1
00:00:07,099 --> 00:00:05,210
just as we ever to region we learned

2
00:00:10,720 --> 00:00:07,109
more about two of our planetary

3
00:00:13,249 --> 00:00:10,730
neighbors this year Jupiter and Saturn

4
00:00:15,200 --> 00:00:13,259
scientists launched rockets to improve

5
00:00:19,070 --> 00:00:15,210
methods of studying ozone and the

6
00:00:20,929 --> 00:00:19,080
Earth's upper atmosphere parts of the

7
00:00:22,490 --> 00:00:20,939
new space transportation system were

8
00:00:26,630 --> 00:00:22,500
assembled and rolled out to the launch

9
00:00:28,429 --> 00:00:26,640
pad in a major test and the tiltrotor

10
00:00:30,859 --> 00:00:28,439
research aircraft began making

11
00:00:38,279 --> 00:00:30,869
transition flights one of a number of

12
00:00:43,180 --> 00:00:40,810
Jupiter largest of the sun's nine

13
00:00:46,209 --> 00:00:43,190

planets was photographed close up by the

14
00:00:48,430 --> 00:00:46,219
voyagers 1 and 2 spacecraft what their

15
00:00:51,220 --> 00:00:48,440
camera eyes recorded as they passed by

16
00:00:53,740 --> 00:00:51,230
the giant planets churning clouds were

17
00:00:56,259 --> 00:00:53,750
ribbon like streaks of red and brown and

18
00:00:58,719 --> 00:00:56,269
yellow the wealth of data and

19
00:01:00,819 --> 00:00:58,729
photographs left behind by the voyagers

20
00:01:02,880 --> 00:01:00,829
are providing scientists a valuable

21
00:01:05,950 --> 00:01:02,890
source of raw material to be studied

22
00:01:08,770 --> 00:01:05,960
from Jupiter's newly discovered ring to

23
00:01:11,499 --> 00:01:08,780
the active volcanoes of aisle one of its

24
00:01:13,419 --> 00:01:11,509
14 surrounding moans the Voyager

25
00:01:16,540 --> 00:01:13,429
discoveries have surprised and delighted

26
00:01:18,520 --> 00:01:16,550
NASA scientists information that may one

27
00:01:22,059 --> 00:01:18,530
day help us better understand our own

28
00:01:24,880 --> 00:01:22,069
earth and the voyagers mission did not

29
00:01:26,919 --> 00:01:24,890
end a Jupiter the two spacecraft are now

30
00:01:31,990 --> 00:01:26,929
speeding toward a rendezvous with Saturn

31
00:01:35,859 --> 00:01:32,000
in 1980 and 1981 acting as Pathfinder

32
00:01:38,169 --> 00:01:35,869
for the voyagers pioneer 11 the 570

33
00:01:41,050 --> 00:01:38,179
pound spacecraft climaxed six and a half

34
00:01:44,609 --> 00:01:41,060
years and a 2 billion mile voyage in

35
00:01:49,089 --> 00:01:44,619
deep space as it swept by Saturn at 70

36
00:01:51,369 --> 00:01:49,099
1,200 miles per hour scientists watched

37
00:01:54,669 --> 00:01:51,379
anxiously as pioneer made its to our

38
00:01:56,830 --> 00:01:54,679

passage of Saturn's rings four times the

39
00:01:59,740 --> 00:01:56,840
spacecraft was hit by small pieces of

40
00:02:02,680 --> 00:01:59,750
debris but emerged safely despite the

41
00:02:04,690 --> 00:02:02,690
collisions pioneer had a closer look at

42
00:02:08,759 --> 00:02:04,700
Saturn that all the observations that

43
00:02:11,350 --> 00:02:08,769
have been made in the last 400 years

44
00:02:14,259 --> 00:02:11,360
photographs show what appeared to be jet

45
00:02:16,839 --> 00:02:14,269
streams swirling around Saturn at 300

46
00:02:19,390 --> 00:02:16,849
miles an hour a new ring circling the

47
00:02:21,070 --> 00:02:19,400
planet's equator and radiation belts

48
00:02:24,430 --> 00:02:21,080
that are more like Earth's in their

49
00:02:27,339 --> 00:02:24,440
intensity and energy levels the pioneer

50
00:02:29,680 --> 00:02:27,349
11 spacecraft dwarfed by the objects it

51
00:02:32,820 --> 00:02:29,690
was sent to observe is speeding out of

52
00:02:37,119 --> 00:02:32,830
the solar system in an endless journey

53
00:02:39,580 --> 00:02:37,129
