1
00:00:14,749 --> 00:00:12,049
may 5th 1961 freedom 7 the United States

2
00:00:24,850 --> 00:00:14,759
took the first small step on its journey

3
00:00:31,780 --> 00:00:27,920
America's first man in space Alan

4
00:00:35,750 --> 00:00:31,790
Shepard rode the mercury capsule lifted

5
00:00:41,299 --> 00:00:35,760
216 miles by the Redstone rockets 78,000

6
00:00:44,420 --> 00:00:41,309
pounds of thrust ten years later the

7
00:00:46,880 --> 00:00:44,430
launch vehicle is Saturn five with a

8
00:00:53,210 --> 00:00:46,890
thrust of seven and a half million

9
00:00:55,819 --> 00:00:53,220
pounds on January 31st 1971 the crew of

10
00:00:57,850 --> 00:00:55,829
Apollo 14 would leave Earth on their

11
00:01:00,830 --> 00:00:57,860
mission to the moon

12
00:01:03,200 --> 00:01:00,840
the man who began our first decade of

13
00:01:05,980 --> 00:01:03,210

manned spaceflight would command a

14
00:01:11,060 --> 00:01:05,990
mission that would close that decade

15
00:01:13,310 --> 00:01:11,070
Alan Shepard with him Stuart Roosa who

16
00:01:16,660 --> 00:01:13,320
would orbit the moon alone while Shepard

17
00:01:20,150 --> 00:01:16,670
and Edgar Mitchell explored its surface

18
00:01:24,730 --> 00:01:20,160
their destination a rugged area of lunar

19
00:01:27,499 --> 00:01:24,740
Highlands called fra mauro Apollo 13

20
00:01:31,130 --> 00:01:27,509
aborted as it neared the moon had been

21
00:01:32,499 --> 00:01:31,140
unable to land at this site now we were

22
00:01:37,460 --> 00:01:32,509
trying again

23
00:01:39,350 --> 00:01:37,470
but why fra mauro what happened to the

24
00:01:42,410 --> 00:01:39,360
moon during its first billion years a

25
00:01:43,669 --> 00:01:42,420
period of raised on earth how did the

26
00:01:46,969 --> 00:01:43,679
earth and moon different overall

27
00:01:48,710 --> 00:01:46,979
composition by visiting fra mauro we

28
00:01:51,020 --> 00:01:48,720
hope to sample a very bedrock of the

29
00:01:53,839 --> 00:01:51,030
moon material very different from that

30
00:01:54,919 --> 00:01:53,849
so far collected material perhaps dating

31
00:01:58,249 --> 00:01:54,929
back to the beginning of the solar

32
00:02:00,800 --> 00:01:58,259
system how can you think of the soil

33
00:02:02,449 --> 00:02:00,810
being 4.5 billion years old when igneous

34
00:02:06,529 --> 00:02:02,459
rocks which presumably underlying are

35
00:02:09,919 --> 00:02:06,539
only 3.5 or 3.7 billion years old this I

36
00:02:13,160 --> 00:02:09,929
suppose will be dramatically refuted or

37
00:02:16,130 --> 00:02:13,170
confirmed at the Apollo 14 mission when

38
00:02:19,010 --> 00:02:16,140

they actually visit from our most of the

39
00:02:21,500 --> 00:02:19,020
activity is associated with one place on

40
00:02:24,680 --> 00:02:21,510
the moon and we have tentatively located

41
00:03:12,149 --> 00:02:24,690
that place in or near the crater from

42
00:03:17,080 --> 00:03:14,559
everything went smoothly during Earth

43
00:03:20,830 --> 00:03:17,090
orbit and for the burn that sent Apollo

44
00:03:23,890 --> 00:03:20,840
14 toward the moon then Stuart Roosa

45
00:03:26,190 --> 00:03:23,900
moved the command module Kittyhawk to a

46
00:03:28,869 --> 00:03:26,200
docking with the lunar module Antares

47
00:03:57,250 --> 00:03:28,879
still attached to the third stage of the

48
00:04:00,309 --> 00:03:57,260
booster twice they tried three times as

49
00:04:02,050 --> 00:04:00,319
the astronauts waited an identical

50
