1
00:00:22,880 --> 00:00:19,640
NASA the National Aeronautics and Space

2
00:00:30,410 --> 00:00:22,890
Administration presents Aeronautics and

3
00:00:32,840 --> 00:00:30,420
Space Report 1967 marked the end of the

4
00:00:35,060 --> 00:00:32,850
first decade since Sputnik it was an

5
00:00:37,040 --> 00:00:35,070
eventful year in space a year when this

6
00:00:40,490 --> 00:00:37,050
country's biggest rocket was flown for

7
00:00:43,069 --> 00:00:40,500
the first time a year when the moon was

8
00:00:44,779 --> 00:00:43,079
mapped in its entirety and a year when

9
00:00:46,639 --> 00:00:44,789
remarkable color pictures of the earth

10
00:00:54,020 --> 00:00:46,649
were received from a globe orbiting

11
00:00:56,060 --> 00:00:54,030
satellite these are the highlights there

12
00:00:57,650 --> 00:00:56,070
were three successful surveyors this

13
00:00:59,420 --> 00:00:57,660

year helping prepare the way for

14
00:01:02,000 --> 00:00:59,430
Americans who would land on the moon

15
00:01:03,920 --> 00:01:02,010
these three legged crafts hurled two

16
00:01:07,179 --> 00:01:03,930
hundred thirty-five thousand miles from

17
00:01:10,520 --> 00:01:07,189
Earth and sat down gently on the moon

18
00:01:13,280 --> 00:01:10,530
their job photographed large areas of

19
00:01:16,940 --> 00:01:13,290
the lunar surface this the surveyors did

20
00:01:19,550 --> 00:01:16,950
and more upon a signal from Earth an

21
00:01:21,980 --> 00:01:19,560
Arman surveyor three with a small shovel

22
00:01:24,950 --> 00:01:21,990
attached extended out to this unknown

23
00:01:26,719 --> 00:01:24,960
soil retrieved a scoop full and placed

24
00:01:29,569 --> 00:01:26,729
it on one of the spacecraft's landing

25
00:01:32,480 --> 00:01:29,579
pads surveyors camera then took a look

26
00:01:34,789 --> 00:01:32,490
at the moon material in color other

27
00:01:38,990 --> 00:01:34,799
instrumentation has chemically sampled

28
00:01:39,560 --> 00:01:39,000
the soil but the surveyors were not

29
00:01:42,050 --> 00:01:39,570
alone

30
00:01:44,300 --> 00:01:42,060
three picture-taking lunar orbiters gave

31
00:01:46,819 --> 00:01:44,310
scientists a different perspective as

32
00:01:49,160 --> 00:01:46,829
they circled above the moon again

33
00:01:51,649 --> 00:01:49,170
pictures pictures from a distance and

34
00:01:54,380 --> 00:01:51,659
pictures close up pictures revealing the

35
00:01:56,569 --> 00:01:54,390
lunar surface in remarkable detail the

36
00:01:59,450 --> 00:01:56,579
kind of detail needed before men land

37
00:02:01,940 --> 00:01:59,460
they're explaining what we've learned

38
00:02:03,620 --> 00:02:01,950

from the two spacecraft NASA's Assistant

39
00:02:06,889 --> 00:02:03,630
Director for lunar flight programs

40
00:02:09,020 --> 00:02:06,899
captain Lee sure there are three major

41
00:02:11,390 --> 00:02:09,030
accomplishments of the severe and lunar

42
00:02:13,850 --> 00:02:11,400
orbiter programs they have demonstrated

43
00:02:15,710 --> 00:02:13,860
that we have the technical competence to

44
00:02:18,770 --> 00:02:15,720
do a significant exploration of the

45
00:02:20,780 --> 00:02:18,780
planets with automated spacecraft they

46
00:02:23,000 --> 00:02:20,790
have shown us that the moon is a complex

47
00:02:26,510 --> 00:02:23,010
and scientifically interesting place for

48
00:02:29,260 --> 00:02:26,520
further exploration by man and they have

49
00:02:31,820 --> 00:02:29,270
