1
00:00:10,339 --> 00:00:08,059
it was the year the Space Shuttle made

2
00:00:15,470 --> 00:00:10,349
its transition from orbital flight tests

3
00:00:17,450 --> 00:00:15,480
to commercial operations a new Landsat

4
00:00:21,680 --> 00:00:17,460
satellite is returning extremely sharp

5
00:00:26,529 --> 00:00:23,390
cooperation with several other countries

6
00:00:28,870 --> 00:00:26,539
and infrared astronomy sometimes

7
00:00:30,819 --> 00:00:28,880
launched and the ad once is a winged

8
00:00:56,320 --> 00:00:30,829
aircraft showed what it could do at the

9
00:01:01,520 --> 00:00:59,960
more than eight days in space as part of

10
00:01:03,680 --> 00:01:01,530
the test program to check out space

11
00:01:05,540 --> 00:01:03,690
shuttle Columbia systems the crew

12
00:01:07,670 --> 00:01:05,550
started and we started the orbital

13
00:01:09,740 --> 00:01:07,680

maneuvering engines turned the orbiter

14
00:01:11,990 --> 00:01:09,750
toward and then away from the Sun for

15
00:01:13,940 --> 00:01:12,000
thermal testing and successfully

16
00:01:16,280 --> 00:01:13,950
operated the remote manipulator arm

17
00:01:18,830 --> 00:01:16,290
picking up and moving various parts of a

18
00:01:20,859 --> 00:01:18,840
space science payload they also carried

19
00:01:23,570 --> 00:01:20,869
experiments to monitor solar flares

20
00:01:25,249 --> 00:01:23,580
medical and materials processing and the

21
00:01:27,290 --> 00:01:25,259
effects of zero gravity on flying

22
00:01:32,359 --> 00:01:27,300
insects as suggested by high school

23
00:01:34,310 --> 00:01:32,369
student table no see after 384 hours and

24
00:01:36,410 --> 00:01:34,320
a one-day delay because of bad weather

25
00:01:38,770 --> 00:01:36,420
Columbia landed at the Army's White

26
00:01:41,330 --> 00:01:38,780
Sands Missile Range in New Mexico

27
00:01:43,190 --> 00:01:41,340
approximately 12 weeks later astronauts

28
00:01:46,040 --> 00:01:43,200
Tom Mattingly and Henry Hartsfield

29
00:01:48,590 --> 00:01:46,050
piloted Columbia on its fourth and final

30
00:01:50,480 --> 00:01:48,600
test flight the spacecraft's nearly

31
00:01:52,550 --> 00:01:50,490
flawless performance marked a fitting

32
00:01:54,980 --> 00:01:52,560
end to the orbital flight test program

33
00:01:56,660 --> 00:01:54,990
making it possible to certify the space

34
00:01:59,630 --> 00:01:56,670
transportation system as a fully

35
00:02:01,760 --> 00:01:59,640
operational carrier on July 4th after

36
00:02:03,770 --> 00:02:01,770
seven days in orbit Columbia made a

37
00:02:06,859 --> 00:02:03,780
perfect landing on a concrete runway

38
00:02:08,240 --> 00:02:06,869

another first the president and mrs.

39
00:02:13,520 --> 00:02:08,250
Reagan were there to watch the landing

40
00:02:16,280 --> 00:02:13,530
and greet the crew November 11th and

41
00:02:19,370 --> 00:02:16,290
Space Shuttle five the first operational

42
00:02:21,530 --> 00:02:19,380
flight to commercial communication

43
00:02:23,690 --> 00:02:21,540
satellites were hauled into orbit one

44
00:02:26,360 --> 00:02:23,700
for satellite business systems and one

45
00:02:27,470 --> 00:02:26,370
for Telesat of Canada their deployment

46
00:02:30,460 --> 00:02:27,480
was a complete success

47
00:02:32,840 --> 00:02:30,470
space shuttle had delivered as promised

48
00:02:35,300 --> 00:02:32,850
Columbia and the four astronaut crew

49
00:02:37,559 --> 00:02:35,310
landed back on earth at 9:33 a.m.

