1
00:00:17,990 --> 00:00:15,980
hello I'm Janine Dewayne welcome to our

2
00:00:21,410 --> 00:00:18,000
children's video on Space Station

3
00:00:23,420 --> 00:00:21,420
freedom this video has three parts my

4
00:00:26,269 --> 00:00:23,430
introductory message primarily to

5
00:00:28,970 --> 00:00:26,279
teachers a social studies part that

6
00:00:31,909 --> 00:00:28,980
explores presidential space policies and

7
00:00:35,030 --> 00:00:31,919
the children's video Hey what Space

8
00:00:37,910 --> 00:00:35,040
Station freedom the NASA logo and title

9
00:00:40,970 --> 00:00:37,920
appear before each part to guide you

10
00:00:43,400 --> 00:00:40,980
when you're fast-forwarding having been

11
00:00:45,350 --> 00:00:43,410
in the classroom for many years I know

12
00:00:48,110 --> 00:00:45,360
that it's the question students ask

13
00:00:50,120 --> 00:00:48,120

which facilitate the learning process in

14
00:00:52,610 --> 00:00:50,130
order to excite questions there must be

15
00:00:54,710 --> 00:00:52,620
interest in the subject this is why

16
00:00:56,930 --> 00:00:54,720
curriculum designers use the technique

17
00:00:59,780 --> 00:00:56,940
of weaving learning into a unit with

18
00:01:03,200 --> 00:00:59,790
subject matter a proven interest such as

19
00:01:05,149 --> 00:01:03,210
the ubiquitous dinosaur however interest

20
00:01:08,359 --> 00:01:05,159
is heightened if the subject matter is

21
00:01:10,219 --> 00:01:08,369
also relevant studies have shown that

22
00:01:12,500 --> 00:01:10,229
the human role in space and the

23
00:01:15,230 --> 00:01:12,510
knowledge needed science math and

24
00:01:17,300 --> 00:01:15,240
technology is relevant in today's world

25
00:01:20,240 --> 00:01:17,310
and will be even more relevant in the

26
00:01:23,810 --> 00:01:20,250
future by the time space station freedom

27
00:01:25,970 --> 00:01:23,820
is permanently occupied in the year 2000

28
00:01:28,160 --> 00:01:25,980
the middle school child viewing this

29
00:01:30,830 --> 00:01:28,170
video today will be about ready to

30
00:01:32,600 --> 00:01:30,840
graduate from college will that child be

31
00:01:36,530 --> 00:01:32,610
working on Space Station freedom

32
00:01:39,410 --> 00:01:36,540
very possibly this video is intended to

33
00:01:41,390 --> 00:01:39,420
be a classroom tool space provides an

34
00:01:43,820 --> 00:01:41,400
excellent basis for curriculum and

35
00:01:45,860 --> 00:01:43,830
captures the students imagination in

36
00:01:48,469 --> 00:01:45,870
pursuit of academic achievement and

37
00:01:50,060 --> 00:01:48,479
practical knowledge just as the

38
00:01:52,160 --> 00:01:50,070

imagination of the children in this

39
00:01:54,310 --> 00:01:52,170
video takes them to a living and working

40
00:01:57,050 --> 00:01:54,320
environment literally out of this world

41
00:01:59,510 --> 00:01:57,060
teachers can design classroom activities

42
00:02:01,039 --> 00:01:59,520
in support of all disciplines what

43
00:02:04,030 --> 00:02:01,049
things or experience would stimulate

44
00:02:06,140 --> 00:02:04,040
students in response to this videotape I

45
00:02:08,660 --> 00:02:06,150
personally have been asked on many

46
00:02:10,699 --> 00:02:08,670
occasion the question is it human space

47
00:02:13,280 --> 00:02:10,709
exploration just for scientists and

48
00:02:16,729 --> 00:02:13,290
engineering astronauts to the contrary

49
00:02:19,220 --> 00:02:16,739
let's take art as an example art has

50
00:02:21,610 --> 00:02:19,230
been at the forefront and sometimes the

51
00:02:24,309 --> 00:02:21,620
genesis of most major scientific

52
00:02:25,930 --> 00:02:24,319
disciplines a scientist who discovers

53
00:02:28,030 --> 00:02:25,940
the most wonderful things has done

54