00:04:05,199 --> 00:04:02,060
docking probe was brought into Mission

51
00:04:07,869 --> 00:04:05,209
Control this probe on the command module

52
00:04:10,869 --> 00:04:07,879
fits into a funnel-like device on the

53
00:04:13,750 --> 00:04:10,879
lunar module called a drogue tiny

54
00:04:17,080 --> 00:04:13,760
catches on the probes point engaged the

55
00:04:21,610 --> 00:04:17,090
drogue it was these capture latches that

56
00:04:31,570 --> 00:04:21,620
were not holding in space the astronauts

57
00:04:35,790 --> 00:04:31,580
tried a fourth time and a fifth in space

58
00:04:49,670 --> 00:04:35,800
on earth they searched for a solution

59
00:04:54,180 --> 00:04:52,350
as they coasted to the moon the crew

60
00:04:58,260 --> 00:04:54,190
brought the probe inside the spacecraft

61
00:04:59,570 --> 00:04:58,270
for examination on earth the probe was

62
00:05:01,890 --> 00:04:59,580
tested and retested

63
00:05:03,899 --> 00:05:01,900

for we had to be sure that the probe

64
00:05:06,540 --> 00:05:03,909
would work for the most critical docking

65
00:05:11,249 --> 00:05:06,550
as Shepard and Mitchell returned from

66
00:05:17,990 --> 00:05:11,259
the lunar surface on February 4th Apollo

67
00:05:21,689 --> 00:05:18,000
14 went into orbit around the moon as

68
00:05:23,879 --> 00:05:21,699
Apollo 14 was on its first orbit the

69
00:05:27,210 --> 00:05:23,889
third stage of the Boosters smashed into

70
00:05:29,640 --> 00:05:27,220
the moon at its planned target point its

71
00:05:36,779 --> 00:05:29,650
impact picked up by the seismometer left

72
00:05:39,719 --> 00:05:36,789
by Apollo 12 the structure of the moon's

73
00:05:42,990 --> 00:05:39,729
interior is one of the major mysteries

74
00:05:46,309 --> 00:05:43,000
of lunar science now another piece was

75
00:05:48,570 --> 00:05:46,319
added that could help solve the puzzle

76
00:05:51,149 --> 00:05:48,580
later that day Shepard and Mitchell

77
00:06:00,059 --> 00:05:51,159
climbed into the lunar module Antares

78
00:06:01,740 --> 00:06:00,069
and undocked prior to descent but as

79
00:06:05,279 --> 00:06:01,750
they checked out the lunar module a

80
00:06:07,920 --> 00:06:05,289
problem appeared an erroneous abort was

81
00:06:10,920 --> 00:06:07,930
being signaled on board Antares and in

82
00:06:13,769 --> 00:06:10,930
Mission Control should this occur during

83
00:06:16,019 --> 00:06:13,779
the landing burn Antares would abort

84
00:06:19,230 --> 00:06:16,029
automatically and the landing would be

85
00:06:22,409 --> 00:06:19,240
off the Mission Control team had two

86
00:06:25,589 --> 00:06:22,419
hours the time of one lunar orbit to

87
00:06:28,230 --> 00:06:25,599
find a solution flight controller dick

88
00:06:31,800 --> 00:06:28,240

Thorson diagnosed the trouble as a loose

89
00:06:33,629 --> 00:06:31,810
particle in the abort button the burden

90
00:06:35,070 --> 00:06:33,639
then came to rest on the shoulders of

91
00:06:37,040 --> 00:06:35,080
computer programmer

92
00:06:39,650 --> 00:06:37,050
Donald Isles

93
00:06:43,040 --> 00:06:39,660
working against time at MIT in Cambridge

94
00:06:45,529 --> 00:06:43,050
Massachusetts he reprogrammed the lunar

95
00:06:49,430 --> 00:06:45,539
module computer to ignore the false

96
00:06:54,110 --> 00:06:49,440
signal this new program was then checked

97
00:06:56,210 --> 00:06:54,120
out in a simulator at Cape Kennedy as

98
00:06:58,520 --> 00:06:56,220
antarious came into contact with earth

99
00:07:07,580 --> 00:06:58,530