50
00:02:41,849 --> 00:02:37,569
Eastern Standard Time on

51
00:02:43,860 --> 00:02:41,859
remember 16 another milestone event the

52
00:02:46,470 --> 00:02:43,870
completion and rollout of the second

53
00:02:49,229 --> 00:02:46,480
Space Shuttle Orbiter took place in July

54
00:02:52,490 --> 00:02:49,239
christened challenger the new orbiter is

55
00:02:55,130 --> 00:02:52,500
scheduled for its first mission

56
00:02:57,260 --> 00:02:55,140
challenger travelled overland to NASA's

57
00:02:59,630 --> 00:02:57,270
Dryden Flight Research Facility where it

58
00:03:01,820 --> 00:02:59,640
was mounted on top of the 747 Carrier

59
00:03:04,190 --> 00:03:01,830
aircraft and flown to the Kennedy Space

60
00:03:05,930 --> 00:03:04,200
Center Florida to ready for its first

61
00:03:08,670 --> 00:03:05,940
one

62
00:03:10,710 --> 00:03:08,680
looking farther into the future nASA has

63
00:03:13,199 --> 00:03:10,720

selected eight companies to prepare

64
00:03:14,550 --> 00:03:13,209
Space Station mission studies the

65
00:03:16,199 --> 00:03:14,560
studies will contribute to the

66
00:03:18,540 --> 00:03:16,209
development of specific mission

67
00:03:20,369 --> 00:03:18,550
requirements and overall architectural

68
00:03:22,199 --> 00:03:20,379
options which will be incorporated in

69
00:03:24,900 --> 00:03:22,209
NASA studies of a shuttle tended

70
00:03:26,910 --> 00:03:24,910
permanent orbiting facility the

71
00:03:29,370 --> 00:03:26,920
companies are expected to identify and

72
00:03:31,890 --> 00:03:29,380
analyze the scientific commercial

73
00:03:33,870 --> 00:03:31,900
national security and space operational

74
00:03:37,920 --> 00:03:33,880
missions that could be most efficiently

75
00:03:40,650 --> 00:03:37,930
conducted by a space station 1982 was

76
00:03:43,050 --> 00:03:40,660
also a busy time for unmanned spacecraft

77
00:03:45,690 --> 00:03:43,060
two satellites for Western Union were

78
00:03:48,300 --> 00:03:45,700
launched called Westar four and five

79
00:03:50,550 --> 00:03:48,310
these communication satellites relay a

80
00:03:52,530 --> 00:03:50,560
variety of radio television programs as

81
00:03:55,199 --> 00:03:52,540
well as transmit complete editions of

82
00:03:57,690 --> 00:03:55,209
magazines to regional printing plants US

83
00:04:00,289 --> 00:03:57,700
News and World Report time people and

84
00:04:03,000 --> 00:04:00,299
Sports Illustrated all dreams west on

85
00:04:05,160 --> 00:04:03,010
other unmanned launches included an

86
00:04:08,160 --> 00:04:05,170
annek for communication satellite

87
00:04:11,380 --> 00:04:08,170
operated by Telesat of Canada RCA

88
00:04:14,650 --> 00:04:11,390

Americans except comm four and five

89
00:04:16,420 --> 00:04:14,660
at 5:00 around the country the various

90
00:04:18,550 --> 00:04:16,430
elements of the space telescope are

91
00:04:21,069 --> 00:04:18,560
being worked on and assembled at the

92
00:04:23,320 --> 00:04:21,079
PerkinElmer plant in Connecticut the 92

93
00:04:25,900 --> 00:04:23,330
inch telescope mirror has been finally

94
00:04:27,940 --> 00:04:25,910
buffed and polished a wide field camera

95
00:04:30,850 --> 00:04:27,950
is being built and tested at the Jet

96
00:04:33,010 --> 00:04:30,860
Propulsion Laboratory in Pasadena these

97
00:04:35,530 --> 00:04:33,020
mock-ups of the Space Telescope's parts

98
00:04:37,000 --> 00:04:35,540
give an idea of its size it's here at

99
00:04:39,760 --> 00:04:37,010
the Lockheed plant in Sunnyvale

100
00:04:41,500 --> 00:04:39,770
California that it will be assembled at

101