00:02:30,940 --> 00:02:28,040
nothing at all unless the discoveries

55
00:02:33,039 --> 00:02:30,950
have been communicated to others in this

56
00:02:34,930 --> 00:02:33,049
video you will witness the artist

57
00:02:37,089 --> 00:02:34,940
conception of things which could not be

58
00:02:39,789 --> 00:02:37,099
photographed because they did not really

59
00:02:42,149 --> 00:02:39,799
happen only the medium of the artists

60
00:02:45,369 --> 00:02:42,159
imagination made them real for us

61
00:02:47,800 --> 00:02:45,379
another activity one may explore is the

62
00:02:50,130 --> 00:02:47,810
multinational aspects of the project

63
00:02:53,380 --> 00:02:50,140

there are four international partners

64
00:02:56,710 --> 00:02:53,390
Canada the European Space Agency which

65
00:02:59,229 --> 00:02:56,720
represents 13 countries Japan and of

66
00:03:01,270 --> 00:02:59,239
course the United States each nation

67
00:03:04,390 --> 00:03:01,280
contributes to the program in a special

68
00:03:07,630 --> 00:03:04,400
way pins placed on each country on a map

69
00:03:11,160 --> 00:03:07,640
will show world participation curriculum

70
00:03:13,990 --> 00:03:11,170
possibilities on this idea seem endless

71
00:03:16,089 --> 00:03:14,000
speaking of maps you may obtain a

72
00:03:17,860 --> 00:03:16,099
mission chart which plots the orbits of

73
00:03:20,259 --> 00:03:17,870
the shuttle and Space Station freedom

74
00:03:23,380 --> 00:03:20,269
missions because kids will want to know

75
00:03:26,259 --> 00:03:23,390
can we see it where do we look get a

76
00:03:28,990 --> 00:03:26,269
copy of spark the shuttle prediction and

77
00:03:31,449 --> 00:03:29,000
recognition kit from NASA and follow the

78
00:03:33,819 --> 00:03:31,459
instructions you and your students will

79
00:03:36,339 --> 00:03:33,829
be able to answer these questions while

80
00:03:39,430 --> 00:03:36,349
learning valuable mathematical concepts

81
00:03:41,020 --> 00:03:39,440
once inside freedom the characters in

82
00:03:43,409 --> 00:03:41,030
our video experience some of the

83
00:03:45,819 --> 00:03:43,419
problems of living and working in space

84
00:03:48,220 --> 00:03:45,829
imagine being in a constant state of

85
00:03:50,619 --> 00:03:48,230
freefall how would a shower work a

86
00:03:54,099 --> 00:03:50,629
toilet how would you get around or stay

87
00:03:55,960 --> 00:03:54,109
put you can't lie down in space so would

88
00:03:59,170 --> 00:03:55,970

you need a bed where do you get water

89
00:04:01,509 --> 00:03:59,180
the questions seem endless freedom is

90
00:04:03,280 --> 00:04:01,519
described as a science laboratory in

91
00:04:05,740 --> 00:04:03,290
which experiments are performed which

92
00:04:07,300 --> 00:04:05,750
could not be performed on earth the

93
00:04:09,220 --> 00:04:07,310
students may wish to discuss the

94
00:04:11,439 --> 00:04:09,230
experiments described in the cartoon

95
00:04:14,080 --> 00:04:11,449
portion of the video a wealth of

96
00:04:17,140 --> 00:04:14,090
interesting vocabulary is presented such

97
00:04:19,500 --> 00:04:17,150
as solar arrays tracking avionics truss

98
00:04:22,210 --> 00:04:19,510
propulsion and node to mention a few

99
00:04:24,100 --> 00:04:22,220
binding definitions in investigating the

100
00:04:26,500 --> 00:04:24,110
technology associated with these words

101
00:04:28,240 --> 00:04:26,510
creates a knowledge base for students

102
00:04:30,750 --> 00:04:28,250
who will grow up in a time of an

103
00:04:33,550 --> 00:04:30,760
expanded environment beyond our planet

104
00:04:35,290 --> 00:04:33,560
ideas for classroom activities using the

105
00:04:38,020 --> 00:04:35,300
space theme across Aldous

106
00:04:40,809 --> 00:04:38,030
