:55,040
but it's nice to talk about apollo it

1312
00:56:01,750 --> 00:55:59,280
as john glenn described john f kennedy's

1313
00:56:05,030 --> 00:56:01,760

mandate was a stark and very simple one

1314

00:56:06,950 --> 00:56:05,040

man on the moon by the end of the decade

1315

00:56:09,829 --> 00:56:06,960

it was such a clear objective though

1316

00:56:12,710 --> 00:56:09,839

there was no ambiguity to it all

1317

00:56:14,390 --> 00:56:12,720

factions could pull behind it one time

1318

00:56:18,390 --> 00:56:14,400

we had as many as

1319

00:56:20,309 --> 00:56:18,400

i think 400 000 americans working apollo

1320

00:56:21,910 --> 00:56:20,319

when i was director here i tried to use

1321

00:56:23,910 --> 00:56:21,920

the same uh

1322

00:56:27,710 --> 00:56:23,920

clarity in this building's construction

1323

00:56:29,589 --> 00:56:27,720

it was uh scheduled for july 4th

1324

00:56:32,470 --> 00:56:29,599

1976 the

1325

00:56:35,190 --> 00:56:32,480

the nation's bicentennial

1326

00:56:37,829 --> 00:56:35,200

so we had apollo

1327

00:56:40,230 --> 00:56:37,839

man on the moon ended the decade

1328

00:56:42,069 --> 00:56:40,240

museum on the mall bicentennial

1329

00:56:44,230 --> 00:56:42,079

and ice go around i used to run around

1330

00:56:47,030 --> 00:56:44,240

washington screaming bicentennial

1331

00:56:48,789 --> 00:56:47,040

bicentennial whenever there was a snag

1332

00:56:51,349 --> 00:56:48,799

that popped up in the

1333

00:56:53,829 --> 00:56:51,359

design or funding of the museum and it

1334

00:56:56,630 --> 00:56:53,839

helped a lot

1335

00:57:00,069 --> 00:56:56,640

but you're not here to discuss buildings

1336

00:57:02,390 --> 00:57:00,079

i know that but to ask us i suppose

1337

00:57:04,549 --> 00:57:02,400

what about apollo

1338

00:57:06,069 --> 00:57:04,559

what do we remember what was

1339

00:57:09,510 --> 00:57:06,079

important

1340

00:57:13,109 --> 00:57:09,520

i was talking apollo recently with my

1341

00:57:14,309 --> 00:57:13,119

daughter ann and somehow one small step

1342

00:57:17,510 --> 00:57:14,319

for a man

1343

00:57:22,069 --> 00:57:19,829

what would she have said i asked her

1344

00:57:24,470 --> 00:57:22,079

had she been the first person down that

1345

00:57:27,190 --> 00:57:24,480

lem ladder maybe

1346

00:57:28,470 --> 00:57:27,200

one small step for a woman no she shot

1347

00:57:38,829 --> 00:57:28,480

back

1348

00:57:45,990 --> 00:57:40,549

but

1349

00:57:49,109 --> 00:57:46,000

mr president i think you would have been

1350

00:57:50,710 --> 00:57:49,119

pleased with the flight of apollo 11.