00:04:43,630 --> 00:04:41,510
the Marshall Space Flight Center in

102
00:04:45,610 --> 00:04:43,640
Alabama astronauts practice working

103
00:04:47,470 --> 00:04:45,620
around the Space Telescope in a tank

104
00:04:50,650 --> 00:04:47,480
filled with water to simulate the

105
00:04:52,330 --> 00:04:50,660
gravity free space environment the Space

106
00:04:55,360 --> 00:04:52,340
Telescope will be placed into orbit from

107
00:04:56,710 --> 00:04:55,370
the shuttle payload Bay in 1985 it's

108
00:04:59,170 --> 00:04:56,720
designed to be an international

109
00:05:01,360 --> 00:04:59,180
observatory located in space for the

110
00:05:03,430 --> 00:05:01,370
study of the universe and is expected to

111
00:05:06,220 --> 00:05:03,440
provide new advances in astronomy and

112
00:05:08,590 --> 00:05:06,230
physics an infrared astronomical

113
00:05:11,020 --> 00:05:08,600

satellite will soon be launched from the

114
00:05:13,090 --> 00:05:11,030
Western Test range in California it's

115
00:05:15,820 --> 00:05:13,100
shown here undergoing tests at the Jet

116
00:05:16,670 --> 00:05:15,830
Propulsion Laboratory iris as it is

117
00:05:18,620 --> 00:05:16,680
called is a

118
00:05:20,629 --> 00:05:18,630
International project that includes NASA

119
00:05:22,850 --> 00:05:20,639
the Netherlands and the United Kingdom

120
00:05:25,490 --> 00:05:22,860
the new Earth orbiting instrument with

121
00:05:27,560 --> 00:05:25,500
its 68 infrared detectors will be used

122
00:05:30,650 --> 00:05:27,570
to witness the birth of new stars and

123
00:05:32,659 --> 00:05:30,660
the death of old ones iris will probe

124
00:05:34,580 --> 00:05:32,669
through space searching for celestial

125
00:05:37,090 --> 00:05:34,590
phenomena that are invisible to our eyes

126
00:05:41,480 --> 00:05:37,100
but glow in the infrared

127
00:05:43,760 --> 00:05:41,490
pioneers 8 & 9 launched in 1967 and 1968

128
00:05:46,279 --> 00:05:43,770
and orbiting the Sun since that time

129
00:05:49,010 --> 00:05:46,289
passed within 1 and 1/2 million miles of

130
00:05:52,249 --> 00:05:49,020
each other on October 7th in space terms

131
00:05:54,050 --> 00:05:52,259
a close encounter they like the two

132
00:05:56,839 --> 00:05:54,060
unmanned pioneers that followed them

133
00:05:58,550 --> 00:05:56,849
pioneers 10 and 11 continued to return a

134
00:06:01,510 --> 00:05:58,560
stream of new information about our

135
00:06:04,070 --> 00:06:01,520
solar system to earthbound scientists

136
00:06:06,140 --> 00:06:04,080
the spacecraft have traveled billions of

137
00:06:08,570 --> 00:06:06,150
miles from Earth passing safely through

138
00:06:11,210 --> 00:06:08,580

rocky asteroid and radiation belts along

139
00:06:13,370 --> 00:06:11,220
the way these are some of the last

140
00:06:15,379 --> 00:06:13,380
photographs of Mars they were taken by

141
00:06:17,510 --> 00:06:15,389
the Viking one orbiter and processed

142
00:06:20,240 --> 00:06:17,520
this past spring at NASA's Jet

143
00:06:21,560 --> 00:06:20,250
Propulsion lab more than 50 thousand

144
00:06:25,969 --> 00:06:21,570
photographs have been taken by the

145
00:06:28,159 --> 00:06:25,979
Viking spacecraft since 1976 the two

146
00:06:29,839 --> 00:06:28,169
Vikings were launched seven years ago as

147
00:06:31,730 --> 00:06:29,849
they arrived at Mars

148
00:06:34,129 --> 00:06:31,740
the lander portion of the spacecraft

149
00:06:36,290 --> 00:06:34,139
separated and touched down soft play on

150
00:06:39,020 --> 00:06:36,300
the Martian surface leaving the orbiters

151
00:06:41,060 --> 00:06:39,030