have been developed by nasa's education

107
00:04:43,809 --> 00:04:40,819
division students are the benefactors of

108
00:04:59,779 --> 00:04:43,819
teachers dreams let's keep this dream

109
00:05:04,320 --> 00:05:02,309
the following segment shows a

110
00:05:06,989 --> 00:05:04,330
chronological series of three

111
00:05:08,609 --> 00:05:06,999
presidential pronouncements students may

112
00:05:10,799 --> 00:05:08,619
wish to research the impact of

113
00:05:13,109 --> 00:05:10,809

presidential leadership on space policy

114
00:05:15,419 --> 00:05:13,119
over the years some presidents have

115
00:05:17,790 --> 00:05:15,429
championed the space program and had a

116
00:05:20,279 --> 00:05:17,800
strong influence on Congress to fund the

117
00:05:22,439 --> 00:05:20,289
various programs students may wish to

118
00:05:24,989 --> 00:05:22,449
study how funding for the space program

119
00:05:27,359 --> 00:05:24,999
is achieved what steps must be taken by

120
00:05:30,419 --> 00:05:27,369
NASA to obtain the funds and how they

121
00:05:32,549 --> 00:05:30,429
are spent on different programs now here

122
00:05:48,110 --> 00:05:32,559
are three presidential pronouncements

123
00:05:54,920 --> 00:05:51,740
now it is time to take longest rise time

124
00:05:56,800 --> 00:05:54,930
for a great new American Enterprise time

125
00:06:00,800 --> 00:05:56,810
for this nation to take a clearly

126
00:06:03,680 --> 00:06:00,810
leading role in space achievement which

127
00:06:11,000 --> 00:06:03,690
in many ways may hold the key to our

128
00:06:13,219 --> 00:06:11,010
future on earth I believe that this

129
00:06:16,370 --> 00:06:13,229
nation should commit itself to achieving

130
00:06:19,129 --> 00:06:16,380
the goal before this decade is out of

131
00:06:20,890 --> 00:06:19,139
landing a man on the moon and returning

132
00:06:23,540 --> 00:06:20,900
him safely to the earth

133
00:06:26,690 --> 00:06:23,550
no single space project in this period

134
00:06:28,430 --> 00:06:26,700
will be more impressive to mankind or

135
00:06:37,940 --> 00:06:28,440
more important for the long-range

136
00:06:40,790 --> 00:06:37,950
exploration of space beginning with the

137
00:06:44,360 --> 00:06:40,800
next flight the Columbia and our sister

138
00:06:46,879 --> 00:06:44,370

ships will be fully operational ready to

139
00:06:49,629 --> 00:06:46,889
provide economical and routine access to

140
00:06:52,670 --> 00:06:49,639
space for scientific exploration

141
00:06:56,080 --> 00:06:52,680
commercial ventures and for tasks

142
00:06:59,029 --> 00:06:56,090
related to the national security

143
00:07:01,790 --> 00:06:59,039
simultaneously we must look aggressively

144
00:07:03,370 --> 00:07:01,800
to the future by demonstrating the

145
00:07:05,629 --> 00:07:03,380
potential of the shuttle and

146
00:07:09,320 --> 00:07:05,639
establishing a more permanent presence

147
00:07:16,670 --> 00:07:13,909
I recently approved a national space

148
00:07:20,209 --> 00:07:16,680
policy statement which is being released

149
00:07:21,379 --> 00:07:20,219
today our goals for space are ambitious

150
00:07:24,830 --> 00:07:21,389
yet achievable

151
00:07:27,339 --> 00:07:24,840
they include continued space activity

152
00:07:30,129 --> 00:07:27,349
for economic and scientific benefits

153
00:07:32,800 --> 00:07:30,139
expanding private investment and

154
00:07:36,129 --> 00:07:32,810
involvement in space related activities

155
00:07:37,999 --> 00:07:36,139
promoting international uses of space

156
00:07:40,640 --> 00:07:38,009
cooperating with other nations to

157
00:07:42,830 --> 00:07:40,650
maintain the freedom of space for all

158
00:07:46,430 --> 00:07:42,840
activities that enhance the security and

159
00:07:48,830 --> 00:07:46,440