1351

00:57:53,109 --> 00:57:50,720

everything worked so well so

1352

00:57:55,990 --> 00:57:53,119

surprisingly well

1353

00:57:58,710 --> 00:57:56,000

about the the flight itself the thing i

1354

00:58:01,589 --> 00:57:58,720

remember most is the view of planet

1355

00:58:03,190 --> 00:58:01,599

earth from a great distance

1356

00:58:05,670 --> 00:58:03,200

tiny

1357

00:58:07,910 --> 00:58:05,680

very shiny blue and white

1358

00:58:10,549 --> 00:58:07,920

bright beautiful

1359

00:58:12,470 --> 00:58:10,559

serene and fragile

1360

00:58:14,789 --> 00:58:12,480

you don't get the full flavor of it

1361

00:58:17,349 --> 00:58:14,799

looking at at this because

1362

00:58:19,510 --> 00:58:17,359

this has to be processed by film

1363

00:58:21,109 --> 00:58:19,520

emulsions which are pretty crude and

1364

00:58:23,190 --> 00:58:21,119

then projected

1365

00:58:25,829 --> 00:58:23,200

so it doesn't sparkle like the real

1366

00:58:28,150 --> 00:58:25,839

thing did it doesn't shine like a little

1367

00:58:31,910 --> 00:58:28,160

gem as it

1368

00:58:33,829 --> 00:58:31,920

would be if you could see it unfiltered

1369

00:58:36,549 --> 00:58:33,839

but

1370

00:58:38,950 --> 00:58:36,559

is the vision true well

1371

00:58:40,549 --> 00:58:38,960

serene it is not

1372

00:58:42,870 --> 00:58:40,559

fragile it is

1373

00:58:45,510 --> 00:58:42,880

the world population when we flew to the

1374

00:58:47,910 --> 00:58:45,520

moon was three billion people

1375

00:58:51,670 --> 00:58:47,920

today it's over six

1376
00:58:54,710 --> 00:58:51,680
and headed for eight so the experts say

1377
00:58:57,109 --> 00:58:54,720
in my view this growth is not wise

1378
00:58:59,109 --> 00:58:57,119
healthy or sustainable

1379
00:59:00,870 --> 00:58:59,119
the loss of habitat

1380
00:59:03,430 --> 00:59:00,880
the trashing of the oceans the

1381
00:59:06,549 --> 00:59:03,440
accumulation of waste products

1382
00:59:08,630 --> 00:59:06,559
this is no way to treat a planet

1383
00:59:10,789 --> 00:59:08,640
yet how do you stop it

1384
00:59:13,190 --> 00:59:10,799
our economic models

1385
00:59:14,549 --> 00:59:13,200
are all predicated on growth they

1386
00:59:16,150 --> 00:59:14,559
require it

1387
00:59:18,710 --> 00:59:16,160
grow or die

1388
00:59:21,589 --> 00:59:18,720

or maybe both

1389

00:59:25,430 --> 00:59:21,599

the dead zone created by runoff from the

1390

00:59:27,270 --> 00:59:25,440

mississippi into the gulf of mexico

1391

00:59:31,430 --> 00:59:27,280

is now larger than the state of new

1392

00:59:38,230 --> 00:59:34,870

we need a new economic paradigm

1393

00:59:42,150 --> 00:59:38,240

that somehow can produce prosperity

1394

00:59:47,030 --> 00:59:44,870

now turning to nasa and our future in

1395

00:59:49,030 --> 00:59:47,040

space

1396

00:59:50,630 --> 00:59:49,040

i add my uh

1397

00:59:52,789 --> 00:59:50,640

voice to buzzes although not as

1398

00:59:54,309 --> 00:59:52,799

eloquently

1399

00:59:55,430 --> 00:59:54,319

sometimes i think i flew to the wrong

1400

00:59:58,950 --> 00:59:55,440

place

1401

01:00:01,430 --> 00:59:58,960

mars was always my favorite as a kid

1402

01:00:02,549 --> 01:00:01,440

and it still is today

1403

01:00:06,870 --> 01:00:02,559

as

1404

01:00:10,230 --> 01:00:08,390

the moon is not a particularly

1405

01:00:11,750 --> 01:00:10,240

interesting place

1406

01:00:14,710 --> 01:00:11,760

but mars is

1407

01:00:16,069 --> 01:00:14,720

and mars is the closest thing to earth's

1408

01:00:18,630 --> 01:00:16,079

sister

1409

01:00:21,030 --> 01:00:18,640

that we've found so far

1410

01:00:23,670 --> 01:00:21,040

i worry that the current emphasis on

1411

01:00:26,069 --> 01:00:23,680

returning to the moon will cause us

1412

01:00:29,430 --> 01:00:26,079

to become ensnared in a technological

1413

01:00:31,510 --> 01:00:29,440

briar patch needlessly delaying for

1414

01:00:33,990 --> 01:00:31,520

decades the exploration

1415

01:00:37,510 --> 01:00:34,000

of mars a much more

1416

01:00:41,589 --> 01:00:39,030

i realize there are

1417

01:00:45,190 --> 01:00:41,599

many difficulties in reaching mars it's

1418

01:00:48,150 --> 01:00:45,200

a very long duration voyage i even wrote

1419

01:00:50,390 --> 01:00:48,160

a book about it one time

1420

01:00:52,549 --> 01:00:50,400

equipment reliability exposure to

1421

01:00:56,309 --> 01:00:52,559

radiation

1422

01:00:58,870 --> 01:00:56,319

aspects of crew selection and psychology

1423

01:01:00,789 --> 01:00:58,880

all these things are tough problems

1424

01:01:02,870 --> 01:01:00,799

but i don't see a