paved the way for that first man landing

50
00:02:35,030 --> 00:02:31,830
this will be accomplished along the

51
00:02:36,890 --> 00:02:35,040
equatorial belt of the moon in this zone

52
00:02:39,949 --> 00:02:36,900
the eight smoothest sites have been

53
00:02:43,730 --> 00:02:39,959
selected from orbiter photography in the

54
00:02:45,680 --> 00:02:43,740
four of these surveyors have landed the

55
00:02:47,930 --> 00:02:45,690
next step is that historic moment

56
00:02:52,340 --> 00:02:47,940
when man first sets foot on the lunar

57
00:02:54,530 --> 00:02:52,350
surface it will be a launch vehicle like

58
00:02:56,750 --> 00:02:54,540
this Saturn 5 that will one day boost

59
00:02:58,880 --> 00:02:56,760
astronauts toward the moon in this

60
00:03:03,160 --> 00:02:58,890
important first flight test on November

61
00:03:12,199 --> 00:03:05,420
separations occurred as programmed

62
00:03:16,979 --> 00:03:14,819
shown here in animation the

63
00:03:19,619 --> 00:03:16,989

all-important re-entry to duplicate a

64
00:03:22,679 --> 00:03:19,629
return trip from the moon if two

65
00:03:24,210 --> 00:03:22,689
exceeded its requirements the spacecraft

66
00:03:26,940 --> 00:03:24,220
skipped in and out of the Earth's

67
00:03:30,059 --> 00:03:26,950
atmosphere to slow it down blazing in at

68
00:03:34,440 --> 00:03:30,069
nearly 25,000 miles per hour simulating

69
00:03:36,720 --> 00:03:34,450
a lunar return finally a landing in the

70
00:03:39,330 --> 00:03:36,730
Pacific within sight of recovery ships a

71
00:03:42,330 --> 00:03:39,340
textbook flight from liftoff to

72
00:03:48,920 --> 00:03:42,340
splashdown Saturn five and its million

73
00:03:53,759 --> 00:03:51,599
1967 was a year when three astronauts

74
00:03:55,490 --> 00:03:53,769
were lost during a ground test of the

75
00:03:58,170 --> 00:03:55,500
Apollo command module

76
00:04:00,569 --> 00:03:58,180
since then the spacecraft has been

77
00:04:03,149 --> 00:04:00,579
redesigned a quick opening hatch for

78
00:04:05,910 --> 00:04:03,159
emergency exits special covers and

79
00:04:08,190 --> 00:04:05,920
guards for panels fireproof containers

80
00:04:12,149 --> 00:04:08,200
for potentially flammable materials and

81
00:04:14,699 --> 00:04:12,159
new electrical circuit designs the new

82
00:04:16,310 --> 00:04:14,709
Apollo spacecraft is ready and so are

83
00:04:24,240 --> 00:04:16,320
the men who will make the first flight

84
00:04:29,800 --> 00:04:26,890
1967 was an especially busy year for

85
00:04:31,450 --> 00:04:29,810
other unmanned space explorers bio

86
00:04:33,640 --> 00:04:31,460
satellite carried out the first

87
00:04:37,090 --> 00:04:33,650
biological research in space under

88
00:04:39,040 --> 00:04:37,100

controlled conditions 13 experiments

89
00:04:41,140 --> 00:04:39,050
were chosen to study how various life

90
00:04:43,300 --> 00:04:41,150
processes are affected by the space

91
00:04:46,030 --> 00:04:43,310
environment these earthly space

92
00:04:50,680 --> 00:04:46,040
travelers included frog eggs wheat

93
00:04:52,330 --> 00:04:50,690
seedlings wasps and flour beetles the

94
00:04:54,100 --> 00:04:52,340
main objectives of the mission were to

95
00:04:58,180 --> 00:04:54,110
study the effects of weightlessness and

96
00:05:00,250 --> 00:04:58,190
radiation upon living organisms after

97
00:05:01,390 --> 00:05:00,260
two days in space the bio satellite

98
00:05:04,060 --> 00:05:01,400