welfare of mankind strengthening our own

160
00:07:52,219 --> 00:07:48,840
security by exploring new methods of

161
00:08:06,769 --> 00:07:52,229
using space as a means of maintaining

162
00:08:12,260 --> 00:08:06,779
the peace 1961 it took a crisis the

163
00:08:14,629 --> 00:08:12,270

space race to speed things up today we

164
00:08:17,830 --> 00:08:14,639
don't have a crisis we have an

165
00:08:20,779 --> 00:08:17,840
opportunity to seize this opportunity

166
00:08:23,439 --> 00:08:20,789
I'm not proposing a 10-year plan like

167
00:08:26,450 --> 00:08:23,449
Apollo I'm proposing a long-range

168
00:08:28,820 --> 00:08:26,460
continuing commitment first for the

169
00:08:31,850 --> 00:08:28,830
coming decade for the 1990s Space

170
00:08:36,560 --> 00:08:31,860
Station freedom our critical next step

171
00:08:39,880 --> 00:08:36,570
in all our space endeavours and and next

172
00:08:43,880 --> 00:08:39,890
for the new century back to the moon

173
00:08:51,800 --> 00:08:43,890
back to the future and this time back to

174
00:08:59,190 --> 00:08:55,970
and then a journey into tomorrow a

175
00:09:07,830 --> 00:08:59,200
journey to another planet a manned

176
00:09:09,780 --> 00:09:07,840
mission to Mars each each mission should

177
00:09:13,440 --> 00:09:09,790
and will lay the groundwork for the next

178
00:09:16,350 --> 00:09:13,450
and the pathway to the Stars begins as

179
00:09:19,560 --> 00:09:16,360
it did 20 years ago with you the

180
00:09:21,330 --> 00:09:19,570
American people and it continues just up

181
00:09:23,880 --> 00:09:21,340
the street there to the United States

182
00:09:26,790 --> 00:09:23,890
Congress where the future of the space

183
00:09:30,720 --> 00:09:26,800
station in our future as a space faring

184
00:09:35,030 --> 00:09:30,730
nation will be decided and yes we're at

185
00:09:39,060 --> 00:09:35,040
a crossroads hard decisions must be made

186
00:09:42,320 --> 00:09:39,070
now as we prepare to enter the next

187
00:09:47,910 --> 00:09:42,330
century on the 30th anniversary of this

188
00:09:50,810 --> 00:09:47,920

extraordinary and astonishing flight the

189
00:09:53,820 --> 00:09:50,820
way to honor the Apollo astronauts is

190
00:09:57,960 --> 00:09:53,830
not by calling them back to Washington

191
00:10:01,280 --> 00:09:57,970
for another round of tributes it is to

192
00:10:04,500 --> 00:10:01,290
have Space Station freedom up there

193
00:10:12,420 --> 00:10:04,510
operational and under way a new bridge

194
00:10:16,470 --> 00:10:12,430
between the worlds and an investment in

195
00:10:33,470 --> 00:10:16,480
the growth prosperity and technological

196
00:10:38,400 --> 00:10:36,270
I'll just Space Station it's a place

197
00:10:41,190 --> 00:10:38,410
where astronauts work when they do their

198
00:10:43,680 --> 00:10:41,200
all kinds neat stuff like that I don't

199
00:10:52,389 --> 00:10:43,690
know let's go us dad dad with the space

200
00:10:57,469 --> 00:10:54,859
you know that research building that's

201
00:10:59,569 --> 00:10:57,479
near the Parkway that's a place where

202
00:11:01,729 --> 00:10:59,579
engineers and scientists and technicians

203
00:11:03,199 --> 00:11:01,739
go to work and Space Station freedom is

204
00:11:05,749 --> 00:11:03,209
gonna be something like that only in

205
00:11:07,549 --> 00:11:05,759
space you mean those buildings in space

206
00:11:10,069 --> 00:11:07,559
well they're very special buildings

207
00:11:11,629 --> 00:11:10,079
called space craft they provide the same

208
00:11:14,900 --> 00:11:11,639
kinds of things that research buildings

209
00:11:17,719 --> 00:11:14,910
do like air and water heat laboratories

210
00:11:20,269 --> 00:11:17,729
and even bathrooms our neighbor mr.