1425

01:01:04,150 --> 01:01:02,880

i don't see a show stopper they can be

1426

01:01:07,510 --> 01:01:04,160

solved

1427

01:01:08,630 --> 01:01:07,520

i'd like to see mars become the focus

1428

01:01:13,190 --> 01:01:08,640

just as

1429

01:01:18,789 --> 01:01:15,670

but getting back to apollo what

1430

01:01:21,190 --> 01:01:18,799

was its significance

1431

01:01:23,829 --> 01:01:21,200

historians tell us it's

1432

01:01:25,190 --> 01:01:23,839

much too early to judge but supposed

1433

01:01:27,510 --> 01:01:25,200

just suppose

1434

01:01:30,630 --> 01:01:27,520

we could fly out into space a whole

1435

01:01:32,710 --> 01:01:30,640

bunch of light years and look around

1436

01:01:35,270 --> 01:01:32,720

what would we see

1437

01:01:37,829 --> 01:01:35,280

with the right instruments

1438

01:01:40,309 --> 01:01:37,839

i think we could detect many many star

1439

01:01:42,710 --> 01:01:40,319

planet combinations

1440

01:01:43,510 --> 01:01:42,720

as suitable for sustaining life as our

1441

01:01:46,069 --> 01:01:43,520

own

1442

01:01:48,870 --> 01:01:46,079

sun earth combo

1443

01:01:51,270 --> 01:01:48,880

i have to stop here and

1444

01:01:52,710 --> 01:01:51,280

tell you a brief story years ago i was

1445

01:01:54,870 --> 01:01:52,720

uh

1446

01:01:56,710 --> 01:01:54,880

writing about what we might detect in

1447

01:02:00,309 --> 01:01:56,720

the way of far distant planets and i

1448

01:02:01,190 --> 01:02:00,319

kept using the word detectable

1449

01:02:04,829 --> 01:02:01,200

i

1450

01:02:07,589 --> 01:02:04,839

the

1451

01:02:09,990 --> 01:02:07,599

typist and when it came back

1452

01:02:12,630 --> 01:02:10,000

detectable had morphed into

1453

01:02:14,309 --> 01:02:12,640

delectable

1454

01:02:16,870 --> 01:02:14,319

and i thought that's wonderful what a

1455

01:02:18,390 --> 01:02:16,880

great promotion for a planet

1456

01:02:27,510 --> 01:02:18,400

but

1457

01:02:29,750 --> 01:02:27,520

detectable delectables

1458

01:02:35,589 --> 01:02:29,760

what categories

1459

01:02:37,829 --> 01:02:35,599

one way i think would be to see if their

1460

01:02:40,069 --> 01:02:37,839

inhabitants were wanderers

1461

01:02:44,069 --> 01:02:40,079

and if they had the capability

1462

01:02:47,430 --> 01:02:44,079

to wander away from their home planet

1463

01:02:49,349 --> 01:02:47,440

our earth is a bit over 4 billion

1464

01:02:51,750 --> 01:02:49,359
years old and in the first four billion

1465

01:02:54,390 --> 01:02:51,760
in cosmic terms

1466

01:02:57,190 --> 01:02:54,400
not much happened

1467

01:02:59,910 --> 01:02:57,200
then in 1968

1468

01:03:05,910 --> 01:03:03,670
apollo 8 left it exceeded escape

1469

01:03:08,309 --> 01:03:05,920
velocity

1470

01:03:11,910 --> 01:03:08,319
and gravity could no longer keep us

1471

01:03:18,870 --> 01:03:14,390
the next year apollo 11 not only left

1472

01:03:24,549 --> 01:03:22,710
neither went very far or did very much

1473

01:03:28,630 --> 01:03:24,559
but as ben franklin

1474

01:03:31,670 --> 01:03:28,640
once asked of what use is a newborn baby

1475

01:03:33,430 --> 01:03:31,680
i think apollo was a dividing line

1476

01:03:35,589 --> 01:03:33,440

putting earth

1477

01:03:37,029 --> 01:03:35,599

for better or for worse into a new

1478

01:03:39,510 --> 01:03:37,039

category

1479

01:03:41,990 --> 01:03:39,520

into the big leagues of planets

1480

01:03:44,549 --> 01:03:42,000

to me that is

1481

01:03:47,829 --> 01:03:44,559

what is the most significant

1482

01:03:49,430 --> 01:03:47,839

thing about apollo

1483

01:03:53,670 --> 01:03:49,440

if you'll permit me

1484

01:03:57,670 --> 01:03:55,430

the flight

1485

01:04:00,470 --> 01:03:57,680

accomplishments

1486

01:04:03,510 --> 01:04:00,480

the major accomplishment

1487

01:04:07,190 --> 01:04:03,520

was not the flight of apollo 11 but the

1488

01:04:11,589 --> 01:04:08,549

now

1489

01:04:15,190 --> 01:04:11,599

turning from the macro to the micro

1490

01:04:17,829 --> 01:04:15,200

turning to collins lucky old mike

1491

01:04:19,109 --> 01:04:17,839

my concept of time has always been a bit

1492

01:04:21,190 --> 01:04:19,119

strange

1493

01:04:23,510 --> 01:04:21,200

i can see a

1494

01:04:25,029 --> 01:04:23,520

a giant grandfather's clock up in the

1495

01:04:26,710 --> 01:04:25,039

sky

1496

01:04:30,710 --> 01:04:26,720

pendulum doesn't swing back and forth

1497

01:04:37,910 --> 01:04:34,710

it only moves once it starts way over on

1498

01:04:43,990 --> 01:04:41,029

that's the young you too young to drive

1499

01:04:45,750 --> 01:04:44,000