this is he 03 high-energy astronomy

54
00:02:42,040 --> 00:02:39,590
observatory the last of a series of

55
00:02:44,350 --> 00:02:42,050
spacecraft designed to study deep

56
00:02:47,089 --> 00:02:44,360
regions of the universe where enormous

57
00:02:51,270 --> 00:02:47,099
amounts of energy are

58
00:02:53,849 --> 00:02:51,280
launched from Cape Canaveral he 03 is

59
00:02:56,640 --> 00:02:53,859
now scanning the galaxies for gamma and

60
00:02:59,610 --> 00:02:56,650
cosmic rays in an effort to find clues

61
00:03:02,759 --> 00:02:59,620
about radiation from exploding stars and

62
00:03:04,800 --> 00:03:02,769
black holes high-energy astronomy is

63
00:03:09,300 --> 00:03:04,810

helping us better understand the

64
00:03:11,909 --> 00:03:09,310
universe around us a new tool for the

65
00:03:15,330 --> 00:03:11,919
80s will be the Space Telescope weighing

66
00:03:18,420 --> 00:03:15,340
five tons and measuring 43 feet long by

67
00:03:20,250 --> 00:03:18,430
14 feet in diameter the Space Telescope

68
00:03:23,159 --> 00:03:20,260
will give astronomers unprecedented

69
00:03:27,479 --> 00:03:23,169
views of space unobstructed by the veil

70
00:03:29,699 --> 00:03:27,489
of the Earth's atmosphere the 94 inch

71
00:03:32,220 --> 00:03:29,709
primary mirror largest astronomical

72
00:03:34,830 --> 00:03:32,230
instrument ever to be placed in space is

73
00:03:36,420 --> 00:03:34,840
shown here undergoing initial grinding

74
00:03:38,759 --> 00:03:36,430
and polishing operations at the

75
00:03:41,879 --> 00:03:38,769
PerkinElmer corporation in Danbury

76
00:03:43,800 --> 00:03:41,889
Connecticut about 300 pounds of glass

77
00:03:47,970 --> 00:03:43,810
will be removed during the lengthy

78
00:03:50,189 --> 00:03:47,980
grinding and polishing process the new

79
00:03:52,110 --> 00:03:50,199
telescope Observatory is scheduled to be

80
00:03:54,569 --> 00:03:52,120
placed in orbit by the Space Shuttle in

81
00:04:00,960 --> 00:03:54,579
the 1980s and will circle the Earth at

82
00:04:02,999 --> 00:04:00,970
an altitude of 310 miles this is what

83
00:04:06,240 --> 00:04:03,009
NASA's Space Shuttle will look like

84
00:04:07,699 --> 00:04:06,250
prior to launch shown here during a test

85
00:04:10,409 --> 00:04:07,709
rollout is the Shuttle Orbiter

86
00:04:13,199 --> 00:04:10,419
enterprise sitting on top of its large

87
00:04:15,869 --> 00:04:13,209
external fuel tank and between two solid

88
00:04:17,789 --> 00:04:15,879

rocket boosters the two solid rockets

89
00:04:19,649 --> 00:04:17,799
will be parachuted back to an ocean

90
00:04:22,460 --> 00:04:19,659
landing where they'll be picked up and

91
00:04:24,420 --> 00:04:22,470
made ready for another mission

92
00:04:26,760 --> 00:04:24,430
preparations for the first shuttle

93
00:04:31,770 --> 00:04:26,770
launch continued this year including a

94
00:04:33,600 --> 00:04:31,780
water deluge test 300,000 gallons of

95
00:04:36,089 --> 00:04:33,610
water will be dumped on the spacecraft's

96
00:04:38,339 --> 00:04:36,099
mobile platform at the time of launch to

97
00:04:41,459 --> 00:04:38,349
counteract damaging noise vibrations of

98
00:04:43,560 --> 00:04:41,469
the engines at liftoff the 16 seconds of

99
00:04:45,850 --> 00:04:43,570
waterfall has a sound deadening effect

100
00:04:48,350 --> 00:04:45,860
as the engines fire

101
00:04:50,420 --> 00:04:48,360
the three main engines that will power

102
00:04:51,980 --> 00:04:50,430
the space shuttle Columbia into orbit

103
00:04:54,110 --> 00:04:51,990
were tested at the National Space

104
00:04:56,690 --> 00:04:54,120
Technology Laboratory in Bay st. Louis

105
00:04:58,160 --> 00:04:56,700
Mississippi the main engines are

106
00:05:01,220 --> 00:04:58,170