211
00:11:21,650 --> 00:11:20,279
Walker was an astronaut why don't we get

212
00:11:23,329 --> 00:11:21,660
him to tell us about the busy season

213
00:11:25,249 --> 00:11:23,339

freedom that's a good idea

214
00:11:26,539 --> 00:11:25,259
he flew in the space shuttle several

215
00:11:28,699 --> 00:11:26,549
times and is working on the space

216
00:11:29,509 --> 00:11:28,709
station freedom program I'll give him a

217
00:11:31,909 --> 00:11:29,519
call and Ranger

218
00:11:32,599 --> 00:11:31,919
do you think we could get some friends

219
00:11:34,849 --> 00:11:32,609
to come with us

220
00:11:40,879 --> 00:11:34,859
I'm sure mr. Walker wouldn't mind a

221
00:11:43,069 --> 00:11:40,889
small group great hi kids Kiara and

222
00:11:44,659 --> 00:11:43,079
Chad's dad told me that you wanted to

223
00:11:46,729 --> 00:11:44,669
learn a little bit more about Space

224
00:11:48,319 --> 00:11:46,739
Station freedom so I'm really glad that

225
00:11:51,469 --> 00:11:48,329
you had a chance to come by the office

226
00:11:53,749 --> 00:11:51,479
today what I'm gonna do is show you this

227
00:11:55,400 --> 00:11:53,759
model it's some more detail then I'm

228
00:11:57,859 --> 00:11:55,410
going to show you a videotape how would

229
00:12:00,859 --> 00:11:57,869
that be great

230
00:12:03,559 --> 00:12:00,869
well Space Station freedom is a place in

231
00:12:05,389 --> 00:12:03,569
space where astronauts from many

232
00:12:08,179 --> 00:12:05,399
different nations around the world will

233
00:12:10,460 --> 00:12:08,189
come together to live and work now this

234
00:12:12,409 --> 00:12:10,470
model will show you how the Space

235
00:12:16,639 --> 00:12:12,419
Station goes together and what the

236
00:12:19,609 --> 00:12:16,649
different parts do for example there are

237
00:12:22,039 --> 00:12:19,619
four pressurized modules pressurized

238
00:12:24,729 --> 00:12:22,049

means they have a livable atmosphere

239
00:12:26,960 --> 00:12:24,739
just like in the room around us now

240
00:12:30,349 --> 00:12:26,970
three of the four modules are

241
00:12:34,879 --> 00:12:30,359
laboratories the fourth module is where

242
00:12:38,149 --> 00:12:34,889
the astronauts eat and sleep this is the

243
00:12:40,099 --> 00:12:38,159
United States laboratory module and back

244
00:12:43,099 --> 00:12:40,109
here are two additional laboratory

245
00:12:45,379 --> 00:12:43,109
modules the Columbus attached laboratory

246
00:12:48,769 --> 00:12:45,389
provided by the European Space Agency

247
00:12:52,999 --> 00:12:48,779
and over here the Japanese experiment

248
00:12:55,579 --> 00:12:53,009
module up here we have the habitation

249
00:12:57,799 --> 00:12:55,589
module that's where the astronauts will

250
00:13:00,889 --> 00:12:57,809
eat and sleep while they're working at

251
00:13:03,379 --> 00:13:00,899
the station and down here we have the

252
00:13:05,420 --> 00:13:03,389
pressurized logistics carrier this

253
00:13:08,900 --> 00:13:05,430
brings the supplies up to the

254
00:13:11,690 --> 00:13:08,910
astronauts over here you see the

255
00:13:15,139 --> 00:13:11,700
Canadian mobile servicing system now

256
00:13:17,870 --> 00:13:15,149
this is a robotic system that is used to

257
00:13:19,820 --> 00:13:17,880
help assemble the space station and it's

258
00:13:22,400 --> 00:13:19,830
also going to be used over the many

259
00:13:26,449 --> 00:13:22,410
years of operation of the space station

260
00:13:30,650 --> 00:13:26,459
to help maintain it the International

261
00:13:34,460 --> 00:13:30,660
Space Station freedom is a cooperative