drink or have a steady girlfriend

1500

01:04:48,230 --> 01:04:45,760

then one night while you're asleep it

1501

01:04:50,549 --> 01:04:48,240

sweeps over to the right

1502

01:04:52,150 --> 01:04:50,559

to the too old side

1503

01:04:54,789 --> 01:04:52,160

the next morning you're suddenly over

1504

01:04:59,510 --> 01:04:54,799

the hill getting bald don't try running

1505

01:05:03,430 --> 01:05:01,349

you know for a lot of people it seems

1506

01:05:05,910 --> 01:05:03,440

that the pendulum has only

1507

01:05:10,150 --> 01:05:05,920

those two stops no middle

1508

01:05:12,230 --> 01:05:10,160

but not for the crew of apollo 11.

1509

01:05:14,549 --> 01:05:12,240

consider that neil armstrong was born in

1510

01:05:22,710 --> 01:05:14,559

1930

1511

01:05:25,430 --> 01:05:22,720

we came along at exactly the right time

1512

01:05:27,270 --> 01:05:25,440

that pendulum stopped for us in the

1513

01:05:30,470 --> 01:05:27,280

middle

1514

01:05:32,710 --> 01:05:30,480

we had survived hazardous careers and

1515

01:05:35,670 --> 01:05:32,720

and been successful in them

1516

01:05:38,230 --> 01:05:35,680

but in my own case at least it involved

1517

01:05:40,870 --> 01:05:38,240

10 percent shrewd planting and 90

1518

01:05:43,029 --> 01:05:40,880

percent blind luck

1519

01:05:45,190 --> 01:05:43,039

lucky that is how

1520

01:05:47,270 --> 01:05:45,200

limited to one word

1521

01:05:49,829 --> 01:05:47,280

i would describe my life

1522

01:05:51,349 --> 01:05:49,839

lucky to have found lucky to have had

1523

01:05:55,670 --> 01:05:51,359

loving parents

1524

01:06:00,630 --> 01:05:57,829

lucky to have two great daughters and

1525

01:06:02,390 --> 01:06:00,640

seven great-grandchildren

1526

01:06:04,870 --> 01:06:02,400

lucky not to be rich because i think

1527

01:06:05,589 --> 01:06:04,880

most rich people develop problems

1528

01:06:08,870 --> 01:06:05,599

but

1529

01:06:13,430 --> 01:06:11,670

so that i can spend my time doing things

1530

01:06:15,910 --> 01:06:13,440

that i like

1531

01:06:18,069 --> 01:06:15,920

what more could i ask

1532

01:06:19,270 --> 01:06:18,079

the things that i like i split my time

1533

01:06:22,390 --> 01:06:19,280

between

1534

01:06:23,910 --> 01:06:22,400

southern florida and new england

1535

01:06:26,309 --> 01:06:23,920

i have a

1536

01:06:28,710 --> 01:06:26,319

small paddle boat with which i fish

1537

01:06:29,670 --> 01:06:28,720

striped bass in the north snook in the

1538

01:06:32,710 --> 01:06:29,680

south

1539

01:06:35,349 --> 01:06:32,720

getting good exercise along the way i do

1540

01:06:37,910 --> 01:06:35,359

some watercolor painting i'm not a pro

1541

01:06:39,270 --> 01:06:37,920

like my friend al bean but i'm trying to

1542

01:06:42,150 --> 01:06:39,280

get better

1543

01:06:45,109 --> 01:06:42,160

i read a lot cook do one triathlon a

1544

01:06:47,430 --> 01:06:45,119

year worry about the stock market

1545

01:06:52,390 --> 01:06:47,440

keep looking for a really good bottle of

1546

01:06:59,510 --> 01:06:55,910

i'm moderately busy and and happy

1547

01:07:21,430 --> 01:07:01,670

put

1548

01:07:25,990 --> 01:07:24,069

thank you general collins

1549

01:07:29,510 --> 01:07:26,000

our final speaker this evening will be

1550

01:07:32,390 --> 01:07:29,520

apollo 11 commander neil armstrong

1551
01:07:34,630 --> 01:07:32,400
a proud graduate of purdue university mr

1552
01:07:36,150 --> 01:07:34,640
armstrong holds a masters of aerospace

1553
01:07:38,630 --> 01:07:36,160
engineering from the university of

1554
01:07:40,630 --> 01:07:38,640
southern california as well as numerous

1555
01:07:42,950 --> 01:07:40,640
honorary doctorates

1556
01:07:44,870 --> 01:07:42,960
mr armstrong has flown over 200

1557
01:07:47,670 --> 01:07:44,880
different models of aircraft

1558
01:07:49,910 --> 01:07:47,680
he served as a combat pilot in korea and

1559
01:07:52,150 --> 01:07:49,920
as a research pilot for the national

1560
01:07:53,910 --> 01:07:52,160
advisory committee for aeronautics

1561
01:07:55,750 --> 01:07:53,920
nasa's predecessor

1562
01:07:58,069 --> 01:07:55,760
he was the project pilot on many

1563
01:08:00,710 --> 01:07:58,079

high-speed aircraft including the x-15

1564

01:08:03,029 --> 01:08:00,720

that hangs outside this theater

1565

01:08:04,870 --> 01:08:03,039

but he is our final speaker this evening

1566

01:08:07,029 --> 01:08:04,880

because mr armstrong became a nasa

1567

01:08:09,990 --> 01:08:07,039

astronaut in 1962

1568

01:08:11,990 --> 01:08:10,000

commanding gemini 8 and as we all know

1569

01:08:13,829 --> 01:08:12,000

apollo 11.