again the instructions were sent up to

100
00:07:10,339 --> 00:07:07,590
the crew less than 10 miles above the

101
00:07:21,290 --> 00:07:10,349
lunar surface Shepard and Mitchell swept

102
00:07:24,680 --> 00:07:21,300
across the landing site then another

103
00:07:26,450 --> 00:07:24,690
problem the landing radar which would

104
00:07:31,320 --> 00:07:26,460
tell them their altitude above the lunar

105
00:07:36,689 --> 00:07:35,100
aboard radar there is that you would

106
00:08:08,850 --> 00:07:36,699
like you to cycle the landing radar

107
00:08:11,839 --> 00:08:08,860
breaker okay okay cone crater a major

108
00:08:14,999 --> 00:08:11,849
objective of this mission to Fra Mauro a

109
00:08:18,330 --> 00:08:15,009
hole blasted in the moon's surface eons

110
00:08:20,760 --> 00:08:18,340
ago it could provide a scientific clue

111
00:08:30,270 --> 00:08:20,770
for the history of the men for the earth

112
00:08:34,510 --> 00:08:32,830
we think that the fra mauro area was

113
00:08:36,490 --> 00:08:34,520

formed from materials thrown out by the

114
00:08:39,790 --> 00:08:36,500
impact that created the Imbrium basin to

115
00:08:41,950 --> 00:08:39,800
the north if this is the case we could

116
00:08:45,430 --> 00:08:41,960
get samples torn out from the deep of 60

117
00:08:47,290 --> 00:08:45,440
miles in the lunar crust all in all the

118
00:08:48,820 --> 00:08:47,300
from our material should contain a great

119
00:08:51,310 --> 00:08:48,830
deal of new information about the early

120
00:08:52,780 --> 00:08:51,320
history of the moon and thus help us to

121
00:09:01,690 --> 00:08:52,790
better understand the formation of our

122
00:09:06,460 --> 00:09:03,820
hey I can give it a few flakes to

123
00:09:09,040 --> 00:09:06,470
through two hundred feet until I have a

124
00:09:12,460 --> 00:09:09,050
per second that looks good mental here

125
00:09:14,080 --> 00:09:12,470
I predict you look great

126
00:09:18,610 --> 00:09:14,090
okay look like you're going right over

127
00:09:23,100 --> 00:09:18,620
there metal of birth Triplett 270 feet

128
00:09:31,450 --> 00:09:27,040
okay solid you're just barely from the

129
00:09:33,940 --> 00:09:31,460
moisture barely conscious it could land

130
00:09:37,780 --> 00:09:33,950
over here there's some stuff out god

131
00:09:43,680 --> 00:09:37,790
you're old you down right now okay third

132
00:09:49,210 --> 00:09:43,690
good rhodium looking great sixty Seconds

133
00:09:54,160 --> 00:09:49,220
forty feet three feet per second 30 feet

134
00:10:10,660 --> 00:10:07,030
the second contact five-and-a-half hours

135
00:10:18,730 --> 00:10:10,670
later Shepard left the lunar module to

136
00:10:23,470 --> 00:10:18,740
begin the first of two explorations ten

137
00:10:27,010 --> 00:10:23,480
years later 114 hours 22 minutes after

138
00:10:31,150 --> 00:10:27,020

leaving Earth Alan Shepard stepped onto

139
00:10:44,770 --> 00:10:31,160
the moon it looks like you're about on

140
00:10:46,540 --> 00:10:44,780
the bottom step and on the surface four

141
00:10:53,749 --> 00:10:46,550
minutes later he was joined by Ed

142
00:10:58,739 --> 00:10:55,949
following the tradition of two previous

143
00:11:09,619 --> 00:10:58,749
missions Shepard and Mitchell planted

144
00:11:15,389 --> 00:11:12,569
the next job was to load the met a

145
00:11:17,220 --> 00:11:15,399
rickshaw like wagon the astronauts would

146
00:11:22,259 --> 00:11:17,230
use to transport their tools of

147