262
00:13:37,100 --> 00:13:34,470
program with many nations involved it's

263
00:13:39,260 --> 00:13:37,110

going to be a research facility in space

264
00:13:41,960 --> 00:13:39,270
where scientists and engineers from

265
00:13:45,710 --> 00:13:41,970
around the world share its unique

266
00:13:49,220 --> 00:13:45,720
resources the modules are all connected

267
00:13:52,820 --> 00:13:49,230
to the truss the truss is really the

268
00:13:55,300 --> 00:13:52,830
backbone of the space station at the end

269
00:13:58,550 --> 00:13:55,310
of the truss are the solar array panels

270
00:14:00,980 --> 00:13:58,560
the solar panels are where the sun's

271
00:14:04,910 --> 00:14:00,990
light is collected and turned into

272
00:14:08,060 --> 00:14:04,920
electricity now inside the truss

273
00:14:10,610 --> 00:14:08,070
structure are various components that

274
00:14:13,190 --> 00:14:10,620
don't need to be within the pressurized

275
00:14:15,199 --> 00:14:13,200
modules now that's like there are

276
00:14:18,519 --> 00:14:15,209
components under the hood of your car

277
00:14:22,430 --> 00:14:18,529
that don't need to be inside the car

278
00:14:25,610 --> 00:14:22,440
electricity is used by the modules like

279
00:14:28,370 --> 00:14:25,620
your home uses electricity but here on

280
00:14:31,160 --> 00:14:28,380
space station that electricity is direct

281
00:14:33,470 --> 00:14:31,170
current excess heat leaves the space

282
00:14:35,990 --> 00:14:33,480
station through the radiators now that's

283
00:14:39,380 --> 00:14:36,000
like the excess heat from your car

284
00:14:40,519 --> 00:14:39,390
engine is radiated out through the

285
00:14:43,250 --> 00:14:40,529
radiator in front of the engine

286
00:14:46,040 --> 00:14:43,260
compartment of your automobile now this

287
00:14:48,019 --> 00:14:46,050
antenna is where the information about

288
00:14:50,079 --> 00:14:48,029

the space station and about the research

289
00:14:52,220 --> 00:14:50,089
and the experiments going on there is

290
00:14:54,680 --> 00:14:52,230
transmitted back to space station

291
00:14:56,600 --> 00:14:54,690
Mission Control in Houston and to

292
00:15:00,079 --> 00:14:56,610
engineers and scientists around the

293
00:15:02,480 --> 00:15:00,089
country and around the world over here

294
00:15:05,030 --> 00:15:02,490
is where the Space Shuttle docks with

295
00:15:08,269 --> 00:15:05,040
the space station to bring up new

296
00:15:12,139 --> 00:15:08,279
astronauts and fresh supplies every

297
00:15:15,760 --> 00:15:12,149
three months or so now space station at

298
00:15:18,400 --> 00:15:15,770
its widest point at the solar panels is

299
00:15:23,480 --> 00:15:18,410
243 feet wide

300
00:15:26,090 --> 00:15:23,490
it's full length along the truss is 353

301
00:15:30,590 --> 00:15:26,100
feet that's longer than a football field

302
00:15:35,410 --> 00:15:30,600
and when it is completed it will weigh

303
00:15:38,900 --> 00:15:35,420
as much as a fully loaded 747 aircraft

304
00:15:42,139 --> 00:15:38,910
this will be the largest spacecraft ever

305
00:15:44,869 --> 00:15:42,149
built now that's about all I can tell

306
00:15:47,600 --> 00:15:44,879
you with this model but I've got a

307
00:15:50,090 --> 00:15:47,610
videotape that I want to show you that

308
00:15:52,280 --> 00:15:50,100
will describe how Space Station freedom

309
00:15:55,509 --> 00:15:52,290
will be assembled in orbit around the

310
00:16:04,310 --> 00:15:55,519
earth over a period of several years

311
00:16:08,509 --> 00:16:06,920
Space Station freedom requires 17

312
