1
00:00:12,230 --> 00:00:09,350
hello i'm lynn bondurant your host for

2
00:00:14,310 --> 00:00:12,240
our series 25 years of progress

3
00:00:16,470 --> 00:00:14,320
during this 13 part series we see some

4
00:00:18,790 --> 00:00:16,480
of the highlights of nasa the national

5
00:00:21,029 --> 00:00:18,800
aeronautics and space administration

6
00:01:03,110 --> 00:00:21,039
since its official founding on october 1

7
00:01:06,550 --> 00:01:04,789
what is happening in other american

8
00:01:08,469 --> 00:01:06,560
science and medicine the year before

9
00:01:09,630 --> 00:01:08,479
nasa is born

10
00:01:12,469 --> 00:01:09,640
well

11
00:01:14,870 --> 00:01:12,479
1957 is the year the american cancer

12
00:01:16,710 --> 00:01:14,880
society reports a high correlation

13
00:01:18,070 --> 00:01:16,720

between cigarette smoking and lung

14
00:01:20,710 --> 00:01:18,080
cancer

15
00:01:22,550 --> 00:01:20,720
and new element nubellium 102 is

16
00:01:32,550 --> 00:01:22,560
disclosed by the argonne national

17
00:01:39,429 --> 00:01:36,390
and overseas on october 4 1957

18
00:01:47,350 --> 00:01:39,439
the soviet union launches sputnik 1 the

19
00:01:52,630 --> 00:01:49,030
the soviets launch is for the

20
00:01:55,350 --> 00:01:52,640
international geophysical year or igy

21
00:01:59,510 --> 00:01:55,360
the geophysical year is 18 months from

22
00:02:02,310 --> 00:01:59,520
july 1957 to december 1958

23
00:02:05,030 --> 00:02:02,320
more than 70 nations and as many as 30

24
00:02:34,869 --> 00:02:05,040
000 scientists cooperate to investigate

25
00:02:39,750 --> 00:02:37,270
sputnik one concerns americans because

26
00:02:41,830 --> 00:02:39,760
of far-reaching military and technical

27
00:02:43,350 --> 00:02:41,840
implications of the launch

28
00:02:45,589 --> 00:02:43,360
less than a month after the first

29
00:02:47,990 --> 00:02:45,599
sputnik the russians launch a second

30
00:02:55,589 --> 00:02:48,000
sputnik which weighs about a half a ton

31
00:03:00,150 --> 00:02:57,670
the second sputnik causes even more

32
00:03:02,309 --> 00:03:00,160
concern in america because of the large

33
00:03:05,350 --> 00:03:02,319
size of the satellite

34
00:03:07,670 --> 00:03:05,360
during igy the united states plans to

35
00:03:10,229 --> 00:03:07,680
launch a vanguard satellite which weighs

36
00:03:11,990 --> 00:03:10,239
just a little over three pounds

37
00:03:14,390 --> 00:03:12,000
the attempt to launch the vanguard on

38
00:03:16,710 --> 00:03:14,400

december 6 1957

39
00:03:30,390 --> 00:03:16,720
ends in failure and a ball of flame and

40
00:03:34,070 --> 00:03:32,149
t keith glennon is the first

41
00:03:36,869 --> 00:03:34,080
administrator of nasa

42
00:03:37,990 --> 00:03:36,879
he is asked why nasa was formed

43
00:03:39,030 --> 00:03:38,000
that's a

44
00:03:42,149 --> 00:03:39,040
fairly

45
00:03:43,670 --> 00:03:42,159
easy question to answer

46
00:03:47,270 --> 00:03:43,680
sputnik

47
00:03:48,710 --> 00:03:47,280
on october 4th 1957 as i recall

48
00:03:50,550 --> 00:03:48,720
the russians

49
00:03:52,710 --> 00:03:50,560
launched a

50
00:03:54,149 --> 00:03:52,720
fairly heavy object

51
00:03:58,390 --> 00:03:54,159
into orbit

52
00:04:00,630 --> 00:03:58,400
and that caught us really by surprise

53
00:04:04,550 --> 00:04:00,640
the vanguard project had gotten underway

54
00:04:07,350 --> 00:04:04,560
in 1955 as i recall it uh part of the

55
00:04:10,229 --> 00:04:07,360
igy program international geophysical

56
00:04:12,229 --> 00:04:10,239
year program but it wasn't anywhere near

57
00:04:13,350 --> 00:04:12,239
uh ready

58
00:04:16,069 --> 00:04:13,360
they had

59
00:04:17,270 --> 00:04:16,079
i think scheduled some launches late

60
00:04:19,349 --> 00:04:17,280
that year

61
00:04:21,030 --> 00:04:19,359
that is in 1958

62
00:04:23,110 --> 00:04:21,040
but it wasn't clear that they were going

63
00:04:25,270 --> 00:04:23,120

to be able to fly them

64
00:04:27,749 --> 00:04:25,280
there was another

65
00:04:30,390 --> 00:04:27,759
competitor which had really never been

66
00:04:31,909 --> 00:04:30,400
recognized that was the army

67
00:04:33,590 --> 00:04:31,919
with their

68
00:04:35,430 --> 00:04:33,600
jupiter

69
00:04:37,430 --> 00:04:35,440
which together with some

70
00:04:39,430 --> 00:04:37,440
upper stage

71
00:04:41,189 --> 00:04:39,440
solid rockets developed by the jet

72
00:04:43,189 --> 00:04:41,199
propulsion laboratory in

73
00:04:45,030 --> 00:04:43,199
california

74
00:04:48,550 --> 00:04:45,040
finally was the

75
00:04:50,230 --> 00:04:48,560
vehicle which was which launched a

76
00:04:52,390 --> 00:04:50,240
satellite for the us

77
00:04:54,629 --> 00:04:52,400
early in 1959

78
00:04:57,830 --> 00:04:54,639
and the satellite was called explorer

79
00:04:57,840 --> 00:05:03,270
let's go back to after sputnik success

80
00:05:03,280 --> 00:05:08,070
and vanguard spectacular failure

81
00:05:12,790 --> 00:05:10,629
when major general john medeiros and dr

82
00:05:15,189 --> 00:05:12,800
verner von braun and their team at the

83
00:05:16,950 --> 00:05:15,199
army redstone arsenal are given their

84
00:05:18,790 --> 00:05:16,960
long sought chance

85
00:05:21,350 --> 00:05:18,800
a go-ahead to launch an american

86
00:05:22,870 --> 00:05:21,360
satellite

87
00:05:26,870 --> 00:05:22,880
they will use their flight proven

88
00:05:30,870 --> 00:05:29,270

we are at cape canaveral in late january

89
00:05:32,950 --> 00:05:30,880
1958

90
00:05:36,150 --> 00:05:32,960
as the covered satellite is placed atop

91
00:05:44,390 --> 00:05:36,160
the jupiter c poised on pad 26 for

92
00:05:47,830 --> 00:05:46,870
explorer one is to be about 30 pounds in

93
00:05:49,830 --> 00:05:47,840
orbit

94
00:05:53,430 --> 00:05:49,840
severe winds and law force a two-day

95
00:05:59,110 --> 00:05:57,189
then on january 31st 1958 the united

96
00:06:09,510 --> 00:05:59,120
states answers the soviet challenge in

97
00:06:14,550 --> 00:06:11,990
explorer makes a major discovery a

98
00:06:16,870 --> 00:06:14,560
radiation belt around the earth

99
00:06:19,590 --> 00:06:16,880
dr james van allen of the university of

100
00:06:21,430 --> 00:06:19,600
iowa identifies the region

101
00:06:22,710 --> 00:06:21,440
the discovery of the van allen belt is

102
00:06:25,350 --> 00:06:22,720
an important finding of the

103
00:06:27,749 --> 00:06:25,360
international geophysical year

104
00:06:30,150 --> 00:06:27,759
during a satellite television program

105
00:06:32,629 --> 00:06:30,160
broadcast in 1978

106
00:06:34,390 --> 00:06:32,639
dr ernst stewlinger director of science

107
00:06:36,390 --> 00:06:34,400
for dr verner von braun

108
00:06:40,070 --> 00:06:36,400
makes this statement about the launch of

109
00:06:45,270 --> 00:06:41,590