00:11:24,269 --> 00:11:22,269
exploration and collected samples one of

148
00:11:27,869 --> 00:11:24,279
the big factors in lunar exploration is

149
00:11:30,449 --> 00:11:27,879
mobility in Apollo 14 we had the met

150
00:11:33,389 --> 00:11:30,459
which let us move further afield in the

151
00:11:35,970 --> 00:11:33,399
previous two missions in future missions

152
00:11:39,269 --> 00:11:35,980
we'll use the lunar rover a sort of moon

153
00:11:40,979 --> 00:11:39,279
going dune buggie this mobility will

154
00:11:42,509 --> 00:11:40,989
mean less time spending getting from

155
00:11:54,929 --> 00:11:42,519
here to there and more time collecting

156
00:11:56,939 --> 00:11:54,939
scientific data Shepard pulled the met

157
00:11:59,609 --> 00:11:56,949
while Mitchell carried the bar bell

158
00:12:02,090 --> 00:11:59,619
shaped package containing an automatic

159
00:12:04,259 --> 00:12:02,100
scientific station they would assemble a

160
00:12:07,590 --> 00:12:04,269
station designed to continue

161
00:12:40,560 --> 00:12:07,600
broadcasting data to earth for a year

162
00:12:44,890 --> 00:12:43,030
finding a suitable site to place the

163
00:12:47,680 --> 00:12:44,900

scientific instruments was the next

164
00:12:49,630 --> 00:12:47,690
order of business Shepard and Mitchell

165
00:12:55,000 --> 00:12:49,640
now began setting up the automated

166
00:12:58,870 --> 00:12:55,010
scientific laboratory a small nuclear

167
00:13:02,220 --> 00:12:58,880
generator to power the array the Central

168
00:13:04,810 --> 00:13:02,230
Station to transmit data to earth a

169
00:13:10,300 --> 00:13:04,820
seismometer to detect and measure

170
00:13:12,880 --> 00:13:10,310
activity on and within the moon a series

171
00:13:16,620 --> 00:13:12,890
of three experiments to measure charged

172
00:13:19,720 --> 00:13:16,630
particles near the lunar surface an

173
00:13:23,080 --> 00:13:19,730
independent experiment to reflect laser

174
00:13:25,120 --> 00:13:23,090
beams from Earth enabling extremely

175
00:13:28,180 --> 00:13:25,130
precise measurements of such things as

176
00:13:31,500 --> 00:13:28,190
earth to moon distance the wobble of the

177
00:13:36,460 --> 00:13:31,510
Earth's axis continental drift and

178
00:13:38,530 --> 00:13:36,470
shifts of the Earth's crust and a mortar

179
00:13:42,280 --> 00:13:38,540
to be fired by a signal from Earth

180
00:13:44,020 --> 00:13:42,290
sometime within the next year the impact

181
00:13:47,540 --> 00:13:44,030
of its charges would be picked up by

182
00:13:51,079 --> 00:13:47,550
Apollo 14 seismometer

183
00:13:53,660 --> 00:13:51,089
as a final exercise Mitchell used the

184
00:13:57,290 --> 00:13:53,670
thumper a device to explode a series of

185
00:13:59,840 --> 00:13:57,300
controlled shotgun like charges the

186
00:14:02,180 --> 00:13:59,850
vibrations from these detonations were

187
00:14:06,110 --> 00:14:02,190
picked up by a series of instruments he

188
00:14:08,600 --> 00:14:06,120

had previously deployed with the

189
00:14:11,210 --> 00:14:08,610
instruments set up and operating they

190
00:14:16,940 --> 00:14:11,220
headed back toward Antares pausing on

191
00:14:19,340 --> 00:14:16,950
the way to collect samples they loaded

192
00:14:21,590 --> 00:14:19,350
their 44 pounds of lunar material aboard

193
00:14:24,620 --> 00:14:21,600
the lunar module and after four hours

194
00:14:28,850 --> 00:14:24,630
and 50 minutes on the surface climbed

195
00:14:35,630 --> 00:14:33,320