circling above the planet the Viking one

152
00:06:43,399 --> 00:06:41,070
Lander continues to send back valuable

153
00:06:44,690 --> 00:06:43,409
imaging and meteorological data every

154
00:06:47,330 --> 00:06:44,700
week

155
00:06:49,580 --> 00:06:47,340
the fourth earth scanning Landsat was

156
00:06:52,430 --> 00:06:49,590
launched from California on July 16th

157
00:06:54,440 --> 00:06:52,440
Landsat 4 is designed to continuously

158
00:06:57,380 --> 00:06:54,450
collect accurate information on earth's

159
00:06:59,840 --> 00:06:57,390
resources information useful in land use

160
00:07:02,570 --> 00:06:59,850
planning exploration and agriculture an

161
00:07:04,730 --> 00:07:02,580
onboard thematic mapper recorded these

162
00:07:06,920 --> 00:07:04,740
views which should help urban planners

163
00:07:09,890 --> 00:07:06,930

better manage and monitor urban sprawl

164
00:07:11,330 --> 00:07:09,900
into the surrounding countryside after

165
00:07:14,240 --> 00:07:11,340
completing its three-year mission

166
00:07:15,430 --> 00:07:14,250
Landsat 4 is designed to be retrieved by

167
00:07:18,590 --> 00:07:15,440
the space shuttle

168
00:07:20,300 --> 00:07:18,600
this is Medicine Bow Wyoming sighted the

169
00:07:23,150 --> 00:07:20,310
dedication of two wind powered

170
00:07:24,890 --> 00:07:23,160
generators on September 4th the project

171
00:07:26,780 --> 00:07:24,900
is a joint endeavor of NASA's Lewis

172
00:07:29,570 --> 00:07:26,790
Research Center the Department of Energy

173
00:07:30,860 --> 00:07:29,580
and the Bureau of Reclamation one unit

174
00:07:33,710 --> 00:07:30,870
was built by the Hamilton standard

175
00:07:35,930 --> 00:07:33,720
company and is nearly 400 feet high it's

176
00:07:39,260 --> 00:07:35,940
capable of producing 4 megawatts of

177
00:07:40,730 --> 00:07:39,270
electricity the second unit constructed

178
00:07:42,560 --> 00:07:40,740
by the Boeing engineering and

179
00:07:44,960 --> 00:07:42,570
construction company is powered by a

180
00:07:47,710 --> 00:07:44,970
rotor 300 feet in diameter and can

181
00:07:50,510 --> 00:07:47,720
produce 2.5 megawatts of electricity

182
00:07:52,280 --> 00:07:50,520
when operating together the pair of wind

183
00:07:54,500 --> 00:07:52,290
turbines will provide enough energy to

184
00:07:57,530 --> 00:07:54,510
meet the needs of 3,000 homes in the

185
00:07:59,450 --> 00:07:57,540
Rocky Mountain area the Lewis Research

186
00:08:01,670 --> 00:07:59,460
Center has been working on experimental

187
00:08:04,310 --> 00:08:01,680
ion electric rocket engines for more

188
00:08:06,470 --> 00:08:04,320

than two decades electric engines

189
00:08:08,210 --> 00:08:06,480
produce minut amounts of thrust and do

190
00:08:10,760 --> 00:08:08,220
it more efficiently than conventional

191
00:08:13,430 --> 00:08:10,770
chemical rockets one experimental

192
00:08:15,590 --> 00:08:13,440
electric engine cert 2 has been tested

193
00:08:17,980 --> 00:08:15,600
for 11 years and journeyed more than a

194
00:08:20,330 --> 00:08:17,990
billion and a half miles through space

195
00:08:22,340 --> 00:08:20,340
ion propulsion systems are especially

196
00:08:25,010 --> 00:08:22,350
attractive for possible Comet and

197
00:08:27,260 --> 00:08:25,020
asteroid rendezvous missions exploration

198
00:08:29,510 --> 00:08:27,270
of the outer planets station keeping of

199
00:08:30,600 --> 00:08:29,520
communication satellites and orbital

200
00:08:32,730 --> 00:08:30,610
platforms

201
00:08:36,540 --> 00:08:32,740
the next space test of an ion rocket

202