designed to produce up to four hundred

107
00:05:03,370 --> 00:05:01,230
seventy thousand pounds of thrust loping

108
00:05:05,870 --> 00:05:03,380
a mixture of hydrogen and oxygen

109
00:05:09,950 --> 00:05:05,880
problems in testing the shuttle engines

110
00:05:11,960 --> 00:05:09,960
continue to cause delays one of the two

111
00:05:13,460 --> 00:05:11,970
solid rocket boosters that will burn for

112
00:05:16,250 --> 00:05:13,470
two minutes with the shuttles main

113
00:05:18,530 --> 00:05:16,260

engines during launch is shown laid out

114
00:05:21,020 --> 00:05:18,540
horizontally in preparation for a test

115
00:05:24,170 --> 00:05:21,030
firing the place is the vehicle

116
00:05:27,460 --> 00:05:24,180
corporation near Brigham City Utah each

117
00:05:32,270 --> 00:05:27,470
of the solid rocket boosters produces

118
00:05:34,190 --> 00:05:32,280
2,650,000 pounds of thrust small rocket

119
00:05:36,200 --> 00:05:34,200
engines called thrusters that make it

120
00:05:38,780 --> 00:05:36,210
possible to maneuver the shuttle once in

121
00:05:41,300 --> 00:05:38,790
space were also successfully fired at

122
00:05:44,690 --> 00:05:41,310
NASA's white sands test facility in New

123
00:05:46,850 --> 00:05:44,700
Mexico the hundred fifty four foot

124
00:05:48,950 --> 00:05:46,860
external propellant tank that will hold

125
00:05:50,780 --> 00:05:48,960
1 million five hundred fifty thousand

126
00:05:53,060 --> 00:05:50,790
pounds of fuel for the shuttles three

127
00:05:55,610 --> 00:05:53,070
main engines was rolled out and shipped

128
00:05:58,040 --> 00:05:55,620
to the Kennedy Space Center Florida the

129
00:06:00,350 --> 00:05:58,050
external tank was manufactured at NASA's

130
00:06:04,220 --> 00:06:00,360
Michoud assembly facility by the Martin

131
00:06:08,240 --> 00:06:04,230
Marietta company this is space shuttle

132
00:06:10,430 --> 00:06:08,250
orbiter 102 christened Columbia it was

133
00:06:12,200 --> 00:06:10,440
named for the sea goin Columbia out of

134
00:06:15,010 --> 00:06:12,210
Boston that entered and explored the

135
00:06:17,420 --> 00:06:15,020
mouth of the Columbia River in 1792

136
00:06:19,850 --> 00:06:17,430
Captain Robert gray named the river

137
00:06:21,590 --> 00:06:19,860
after his ship it will be the space

138
00:06:25,040 --> 00:06:21,600

shuttle Columbia that makes the first

139
00:06:27,500 --> 00:06:25,050
trip into orbit around the earth the 122

140
00:06:30,500 --> 00:06:27,510
foot long spaceship which looks like and

141
00:06:32,480 --> 00:06:30,510
lands like an airplane is being molded

142
00:06:37,400 --> 00:06:32,490
into existence by a government industry

143
00:06:39,890 --> 00:06:37,410
team of engineers and technicians 31,000

144
00:06:41,600 --> 00:06:39,900
specially made silica tiles are being

145
00:06:43,760 --> 00:06:41,610
mounted on the surface of Columbia

146
00:06:45,950 --> 00:06:43,770
making it possible for the shuttle to

147
00:06:49,430 --> 00:06:45,960
withstand repeated heating and cooling

148
00:06:52,760 --> 00:06:49,440
good for 100 or more round trips into

149
00:06:54,710 --> 00:06:52,770
space without replacement problems

150
00:06:56,930 --> 00:06:54,720
encountered in installing the protective

151
00:06:58,820 --> 00:06:56,940
tiles have contributed to pushing back

152
00:07:00,620 --> 00:06:58,830
the first shuttle launch by several

153
00:07:03,270 --> 00:07:00,630
months

154
00:07:05,340 --> 00:07:03,280
astronauts john young and bob crippen

155
00:07:08,550 --> 00:07:05,350
will pilot columbia on its maiden voyage

156
00:07:10,380 --> 00:07:08,560
into space they are ready and despite

157
00:07:12,720 --> 00:07:10,390
some troublesome delays along the way

158
00:07:14,730 --> 00:07:12,730