as Shepard and Mitchell rested Stuart

196
00:14:41,690 --> 00:14:35,640
Roosa continued his work from lunar

197
00:14:47,490 --> 00:14:44,610
his photographs would have meaning not

198
00:14:49,200 --> 00:14:47,500
only to the scientific community but

199
00:15:00,630 --> 00:14:49,210
would have direct bearing on the

200
00:15:03,000 --> 00:15:00,640
planning for coming missions 12 hours 40

201
00:15:16,000 --> 00:15:03,010
minutes later Shepard and Mitchell began

202
00:15:20,690 --> 00:15:18,170
after loading the lunar rickshaw

203
00:15:25,340 --> 00:15:20,700
mitchell began the journey to cone

204
00:15:58,489 --> 00:15:25,350
crater Shepard adjusted the television

205
00:16:04,979 --> 00:16:02,340
point a the first stop on the trip to

206
00:16:07,319 --> 00:16:04,989
comb here they would collect and

207
00:16:10,139 --> 00:16:07,329
document samples measure the local

208
00:16:24,289 --> 00:16:10,149
magnetic field and take core tube

209
00:16:29,400 --> 00:16:26,699
the quality of the scientific

210
00:16:32,129 --> 00:16:29,410
description by the astronauts could be

211
00:16:34,489 --> 00:16:32,139
termed by earth-based scientists only as

212
00:16:37,669 --> 00:16:34,499
excellent

213
00:16:40,590 --> 00:16:37,679

but now Shepard and Mitchell pushed on

214
00:16:43,679 --> 00:16:40,600
after a brief stop at a second survey

215
00:16:46,619 --> 00:16:43,689
site they began their assault on cone

216
00:16:49,319 --> 00:16:46,629
crater a climb not only toward the

217
00:16:54,479 --> 00:16:49,329
summit of a lunar mountain but back

218
00:16:57,030 --> 00:16:54,489
through time a large crater acts in many

219
00:16:59,059 --> 00:16:57,040
respects like a drill throwing out

220
00:17:01,439 --> 00:16:59,069
material from deep beneath the surface

221
00:17:03,720 --> 00:17:01,449
this material should be very different

222
00:17:05,519 --> 00:17:03,730
from any we've collected before perhaps

223
00:17:12,670 --> 00:17:05,529
dating back to the origins of the moon

224
00:17:12,680 --> 00:17:22,780
permanent point but indefinitely uphill

225
00:17:28,460 --> 00:17:25,400
how do I pull up the sizes big trader

226
00:17:31,700 --> 00:17:28,470
came take a break get the map find out

227
00:17:33,680 --> 00:17:31,710
exactly where we are the maps they were

228
00:17:37,250 --> 00:17:33,690
using had been made from photography

229
00:17:40,100 --> 00:17:37,260
from lunar orbit the hummert's craters

230
00:18:54,250 --> 00:17:40,110
ridges and boulders took on a new

231
00:18:59,270 --> 00:18:56,740
now they were working against time

232
00:19:01,549 --> 00:18:59,280
against the oxygen and water left in

233
00:19:04,850 --> 00:19:01,559
their backpacks against the alien

234
00:19:53,209 --> 00:19:04,860
terrain top orig thinking it's the rim

235
00:19:58,709 --> 00:19:55,919
standing in a boulder field surrounded

236
00:20:00,779 --> 00:19:58,719
by rocks 10 to 12 feet long the

237
00:20:03,839 --> 00:20:00,789
astronauts made their most difficult

238
00:20:07,169 --> 00:20:03,849

decision with the concurrence of Mission

239
00:20:10,469 --> 00:20:07,179
Control they stopped their climb less

240
00:20:15,529 --> 00:20:10,479
than 150 feet from the edge to begin the

241
00:20:20,729 --> 00:20:18,180
the crew had no way of realizing they

242
00:20:21,930 --> 00:20:20,739
were so close it was a week after the

243
00:20:26,459 --> 00:20:21,940
mission before we determine this by

244
00:20:29,039 --> 00:20:26,469