00:08:38,130 --> 00:08:36,550
engine will take place in 1983 the Lewis

203
00:08:40,649 --> 00:08:38,140
Center has also been working on earth

204
00:08:43,079 --> 00:08:40,659
applications of solar power for example

205
00:08:44,639 --> 00:08:43,089
a solar electric powered medical clinic

206
00:08:46,470 --> 00:08:44,649
has been designed and several

207
00:08:48,600 --> 00:08:46,480
constructed for the US Agency for

208
00:08:50,430 --> 00:08:48,610
International Development built by the

209
00:08:52,740 --> 00:08:50,440
solar X corporation they're being

210
00:08:56,430 --> 00:08:52,750
installed in remote villages in Guiana

211
00:08:58,139 --> 00:08:56,440
Ecuador Kenya and Zimbabwe the medical

212
00:09:00,750 --> 00:08:58,149
system package includes a refrigerator

213
00:09:02,880 --> 00:09:00,760

sterilizer examination light two-way

214
00:09:10,410 --> 00:09:02,890
radio and numerous interior and exterior

215
00:09:14,050 --> 00:09:12,250
scientists from the university of

216
00:09:16,150 --> 00:09:14,060
southern california are applying

217
00:09:18,040 --> 00:09:16,160
space-related computerized image

218
00:09:20,290 --> 00:09:18,050
analysis techniques to the earthly

219
00:09:22,660 --> 00:09:20,300
treatment of arteriosclerosis and

220
00:09:25,690 --> 00:09:22,670
stenosis of the arteries diseases that

221
00:09:27,640 --> 00:09:25,700
affect thousands of Americans to

222
00:09:29,560 --> 00:09:27,650
calculate the degree of disease present

223
00:09:32,050 --> 00:09:29,570
the computer first indicates the edges

224
00:09:33,640 --> 00:09:32,060
of the artery with black lines the white

225
00:09:35,350 --> 00:09:33,650
lines which just appeared are the

226
00:09:37,360 --> 00:09:35,360
computer's best estimate of where the

227
00:09:39,760 --> 00:09:37,370
walls of the artery would be if there

228
00:09:41,980 --> 00:09:39,770
were no disease precedent using these

229
00:09:44,470 --> 00:09:41,990
guidelines and statistics such as the

230
00:09:46,750 --> 00:09:44,480
degree of narrowing

231
00:09:48,160 --> 00:09:46,760
for the patient's file these same

232
00:09:50,019 --> 00:09:48,170
techniques were used to enhance

233
00:09:53,019 --> 00:09:50,029
significant areas of the planet Saturn

234
00:09:57,220 --> 00:09:53,029
for scientific study from pictures taken

235
00:10:01,720 --> 00:09:57,230
by the Voyager spacecraft research and

236
00:10:10,020 --> 00:10:04,910
case in point the rotor systems research

237
00:10:14,460 --> 00:10:12,300
flying laboratory looks like a cross

238
00:10:17,340 --> 00:10:14,470

between the airplane in a helicopter and

239
00:10:18,930 --> 00:10:17,350
can fly like both the main objectives of

240
00:10:21,210 --> 00:10:18,940
the research are two flight tests

241
00:10:23,730 --> 00:10:21,220
advanced rotor concepts to increase

242
00:10:26,070 --> 00:10:23,740
performance lower noise and vibrations

243
00:10:28,710 --> 00:10:26,080
and improve flight control systems the

244
00:10:31,980 --> 00:10:28,720
our sra is a valuable tool for testing

245
00:10:34,770 --> 00:10:31,990
out the new rotor concepts the bell

246
00:10:36,570 --> 00:10:34,780
xv-15 is another research aircraft that

247
00:10:38,880 --> 00:10:36,580
holds great promise for both military

248
00:10:41,220 --> 00:10:38,890
and civilian use it can hover like a

249
00:10:44,250 --> 00:10:41,230
helicopter or cruise like a turboprop

250
00:10:46,470 --> 00:10:44,260
airplane once the 25-foot prop rotors

251
00:10:50,460 --> 00:10:46,480
are rotated forward it can fly at speeds

252