capsule re-entered the Earth's

99
00:05:07,000 --> 00:05:04,070
atmosphere was snatched in midair by

100
00:05:10,060 --> 00:05:07,010
plane and rushed to Hawaii to waiting

101
00:05:12,130 --> 00:05:10,070
scientists it was learned from the

102
00:05:14,230 --> 00:05:12,140
flight that several types of plants are

103
00:05:16,870 --> 00:05:14,240
dependent upon a continuous gravity

104
00:05:19,000 --> 00:05:16,880
field however most of the data from the

105
00:05:23,890 --> 00:05:19,010
various experiments including those for

106
00:05:25,900 --> 00:05:23,900
radiation are still being studied three

107
00:05:29,080 --> 00:05:25,910
Observatory type spacecraft were

108
00:05:31,600 --> 00:05:29,090
launched during the year this is a go

109
00:05:33,310 --> 00:05:31,610
orbiting geophysical Observatory in

110
00:05:35,260 --> 00:05:33,320
addition to giving scientists a better

111
00:05:38,260 --> 00:05:35,270
understanding of interplanetary and

112
00:05:40,690 --> 00:05:38,270
galactic space logos many experiment

113
00:05:41,800 --> 00:05:40,700

hours of data may eventually unlock some

114
00:05:46,630 --> 00:05:41,810
of the mysteries of the Earth's

115
00:05:48,880 --> 00:05:46,640
environment - spacecraft in the orbiting

116
00:05:50,770 --> 00:05:48,890
solar observatory series are studying

117
00:05:53,230 --> 00:05:50,780
the Sun and its influence on the earth

118
00:05:55,480 --> 00:05:53,240
the Sun is the nearest star to our

119
00:05:58,690 --> 00:05:55,490
planet and the only one we can study in

120
00:06:01,480 --> 00:05:58,700
detail here's an ultraviolet view as

121
00:06:03,760 --> 00:06:01,490
never before seen it indicates solar

122
00:06:07,270 --> 00:06:03,770
heat in excess of a million and a half

123
00:06:09,670 --> 00:06:07,280
degrees orbiting solar observatories

124
00:06:12,130 --> 00:06:09,680
will also serve as watchdogs for future

125
00:06:14,080 --> 00:06:12,140
space travelers enabling those on the

126
00:06:16,480 --> 00:06:14,090
ground to advise astronauts of solar

127
00:06:18,490 --> 00:06:16,490
activity warning them when they should

128
00:06:22,900 --> 00:06:18,500
come in out of possibly hazardous solar

129
00:06:25,719 --> 00:06:22,910
storms complimenting the observatory

130
00:06:29,529 --> 00:06:25,729
satellites - interplanetary monitoring

131
00:06:31,420 --> 00:06:29,539
probes explorers 34 and 35 they too are

132
00:06:34,400 --> 00:06:31,430
part of a solar flare production

133
00:06:36,720 --> 00:06:34,410
capability to aid the lunar landing

134
00:06:38,400 --> 00:06:36,730
they are also reporting on the

135
00:06:43,680 --> 00:06:38,410
magnetosphere which protects the earth

136
00:06:45,720 --> 00:06:43,690
from radiation the reliable Atlas Aegina

137
00:06:47,460 --> 00:06:45,730
launch vehicle was used this year to

138
00:06:50,130 --> 00:06:47,470

launch the second and third in a series

139
00:06:53,100 --> 00:06:50,140
of five applications technology

140
00:06:55,260 --> 00:06:53,110
satellites the spider shaped spacecraft

141
00:06:57,330 --> 00:06:55,270
are being used to test out experimental

142
00:07:00,810 --> 00:06:57,340
systems for improving weather forecasts

143
00:07:03,810 --> 00:07:00,820
radio television and communications of

144
00:07:06,030 --> 00:07:03,820
all kinds up till now

145
00:07:08,130 --> 00:07:06,040
airplanes flying over mid-ocean have

146
00:07:11,400 --> 00:07:08,140