1570

01:08:15,750 --> 01:08:13,839

he is a college professor who has taught

1571

01:08:17,749 --> 01:08:15,760

aerospace engineering

1572

01:08:19,430 --> 01:08:17,759

a trusted expert who helped run the

1573

01:08:21,829 --> 01:08:19,440

rogers commission

1574

01:08:23,189 --> 01:08:21,839

a businessman who has served on numerous

1575

01:08:26,149 --> 01:08:23,199

boards

1576

01:08:28,390 --> 01:08:26,159

and for 40 years a careful steward of

1577

01:08:29,749 --> 01:08:28,400

the responsibility of being the first

1578

01:08:31,910 --> 01:08:29,759

man on the moon

1579

01:08:49,990 --> 01:08:31,920

it is an honor to introduce mr neil

1580

01:08:50,000 --> 01:09:08,149

oh

1581

01:09:08,159 --> 01:09:12,550

thank you very much

1582

01:09:19,030 --> 01:09:16,390

our reason for gathering here tonight is

1583

01:09:22,070 --> 01:09:19,040

to remember the apollo program in

1584

01:09:26,470 --> 01:09:22,080

particular the 40th anniversary year

1585

01:09:28,709 --> 01:09:26,480

of achievements in the year 1969

1586

01:09:32,309 --> 01:09:28,719

and

1587

01:09:34,390 --> 01:09:32,319

because i wanted to talk about things

1588

01:09:35,510 --> 01:09:34,400

other than what the previous speaker's

1589

01:09:41,269 --> 01:09:35,520

talk

1590

01:09:42,550 --> 01:09:41,279

goddard

1591

01:09:52,070 --> 01:09:42,560

governance

1592

01:09:52,080 --> 01:09:55,350

part one

1593

01:10:00,630 --> 01:09:57,510

got it

1594

01:10:02,470 --> 01:10:00,640

many of you here tonight know

1595

01:10:05,750 --> 01:10:02,480

robert goddard

1596

01:10:08,070 --> 01:10:05,760

american inventor of the liquid

1597

01:10:11,110 --> 01:10:08,080

fueled rocket

1598

01:10:12,470 --> 01:10:11,120

as a young professor at clark university

1599

01:10:14,550 --> 01:10:12,480

uh

1600

01:10:17,990 --> 01:10:14,560

early in the 20th century

1601
01:10:21,510 --> 01:10:18,000
he searched for support for uh rocket

1602
01:10:23,830 --> 01:10:21,520
research without much success

1603
01:10:26,630 --> 01:10:23,840
his first substantive help

1604
01:10:28,830 --> 01:10:26,640
was a five thousand dollar grant over

1605
01:10:34,390 --> 01:10:28,840
five years

1606
01:10:41,030 --> 01:10:37,270
he received no government assistance

1607
01:10:42,830 --> 01:10:41,040
in any of his liquid rocket work

1608
01:10:46,390 --> 01:10:42,840
the first

1609
01:10:51,430 --> 01:10:46,400
successful liquid rocket flight occurred

1610
01:10:53,470 --> 01:10:51,440
in massachusetts uh in 1926

1611
01:10:55,470 --> 01:10:53,480
distance covered

1612
01:10:59,830 --> 01:10:55,480
180 feet

1613
01:11:02,950 --> 01:10:59,840

184 feet or maximum altitude

1614

01:11:05,350 --> 01:11:04,149
from then

1615

01:11:07,510 --> 01:11:05,360
for the next

1616

01:11:09,990 --> 01:11:07,520
decade and a half until the

1617

01:11:13,189 --> 01:11:10,000
beginning of world war ii

1618

01:11:15,030 --> 01:11:13,199
he was improving and enlarging his his

1619

01:11:17,430 --> 01:11:15,040
rockets and flying them faster and

1620

01:11:19,990 --> 01:11:17,440
higher at his flight test range in new

1621

01:11:22,070 --> 01:11:20,000
mexico

1622

01:11:24,830 --> 01:11:22,080
as a result of this work

1623

01:11:26,470 --> 01:11:24,840
he held 214

1624

01:11:28,630 --> 01:11:26,480
patents

1625

01:11:31,430 --> 01:11:28,640
on that work

1626
01:11:32,390 --> 01:11:31,440
his inventions his patents and successes

1627
01:11:34,470 --> 01:11:32,400
were

1628
01:11:35,830 --> 01:11:34,480
of limited interest here in the united

1629
01:11:38,630 --> 01:11:35,840
states

1630
01:11:42,070 --> 01:11:38,640
but they were oft noted

1631
01:11:43,830 --> 01:11:42,080
in europe where rocket clubs were very

1632
01:11:46,310 --> 01:11:43,840
very popular

1633
01:11:48,870 --> 01:11:46,320
the british interplanetary society the

1634
01:11:51,110 --> 01:11:48,880
gird and the soviet

1635
01:11:53,750 --> 01:11:51,120
in the soviet union and the german

1636
01:11:56,229 --> 01:11:53,760
rocket society and the rocket

1637
01:11:58,229 --> 01:11:56,239
section of the society astronomy de

1638
01:12:01,350 --> 01:11:58,239

france

1639

01:12:03,830 --> 01:12:01,360
in the uh 1930s

1640

01:12:05,750 --> 01:12:03,840
the war weapons department

1641

01:12:07,270 --> 01:12:05,760
of the army in berlin

1642

01:12:10,229 --> 01:12:07,280
recruited

1643

01:12:13,030 --> 01:12:10,239
rocket enthusiasts including

1644

01:12:15,430 --> 01:12:13,040
a young varner one brown

1645

01:12:18,390 --> 01:12:15,440
from the german rocket society

1646

01:12:21,350 --> 01:12:18,400
in order to institute a crash program

1647

01:12:23,189 --> 01:12:21,360
in rocket weapon development

1648

01:12:25,669 --> 01:12:23,199
they built ever larger rockets

1649

01:12:29,430 --> 01:12:25,679
culminating in the a4 or the vengeance

1650

01:12:34,310 --> 01:12:29,440
weapon two v2 v2 the v2

1651

01:12:38,709 --> 01:12:34,320

at 14 tons and 47 feet in height it was

1652

01:12:41,270 --> 01:12:38,719

a gigantic rocket for the time

1653

01:12:44,070 --> 01:12:41,280

thousands of v2s were launched toward

1654

01:12:47,350 --> 01:12:44,080

england and holland

1655

01:12:51,270 --> 01:12:47,360

with speeds of over 3 000 miles per hour

1656

01:12:54,149 --> 01:12:51,280

and a range of 234 miles and

1657

01:12:55,510 --> 01:12:54,159

approximately a 110 warhead

1658

01:12:58,070 --> 01:12:55,520

the v2

1659

01:13:02,310 --> 01:12:58,080

clearly suggested

1660

01:13:05,030 --> 01:13:02,320

that a rocket-powered long-range weapon

1661

01:13:07,110 --> 01:13:05,040

might be a useful addition to a military

1662

01:13:09,030 --> 01:13:07,120

arsenal

1663

01:13:14,310 --> 01:13:09,040

and no v2

1664

01:13:17,430 --> 01:13:16,070

at least six co

1665

01:13:20,630 --> 01:13:17,440

uh

1666

01:13:24,070 --> 01:13:20,640

concepts resident in the v2

1667

01:13:25,990 --> 01:13:24,080

had been patented by robert goddard

1668

01:13:28,470 --> 01:13:26,000

most of them prior

1669

01:13:30,070 --> 01:13:28,480

to the beginning of the german military

1670