it was a gate

110
00:06:47,430 --> 00:06:45,280
that opened into a new land

111
00:06:50,230 --> 00:06:47,440
we hoped at that time

112
00:06:51,029 --> 00:06:50,240
that we will make progress

113
00:06:55,029 --> 00:06:51,039

and

114
00:06:58,309 --> 00:06:55,039
achieve many more things in space

115
00:06:59,029 --> 00:06:58,319
beyond launching a small satellite

116
00:07:01,270 --> 00:06:59,039
i

117
00:07:03,909 --> 00:07:01,280
want to be honest though and say that at

118
00:07:06,790 --> 00:07:03,919
that time we did even not

119
00:07:09,749 --> 00:07:06,800
think it possible that 20 years later

120
00:07:12,469 --> 00:07:09,759
there may have been 12 men

121
00:07:13,350 --> 00:07:12,479
walking on the moon and coming back to

122
00:07:15,270 --> 00:07:13,360
earth

123
00:07:18,070 --> 00:07:15,280
in good shape

124
00:07:19,029 --> 00:07:18,080
many of the dreams which we had at that

125
00:07:20,629 --> 00:07:19,039
time

126
00:07:22,629 --> 00:07:20,639
were fulfilled

127
00:07:24,230 --> 00:07:22,639
but many other dreams

128
00:07:26,790 --> 00:07:24,240
which

129
00:07:29,270 --> 00:07:26,800
meant many many achievements were

130
00:07:31,909 --> 00:07:29,280
accomplished which we even did not dare

131
00:07:34,790 --> 00:07:31,919
to dream at that time

132
00:07:37,350 --> 00:07:34,800
however when we look forward now

133
00:07:41,510 --> 00:07:37,360
toward the next 20 years i have the

134
00:07:43,510 --> 00:07:41,520
feeling that the best is yet to come

135
00:07:46,390 --> 00:07:43,520
the united states space effort before

136
00:07:49,749 --> 00:07:46,400
the launch of explorer 1 is fragmented

137
00:07:52,469 --> 00:07:49,759
navy army air force national science

138
00:07:54,309 --> 00:07:52,479

academy and naca

139
00:07:56,790 --> 00:07:54,319
president eisenhower appoints james

140
00:07:58,790 --> 00:07:56,800
killian to be science advisor just after

141
00:08:00,629 --> 00:07:58,800
the first sputnik launch

142
00:08:03,189 --> 00:08:00,639
keith glennon recollects the writing of

143
00:08:06,710 --> 00:08:03,199
the space act which forms nasa my

144
00:08:08,790 --> 00:08:06,720
recollection would be that mr killian

145
00:08:11,029 --> 00:08:08,800
who was the president's science advisor

146
00:08:13,029 --> 00:08:11,039
had been appointed almost immediately

147
00:08:15,589 --> 00:08:13,039
following the

148
00:08:18,070 --> 00:08:15,599
launch of sputnik

149
00:08:21,189 --> 00:08:18,080
and psac the president's science

150
00:08:24,830 --> 00:08:21,199
advisory committee and i suspect

151
00:08:30,950 --> 00:08:28,550
did a sort of a

152
00:08:32,389 --> 00:08:30,960
cooperative job in putting together the

153
00:08:33,430 --> 00:08:32,399
space act

154
00:08:34,790 --> 00:08:33,440
they had

155
00:08:37,430 --> 00:08:34,800
as a model

156
00:08:39,670 --> 00:08:37,440
the atomic energy act

157
00:08:40,469 --> 00:08:39,680
and indeed if you compare the two you

158
00:08:42,790 --> 00:08:40,479
find

159
00:08:45,590 --> 00:08:42,800
a good deal of similarity in many of the

160
00:08:47,190 --> 00:08:45,600
clauses in the two acts

161
00:08:48,949 --> 00:08:47,200
well what were the major implications of

162
00:08:51,110 --> 00:08:48,959
the space act

163
00:08:53,030 --> 00:08:51,120

they simply said that we were to

164
00:08:54,949 --> 00:08:53,040
pursue

165
00:08:56,949 --> 00:08:54,959
the development of

166
00:09:00,389 --> 00:08:56,959
activities in space

167
00:09:03,030 --> 00:09:00,399
for the benefit of all mankind

168
00:09:09,269 --> 00:09:06,389
do it as a civilian agency

169
00:09:11,269 --> 00:09:09,279
we were to be uh responsive to the

170
00:09:14,470 --> 00:09:11,279
military in the sense that

171
00:09:15,350 --> 00:09:14,480
if we found in our developments

172
00:09:20,550 --> 00:09:15,360
some

173
00:09:23,430 --> 00:09:20,560
be of value to the military

174
00:09:25,190 --> 00:09:23,440
we are bound to give it to them and that

175
00:09:27,350 --> 00:09:25,200
that was really the

176
00:09:28,790 --> 00:09:27,360
the thrust of this

177
00:09:31,910 --> 00:09:28,800
act

178
00:09:33,990 --> 00:09:31,920
we were also uh

179
00:09:37,030 --> 00:09:34,000
told that we should

180
00:09:38,949 --> 00:09:37,040
pursue international activities and this

181
00:09:41,910 --> 00:09:38,959
is i think an extension of this for the

182
00:09:43,910 --> 00:09:41,920
benefit of all mankind

183
00:09:47,829 --> 00:09:43,920
the space act is signed into law by

184
00:09:50,310 --> 00:09:47,839
president eisenhower on july 29 1958 and

185
00:09:52,310 --> 00:09:50,320
on october 1 1958

186
00:09:54,630 --> 00:09:52,320
nasa comes into being

187
00:09:55,990 --> 00:09:54,640
glennon recalls eisenhower's feelings

188
00:09:58,710 --> 00:09:56,000

about space

189
00:10:00,790 --> 00:09:58,720
he was not a space cadet he used to say

190
00:10:02,470 --> 00:10:00,800
as he looked over his shoulder and said

191
00:10:04,710 --> 00:10:02,480
you know keith that moon's been there a

192
00:10:07,750 --> 00:10:04,720
long time it's going to be there are

193
00:10:09,509 --> 00:10:07,760
great many eons yet and we'll get there

194
00:10:11,030 --> 00:10:09,519
one day but it isn't necessary we break

195
00:10:13,110 --> 00:10:11,040
our necks and break the budget to get

196
00:10:14,630 --> 00:10:13,120
there now okay what about congressional

197
00:10:17,030 --> 00:10:14,640
support at the time

198
00:10:19,990 --> 00:10:17,040
congressional support was really very

199
00:10:21,590 --> 00:10:20,000
good as a matter of fact they were

200
00:10:24,389 --> 00:10:21,600
pushing us

201
00:10:28,710 --> 00:10:24,399
i don't think in my 20 months there that

202
00:10:30,069 --> 00:10:28,720
i ever had a budget proposed to them

203
00:10:31,670 --> 00:10:30,079
that they didn't want to add something

204
00:10:32,389 --> 00:10:31,680
to

205
00:10:35,190 --> 00:10:32,399
my

206
00:10:37,509 --> 00:10:35,200
stock answer was i have

207
00:10:40,150 --> 00:10:37,519
studied this we've presented you with a

208
00:10:42,230 --> 00:10:40,160
budget which is what we think we can

209
00:10:43,910 --> 00:10:42,240
usefully use

210
00:10:45,910 --> 00:10:43,920
if we need any more

211
00:10:46,949 --> 00:10:45,920
you may be certain i'll come right back

212
00:10:48,790 --> 00:10:46,959
to you

213
00:10:51,269 --> 00:10:48,800

that seemed to satisfy them

214
00:10:52,790 --> 00:10:51,279
before nasa is born keith glennon is

215
00:10:54,870 --> 00:10:52,800
president of case institute of

216
00:10:56,949 --> 00:10:54,880
technology and former commissioner of

217
00:10:59,269 --> 00:10:56,959
the atomic energy commission

218
00:11:02,790 --> 00:10:59,279
then eisenhower nominates him to be

219
00:11:05,910 --> 00:11:02,800