been out of radio range for periods of

147
00:07:29,870 --> 00:07:11,410
an hour or more with ats technology

148
00:07:35,490 --> 00:07:32,850
this conversation between a Pan Am jet

149
00:07:37,440 --> 00:07:35,500
pilot and mainland United States took

150
00:07:41,250 --> 00:07:37,450
place when the plane was half way from

151
00:07:42,960 --> 00:07:41,260
New York to London the communication

152
00:07:46,520 --> 00:07:42,970
travelled from the ground to the

153
00:07:50,670 --> 00:07:46,530
satellite and finally to the airplane

154
00:07:53,780 --> 00:07:50,680
ATS can also relay color TV and multiple

155
00:07:56,250 --> 00:07:53,790
telephone calls from around the globe

156
00:07:57,990 --> 00:07:56,260
color pictures of the earth show the

157
00:08:00,750 --> 00:07:58,000
changing cloud pattern over the world

158
00:08:05,580 --> 00:08:00,760
for an entire day giving weather men a

159
00:08:07,740 --> 00:08:05,590
view in color of developing storms while

160
00:08:09,870 --> 00:08:07,750
the 80s were checking out possible

161
00:08:12,110 --> 00:08:09,880
advanced application systems NASA

162
00:08:14,520 --> 00:08:12,120
launched six more operational satellites

163
00:08:16,950 --> 00:08:14,530

three SS satellites for the weather

164
00:08:18,240 --> 00:08:16,960
bureau and three intercept spacecraft

165
00:08:21,230 --> 00:08:18,250
for the communication satellite

166
00:08:27,260 --> 00:08:25,430
On June 14th a 540 pound spacecraft

167
00:08:28,270 --> 00:08:27,270
called Mariner was launched toward the

168
00:08:30,499 --> 00:08:28,280
planet Venus

169
00:08:32,899 --> 00:08:30,509
after travelling through space for

170
00:08:36,529 --> 00:08:32,909
nearly 3 and 1/2 months and covering a

171
00:08:39,860 --> 00:08:36,539
distance of 219 million miles Mariner 5

172
00:08:42,139 --> 00:08:39,870
flew by Venus the highly successful

173
00:08:45,019 --> 00:08:42,149
Mariner transmitted data about the

174
00:08:47,329 --> 00:08:45,029
Venusian atmosphere ionosphere magnetic

175
00:08:50,990 --> 00:08:47,339
fields and the energy levels of cosmic

176
00:08:52,940 --> 00:08:51,000
rays in Pasadena the director of the Jet

177
00:08:55,630 --> 00:08:52,950
Propulsion Laboratory talked about the

178
00:08:58,579 --> 00:08:55,640
results here's dr. William H Pickering

179
00:09:01,400 --> 00:08:58,589
on October 19th for this year

180
00:09:03,680 --> 00:09:01,410
905 flew past the planet Venus at a

181
00:09:06,350 --> 00:09:03,690
distance of about 2500 miles above the

182
00:09:09,320 --> 00:09:06,360
surface this was the second successful

183
00:09:12,620 --> 00:09:09,330
Mariner mission to the planet the past

184
00:09:17,060 --> 00:09:12,630
of the Mariner is shown by this model

185
00:09:19,340 --> 00:09:17,070
and between these two points of the path

186
00:09:21,620 --> 00:09:19,350
around the planet Mariner was out of

187
00:09:23,240 --> 00:09:21,630
sight of the earth this was done

188
00:09:25,699 --> 00:09:23,250

deliberately so that we could observe

189
00:09:27,590 --> 00:09:25,709
the effect of radio signals passing

190
00:09:31,850 --> 00:09:27,600
through the atmosphere of the planet

191
00:09:34,730 --> 00:09:31,860
Venus by observing the effect of the

192
00:09:37,100 --> 00:09:34,740
atmosphere on the radio pigments we were

193
00:09:39,350 --> 00:09:37,110
able to learn a great deal about the

194
00:09:41,630 --> 00:09:39,360
atmosphere of a planet to show for