01:13:32,630 --> 01:13:30,080

rocket effort

1671

01:13:34,070 --> 01:13:32,640

analysis of the v2 immediately after the

1672

01:13:35,510 --> 01:13:34,080

end of the war

1673

01:13:38,390 --> 01:13:35,520

disclosed that

1674

01:13:40,870 --> 01:13:38,400

all of its principal characteristics

1675

01:13:42,630 --> 01:13:40,880

were nearly identical to the

1676

01:13:44,470 --> 01:13:42,640

goddard rockets

1677

01:13:46,470 --> 01:13:44,480

it didn't take long

1678

01:13:48,149 --> 01:13:46,480

for military planners

1679

01:13:50,630 --> 01:13:48,159

particularly in the soviet union and

1680

01:13:53,510 --> 01:13:50,640

here in the united states

1681

01:13:56,229 --> 01:13:53,520

to note the possibility

1682

01:13:58,390 --> 01:13:56,239

of long-range rockets

1683

01:13:59,990 --> 01:13:58,400

armed with nuclear

1684

01:14:06,310 --> 01:14:00,000

warheads

1685

01:14:07,990 --> 01:14:06,320

aerospace manufacturers responded to

1686

01:14:10,470 --> 01:14:08,000

military requirements

1687

01:14:16,070 --> 01:14:10,480

with rocket-powered ballistic missiles

1688

01:14:20,310 --> 01:14:17,830

part two

1689

01:14:22,149 --> 01:14:20,320

governance

1690

01:14:24,550 --> 01:14:22,159

a great

1691

01:14:27,750 --> 01:14:24,560

global schism

1692

01:14:30,950 --> 01:14:27,760

developed during these years

1693

01:14:33,350 --> 01:14:30,960

political discord was based on

1694

01:14:34,950 --> 01:14:33,360

two superpowers the united states and

1695

01:14:36,229 --> 01:14:34,960

the soviet union

1696

01:14:39,270 --> 01:14:36,239

competing

1697

01:14:43,270 --> 01:14:39,280

for the respect of the world in general

1698

01:14:46,229 --> 01:14:43,280

and the unaligned nations in particular

1699

01:14:49,669 --> 01:14:46,239

and many of you here tonight remember

1700

01:14:52,070 --> 01:14:49,679

well the cold war vividly

1701

01:14:55,189 --> 01:14:52,080

younger members of the audience may not

1702

01:15:02,470 --> 01:14:59,270

cold war was a state of high tension and

1703

01:15:04,709 --> 01:15:02,480

high political tension and intense

1704

01:15:07,510 --> 01:15:04,719

military rivalry

1705

01:15:09,669 --> 01:15:07,520

the united states and its western allies

1706

01:15:11,830 --> 01:15:09,679

versus the soviet union

1707

01:15:15,189 --> 01:15:11,840

and its socialist

1708

01:15:19,669 --> 01:15:17,590

to defend themselves

1709

01:15:22,550 --> 01:15:19,679

the superpowers

1710

01:15:25,189 --> 01:15:22,560

depended on the doctrine of mutually

1711

01:15:28,310 --> 01:15:25,199

assured destruction

1712

01:15:29,910 --> 01:15:28,320

to deter either side from initiating a

1713

01:15:31,910 --> 01:15:29,920

nuclear attack

1714

01:15:36,310 --> 01:15:31,920

both sides were committed

1715

01:15:39,110 --> 01:15:36,320

to a full-scale nuclear counter attack

1716

01:15:41,350 --> 01:15:39,120

assuring the total destruction of both

1717

01:15:43,510 --> 01:15:41,360

nations

1718

01:15:45,510 --> 01:15:43,520

thousands of ballistic missiles armed

1719

01:15:47,430 --> 01:15:45,520

with nuclear warheads

1720

01:15:48,550 --> 01:15:47,440

created by the two super

1721

01:15:51,350 --> 01:15:48,560

powers

1722

01:15:56,870 --> 01:15:51,360

and pointed toward each other

1723

01:16:02,709 --> 01:15:59,189

part three

1724

01:16:08,149 --> 01:16:04,870

during the cold war

1725

01:16:11,030 --> 01:16:08,159

a little remembered but

1726

01:16:13,270 --> 01:16:11,040

particularly important research program

1727

01:16:15,430 --> 01:16:13,280

was underway

1728

01:16:19,590 --> 01:16:15,440

the program was called the international

1729

01:16:25,270 --> 01:16:23,590

66 countries joined together to analyze

1730

01:16:28,390 --> 01:16:25,280

our earth

1731

01:16:30,709 --> 01:16:28,400

oceanography meteorology solar

1732

01:16:34,229 --> 01:16:30,719

activity there's magnetism the upper

1733

01:16:38,550 --> 01:16:34,239

atmosphere cosmic rays meteors

1734

01:16:40,630 --> 01:16:38,560

the fascinating geophysical sciences

1735

01:16:45,510 --> 01:16:40,640

the igy was planned for

1736

01:16:49,910 --> 01:16:45,520

mid 1957 until the end of 1958

1737

01:16:51,110 --> 01:16:49,920

and even before the igy began

1738

01:16:54,550 --> 01:16:51,120

scientists

1739

01:16:56,950 --> 01:16:54,560
particularly russian and american

1740

01:16:58,709 --> 01:16:56,960
recognized that if

1741

01:17:01,030 --> 01:16:58,719
it would be possible

1742

01:17:05,110 --> 01:17:01,040
to use one of these new

1743

01:17:08,229 --> 01:17:05,120
high-performance military rockets

1744

01:17:10,310 --> 01:17:08,239
carrying scientific instruments to put a

1745

01:17:14,390 --> 01:17:10,320
man-made object

1746

01:17:16,709 --> 01:17:15,350
it

1747

01:17:18,310 --> 01:17:16,719
would have a perspective a new

1748

01:17:20,950 --> 01:17:18,320
perspective

1749

01:17:23,350 --> 01:17:20,960
allow accurate measurements

1750

01:17:24,790 --> 01:17:23,360
perhaps solving or at least shedding new

1751

01:17:27,669 --> 01:17:24,800

light

1752

01:17:31,030 --> 01:17:27,679

on some reverse mysteries

1753

01:17:33,189 --> 01:17:31,040

both countries publicly announced that

1754

01:17:36,149 --> 01:17:33,199

they were trying to develop

1755

01:17:39,430 --> 01:17:36,159

an artificial satellite

1756

01:17:41,750 --> 01:17:39,440

they didn't recognize it at the time

1757

01:17:44,630 --> 01:17:41,760

but they had started a new competition

1758

01:17:46,790 --> 01:17:44,640

which eventually became known as the

1759

01:17:49,430 --> 01:17:46,800

space race

1760

01:17:52,950 --> 01:17:49,440

the first heat

1761

01:17:57,590 --> 01:17:56,070

and as dr graft

1762

01:17:59,430 --> 01:17:57,600

noted

1763

01:18:01,669 --> 01:17:59,440

and all here we'll know

1764

01:18:04,229 --> 01:18:01,679

the soviet union succeeded in launching

1765

01:18:05,110 --> 01:18:04,239

sputnik 1 and 2 and winning that first

1766

01:18:08,550 --> 01:18:05,120

heat

1767

01:18:11,430 --> 01:18:08,560

americans followed with explorer 1.