first nasa administrator in august 1958

220
00:11:07,750 --> 00:11:05,920
with dr hugh dryden as deputy and nasa

221
00:11:09,990 --> 00:11:07,760
is formed from the national advisory

222
00:11:11,910 --> 00:11:10,000
committee for aeronautics glennon

223
00:11:15,190 --> 00:11:11,920
explains

224
00:11:17,110 --> 00:11:15,200
and we did inherit uh the

225
00:11:18,630 --> 00:11:17,120
national advisory committee for

226
00:11:20,230 --> 00:11:18,640
aeronautics

227
00:11:21,269 --> 00:11:20,240
operation

228
00:11:23,590 --> 00:11:21,279
uh

229
00:11:24,630 --> 00:11:23,600
naca as it was then called of which

230
00:11:27,110 --> 00:11:24,640
lewis

231
00:11:28,710 --> 00:11:27,120
laboratories would won

232
00:11:31,910 --> 00:11:28,720
there were uh

233
00:11:35,110 --> 00:11:31,920
four or five such laboratories three big

234
00:11:37,910 --> 00:11:35,120
ones ames langley and lewis

235
00:11:41,030 --> 00:11:37,920
and one at wallops island in virginia

236
00:11:42,470 --> 00:11:41,040
and one out in edwards air force base in

237
00:11:43,829 --> 00:11:42,480
california

238
00:11:45,829 --> 00:11:43,839

but

239
00:11:49,829 --> 00:11:45,839
we had 8 000

240
00:11:50,710 --> 00:11:49,839
well-trained loyal dedicated

241
00:11:52,710 --> 00:11:50,720
people

242
00:11:54,389 --> 00:11:52,720
in naca

243
00:11:57,430 --> 00:11:54,399
and they formed

244
00:12:01,590 --> 00:11:57,440
the base on which we erected

245
00:12:05,509 --> 00:12:01,600
nasa so we were very well endowed

246
00:12:07,350 --> 00:12:05,519
naca was formed in 1915 to supervise and

247
00:12:09,590 --> 00:12:07,360
direct the scientific study of the

248
00:12:11,430 --> 00:12:09,600
problems of flight with a view to their

249
00:12:14,310 --> 00:12:11,440
practical solution

250
00:12:16,870 --> 00:12:14,320
naca was required to direct and conduct

251
00:12:18,790 --> 00:12:16,880
research and experiments in aeronautics

252
00:12:21,150 --> 00:12:18,800
the committee was responsible for many

253
00:12:22,949 --> 00:12:21,160
of the advances in u.s aviation through

254
00:12:24,790 --> 00:12:22,959
1958

255
00:12:27,509 --> 00:12:24,800
some space type research is done in

256
00:12:28,550 --> 00:12:27,519
later years but emphasis was on airplane

257
00:12:30,949 --> 00:12:28,560
research

258
00:12:38,310 --> 00:12:30,959
again glennon tells us what happened in

259
00:12:42,470 --> 00:12:40,069
been doing development work largely at

260
00:12:44,870 --> 00:12:42,480
langley as i recall it

261
00:12:45,910 --> 00:12:44,880
on the shape of the capsule that might

262
00:12:48,710 --> 00:12:45,920
be used

263
00:12:52,790 --> 00:12:48,720

in a an up and down flight like

264
00:12:54,870 --> 00:12:52,800
actually mercury started out to be and

265
00:12:56,470 --> 00:12:54,880
finally into an orbit

266
00:12:59,190 --> 00:12:56,480
the

267
00:13:02,710 --> 00:12:59,200
problems of

268
00:13:08,870 --> 00:13:05,350
adequately

269
00:13:11,269 --> 00:13:08,880
capable people in a variety of fields

270
00:13:14,310 --> 00:13:11,279
meant that we had to look

271
00:13:15,110 --> 00:13:14,320
other than in naca

272
00:13:18,310 --> 00:13:15,120
and

273
00:13:21,509 --> 00:13:18,320
it became apparent very early on that

274
00:13:23,990 --> 00:13:21,519
our real limitations in the launch

275
00:13:25,750 --> 00:13:24,000
vehicle business the booster rocket as

276
00:13:28,150 --> 00:13:25,760
we then called

277
00:13:30,230 --> 00:13:28,160
we really didn't have any

278
00:13:33,190 --> 00:13:30,240
we had been using sounding rockets small

279
00:13:35,269 --> 00:13:33,200
things that went up and

280
00:13:36,069 --> 00:13:35,279
accumulated information

281
00:13:38,629 --> 00:13:36,079
and

282
00:13:40,790 --> 00:13:38,639
telemetered it back to the united to the

283
00:13:42,870 --> 00:13:40,800
ground but we didn't have anything it

284
00:13:46,310 --> 00:13:42,880
really would lift very much

285
00:13:47,509 --> 00:13:46,320
with any degree of of surety

286
00:13:51,670 --> 00:13:47,519
so

287
00:13:54,829 --> 00:13:51,680
i guess it was in probably in november

288
00:13:56,389 --> 00:13:54,839

might have been late october of

289
00:13:59,430 --> 00:13:56,399
1958

290
00:14:00,870 --> 00:13:59,440
that i made a trip to um

291
00:14:02,949 --> 00:14:00,880
to

292
00:14:05,269 --> 00:14:02,959
huntsville with

293
00:14:08,629 --> 00:14:05,279
hugh dryden my deputy and one of the

294
00:14:11,430 --> 00:14:08,639
very very great men in this

295
00:14:15,670 --> 00:14:11,440
space program his name

296
00:14:16,710 --> 00:14:15,680
cannot and will not ever be forgotten

297
00:14:18,150 --> 00:14:16,720
we

298
00:14:20,629 --> 00:14:18,160
came back

299
00:14:21,430 --> 00:14:20,639
it's clear that von braun

300
00:14:22,629 --> 00:14:21,440
had

301
00:14:25,509 --> 00:14:22,639
a real

302
00:14:27,990 --> 00:14:25,519
strong team there very capable we did

303
00:14:30,230 --> 00:14:28,000
try to get that

304
00:14:31,670 --> 00:14:30,240
laboratory or part of it i didn't want

305
00:14:33,590 --> 00:14:31,680
the whole thing

306
00:14:35,590 --> 00:14:33,600
they had work going on for the army the

307
00:14:37,990 --> 00:14:35,600
pershing missile wasn't in

308
00:14:40,949 --> 00:14:38,000
development at the time

309
00:14:43,350 --> 00:14:40,959
and they were they had as their

310
00:14:47,189 --> 00:14:43,360
really scientific support the jet

311
00:14:49,350 --> 00:14:47,199
propulsion laboratory managed by the

312
00:14:51,350 --> 00:14:49,360
caltech out on the west coast

313
00:14:53,590 --> 00:14:51,360

near pasadena

314
00:14:55,590 --> 00:14:53,600
dr glennon is successful in his effort

315
00:14:57,350 --> 00:14:55,600
to continue the job of building the new

316
00:14:59,910 --> 00:14:57,360
nasa organization

317
00:15:02,310 --> 00:14:59,920
officials transfer jpl the jet

318
00:15:04,470 --> 00:15:02,320
propulsion laboratory in pasadena to

319
00:15:07,350 --> 00:15:04,480
nasa and the role of the california

320
00:15:10,069 --> 00:15:07,360
institute of technology as jpl manager

321
00:15:11,990 --> 00:15:10,079
continues about a year later officials

322
00:15:14,470 --> 00:15:12,000
transfer a large segment of the army

323
00:15:16,550 --> 00:15:14,480
operation at huntsville to nasa and

324
00:15:17,910 --> 00:15:16,560
workers build it into the marshall space

325
00:15:20,710 --> 00:15:17,920
flight center

326
00:15:23,189 --> 00:15:20,720
only a week after nasa comes to life dr

327
00:15:24,870 --> 00:15:23,199
glennon approves the first u.s manned

328
00:15:30,069 --> 00:15:24,880
space flight program

329
00:15:36,470 --> 00:15:31,990
scientists developed the mercury capsule

330
00:15:40,790 --> 00:15:38,550
workers do wind tunnel tests as small

331