all the parts and pieces of the new

159
00:07:16,290 --> 00:07:14,740
space transportation system are coming

160
00:07:20,040 --> 00:07:16,300
together and approaching launch

161
00:07:21,810 --> 00:07:20,050
readiness there were several major

162
00:07:24,570 --> 00:07:21,820
events that occurred during the year

163
00:07:27,930 --> 00:07:24,580

including adding 35 men and women to the

164
00:07:30,090 --> 00:07:27,940
astronaut roster the 35 completed a 12

165
00:07:32,250 --> 00:07:30,100
month training program and will be the

166
00:07:36,030 --> 00:07:32,260
pilots and mission specialists as the

167
00:07:38,340 --> 00:07:36,040
Space Shuttle becomes operational ten

168
00:07:40,350 --> 00:07:38,350
years ago three American astronauts

169
00:07:43,440 --> 00:07:40,360
lifted off from the Kennedy Space Center

170
00:07:45,870 --> 00:07:43,450
in Florida two of those men astronauts

171
00:07:48,120 --> 00:07:45,880
neil armstrong and buzz aldrin became

172
00:07:52,170 --> 00:07:48,130
the first humans to set foot on another

173
00:07:54,230 --> 00:07:52,180
planet much attention was given during

174
00:07:58,290 --> 00:07:54,240
the year to the re-entry of Skylab

175
00:08:01,050 --> 00:07:58,300
launched in May 1973 Skylab was manned

176
00:08:05,190 --> 00:08:01,060
by three different three-man crews for

177
00:08:07,110 --> 00:08:05,200
periods of 2859 and 84 days during which

178
00:08:09,420 --> 00:08:07,120
many scientific experiments were

179
00:08:12,090 --> 00:08:09,430
conducted since early nineteen

180
00:08:14,670 --> 00:08:12,100
seventy-four the uninhabited Skylab had

181
00:08:17,310 --> 00:08:14,680
been slowly descending early in the year

182
00:08:19,380 --> 00:08:17,320
it became apparent that the 77 ton space

183
00:08:22,080 --> 00:08:19,390
station would re-enter the atmosphere in

184
00:08:24,240 --> 00:08:22,090
the summer skillful manipulation of

185
00:08:26,390 --> 00:08:24,250
skylabs small amount of maneuvering

186
00:08:28,680 --> 00:08:26,400
capability combined with good fortune

187
00:08:30,870 --> 00:08:28,690
resulted in debris reaching the surface

188
00:08:33,779 --> 00:08:30,880

in the Indian Ocean and in sparsely

189
00:08:38,580 --> 00:08:33,789
populated areas of Australia causing no

190
00:08:40,650 --> 00:08:38,590
damage or injuries in space applications

191
00:08:42,930 --> 00:08:40,660
remote sensing from satellites like

192
00:08:45,030 --> 00:08:42,940
Landsat are being considered more as

193
00:08:48,090 --> 00:08:45,040
operational tools by the departments of

194
00:08:49,980 --> 00:08:48,100
agriculture and interior remote sensing

195
00:08:52,520 --> 00:08:49,990
makes it possible to inventory and

196
00:08:55,410 --> 00:08:52,530
predict world food crops for instance

197
00:08:57,590 --> 00:08:55,420
consider these pictures taken by Landsat

198
00:09:00,240 --> 00:08:57,600
as it tracked the Mexican Gulf oil spill

199
00:09:02,640 --> 00:09:00,250
large area views like this have been

200
00:09:05,310 --> 00:09:02,650
very useful to the US Geological Survey

201
00:09:08,230 --> 00:09:05,320
and the Mexican government

202
00:09:10,210 --> 00:09:08,240
using computers and the goes one weather

203
00:09:12,280 --> 00:09:10,220
satellite NASA is working with the

204
00:09:14,350 --> 00:09:12,290
University of Florida and the National

205
00:09:16,480 --> 00:09:14,360
Oceanic and Atmospheric Administration

206
00:09:18,370 --> 00:09:16,490
to develop a system to warn citrus

207
00:09:20,980 --> 00:09:18,380
growers when freezing temperatures are

208
00:09:22,990 --> 00:09:20,990
about to occur this type information

209
00:09:25,060 --> 00:09:23,000
alerts growers when they should fire up

210