00:10:52,290 --> 00:10:50,470
up to 350 miles per hour the xv-15 flow

253
00:10:54,090 --> 00:10:52,300
proof of concept and extensive

254
00:10:56,910 --> 00:10:54,100
operational demonstration flights for

255
00:11:10,510 --> 00:10:56,920
the military in 1982 including the one

256
00:11:14,230 --> 00:11:12,400
after practicing carrier takeoffs and

257
00:11:16,389 --> 00:11:14,240
landings at the Navy's North Island Base

258
00:11:23,360 --> 00:11:16,399
in San Diego the tiltrotor went through

259
00:11:27,560 --> 00:11:25,700
the xv-15 is generating a lot of

260
00:11:29,570 --> 00:11:27,570
interest for use in search-and-rescue

261
00:11:32,120 --> 00:11:29,580
operations as an economical way to

262
00:11:38,079 --> 00:11:32,130
supply offshore oil rigs and is an

263
00:11:42,970 --> 00:11:41,199

a wind tunnel at the Lewis Research

264
00:11:45,610 --> 00:11:42,980
Center in Cleveland is one of the places

265
00:11:47,710 --> 00:11:45,620
research is being done to design highly

266
00:11:50,139 --> 00:11:47,720
efficient propellers for future aircraft

267
00:11:52,660 --> 00:11:50,149
the unusually shaped propeller has many

268
00:11:59,319 --> 00:11:52,670
blades which spin at speeds greater than

269
00:12:01,059 --> 00:11:59,329
those of conventional props when applied

270
00:12:02,980 --> 00:12:01,069
to commercial transport aircraft

271
00:12:05,769 --> 00:12:02,990
researchers believe it will result in

272
00:12:07,749 --> 00:12:05,779
fuel savings of as much as 30% over

273
00:12:10,299 --> 00:12:07,759
conventional turbofan-powered planes

274
00:12:13,660 --> 00:12:10,309
while operating at similar speeds and

275
00:12:15,910 --> 00:12:13,670
altitudes the Lewis Center also has an

276
00:12:18,220 --> 00:12:15,920
icing research tunnel to study problems

277
00:12:20,559 --> 00:12:18,230
associated with aircraft flying into

278
00:12:23,170 --> 00:12:20,569
conditions that cause ice to build on

279
00:12:24,910 --> 00:12:23,180
plane surfaces the main objective is to

280
00:12:27,220 --> 00:12:24,920
provide for more efficient more

281
00:12:28,509 --> 00:12:27,230
lightweight ice protection systems that

282
00:12:31,179 --> 00:12:28,519
can be applied to general aviation

283
00:12:37,280 --> 00:12:31,189
aircraft helicopters and future

284
00:12:41,699 --> 00:12:39,750
to NASA Aeronautics

285
00:12:44,009 --> 00:12:41,709
for the 1982 Experimental Aircraft

286
00:12:57,520 --> 00:12:44,019
Association National Convention in

287
00:13:02,420 --> 00:13:00,590
NASA's Langley Louis and Ames Research

288
00:13:04,210 --> 00:13:02,430

Center's participated in the eight day

289
00:13:06,020 --> 00:13:04,220
event with people and equipment

290
00:13:07,930 --> 00:13:06,030
highlighted at the world's largest

291
00:13:09,460 --> 00:13:07,940
annual aviation

292
00:13:10,510 --> 00:13:09,470
when NASA's research and advanced

293
00:13:14,249 --> 00:13:10,520
technology

294
00:13:18,639 --> 00:13:16,929
600,000 people saw massive pilot Tom

295
00:13:24,920 --> 00:13:18,649
McMurtry from the Dryden Flight Research

296
00:13:35,280 --> 00:13:27,889
and rotated to a big angle of up to 60

297
00:13:35,290 --> 00:13:51,780
variety of aircraft

298
00:13:57,180 --> 00:13:54,660
missions of Shuttle Orbiter Columbia to

299
00:13:59,760 --> 00:13:57,190
space science applications and aircraft

300
00:14:01,950 --> 00:13:59,770
research this country's aeronautics and

301
00:14:24,170 --> 00:14:01,960
space efforts moved forward on many

302
00:14:28,790 --> 00:14:26,570
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