00:15:43,269 --> 00:15:40,800
and large scale models covering speeds

332
00:15:47,750 --> 00:15:43,279
from zero to eighteen thousand miles per

333
00:15:51,829 --> 00:15:49,749
researchers fired small models of the

334
00:16:06,230 --> 00:15:51,839
capsule in the supersonic pre-flight

335
00:16:10,790 --> 00:16:08,470
the gun sends the one-inch model down a

336
00:16:11,990 --> 00:16:10,800
30-foot instrumented range of recording

337
00:16:18,710 --> 00:16:12,000
stations

338
00:16:23,350 --> 00:16:20,790

as a model speeds down the gun range

339
00:16:24,949 --> 00:16:23,360
barrel photographs and shadow graphs are

340
00:16:27,749 --> 00:16:24,959
taken

341
00:16:32,949 --> 00:16:27,759
this shadow graph shows airflow around

342
00:16:38,470 --> 00:16:35,189
workers develop boilerplate versions of

343
00:16:40,710 --> 00:16:38,480
the mercury capsules for tests

344
00:16:44,069 --> 00:16:40,720
this first test is a parachute drop test

345
00:16:45,990 --> 00:16:44,079
from an air force c-130

346
00:16:48,470 --> 00:16:46,000
the capsule slides out of the plane's

347
00:16:56,790 --> 00:16:48,480
cargo door on a sled

348
00:16:56,800 --> 00:17:30,950
a charge ejects a drogue parachute

349
00:17:35,590 --> 00:17:33,350
not only is nasa working on manned space

350
00:17:37,669 --> 00:17:35,600
travel but from early on scientists

351
00:17:39,750 --> 00:17:37,679
launched space science probes

352
00:17:42,390 --> 00:17:39,760
workers launched the pioneer 1 probe

353
00:17:43,909 --> 00:17:42,400
toward the moon about a week after nasa

354
00:17:46,390 --> 00:17:43,919
comes into being

355
00:17:49,190 --> 00:17:46,400
a lunar tv scanner is a board

356
00:17:51,029 --> 00:17:49,200
because of an error in burnout velocity

357
00:17:53,669 --> 00:17:51,039
the probe does not reach the moon but

358
00:17:55,750 --> 00:17:53,679
reaches an altitude of almost 71 000

359
00:17:57,350 --> 00:17:55,760
miles and the craft re-enters the

360
00:18:01,110 --> 00:17:57,360
earth's atmosphere over the south

361
00:18:05,510 --> 00:18:01,120
pacific on october 12 1958

362
00:18:08,070 --> 00:18:06,549
i guess

363
00:18:11,590 --> 00:18:08,080

we

364
00:18:15,430 --> 00:18:11,600
sort of broke our pick on some of those

365
00:18:19,830 --> 00:18:18,870
those were the pioneers as i recall it

366
00:18:22,470 --> 00:18:19,840
and

367
00:18:24,549 --> 00:18:22,480
i recall how how

368
00:18:27,270 --> 00:18:24,559
overjoyed we were

369
00:18:29,110 --> 00:18:27,280
when we could talk to that

370
00:18:31,909 --> 00:18:29,120
little bit of a thing it's about this

371
00:18:36,150 --> 00:18:33,270
so passion

372
00:18:37,990 --> 00:18:36,160
uh 200 000 miles out in space and get

373
00:18:40,870 --> 00:18:38,000
the information back

374
00:18:43,510 --> 00:18:40,880
it never did reach the moon or go into

375
00:18:44,950 --> 00:18:43,520
orbit around the moon it failed and fell

376
00:18:47,510 --> 00:18:44,960
back to earth

377
00:18:49,990 --> 00:18:47,520
but at the same time the soviets could

378
00:18:51,350 --> 00:18:50,000
never talk to their birds more than 10

379
00:18:54,150 --> 00:18:51,360
000 miles up

380
00:18:57,350 --> 00:18:54,160
so we were beginning to get a little

381
00:18:59,830 --> 00:18:57,360
sense that we were doing things right

382
00:19:02,789 --> 00:18:59,840
that we were getting better all the time

383
00:19:04,870 --> 00:19:02,799
and that was indeed the the objective of

384
00:19:07,029 --> 00:19:04,880
nasa in those days

385
00:19:07,990 --> 00:19:07,039
push the state of the art as hard as you

386
00:19:11,350 --> 00:19:08,000
could

387
00:19:13,990 --> 00:19:11,360
but don't waste your muscle

388
00:19:17,029 --> 00:19:14,000

the united states tries 37 satellite

389
00:19:19,270 --> 00:19:17,039
launches by december 1959

390
00:19:22,150 --> 00:19:19,280
less than a third are successful

391
00:19:24,390 --> 00:19:22,160
as a result nasa begins to instill a new

392
00:19:25,510 --> 00:19:24,400
sense of rigid quality control

393
00:19:27,750 --> 00:19:25,520
to check

394
00:19:29,990 --> 00:19:27,760
and check and check again rocket

395
00:19:34,070 --> 00:19:30,000
components wells

396
00:19:36,870 --> 00:19:34,080
valves pumps materials and so on over

397
00:19:38,470 --> 00:19:36,880
time the quality control program works

398
00:19:40,630 --> 00:19:38,480
in other areas of science and

399
00:19:42,950 --> 00:19:40,640
engineering the first domestic jet

400
00:19:46,070 --> 00:19:42,960
airline service begins between new york

401
00:19:49,510 --> 00:19:46,080
and miami on december 10 1958

402
00:19:52,870 --> 00:19:49,520
and in august 1959 plans to explore

403
00:19:56,710 --> 00:19:52,880
antarctica in 1959 and 1960 are

404
00:19:59,190 --> 00:19:56,720
announced in september 1959 severo

405
00:20:01,750 --> 00:19:59,200
ochawa and arthur kornberg received the

406
00:20:03,270 --> 00:20:01,760
nobel prize in medicine for chemical

407
00:20:06,230 --> 00:20:03,280
heredity work

408
00:20:07,990 --> 00:20:06,240
meanwhile the first seven u.s astronauts

409
00:20:11,590 --> 00:20:08,000
are chosen

410
00:20:13,830 --> 00:20:11,600
early in 1959 nasa selects a team of

411
00:20:15,350 --> 00:20:13,840
seven engineer pilots for project

412
00:20:19,510 --> 00:20:15,360
mercury

413
00:20:21,029 --> 00:20:19,520

m scott carpenter l gordon cooper

414
00:20:23,270 --> 00:20:21,039
john glenn

415
00:20:25,750 --> 00:20:23,280
virgil grissom

416
00:20:27,669 --> 00:20:25,760
walter sharrar

417
00:20:29,750 --> 00:20:27,679
alan shepard

418
00:20:32,789 --> 00:20:29,760
and donald slayton

419
00:20:34,870 --> 00:20:32,799
the astronauts prepare for flight

420
00:20:37,029 --> 00:20:34,880
after two hours the astronaut comes out

421
00:20:40,070 --> 00:20:37,039
of a mold used to make a flight couch to

422
00:20:42,470 --> 00:20:40,080
fit his body shape

423
00:20:44,310 --> 00:20:42,480
early on veteran test pilots look down

424
00:20:47,110 --> 00:20:44,320
on the role of the pilot in project

425
00:20:48,630 --> 00:20:47,120
mercury but the mercury pilot plays an

426
00:20:51,029 --> 00:20:48,640
active role

427
00:20:53,830 --> 00:20:51,039
he controls the capsule's attitude and

428
00:20:56,789 --> 00:20:53,840
pitch roll and yaw as well as operating

429
00:20:59,190 --> 00:20:56,799
navigation and communication systems in

430
00:21:00,870 --> 00:20:59,200
all mercury flights the pilot proves to

431
00:21:03,430 --> 00:21:00,880
be essential to the success of the

432
00:21:06,070 --> 00:21:03,440
mission he operates all primary flight

433
00:21:08,870 --> 00:21:06,080
controls and initiates retro rockets to

434
00:21:11,510 --> 00:21:08,880
fire beginning the descent to a landing

435
00:21:13,350 --> 00:21:11,520
whirling in a centrifuge cab astronauts