00:09:29,380 --> 00:09:25,070
their oil heaters to save their crops

211
00:09:31,390 --> 00:09:29,390
from freezing NASA's Marshall Space

212
00:09:33,520 --> 00:09:31,400
Flight Center has taken technology

213
00:09:35,560 --> 00:09:33,530

needed to design highly efficient pumps

214
00:09:37,870 --> 00:09:35,570
for rocket engines to develop new

215
00:09:40,270 --> 00:09:37,880
lightweight firefighting water cannons

216
00:09:42,010 --> 00:09:40,280
for the Coast Guard these portable units

217
00:09:44,260 --> 00:09:42,020
can easily be transported where they're

218
00:09:46,900 --> 00:09:44,270
needed and can draw water from anywhere

219
00:09:51,580 --> 00:09:46,910
including the sea with a pumping rate of

220
00:09:54,040 --> 00:09:51,590
1,000 gallons per minute to study the

221
00:09:56,770 --> 00:09:54,050
ozone layer and effects of aerosols on

222
00:10:00,310 --> 00:09:56,780
that region a stratospheric aerosol and

223
00:10:02,020 --> 00:10:00,320
gas experiment satellite called sage was

224
00:10:05,080 --> 00:10:02,030
launched from NASA's Wallops Flight

225
00:10:06,850 --> 00:10:05,090
Center off Virginia's Eastern Shore to

226
00:10:09,280 --> 00:10:06,860
compare the information received from

227
00:10:11,440 --> 00:10:09,290
satellites like sage scientists and

228
00:10:13,570 --> 00:10:11,450
engineers from five countries also

229
00:10:16,480 --> 00:10:13,580
launched 20 small rocket born

230
00:10:18,490 --> 00:10:16,490
experiments from Wallops Island changes

231
00:10:20,620 --> 00:10:18,500
in aerosol concentration may cause

232
00:10:24,520 --> 00:10:20,630
changes in climate with important

233
00:10:26,740 --> 00:10:24,530
implications for agriculture energy

234
00:10:29,380 --> 00:10:26,750
related research is continuing to be

235
00:10:31,480 --> 00:10:29,390
part of NASA's overall effort a wind

236
00:10:34,180 --> 00:10:31,490
energy program supporting the Department

237
00:10:36,310 --> 00:10:34,190
of Energy is just one example the third

238
00:10:38,950 --> 00:10:36,320

in a series of two hundred thousand watt

239
00:10:41,800 --> 00:10:38,960
wind generators began operating on Block

240
00:10:44,230 --> 00:10:41,810
Island Rhode Island it can Electrify up

241
00:10:46,690 --> 00:10:44,240
to 250 homes there during the winter

242
00:10:50,140 --> 00:10:46,700
that's half the permanent residence on

243
00:10:52,690 --> 00:10:50,150
the island a much larger wind turbine

244
00:10:54,820 --> 00:10:52,700
able to produce two million watts of

245
00:10:59,660 --> 00:10:54,830
electricity began operating atop a

246
00:11:04,650 --> 00:11:02,340
residents in the papago indian village

247
00:11:06,570 --> 00:11:04,660
of stu Cilic arizona are enjoying

248
00:11:10,410 --> 00:11:06,580
electrical power provided by solar

249
00:11:12,180 --> 00:11:10,420
energy the 3500 wat photovoltaic village

250
00:11:14,430 --> 00:11:12,190
power project was funded by the

251
00:11:16,650 --> 00:11:14,440
Department of Energy the papago tribe

252
00:11:18,870 --> 00:11:16,660
Public Health Service and the four

253
00:11:21,120 --> 00:11:18,880
corners Regional Commission it is

254
00:11:24,200 --> 00:11:21,130
managed by NASA's Lewis Research Center

255
00:11:26,850 --> 00:11:24,210
in Cleveland NASA's Jet Propulsion

256
00:11:30,180 --> 00:11:26,860
Laboratory in Pasadena took delivery of

257
00:11:32,340 --> 00:11:30,190
a new electric test vehicle developed by

258
00:11:34,500 --> 00:11:32,350
General Electric and Chrysler for the

259
00:11:36,480 --> 00:11:34,510
Department of Energy the sleek electric

260
00:11:40,110 --> 00:11:36,490
car is scheduled to undergo extensive

261
00:11:43,320 --> 00:11:40,120
testing etv one can range from between

262