photographic analysis while they could

245
00:20:31,229 --> 00:20:29,049
overcome the terrain they could not beat

246
00:20:34,229 --> 00:20:31,239
the steady drain of oxygen from their

247
00:20:36,869 --> 00:20:34,239
backpacks in the terms of scientific

248
00:20:41,159 --> 00:20:36,879
meaning the decision not to go on to the

249
00:21:00,359 --> 00:20:41,169
rim meant little in human terms a great

250
00:21:02,129 --> 00:21:00,369
disappointment the white rock is of

251
00:21:04,979 --> 00:21:02,139
different composition to the Apollo 11

252
00:21:06,180 --> 00:21:04,989
and 12 rocks in fact the chemistry of

253
00:21:08,719 --> 00:21:06,190
all the rocks that are being looked at

254
00:21:10,799 --> 00:21:08,729
so far is different to those rocks

255
00:21:12,509 --> 00:21:10,809
potassium and uranium are 10 times

256
00:21:14,219 --> 00:21:12,519
higher which are the sort of values we

257
00:21:16,799 --> 00:21:14,229
might expect if the firm are rocks

258
00:21:20,230 --> 00:21:16,809
represent ancient lunar crust which of

259
00:21:39,360 --> 00:21:23,530
again it was time time to head back to

260
00:21:43,950 --> 00:21:41,760
after a quick side trip to check on the

261
00:21:46,590 --> 00:21:43,960
science station they loaded the lunar

262
00:21:49,200 --> 00:21:46,600
module with samples and data and stepped

263
00:21:51,960 --> 00:21:49,210

off the lunar surface the second

264
00:21:55,650 --> 00:21:51,970
expedition had lasted four hours and 35

265
00:22:01,110 --> 00:21:55,660
minutes a total exploration of a record

266
00:22:03,810 --> 00:22:01,120
nine and one-half hours thirty three and

267
00:22:06,000 --> 00:22:03,820
a half hours after they landed Alan

268
00:22:34,070 --> 00:22:06,010
Shepard and Edgar Mitchell lifted off in

269
00:22:34,080 --> 00:22:41,220
Oh baby it's the record

270
00:22:45,930 --> 00:22:44,010
doing up good use

271
00:22:51,120 --> 00:22:45,940
Roger you're looking good from down here

272
00:22:53,760 --> 00:22:51,130
up on one minute half an hour later

273
00:23:10,890 --> 00:22:53,770
Stuart Roosa watched their progress from

274
00:23:15,030 --> 00:23:13,470
is an anticipation gaming it about

275
00:23:16,920 --> 00:23:15,040
Arthur speed closing in a little more

276
00:23:30,090 --> 00:23:16,930
for the pictures of the service module

277
00:23:39,060 --> 00:23:30,100
of Khmer mighdal okay okay it's food and

278
00:23:45,650 --> 00:23:39,070
around we go ohhh oh you look good there

279
00:23:45,660 --> 00:23:50,810
rope

280
00:23:59,870 --> 00:23:57,920
would you believe 360,000 yeah Kenny

281
00:24:02,960 --> 00:23:59,880
Arkansas an extremely smooth loop we're

282
00:24:08,840 --> 00:24:02,970
sitting at the 70 feet watching him go

283
00:24:11,600 --> 00:24:08,850
around he looks very clean the

284
00:24:32,979 --> 00:24:11,610
inspection complete Antares and Kitty

285
00:24:41,599 --> 00:24:38,799
and we got a hard dock big fire breather

286
00:24:43,759 --> 00:24:41,609
they transferred the gear from Antares

287
00:24:47,060 --> 00:24:43,769
to Kittyhawks buttoned up the tunnel

288
00:24:48,649 --> 00:24:47,070

then jettison the lunar module it would

289
00:24:51,649 --> 00:24:48,659
crash into the moon at a predetermined

290
00:24:54,709 --> 00:24:51,659
spot its impact picked up by their

291
00:25:00,379 --> 00:24:54,719
seismometer and the seismometer left by

292
00:25:02,239 --> 00:25:00,389
Apollo 12 over a year earlier a hundred

293
00:25:04,969 --> 00:25:02,249