436
00:21:17,510 --> 00:21:13,360
learn important lessons about how they

437
00:21:20,149 --> 00:21:17,520
react to the g-loads of emergency aborts

438
00:21:23,590 --> 00:21:20,159

meanwhile workers test an escape system

439
00:21:25,430 --> 00:21:23,600
for the early mercury capsule

440
00:21:27,270 --> 00:21:25,440
the pilot must be able to escape from

441
00:21:28,549 --> 00:21:27,280
the mercury launch site in case of an

442
00:21:31,750 --> 00:21:28,559
emergency

443
00:21:34,070 --> 00:21:31,760
in this unmanned test a 16-foot tower

444
00:21:44,710 --> 00:21:34,080
with a solid rocket sends the capsule

445
00:21:53,750 --> 00:21:47,110
during this test a rhesus monkey is

446
00:22:11,029 --> 00:21:56,870
at more than 300 miles per hour pressure

447
00:22:15,029 --> 00:22:13,350
extensive mercury program research and

448
00:22:17,029 --> 00:22:15,039
development continues

449
00:22:19,029 --> 00:22:17,039
workers launch a big joe mercury test

450
00:22:25,990 --> 00:22:19,039
capsule nearly into orbit to test

451
00:22:30,870 --> 00:22:28,230
an atlas booster carries the capsule to

452
00:22:36,070 --> 00:22:30,880
an altitude of 100 miles and nearly to

453
00:22:39,990 --> 00:22:37,909
from the recovery ships the capsule

454
00:22:42,710 --> 00:22:40,000
appears as a flaming fireball as it

455
00:22:45,669 --> 00:22:42,720
streaks back into the atmosphere

456
00:22:47,430 --> 00:22:45,679
patrol aircraft fly to the impact area

457
00:22:49,669 --> 00:22:47,440
and pick up the capsule's recovery

458
00:22:59,430 --> 00:22:49,679
signals

459
00:22:59,440 --> 00:23:03,990
the navy ship strong makes the pickup

460
00:23:10,950 --> 00:23:06,149
the capsule survives its reentry in

461
00:23:15,190 --> 00:23:12,789
other areas of the space program are

462
00:23:18,230 --> 00:23:15,200
successful in 1959

463
00:24:11,669 --> 00:23:18,240

by august 10 of the 17 launches are good

464
00:24:17,830 --> 00:24:14,070
also in august nasa launches an explorer

465
00:24:20,149 --> 00:24:17,840
6 which functions well in all respects

466
00:24:24,390 --> 00:24:20,159
explorer 6 detects a large ring of

467
00:24:26,710 --> 00:24:24,400
electrical current circulating the earth

468
00:24:28,789 --> 00:24:26,720
during this first program of our 13 part

469
00:24:31,269 --> 00:24:28,799
series we've seen how the launch of

470
00:24:33,590 --> 00:24:31,279
sputnik in late 1957

471
00:24:35,350 --> 00:24:33,600
encouraged the birth of nasa in october

472
00:24:37,510 --> 00:24:35,360
1958.

473
00:24:39,269 --> 00:24:37,520
early nasa projects continue through

474
00:24:41,590 --> 00:24:39,279
1959

475
00:24:43,350 --> 00:24:41,600
lessons learned from early difficulties

476
00:25:42,870 --> 00:24:43,360
lead us to ever more successful

477
00:25:42,880 --> 00:26:03,590
me

478
00:26:03,600 --> 00:26:17,269
please clear the launching area

479
00:26:23,590 --> 00:26:19,830
next program we pick up the nasa saga in

480
00:26:29,669 --> 00:26:23,600
1960 when goals are still being set

481
00:26:33,830 --> 00:26:31,830
lights are correct the ready light is on

482
00:27:24,070 --> 00:26:33,840
he checked mercury umbilical

483
00:27:24,080 --> 00:28:00,870
hmm

484
00:28:00,880 --> 00:28:15,190
good

485
00:28:15,200 --> 00:28:30,389
columbia houston your go at 40.

486
00:28:30,399 --> 00:29:21,110
whew

487
00:29:21,120 --> 00:31:04,389
um

488
00:31:09,430 --> 00:31:06,710

hello i'm lynn bondurant your host of

489
00:31:12,549 --> 00:31:09,440
our series 25 years of progress

490
00:31:14,230 --> 00:31:12,559
during this second program we cover 1960

491
00:31:15,830 --> 00:31:14,240
and 1961

492
00:31:18,230 --> 00:31:15,840
national aeronautics and space

493
00:31:20,230 --> 00:31:18,240
administration projects

494
00:31:22,470 --> 00:31:20,240
to set the perspective against other

495
00:31:26,310 --> 00:31:22,480
scientific and medical us history in

496
00:31:29,669 --> 00:31:26,320
1960 the navy submerges a bathyscaf to a

497
00:31:32,230 --> 00:31:29,679
record 24 000 feet in the pacific ocean

498
00:31:34,630 --> 00:31:32,240
and in may the us atomic submarine

499
00:31:36,710 --> 00:31:34,640
triton travels submerged around the

500
00:31:38,789 --> 00:31:36,720
world in 84 days

501
00:31:41,990 --> 00:31:38,799
a nasa highlight is the launch of the

502
00:31:43,830 --> 00:31:42,000
first u.s weather satellite on april 1

503
00:31:45,590 --> 00:31:43,840
1960.

504
00:31:48,549 --> 00:31:45,600
call tyrus 1

505
00:31:49,830 --> 00:31:48,559
it produces almost 23 000 pictures of

506
00:31:52,070 --> 00:31:49,840
earth's weather

507
00:31:54,549 --> 00:31:52,080
this tyros-1 experimental weather

508
00:31:57,110 --> 00:31:54,559
satellite provides dramatic pictures of

509
00:31:59,430 --> 00:31:57,120
cloud formations including spiral

510
00:32:00,789 --> 00:31:59,440
formations associated with large area

511
00:32:04,070 --> 00:32:00,799
storms

512
00:32:06,789 --> 00:32:04,080
tyros-1 works in a useful manner for 78

513
00:32:08,470 --> 00:32:06,799

days it's the world's first successful

514
00:32:17,750 --> 00:32:08,480
weather satellite

515
00:32:28,470 --> 00:32:19,909
save lives and property through storm

516
00:32:33,350 --> 00:32:31,750
meanwhile in the mann program astronauts

517
00:32:35,509 --> 00:32:33,360
continue training for their space

518
00:32:37,669 --> 00:32:35,519
flights in the mercury capsule

519
00:32:39,909 --> 00:32:37,679
astronauts practice with a space flight

520
00:32:41,110 --> 00:32:39,919
simulator at lewis research center in

521
00:32:43,509 --> 00:32:41,120
cleveland

522
00:32:47,830 --> 00:32:43,519
strapped firmly the astronaut spins

523
00:32:50,389 --> 00:32:47,840
around first one and then all three axes

524
00:32:53,590 --> 00:32:50,399
they do exercises in bringing spacecraft

525
00:32:59,110 --> 00:32:56,230
a spacecraft in orbit travels at a speed

526
00:33:01,029 --> 00:32:59,120
which balances very delicately the pull

527
00:33:03,590 --> 00:33:01,039
of earth's gravity

528
00:33:05,509 --> 00:33:03,600
to simulate weightlessness in space a

529
00:33:07,350 --> 00:33:05,519
pilot flies an airplane

530
00:33:09,590 --> 00:33:07,360
the plane descends

531
00:33:12,149 --> 00:33:09,600
begins a steep climb

532
00:33:15,110 --> 00:33:12,159
as the aircraft decelerates it eases

533
00:33:17,430 --> 00:33:15,120
over the top in a parabolic arc

534
00:33:32,789 --> 00:33:17,440
for short periods its occupants are

535
00:33:38,549 --> 00:33:34,950
another first for nasa is the launch of

536
00:33:39,750 --> 00:33:38,559
echo1 the first passive communications

537
00:33:41,669 --> 00:33:39,760
satellite

538
00:33:43,750 --> 00:33:41,679

workers launched it into orbit on august

539
00:33:46,549 --> 00:33:43,760
12 1960.