195
00:09:44,150 --> 00:09:41,640
example that it is exceedingly dense at

196
00:09:48,319 --> 00:09:44,160
the surface that it is mostly carbon

197
00:09:50,569 --> 00:09:48,329
dioxide san marco' is the name of a

198
00:09:52,790 --> 00:09:50,579
cooperative effort between NASA and the

199
00:09:55,340 --> 00:09:52,800
Italian commission for Space Research a

200
00:09:57,230 --> 00:09:55,350
launch pad anchored off the coast of

201
00:10:00,170 --> 00:09:57,240
Kenya Africa was the site of the

202
00:10:02,240 --> 00:10:00,180
scientific launching the successful San

203
00:10:04,490 --> 00:10:02,250
Marco reported on the makeup of the

204
00:10:06,199 --> 00:10:04,500
Earth's atmosphere and investigated the

205
00:10:11,240 --> 00:10:06,209
causes of interference with long-range

206
00:10:13,160 --> 00:10:11,250
radio transmissions more than 360

207
00:10:14,540 --> 00:10:13,170
sounding rockets were used to probe the

208
00:10:17,090 --> 00:10:14,550
regions of the lower and middle

209
00:10:19,900 --> 00:10:17,100
atmospheres many of these experiments

210
00:10:22,250 --> 00:10:19,910
were in cooperation with other nations

211
00:10:24,290 --> 00:10:22,260
interested scientists from all over the

212
00:10:26,449 --> 00:10:24,300
world bring their experiments to NASA's

213
00:10:29,290 --> 00:10:26,459

Wallops Island Virginia sounding rocket

214
00:10:32,230 --> 00:10:29,300
station for launching

215
00:10:35,400 --> 00:10:32,240
NASA continued broadly applicable basic

216
00:10:38,050 --> 00:10:35,410
research in aeronautics during 1967

217
00:10:40,690 --> 00:10:38,060
supersonic aircraft technology was of

218
00:10:42,660 --> 00:10:40,700
particular interest this effort included

219
00:10:46,630 --> 00:10:42,670
the operation of test planes like this

220
00:10:48,699 --> 00:10:46,640
xb-70 the xb-70 is being used to study

221
00:10:52,420 --> 00:10:48,709
the flight dynamics associated with

222
00:10:55,030 --> 00:10:52,430
supersonic speeds the huge bird-like

223
00:10:56,079 --> 00:10:55,040
plane duplicates the size and speed of

224
00:10:58,210 --> 00:10:56,089
the SST

225
00:11:00,699 --> 00:10:58,220
although primary interest has been on

226
00:11:03,790 --> 00:11:00,709
materials propulsion and flight dynamics

227
00:11:05,860 --> 00:11:03,800
work in such areas as fuels radiation

228
00:11:09,460 --> 00:11:05,870
factors and sonic boom is also

229
00:11:11,710 --> 00:11:09,470
continuing one thing the xb-70 cannot

230
00:11:14,199 --> 00:11:11,720
simulate is the variable-sweep feature

231
00:11:16,630 --> 00:11:14,209
of the SST which allows the plane's

232
00:11:19,090 --> 00:11:16,640
wings to fold close to the fuselage for

233
00:11:22,720 --> 00:11:19,100
supersonic travel and then swing back to

234
00:11:25,810 --> 00:11:22,730
normal position for landing the f-111

235
00:11:28,300 --> 00:11:25,820
can however and NASA is using this plane

236
00:11:29,620 --> 00:11:28,310
to provide much of the experience needed

237
00:11:32,079 --> 00:11:29,630
to study the variable-sweep

238
00:11:36,040 --> 00:11:32,089

characteristics of supersonic transports

239
00:11:38,680 --> 00:11:36,050
to study speeds in excess of 3500 miles

240
00:11:41,710 --> 00:11:38,690
per hour the hypersonic x-15 rocket

241
00:11:44,500 --> 00:11:41,720
airplane is used the usual jet black

242
00:11:46,269 --> 00:11:44,510
x-15 took on a new appearance this year

243