and forty nine hours after they left

294
00:25:09,049 --> 00:25:04,979
Earth they performed the burn that broke

295
00:25:11,029 --> 00:25:09,059
them out of lunar orbit during the coast

296
00:25:14,389 --> 00:25:11,039
to earth there would be time to catch up

297
00:25:20,779 --> 00:25:14,399
on sleep relax and do all the little

298
00:25:23,509 --> 00:25:20,789
things left undone and there was one

299
00:25:25,839 --> 00:25:23,519
more item a series of scientific

300
00:25:28,190 --> 00:25:25,849
demonstrations in zero gravity

301
00:25:32,569 --> 00:25:28,200
demonstrations impossible to reproduce

302
00:25:34,129 --> 00:25:32,579
on earth these trials looked at basic

303
00:25:37,190 --> 00:25:34,139
physical properties of matter in

304
00:25:40,339 --> 00:25:37,200
zero-gravity studies that could lead

305
00:25:45,680 --> 00:25:40,349
eventually to new materials manufactured

306
00:25:49,669 --> 00:25:45,690
in space for use on earth on February

307
00:25:52,489 --> 00:25:49,679
9th 1971 nine days after they left Earth

308
00:25:55,419 --> 00:25:52,499
the crew of Apollo 14 hit the atmosphere

309
00:25:57,940 --> 00:25:55,429
of their planet at a speed of over

310
00:26:01,459 --> 00:25:57,950
24,000 miles per hour

311
00:26:05,599 --> 00:26:01,469
they hurtled toward Earth a meteor

312
00:26:12,470 --> 00:26:05,609
heading home on board 95 pounds of the

313
00:26:16,260 --> 00:26:14,520

extremely important those relate to the

314
00:26:19,230 --> 00:26:16,270
question of why we while we're fooling

315
00:26:21,450 --> 00:26:19,240
around the loan it's really that the the

316
00:26:23,520 --> 00:26:21,460
imprint of history of solar system

317
00:26:24,690 --> 00:26:23,530
history on the earth-moon system is

318
00:26:31,400 --> 00:26:24,700
centered on the moon for the first

319
00:26:36,600 --> 00:26:33,990
what do we hope to gain is we've got a

320
00:26:38,549 --> 00:26:36,610
window right now between T equals zero

321
00:26:41,040 --> 00:26:38,559
the beginning of the solar system and

322
00:26:43,370 --> 00:26:41,050
when the earth so totally messed up

323
00:26:46,799 --> 00:26:43,380
itself that we can't look at it anymore

324
00:26:54,330 --> 00:26:46,809
we'd like to look in there and that

325
00:26:56,180 --> 00:26:54,340
windows on the moon Apollo 14 has

326
00:26:58,880 --> 00:26:56,190
already had a very big scientific impact

327
00:27:01,200 --> 00:26:58,890
and we still have three missions left

328
00:27:05,630 --> 00:27:01,210
they'll be heading into even more rugged

329
00:27:10,860 --> 00:27:09,000
beginning with Apollo 15 the lunar rover

330
00:27:13,560 --> 00:27:10,870
will let us range further afield and

331
00:27:21,390 --> 00:27:13,570
collect more and more very percent of

332
00:27:23,640 --> 00:27:21,400
examples and information the study of

333
00:27:24,870 --> 00:27:23,650
the moon and how for instance elements

334
00:27:27,600 --> 00:27:24,880
and minerals are distributed in its

335
00:27:29,960 --> 00:27:27,610
crust will enable us to learn more about

336
00:27:32,250 --> 00:27:29,970
the process of crest formation on earth

337
00:27:33,990 --> 00:27:32,260
leading to a better understanding of the

338
00:27:37,530 --> 00:27:34,000

way that certain elements concentrate in

339
00:27:39,000 --> 00:27:37,540
the crust will we have had enough

340
00:27:42,780 --> 00:27:39,010
missions to the moon by the end of the

341
00:27:44,880 --> 00:27:42,790
Apollo program probably not you can