540
00:33:49,190 --> 00:33:46,559
echo1 is really a big balloon

541
00:33:51,029 --> 00:33:49,200
from it radio signals are bounced

542
00:33:53,430 --> 00:33:51,039
relaying signals between distant

543
00:33:55,590 --> 00:33:53,440
locations on earth

544
00:33:58,230 --> 00:33:55,600
millions on earth see echo as a moving

545
00:34:00,230 --> 00:33:58,240
pinpoint of light in the night sky

546
00:34:03,750 --> 00:34:00,240
t keith glennon nasa's first

547
00:34:06,470 --> 00:34:03,760
administrator recalls echo was a 100

548
00:34:08,389 --> 00:34:06,480
foot in diameter inflatable balloon

549
00:34:11,270 --> 00:34:08,399
which

550
00:34:14,149 --> 00:34:11,280
was encased perhaps in a

551
00:34:15,510 --> 00:34:14,159
an aluminum casing of about

552
00:34:17,909 --> 00:34:15,520
i suppose

553
00:34:19,589 --> 00:34:17,919
30 inches in diameter perhaps

554
00:34:21,909 --> 00:34:19,599
and it was

555
00:34:24,470 --> 00:34:21,919
that case was exploded open when it

556
00:34:27,109 --> 00:34:24,480
reached a particular height

557
00:34:29,270 --> 00:34:27,119
and then the the balloon inflated

558
00:34:30,149 --> 00:34:29,280
and it stayed up there just circling the

559
00:34:32,710 --> 00:34:30,159
earth

560
00:34:35,190 --> 00:34:32,720
as a matter of the uh what we call

561
00:34:36,550 --> 00:34:35,200
injection velocity when it was injected

562
00:34:39,589 --> 00:34:36,560
into orbit

563
00:34:41,990 --> 00:34:39,599

and uh i i can recall going up to homes

564
00:34:44,950 --> 00:34:42,000
in old new jersey where they had a new

565
00:34:47,589 --> 00:34:44,960
type of antenna a horn antenna you can

566
00:34:49,510 --> 00:34:47,599
now see them on a

567
00:34:51,030 --> 00:34:49,520
towers around the country

568
00:34:59,190 --> 00:34:51,040
and

569
00:35:02,150 --> 00:34:59,200
have one on my desk echo is just the

570
00:35:04,310 --> 00:35:02,160
first of many communications satellites

571
00:35:07,109 --> 00:35:04,320
later communications satellites are much

572
00:35:09,750 --> 00:35:07,119
more complicated they are active not

573
00:35:11,829 --> 00:35:09,760
passive carry antennas receivers

574
00:35:13,750 --> 00:35:11,839
transmitters and other equipment

575
00:35:15,510 --> 00:35:13,760
modern satellites receive signals

576
00:35:17,589 --> 00:35:15,520
transmitted up from earth and

577
00:35:19,510 --> 00:35:17,599
re-transmit an amplified signal to

578
00:35:22,630 --> 00:35:19,520
distant locations

579
00:35:24,790 --> 00:35:22,640
news sports entertainment television

580
00:35:26,710 --> 00:35:24,800
telephone facsimile and other

581
00:35:29,750 --> 00:35:26,720
communications are now routinely

582
00:35:32,550 --> 00:35:29,760
transmitted via satellite

583
00:35:35,990 --> 00:35:32,560
began a communications revolution

584
00:35:37,589 --> 00:35:36,000
and 1961 is a year of other scientific

585
00:35:39,750 --> 00:35:37,599
advances as well

586
00:35:41,750 --> 00:35:39,760
the national geographic society

587
00:35:44,550 --> 00:35:41,760
announces that the fossilized skull of

588
00:35:48,150 --> 00:35:44,560

an early humanoid discovered by dr louis

589
00:35:50,630 --> 00:35:48,160
leakey is 1.7 million years old

590
00:35:52,550 --> 00:35:50,640
jack kirby of texas instruments invents

591
00:35:56,390 --> 00:35:52,560
the integrated circuit

592
00:35:58,790 --> 00:35:56,400
on april 12 1961 soviet cosmonaut yuri

593
00:36:00,310 --> 00:35:58,800
gagarin becomes the first human being to

594
00:36:04,230 --> 00:36:00,320
orbit the earth

595
00:36:06,230 --> 00:36:04,240
his vostok 1 spacecraft makes one orbit

596
00:36:08,310 --> 00:36:06,240
gagarin lands safely

597
00:36:10,710 --> 00:36:08,320
again the soviet union accomplishes a

598
00:36:15,670 --> 00:36:10,720
first while the u.s is preparing for a

599
00:36:27,589 --> 00:36:17,589
the mercury ground tracking network

600
00:36:31,990 --> 00:36:29,750
bermuda station continues undergoing

601
00:36:33,750 --> 00:36:32,000
inter-systems checkout bermuda

602
00:36:36,390 --> 00:36:33,760
duplicates the control center on the

603
00:36:44,550 --> 00:36:36,400
mainland workers complete and ready the

604
00:36:47,829 --> 00:36:46,390
other workers complete the final two

605
00:36:49,589 --> 00:36:47,839
stations

606
00:36:53,589 --> 00:36:49,599
cano nigeria

607
00:37:09,510 --> 00:36:55,589
scientists simulate orbital flights for

608
00:37:38,550 --> 00:37:12,950
during 1961 this unmanned test shot is

609
00:37:38,560 --> 00:37:47,910
the launch fails

610
00:37:57,430 --> 00:37:50,230
but the escape system works raising

611
00:38:02,310 --> 00:37:59,750
i think the one thing that strikes me as

612
00:38:04,069 --> 00:38:02,320
i look back on the training program

613
00:38:06,230 --> 00:38:04,079

is that i have really developed a

614
00:38:08,310 --> 00:38:06,240
feeling of confidence

615
00:38:09,589 --> 00:38:08,320
a confidence in the people with whom i

616
00:38:11,829 --> 00:38:09,599
work

617
00:38:13,990 --> 00:38:11,839
a confidence in the systems with which i

618
00:38:15,349 --> 00:38:14,000
am dealing and will have to deal in

619
00:38:19,910 --> 00:38:15,359
flight

620
00:38:25,430 --> 00:38:23,270
in may 1961 astronaut alan shepard

621
00:38:27,829 --> 00:38:25,440
prepares for the first u.s manned space

622
00:38:30,630 --> 00:38:27,839
flight with a mercury capsule the craft

623
00:38:33,109 --> 00:38:30,640
is to rise over 100 miles into space in

624
00:38:34,790 --> 00:38:33,119
this suborbital flight

625
00:38:37,990 --> 00:38:34,800
officials scheduled the launch for the

626
00:38:43,510 --> 00:38:38,000
early morning of may 2 1961.