1768

01:18:13,110 --> 01:18:11,440

sputnik shocked the american public

1769

01:18:15,189 --> 01:18:13,120

we believe we're the most

1770

01:18:17,030 --> 01:18:15,199

technologically advanced community in

1771

01:18:19,110 --> 01:18:17,040

the world and how could this have

1772

01:18:21,270 --> 01:18:19,120

happened somebody has to be doing

1773

01:18:22,950 --> 01:18:21,280

something

1774

01:18:24,709 --> 01:18:22,960

president eisenhower tried to calm the

1775

01:18:28,070 --> 01:18:24,719

waters he

1776

01:18:30,950 --> 01:18:28,080

he said as i understand it they've only

1777

01:18:33,270 --> 01:18:30,960

shot one small ball in the air

1778

01:18:37,350 --> 01:18:33,280

he said his concern about our nation's

1779

01:18:41,110 --> 01:18:37,360

security had not diminished one iota

1780

01:18:43,030 --> 01:18:41,120

actually he was probably very worried

1781

01:18:46,070 --> 01:18:43,040

a rocket that had the

1782

01:18:48,950 --> 01:18:46,080

power and the accuracy to orbit a

1783

01:18:51,189 --> 01:18:48,960

satellite had the power and accuracy to

1784

01:18:55,669 --> 01:18:51,199

send a nuclear warhead

1785

01:18:57,189 --> 01:18:55,679

across the ocean to a specific target

1786

01:18:58,790 --> 01:18:57,199

public interest in these space

1787

01:19:01,590 --> 01:18:58,800

activities was

1788

01:19:03,910 --> 01:19:01,600

unbelievably high

1789

01:19:05,910 --> 01:19:03,920

congress and the executive branch agreed

1790

01:19:08,550 --> 01:19:05,920

that the united states should have an

1791

01:19:12,149 --> 01:19:08,560

agency specifically dedicated to the

1792

01:19:14,470 --> 01:19:12,159

exploration and exploitation of space

1793

01:19:15,669 --> 01:19:14,480

and so it happened just over 50 years

1794

01:19:17,590 --> 01:19:15,679

ago

1795

01:19:20,550 --> 01:19:17,600

that president eisenhower signed the law

1796

01:19:23,189 --> 01:19:20,560

creating nasa

1797

01:19:25,510 --> 01:19:23,199

but the soviets continued to

1798

01:19:26,950 --> 01:19:25,520

dominate the space race winning heat

1799

01:19:29,030 --> 01:19:26,960

after heat

1800

01:19:31,910 --> 01:19:29,040

in addition to the first satellite they

1801
01:19:34,950 --> 01:19:31,920
they rocketed the first animal into

1802
01:19:37,750 --> 01:19:34,960
into orbit the russian dog leica in

1803
01:19:40,550 --> 01:19:37,760
english barker

1804
01:19:41,510 --> 01:19:40,560
the soviets were the first to fly a pro

1805
01:19:44,310 --> 01:19:41,520
probe

1806
01:19:46,390 --> 01:19:44,320
around the moon and the first to

1807
01:19:48,149 --> 01:19:46,400
send a remote controlled craft to reach

1808
01:19:50,790 --> 01:19:48,159
the surface

1809
01:19:52,709 --> 01:19:50,800
both in 1959

1810
01:19:54,149 --> 01:19:52,719
they were the first to fly a probe to

1811
01:19:57,990 --> 01:19:54,159
mars

1812
01:19:59,990 --> 01:19:58,000
in 1960 and the first to fly past venus

1813
01:20:01,510 --> 01:20:00,000

their progress was astounding and too

1814

01:20:03,669 --> 01:20:01,520

many americans

1815

01:20:07,110 --> 01:20:03,679

were racism

1816

01:20:08,149 --> 01:20:07,120

oh we had a few successes our marijuana

1817

01:20:10,790 --> 01:20:08,159

ii although

1818

01:20:12,870 --> 01:20:10,800

arriving at venus after the russians was

1819

01:20:13,750 --> 01:20:12,880

far more successful

1820

01:20:15,430 --> 01:20:13,760

and

1821

01:20:16,950 --> 01:20:15,440

we put up the first communications

1822

01:20:19,270 --> 01:20:16,960

satellites and

1823

01:20:21,270 --> 01:20:19,280

out on the whole

1824

01:20:25,030 --> 01:20:21,280

the soviets were out in front in most

1825

01:20:27,590 --> 01:20:25,040

areas many americans were embarrassed

1826

01:20:29,189 --> 01:20:27,600

both sides wanted to put humans into

1827

01:20:31,430 --> 01:20:29,199

space

1828

01:20:33,430 --> 01:20:31,440

both nations used their biggest rockets

1829

01:20:35,030 --> 01:20:33,440

originally built as intercontinental

1830

01:20:40,790 --> 01:20:35,040

ballistic missiles

1831

01:20:44,790 --> 01:20:41,910

and as

1832

01:20:46,390 --> 01:20:44,800

dr kraft also noted one month after the

1833

01:20:48,470 --> 01:20:46,400

inauguration of

1834

01:20:49,669 --> 01:20:48,480

the new young president john fitzgerald

1835

01:20:52,070 --> 01:20:49,679

kennedy

1836

01:20:53,590 --> 01:20:52,080

the russians again

1837

01:20:55,590 --> 01:20:53,600

to the

1838

01:20:58,229 --> 01:20:55,600

substantial surprise of the american

1839

01:20:59,990 --> 01:20:58,239

public in general in general

1840

01:21:01,830 --> 01:21:00,000

rocketed a young

1841

01:21:06,629 --> 01:21:01,840

russian pilot

1842

01:21:08,310 --> 01:21:06,639

like say or yuri alexeyevich gagarin

1843

01:21:10,310 --> 01:21:08,320

into space

1844

01:21:13,750 --> 01:21:10,320

circling the earth in 108 minutes and

1845

01:21:16,070 --> 01:21:13,760

recovered him successfully

1846

01:21:18,709 --> 01:21:16,080

the world cheered the soviet

1847

01:21:21,510 --> 01:21:18,719

success accomplishment

1848

01:21:23,510 --> 01:21:21,520

kennedy called the new agency into the

1849

01:21:25,510 --> 01:21:23,520

white house and is there any place we

1850

01:21:26,950 --> 01:21:25,520

can catch him what can we do when is it

1851

01:21:29,270 --> 01:21:26,960

dr kraft

1852

01:21:31,669 --> 01:21:29,280

pointed out they had a hard time

1853

01:21:34,149 --> 01:21:31,679

thinking of anything we could do

1854

01:21:36,550 --> 01:21:34,159

to catch him short of

1855

01:21:38,870 --> 01:21:36,560

either going around the moon or landing

1856

01:21:40,709 --> 01:21:38,880

in the surface of the moon

1857

01:21:42,390 --> 01:21:40,719

and even then

1858

01:21:43,990 --> 01:21:42,400

it would take a concerted national

1859

01:21:46,790 --> 01:21:44,000

effort

1860

01:21:49,189 --> 01:21:46,800

sort of like a manhattan project for the

1861

01:21:50,470 --> 01:21:49,199

the atom bomb

1862

01:21:53,030 --> 01:21:50,480

and so now

1863

01:21:55,510 --> 01:21:53,040

in this year

1864

01:21:59,189 --> 01:21:55,520

2009

1865

01:22:02,470 --> 01:21:59,199

we remember the apex of that

1866

01:22:04,390 --> 01:22:02,480

space race four decades ago

1867

01:22:06,070 --> 01:22:04,400

the manned flights of apollo actually

1868

01:22:08,470 --> 01:22:06,080

began in

1869

01:22:10,870 --> 01:22:08,480

late 1968.

1870

01:22:14,149 --> 01:22:10,880

apollo 7 the first

1871

01:22:16,229 --> 01:22:14,159

and so important test flight of the

1872

01:22:19,030 --> 01:22:16,239

apollo command module

1873

01:22:22,310 --> 01:22:19,040

and apollo 8 the second

1874

01:22:25,110 --> 01:22:22,320

flight that remarkably bold flight to

1875

01:22:27,830 --> 01:22:25,120

and orbiting the moon

1876

01:22:29,910 --> 01:22:27,840

launched on only the third saturn v

1877

01:22:33,030 --> 01:22:29,920

rocket

1878

01:22:35,750 --> 01:22:33,040

two months later apollo 9 launched with

1879

01:22:38,310 --> 01:22:35,760

two spacecraft the normal apollo command

1880

01:22:41,270 --> 01:22:38,320

module and with the new lunar landing

1881

01:22:43,030 --> 01:22:41,280

craft called the lunar module they named

1882

01:22:45,110 --> 01:22:43,040

spyder

1883

01:22:47,669 --> 01:22:45,120

it was the first checkout

1884

01:22:49,590 --> 01:22:47,679

of that ungainly machine

1885

01:22:52,070 --> 01:22:49,600

in earth orbit

1886

01:22:53,189 --> 01:22:52,080

the lunar module flew again in apollo 10

1887

01:22:57,189 --> 01:22:53,199

this time

1888

01:22:59,830 --> 01:22:57,199

to the moon in a full dress rehearsal

1889

01:23:01,910 --> 01:22:59,840

of a landing attempt

1890

01:23:06,550 --> 01:23:01,920

and on 13 july

1891

01:23:08,790 --> 01:23:06,560

of 69 soviet launched luna 15.