00:11:48,160 --> 00:11:46,279
as it was painted with a special

244
00:11:51,730 --> 00:11:48,170
ablative coating to withstand the

245
00:11:52,240 --> 00:11:51,740
searing heat beyond Mach 7 on October

246
00:11:53,889 --> 00:11:52,250
3rd

247
00:11:55,840 --> 00:11:53,899
Major William Knight set a new speed

248
00:12:01,150 --> 00:11:55,850
record with the newly painted rocket

249
00:12:03,790 --> 00:12:01,160
plane 4,500 34 miles per hour as usual

250
00:12:06,550 --> 00:12:03,800
the x-15 is carried aloft by a giant

251
00:12:08,860 --> 00:12:06,560
b-52 when the desired altitude is

252
00:12:13,300 --> 00:12:08,870
reached the x-15 drops away and

253
00:12:18,170 --> 00:12:16,160
major night and all the test pilots at

254
00:12:20,600 --> 00:12:18,180
the Flight Research Center mourn the

255
00:12:23,330 --> 00:12:20,610
recent death of major Michael J Adams in

256
00:12:25,400 --> 00:12:23,340
a fatal crash of one of the x-15 the

257
00:12:30,950 --> 00:12:25,410
first fatality since the program began

258
00:12:32,960 --> 00:12:30,960
in 1959 a so-called HL 10 lifting body

259
00:12:35,210 --> 00:12:32,970
was successfully tested this year at the

260
00:12:37,190 --> 00:12:35,220
Flight Research Center lifting body

261
00:12:39,680 --> 00:12:37,200
craft are being studied there's one

262
00:12:41,930 --> 00:12:39,690
possible means of flying future

263
00:12:44,300 --> 00:12:41,940

spacecraft back to earth after a mission

264
00:12:47,000 --> 00:12:44,310
rather than parachuting into the ocean

265
00:12:49,310 --> 00:12:47,010
their stubby design will allow an

266
00:12:51,260 --> 00:12:49,320
astronaut to maneuver his spaceship back

267
00:12:57,230 --> 00:12:51,270
through the Earth's atmosphere and then

268
00:12:59,740 --> 00:12:57,240
land like a conventional airplane jet

269
00:13:01,880 --> 00:12:59,750
aircraft noise is a national problem

270
00:13:03,710 --> 00:13:01,890
NASA's effort is part of a nationwide

271
00:13:09,260 --> 00:13:03,720
program with other government agencies

272
00:13:11,510 --> 00:13:09,270
and industry is threefold while studies

273
00:13:13,730 --> 00:13:11,520
are going on to improve existing engines

274
00:13:15,890 --> 00:13:13,740
the Lewis Research Center in Cleveland

275
00:13:19,250 --> 00:13:15,900
is designing a completely new engine

276
00:13:21,380 --> 00:13:19,260
designed to be quiet across the country

277
00:13:23,900 --> 00:13:21,390
at NASA's Ames Research Center in

278
00:13:26,210 --> 00:13:23,910
California especially instrumented jet

279
00:13:28,610 --> 00:13:26,220
is being operated in a way to decrease

280
00:13:30,770 --> 00:13:28,620
the ground exposure to noise this

281
00:13:32,870 --> 00:13:30,780
involves flying the plane in at a steep

282
00:13:36,650 --> 00:13:32,880
approach and letting the distance reduce

283
00:13:38,960 --> 00:13:36,660
the noise on the ground eventually all

284
00:13:41,000 --> 00:13:38,970
the known noise control techniques will

285
00:13:46,970 --> 00:13:41,010
be combined in an effort to produce a

286
00:13:46,970 --> 00:13:46,980
truly quiet engine surveyor

287
00:13:58,180 --> 00:13:52,680
lunar orbiter Mariner

288
00:13:58,190 --> 00:14:08,569

biyo satellite xb-70 Saturn 5

289
00:14:14,850 --> 00:14:12,329
aeronautics and space highlights in 1967

290
00:14:25,549 --> 00:14:14,860
a year of continued research and

291
00:14:30,720 --> 00:14:27,869
this has been an Aeronautics and Space