627
00:38:49,510 --> 00:38:47,349
roger ready to resume the account

628
00:38:51,030 --> 00:38:49,520
on may 5 shepard goes to the launch

629
00:38:53,109 --> 00:38:51,040
complex

630
00:38:59,349 --> 00:38:53,119
it is just two years and seven months

631
00:39:22,950 --> 00:39:01,109
all right three

632
00:39:28,069 --> 00:39:25,910
as countless millions watch and listen

633
00:39:30,150 --> 00:39:28,079
the astronaut manually controls his

634
00:39:32,150 --> 00:39:30,160
craft and has almost continuous

635
00:39:36,230 --> 00:39:32,160
communications with earth i'm a

636
00:39:38,710 --> 00:39:36,240
periscope what a beautiful view

637
00:39:40,790 --> 00:39:38,720
out cover over florida

638
00:39:43,910 --> 00:39:40,800

three to four tenths near the eastern

639
00:39:46,630 --> 00:39:43,920
coast the mercury redstone 3 travels 300

640
00:39:47,990 --> 00:39:46,640
miles and reaches an altitude of 115

641
00:39:49,910 --> 00:39:48,000
miles

642
00:39:53,190 --> 00:39:49,920
shepard enjoys about five minutes of

643
00:39:57,750 --> 00:39:55,030
my condition is still good i'm getting

644
00:40:00,710 --> 00:39:57,760
ready for impact about 16 minutes after

645
00:40:03,109 --> 00:40:00,720
liftoff the spacecraft is found

646
00:40:06,310 --> 00:40:03,119
a helicopter picks up shepard and then

647
00:40:08,150 --> 00:40:06,320
his freedom 7 spacecraft

648
00:40:09,430 --> 00:40:08,160
the mercury suborbital flight is a

649
00:40:11,589 --> 00:40:09,440
success

650
00:40:14,710 --> 00:40:11,599
but the russian gagarin has orbited the

651
00:40:16,950 --> 00:40:14,720
earth and in a heavier spacecraft

652
00:40:18,710 --> 00:40:16,960
president kennedy says quote

653
00:40:20,950 --> 00:40:18,720
we are behind

654
00:40:21,910 --> 00:40:20,960
the news will be worse before it is

655
00:40:24,069 --> 00:40:21,920
better

656
00:40:25,589 --> 00:40:24,079
and it will be some time before we catch

657
00:40:27,349 --> 00:40:25,599
up

658
00:40:29,510 --> 00:40:27,359
president kennedy asked vice president

659
00:40:31,109 --> 00:40:29,520
lyndon johnson to head a study of what

660
00:40:32,870 --> 00:40:31,119
is needed to beat the soviets in the

661
00:40:35,349 --> 00:40:32,880
space race

662
00:40:37,510 --> 00:40:35,359
nasa's 10-year plan calls for a manned

663
00:40:39,030 --> 00:40:37,520

orbital flight around the moon

664
00:40:41,430 --> 00:40:39,040
the question is

665
00:40:43,910 --> 00:40:41,440
can the u.s be the first nation to orbit

666
00:40:46,230 --> 00:40:43,920
a man around the moon

667
00:40:48,710 --> 00:40:46,240
the technical answer is maybe not

668
00:40:51,430 --> 00:40:48,720
so the proposal is made that the goal be

669
00:40:54,310 --> 00:40:51,440
extended to the surface of the moon

670
00:40:56,309 --> 00:40:54,320
on may 25 1961

671
00:40:58,870 --> 00:40:56,319
president kennedy speaks before a joint

672
00:41:03,270 --> 00:40:58,880
station of congress to define a new

673
00:41:09,670 --> 00:41:06,470
now it is time to take longer strides

674
00:41:12,550 --> 00:41:09,680
time for a great new american enterprise

675
00:41:13,829 --> 00:41:12,560
time for this nation to take a clearly

676
00:41:15,510 --> 00:41:13,839
leading role

677
00:41:17,349 --> 00:41:15,520
in space achievement

678
00:41:26,069 --> 00:41:17,359
which in many ways

679
00:41:28,950 --> 00:41:27,990
i believe that this nation should commit

680
00:41:30,870 --> 00:41:28,960
itself

681
00:41:32,950 --> 00:41:30,880
to achieving the goal

682
00:41:34,630 --> 00:41:32,960
before this decade is out

683
00:41:37,670 --> 00:41:34,640
of landing a man on the moon and

684
00:41:40,550 --> 00:41:37,680
returning him safely to the earth

685
00:41:43,109 --> 00:41:40,560
no single space project in this period

686
00:41:44,950 --> 00:41:43,119
will be more impressive to mankind or

687
00:41:46,790 --> 00:41:44,960
more important for the long range

688
00:41:48,470 --> 00:41:46,800

exploration of space

689
00:41:51,670 --> 00:41:48,480
as one author writes

690
00:41:53,589 --> 00:41:51,680
nasa is exhilarated but odd

691
00:41:55,190 --> 00:41:53,599
to land a man on the moon and return him

692
00:41:56,870 --> 00:41:55,200
to earth is perhaps the hardest

693
00:41:57,990 --> 00:41:56,880
technical project in the nation's

694
00:41:59,829 --> 00:41:58,000
history

695
00:42:02,790 --> 00:41:59,839
the mercury project to orbit a manned

696
00:42:05,030 --> 00:42:02,800
spacecraft around the earth is by itself

697
00:42:07,430 --> 00:42:05,040
a demanding program but facing the

698
00:42:09,510 --> 00:42:07,440
challenge nasa begins to work towards

699
00:42:11,910 --> 00:42:09,520
the assigned national goal

700
00:42:14,710 --> 00:42:11,920
nasa decides that a two-man earth

701
00:42:16,710 --> 00:42:14,720
orbital spacecraft called gemini must be

702
00:42:19,190 --> 00:42:16,720
developed as a step between the one-man

703
00:42:21,349 --> 00:42:19,200
mercury capsule and the apollo craft

704
00:42:23,910 --> 00:42:21,359
which is destined to fly men to the moon

705
00:42:26,230 --> 00:42:23,920
and back project germany is to learn of

706
00:42:27,750 --> 00:42:26,240
man's capabilities during longer periods

707
00:42:30,550 --> 00:42:27,760
of weightlessness

708
00:42:32,870 --> 00:42:30,560
and germany is to help train astronauts

709
00:42:35,349 --> 00:42:32,880
to maneuver and rendezvous spacecraft

710
00:42:37,190 --> 00:42:35,359
during flight the two-man spacecraft

711
00:42:39,270 --> 00:42:37,200
continues under design

712
00:42:42,150 --> 00:42:39,280
acquisition of the titan ii rocket for

713
00:42:44,069 --> 00:42:42,160

gemini from the air force begins

714
00:42:47,030 --> 00:42:44,079
gemini is the intermediate project

715
00:42:53,510 --> 00:42:47,040
between earth orbital and manned lunar

716
00:42:58,790 --> 00:42:56,870
by october 1961 nasa is already

717
00:43:01,109 --> 00:42:58,800
receiving proposals for a three-man

718
00:43:03,910 --> 00:43:01,119
spacecraft for moon missions

719
00:43:06,150 --> 00:43:03,920
officials evaluate proposals engineers

720
00:43:08,309 --> 00:43:06,160
and scientists of project apollo meet

721
00:43:10,550 --> 00:43:08,319
with industry people to discuss design

722
00:43:12,950 --> 00:43:10,560
and building of the apollo craft

723
00:43:15,510 --> 00:43:12,960
companies present their models

724
00:43:17,750 --> 00:43:15,520
on november 29th officials select the

725
00:43:20,150 --> 00:43:17,760
north american aviation corporation of

726
00:43:23,030 --> 00:43:20,160
downey california to be the prime

727
00:43:26,230 --> 00:43:23,040
contractor to produce apollo spacecraft

728
00:43:29,030 --> 00:43:26,240
during 1961 nasa puts four successful

729
00:43:31,109 --> 00:43:29,040
unmanned scientific satellites in orbit

730
00:43:32,390 --> 00:43:31,119
other nasa satellites are only partly

731
00:43:34,309 --> 00:43:32,400
successful

732
00:43:37,109 --> 00:43:34,319
there are two good orbital tests of the

733
00:43:39,829 --> 00:43:37,119
mercury capsule without a man on board

734
00:43:41,589 --> 00:43:39,839
one of the flights carries a chimpanzee

735
00:43:44,870 --> 00:43:41,599
and there are two manned suborbital

736
00:43:49,109 --> 00:43:44,880
missions including shepard's flight