1892

01:23:11,270 --> 01:23:08,800

it had no human crew aboard

1893

01:23:13,510 --> 01:23:11,280

but its secret mission was to land on

1894

01:23:16,390 --> 01:23:13,520

the lunar surface collect some soil

1895

01:23:18,870 --> 01:23:16,400

samples rocket them back to earth

1896

01:23:21,110 --> 01:23:18,880

and claim a soviet victory

1897

01:23:23,830 --> 01:23:21,120

first chunks of the moon returned to the

1898

01:23:25,590 --> 01:23:23,840

earth by humans

1899

01:23:28,310 --> 01:23:25,600

three days later

1900

01:23:29,830 --> 01:23:28,320

apollo 11 departed kennedy space center

1901
01:23:33,030 --> 01:23:29,840
for luna

1902
01:23:34,550 --> 01:23:33,040
the crew did not know about luna 15

1903
01:23:35,990 --> 01:23:34,560
or its goal

1904
01:23:37,830 --> 01:23:36,000
mission control

1905
01:23:40,070 --> 01:23:37,840
informed the crew of the existence of

1906
01:23:42,629 --> 01:23:40,080
the silver soviet craft while they were

1907
01:23:44,870 --> 01:23:42,639
enroute to the moon

1908
01:23:46,950 --> 01:23:44,880
luna 15 was in orbit

1909
01:23:50,149 --> 01:23:46,960
around the moon preparing for its

1910
01:23:51,990 --> 01:23:50,159
descent when the americans arrived

1911
01:23:55,750 --> 01:23:52,000
it circled the moon

1912
01:23:58,310 --> 01:23:55,760
for four days and began its descent

1913
01:24:00,550 --> 01:23:58,320

on july 20th

1914

01:24:04,070 --> 01:24:00,560

but its landing system failed

1915

01:24:05,910 --> 01:24:04,080

and it crashed into the lunar surface

1916

01:24:08,550 --> 01:24:05,920

that same day

1917

01:24:10,550 --> 01:24:08,560

apollo 11's lunar module

1918

01:24:12,870 --> 01:24:10,560

named eagle

1919

01:24:16,390 --> 01:24:12,880

made a smooth touchdown

1920

01:24:20,470 --> 01:24:16,400

on luna's mari tranquillitatis

1921

01:24:22,470 --> 01:24:20,480

40 years again 40 years ago tomorrow

1922

01:24:25,030 --> 01:24:22,480

fulfilling the dreams of those hundreds

1923

01:24:27,110 --> 01:24:25,040

of thousands who had divided devoted

1924

01:24:30,790 --> 01:24:27,120

their lives

1925

01:24:32,950 --> 01:24:30,800

to that project for nearly a decade

1926

01:24:35,270 --> 01:24:32,960

in october

1927

01:24:37,510 --> 01:24:35,280

soyuz six seven and eight

1928

01:24:40,629 --> 01:24:37,520

with seven cosmonauts aboard

1929

01:24:42,790 --> 01:24:40,639

flew simultaneously and in november

1930

01:24:44,709 --> 01:24:42,800

apollo 12

1931

01:24:46,950 --> 01:24:44,719

made the second successful landing on

1932

01:24:48,870 --> 01:24:46,960

the moon

1933

01:24:51,189 --> 01:24:48,880

russians announced they had no interest

1934

01:24:52,870 --> 01:24:51,199

in the moon they were focusing on

1935

01:24:55,030 --> 01:24:52,880

an earth orbiting

1936

01:24:57,350 --> 01:24:55,040

manned laboratory

1937

01:24:59,590 --> 01:24:57,360

only much later did we learn

1938

01:25:02,229 --> 01:24:59,600

that they had in fact

1939

01:25:04,870 --> 01:25:02,239

did have a lunar landing program

1940

01:25:06,870 --> 01:25:04,880

and there's theirs was a cover story for

1941

01:25:08,790 --> 01:25:06,880

the failures of their gigantic lunar

1942

01:25:11,669 --> 01:25:08,800

rocket

1943

01:25:14,550 --> 01:25:11,679

the space race

1944

01:25:14,560 --> 01:25:17,750

it was the ultimate

1945

01:25:20,709 --> 01:25:18,870

peaceful

1946

01:25:24,310 --> 01:25:20,719

competition

1947

01:25:27,350 --> 01:25:24,320

usa versus ussr

1948

01:25:29,750 --> 01:25:27,360

i'll not assert that uh

1949

01:25:32,950 --> 01:25:29,760

it was a diversion which prevented a war

1950

01:25:35,830 --> 01:25:32,960

nevertheless it was a diversion

1951

01:25:38,390 --> 01:25:35,840

it was intense and it did allow to both

1952

01:25:40,390 --> 01:25:38,400

sides to take the high road

1953

01:25:43,590 --> 01:25:40,400

with the objectives of science and

1954

01:25:44,950 --> 01:25:43,600

learning and exploration

1955

01:25:47,189 --> 01:25:44,960

eventually

1956

01:25:50,310 --> 01:25:47,199

it provided a mechanism

1957

01:25:53,189 --> 01:25:50,320

for engendering cooperation

1958

01:25:55,669 --> 01:25:53,199

between former adversaries

1959

01:25:58,070 --> 01:25:55,679

in that sense among others it was an

1960

01:26:00,470 --> 01:25:58,080

exceptional national investment for both

1961

01:26:05,110 --> 01:26:02,470

so i close

1962

01:26:07,270 --> 01:26:05,120

remembering goddard governance and

1963

01:26:09,030 --> 01:26:07,280

geophysics

1964

01:26:11,430 --> 01:26:09,040

the american

1965

01:26:13,270 --> 01:26:11,440

robert goddard invented the liquid

1966

01:26:14,310 --> 01:26:13,280

propellant rocket

1967

01:26:17,270 --> 01:26:14,320

germany

1968

01:26:20,149 --> 01:26:17,280

used his technology to develop a large

1969

01:26:22,629 --> 01:26:20,159

strategic weapon

1970

01:26:25,350 --> 01:26:22,639

a governance comp competition between

1971

01:26:27,430 --> 01:26:25,360

superpowers resulted in the military

1972

01:26:30,310 --> 01:26:27,440

development of very low

1973

01:26:33,750 --> 01:26:30,320

high performance rockets

1974

01:26:36,070 --> 01:26:33,760

a scientific program in geophysics led

1975

01:26:38,070 --> 01:26:36,080

to the use of those big rockets to

1976

01:26:40,149 --> 01:26:38,080

launch the first satellites around the

1977

01:26:42,310 --> 01:26:40,159

earth

1978

01:26:44,070 --> 01:26:42,320

those satellites initiated the space

1979

01:26:50,229 --> 01:26:44,080

race

1980

01:26:52,390 --> 01:26:50,239

events we celebrate this evening

1981

01:26:54,470 --> 01:26:52,400

would humans have explored

1982

01:26:56,149 --> 01:26:54,480

the moon without the work

1983

01:26:58,709 --> 01:26:56,159

of robert goddard

1984

01:27:01,430 --> 01:26:58,719

the existence of the cold war

1985

01:27:03,669 --> 01:27:01,440

or the igy

1986

01:27:06,470 --> 01:27:03,679

perhaps

1987

01:27:09,510 --> 01:27:06,480

but certainly never on the schedule

1988

01:27:12,470 --> 01:27:09,520

as it actually occurred

1989

01:27:14,390 --> 01:27:12,480

history is a sequence of

1990

01:27:17,590 --> 01:27:14,400

random events and

1991

01:27:21,030 --> 01:27:17,600

unpredictable choices

1992

01:27:23,590 --> 01:27:21,040

which is why the future is so difficult

1993

01:27:24,550 --> 01:27:23,600

to foresee

1994

01:27:27,110 --> 01:27:24,560

but

1995

01:27:28,870 --> 01:27:27,120

you can try

1996

01:27:31,669 --> 01:27:28,880

thank you all for

1997

01:27:34,629 --> 01:27:31,679

helping us celebrate

1998

01:27:59,669 --> 01:27:34,639

this space flight anniversary

1999

01:28:04,470 --> 01:28:02,390

this concludes this evening's program

2000

01:28:06,310 --> 01:28:04,480

and i'm sure that you all share my

2001

01:28:08,070 --> 01:28:06,320

gratitude to

2002

01:28:10,950 --> 01:28:08,080

dr aldrin

2003

01:28:14,070 --> 01:28:10,960

general collins colonel armstrong

2004

01:28:15,669 --> 01:28:14,080

and dr kraft for what is truly a

2005

01:28:33,030 --> 01:28:15,679

memorable evening

2006

01:28:33,040 --> 01:28:50,390

i think they like it

2007

01:28:54,390 --> 01:28:52,390

like to also thank senator glenn for

2008

01:28:57,270 --> 01:28:54,400

hosting the

2009

01:28:59,750 --> 01:28:57,280

annual john glenn lecture

2010

01:29:01,510 --> 01:28:59,760

and also once again our gratitude to the

2011

01:29:03,270 --> 01:29:01,520

boeing company for making this possible

2012

01:29:05,350 --> 01:29:03,280

this evening

2013

01:29:06,470 --> 01:29:05,360

the please exit through the rear of the

2014

01:29:08,390 --> 01:29:06,480

theater

2015

01:29:10,870 --> 01:29:08,400

those in the front rows please follow

2016

01:29:12,550 --> 01:29:10,880

the instructions of the the folks that

2017

01:29:14,550 --> 01:29:12,560

are at the end of your rose and we'll

2018

01:29:16,070 --> 01:29:14,560

have bringing you down through the

2019

01:29:18,470 --> 01:29:16,080

stairway in front