00:11:46,500 --> 00:11:43,330
75 on 120 miles before recharging and

263
00:11:49,410 --> 00:11:46,510

has a top speed of 65 miles per hour at

264
00:11:52,590 --> 00:11:49,420
an estimated operating cost of 18 cents

265
00:11:55,860 --> 00:11:52,600
a mile the car uses 18 lead-acid

266
00:11:58,290 --> 00:11:55,870
batteries good for 30,000 to 50,000

267
00:12:00,900 --> 00:11:58,300
miles and can be recharged by plugging

268
00:12:04,410 --> 00:12:00,910
into an ordinary household outlet for

269
00:12:05,820 --> 00:12:04,420
eight hours a large part of NASA's

270
00:12:07,950 --> 00:12:05,830
efforts are directed toward producing

271
00:12:11,280 --> 00:12:07,960
the advanced technology for future

272
00:12:14,040 --> 00:12:11,290
aircraft case in point the xB 15

273
00:12:15,750 --> 00:12:14,050
tiltrotor the tiltrotor combines the

274
00:12:18,330 --> 00:12:15,760
vertical take-off capability of the

275
00:12:21,330 --> 00:12:18,340
helicopter with the speed range and fuel

276
00:12:23,820 --> 00:12:21,340
economy of a turbo prop airplane rotor

277
00:12:25,560 --> 00:12:23,830
aircraft technology like this could add

278
00:12:29,010 --> 00:12:25,570
new dimensions to air transportation

279
00:12:31,020 --> 00:12:29,020
within the next 20 years the XP 15

280
00:12:33,120 --> 00:12:31,030
research aircraft was developed for NASA

281
00:12:35,490 --> 00:12:33,130
and the army by Bell Helicopter and

282
00:12:37,590 --> 00:12:35,500
recently completed its first in flight

283
00:12:41,610 --> 00:12:37,600
conversion from helicopter to the

284
00:12:44,270 --> 00:12:41,620
airplane flight mode it's called heimat

285
00:12:46,770 --> 00:12:44,280
highly maneuverable aircraft technology

286
00:12:48,800 --> 00:12:46,780
the place is nasa's dryden flight

287
00:12:51,420 --> 00:12:48,810
research center near the Mojave Desert

288
00:12:53,490 --> 00:12:51,430

hi matt is a supersonic research

289
00:12:55,770 --> 00:12:53,500
aircraft that's remotely piloted from

290
00:12:57,420 --> 00:12:55,780
the ground I matt has about twice the

291
00:13:00,540 --> 00:12:57,430
turning capability of the most

292
00:13:02,670 --> 00:13:00,550
maneuverable plane flying today data

293
00:13:04,620 --> 00:13:02,680
from these flight test programs are fed

294
00:13:08,060 --> 00:13:04,630
into a simulator to assess their

295
00:13:10,260 --> 00:13:08,070
application to full scale aircraft

296
00:13:11,360 --> 00:13:10,270
engineers at NASA's Langley Research

297
00:13:13,240 --> 00:13:11,370
Center are

298
00:13:15,800 --> 00:13:13,250
budding aircraft structural design

299
00:13:17,510 --> 00:13:15,810
including improved seat and restraint

300
00:13:19,490 --> 00:13:17,520
systems that could increase the

301
00:13:21,920 --> 00:13:19,500
probability of passenger survival and

302
00:13:31,730 --> 00:13:21,930
also reduce injuries when a general

303
00:13:34,100 --> 00:13:31,740
aviation airplane crashes they do this

304
00:13:38,950 --> 00:13:34,110
by intentionally crashing planes into

305
00:13:44,210 --> 00:13:41,990
this rocket-assisted crash allowed the

306
00:13:46,850 --> 00:13:44,220
researchers to impact the plane at 90

307
00:13:48,440 --> 00:13:46,860
miles per hour onboard cameras and

308
00:13:50,720 --> 00:13:48,450
instruments give precise information

309
00:13:56,810 --> 00:13:50,730
that can be used to improve the crash

310
00:14:00,170 --> 00:13:56,820
worthiness of future aircraft space

311
00:14:05,260 --> 00:14:00,180
science and applications space

312
00:14:09,350 --> 00:14:05,270
transportation wind and solar energy and

313
00:14:22,329 --> 00:14:09,360

Aeronautics all are a part of the NASA

314
00:14:27,170 --> 00:14:24,859
this special report brought to you by