737
00:43:51,510 --> 00:43:49,119
workers launch explorer 10 march 25 1961

738
00:43:54,230 --> 00:43:51,520

the 79 pound satellite gathers facts

739
00:43:56,870 --> 00:43:54,240
about solar wind earth's magnetic field

740
00:44:00,390 --> 00:43:56,880
and its reaction to solar flares

741
00:44:03,349 --> 00:44:00,400
in april 1961 nasa launches the 82 pound

742
00:44:05,510 --> 00:44:03,359
explorer 11 it detects gamma rays from

743
00:44:06,710 --> 00:44:05,520
cosmic sources and maps their locations

744
00:44:08,550 --> 00:44:06,720
in the sky

745
00:44:10,870 --> 00:44:08,560
this is the first try of that kind of

746
00:44:12,630 --> 00:44:10,880
satellite space astronomy

747
00:44:14,870 --> 00:44:12,640
scientists and engineers put another

748
00:44:15,670 --> 00:44:14,880
successful tyros weather satellite in

749
00:44:18,710 --> 00:44:15,680
orbit

750
00:44:20,710 --> 00:44:18,720
and in august 1961 nasa launches the

751
00:44:22,630 --> 00:44:20,720
explorer 12 satellite into a highly

752
00:44:25,270 --> 00:44:22,640
elliptical earth orbit

753
00:44:27,990 --> 00:44:25,280
explorer 12 investigates solar wind

754
00:44:30,550 --> 00:44:28,000
interplanetary magnetic fields energetic

755
00:44:32,630 --> 00:44:30,560
particles and the van allen belt the

756
00:44:34,870 --> 00:44:32,640
second manned suborbital u.s space

757
00:44:36,390 --> 00:44:34,880
flight with astronaut virgil grissom

758
00:44:38,470 --> 00:44:36,400
aboard is a success

759
00:44:51,109 --> 00:44:38,480
but the spacecraft is to sink in the

760
00:44:56,630 --> 00:44:54,710
grissom experiences one and a half g's

761
00:44:58,950 --> 00:44:56,640
the flight surgeon closely watches the

762
00:45:01,430 --> 00:44:58,960
test pilot's condition during flight

763
00:45:03,430 --> 00:45:01,440

grissom's vital signs are okay

764
00:45:05,589 --> 00:45:03,440
at engine cut off the spacecraft makes

765
00:45:11,990 --> 00:45:05,599
its turn around and the astronaut is

766
00:45:16,309 --> 00:45:13,990
the retrieval helicopters are within two

767
00:45:18,630 --> 00:45:16,319
miles of the landing point grissom says

768
00:45:21,109 --> 00:45:18,640
he's ready for pickup as the lead

769
00:45:23,510 --> 00:45:21,119
helicopter moves in to hook the capsule

770
00:45:26,309 --> 00:45:23,520
the side hatch is blown off grissom

771
00:45:28,309 --> 00:45:26,319
leaves the rapidly filling spacecraft

772
00:45:30,710 --> 00:45:28,319
the recovery helicopter struggles with

773
00:45:32,630 --> 00:45:30,720
the almost submerged craft

774
00:45:34,950 --> 00:45:32,640
the helicopter is over taxed by a

775
00:45:36,710 --> 00:45:34,960
thousand pounds a second recovery

776
00:45:39,190 --> 00:45:36,720
helicopter moves in to pick up the

777
00:45:40,710 --> 00:45:39,200
astronaut grissom has trouble staying

778
00:45:42,790 --> 00:45:40,720
afloat

779
00:45:46,150 --> 00:45:42,800
after four anxious minutes grissom

780
00:45:48,230 --> 00:45:46,160
struggles into the horse collar

781
00:46:05,030 --> 00:45:48,240
the lead helicopter's motor apparently

782
00:46:09,990 --> 00:46:07,349
project mercury continues in high gear

783
00:46:12,870 --> 00:46:10,000
pointing toward a manned orbital mission

784
00:46:14,550 --> 00:46:12,880
on september 13 nasa puts an unmanned

785
00:46:16,630 --> 00:46:14,560
mercury into orbit

786
00:46:17,670 --> 00:46:16,640
one test objective is met early in

787
00:46:19,829 --> 00:46:17,680
flight

788
00:46:22,870 --> 00:46:19,839

the atlas releases the spacecraft into

789
00:46:27,750 --> 00:46:25,510
one hour and 49 minutes after launch the

790
00:46:33,510 --> 00:46:27,760
spacecraft lands 200 miles east of

791
00:46:38,390 --> 00:46:35,510
enis the chimpanzee makes a mercury

792
00:46:40,630 --> 00:46:38,400
flight in november 1961.

793
00:46:42,710 --> 00:46:40,640
the chimpanzee arrives at cape canaveral

794
00:46:45,030 --> 00:46:42,720
from holloman air force base

795
00:46:47,430 --> 00:46:45,040
workers put the chimp in a special couch

796
00:46:50,710 --> 00:46:47,440
with testers in a pallet and water

797
00:46:55,829 --> 00:46:53,510
he is 39 pounds

798
00:46:57,270 --> 00:46:55,839
during pre-launch testing enos is

799
00:46:59,990 --> 00:46:57,280
connected to the spacecraft's

800
00:47:02,230 --> 00:47:00,000
environmental system

801
00:47:18,470 --> 00:47:02,240
fitted with numerous biosensors the

802
00:48:08,790 --> 00:47:20,950
later nasa launches mercury with enos

803
00:48:14,230 --> 00:48:10,550
about an hour into the flight the

804
00:48:16,630 --> 00:48:14,240
spacecraft passes over mushay australia

805
00:48:18,870 --> 00:48:16,640
then five minutes later the wumera

806
00:48:23,270 --> 00:48:18,880
australia tracking station confirms that

807
00:48:28,549 --> 00:48:26,150
a 16 millimeter camera gives a periscope

808
00:48:30,950 --> 00:48:28,559
eye view of the cloud formations and the

809
00:48:35,270 --> 00:48:30,960
island dotted pacific on a condensed

810
00:48:39,430 --> 00:48:37,510
going into the second orbit tracking

811
00:48:43,910 --> 00:48:39,440
stations report steadily rising

812
00:48:48,309 --> 00:48:45,510
midway through the first leg of the

813
00:48:50,470 --> 00:48:48,319

second orbit cano nigeria reports the

814
00:48:53,270 --> 00:48:50,480
spacecraft is reporting intermittent

815
00:48:55,510 --> 00:48:53,280
roll and ignore signals

816
00:49:05,670 --> 00:48:55,520
a slight rise in the chimps temperature

817
00:49:09,750 --> 00:49:07,430
officials decide not to fly the

818
00:49:18,230 --> 00:49:09,760
spacecraft into a third orbit and they

819
00:49:31,910 --> 00:49:20,470
the descent landing and recovery are all

820
00:49:36,470 --> 00:49:33,750
that afternoon at a press conference

821
00:49:37,990 --> 00:49:36,480
held at cape canaveral nasa officials

822
00:49:39,109 --> 00:49:38,000
say that they are pleased with the

823
00:49:41,430 --> 00:49:39,119
flight

824
00:49:43,349 --> 00:49:41,440
astronaut john glenn is test pilot for

825
00:49:44,950 --> 00:49:43,359
the upcoming first manned orbital

826
00:49:49,630 --> 00:49:44,960
mercury mission

827
00:49:55,750 --> 00:49:53,270
1961 is coming to a close and enos the

828
00:50:12,470 --> 00:49:55,760
space-faring champ returns triumphantly

829
00:50:49,589 --> 00:50:14,549
meanwhile the mercury capsule undergoes

830
00:51:02,790 --> 00:50:51,430
there are two water landing tests in

831
00:51:08,549 --> 00:51:06,470
and so 1961 ends and in that year nasa

832
00:51:11,190 --> 00:51:08,559
begins to work on the big job of sending

833
00:51:14,150 --> 00:51:11,200
men to the moon and back

834
00:51:16,069 --> 00:51:14,160
roger zero g and i feel fine capsule is

835
00:51:18,309 --> 00:51:16,079
turning during our next episode we see

836
00:51:21,750 --> 00:51:18,319
film of john glenn making the first u.s

837
00:51:23,589 --> 00:51:21,760
space flight around the world in

838
00:51:26,630 --> 00:51:23,599

and 1962 continue the saga of nasa

839
00:52:48,710 --> 00:51:26,640
during 25 years of progress

840
00:52:48,720 --> 00:53:15,910
oh

841
00:56:52,470 --> 00:56:19,510
so

842
00:56:52,480 --> 00:57:02,150
um

843
00:57:02,160 --> 00:57:30,309
so

844
00:57:30,319 --> 00:57:43,510
roger clubby on the roll