00:16:10,790 --> 00:16:08,519
shuttle launches to get all of the

313
00:16:13,400 --> 00:16:10,800

pieces into orbit the first launch

314
00:16:15,949 --> 00:16:13,410
carries up one solar panel and part of

315
00:16:17,840 --> 00:16:15,959
the trust for backbone the second flight

316
00:16:19,790 --> 00:16:17,850
delivers another truss section and two

317
00:16:22,040 --> 00:16:19,800
propulsion modules which contain small

318
00:16:25,189 --> 00:16:22,050
rocket engines used to keep freedom

319
00:16:27,379 --> 00:16:25,199
flying steadily third flight transports

320
00:16:30,050 --> 00:16:27,389
a cooling radiator and the Canadian

321
00:16:32,269 --> 00:16:30,060
robotic arm the fourth flight delivers

322
00:16:34,460 --> 00:16:32,279
another truck section containing bottles

323
00:16:36,129 --> 00:16:34,470
of liquid oxygen and nitrogen which are

324
00:16:38,360 --> 00:16:36,139
used to make breathing air for the crew

325
00:16:41,090 --> 00:16:38,370
next the shuttle delivers a small

326
00:16:42,860 --> 00:16:41,100
pressurized room called anode which

327
00:16:45,559 --> 00:16:42,870
contains equipment like the utility room

328
00:16:48,350 --> 00:16:45,569
in your house the sixth shuttle flight

329
00:16:51,170 --> 00:16:48,360
brings up the u.s. laboratory now the

330
00:16:53,120 --> 00:16:51,180
station can be used for research but the

331
00:16:55,550 --> 00:16:53,130
astronauts can only stay about two weeks

332
00:16:57,949 --> 00:16:55,560
because the habitation module isn't air

333
00:17:00,050 --> 00:16:57,959
yet the seventh flight adds an airlock

334
00:17:02,900 --> 00:17:00,060
which the astronauts will use to go

335
00:17:04,699 --> 00:17:02,910
outside in spacesuits this flight adds

336
00:17:07,819 --> 00:17:04,709
another truss section with more

337
00:17:09,710 --> 00:17:07,829
radiators and antennas the ninth flight

338
00:17:12,530 --> 00:17:09,720

adds a truss section and more propulsion

339
00:17:14,689 --> 00:17:12,540
modules containing rocket engines the

340
00:17:17,870 --> 00:17:14,699
10th flight has another set of solar

341
00:17:20,360 --> 00:17:17,880
panels on the 11th flight another node

342
00:17:23,090 --> 00:17:20,370
is brought up giving freedom to utility

343
00:17:24,789 --> 00:17:23,100
rooms on the 12th flight the shuttle

344
00:17:28,100 --> 00:17:24,799
delivers the Japanese experiment module

345
00:17:30,169 --> 00:17:28,110
freedoms second laboratory and on the

346
00:17:32,360 --> 00:17:30,179
next flight the European laboratory is

347
00:17:35,539 --> 00:17:32,370
brought up now freedom has three

348
00:17:37,760 --> 00:17:35,549
laboratories the third solar panel is

349
00:17:41,060 --> 00:17:37,770
brought up on flight 14

350
00:17:44,030 --> 00:17:41,070
on launch 15 a back porch is brought up

351
00:17:45,350 --> 00:17:44,040
and connected to the Japanese lab the

352
00:17:47,210 --> 00:17:45,360
back porch is a place to mount

353
00:17:50,870 --> 00:17:47,220
experiments for looking at the earth and

354
00:17:52,160 --> 00:17:50,880
the stars on flight 16 the shuttle

355
00:17:55,700 --> 00:17:52,170
brings up the fully functional

356
00:17:57,860 --> 00:17:55,710
habitation module finally the 17th

357
00:18:00,610 --> 00:17:57,870
flight brings a light boat to freedom

358
00:18:03,350 --> 00:18:00,620
called the assured crew return vehicle

359
00:18:06,919 --> 00:18:03,360
now astronauts can come to freedom and

360
00:18:09,620 --> 00:18:06,929
stay even after the shuttle leaves and

361
00:18:14,330 --> 00:18:09,630
now let's look at all 17 flights for

362
00:18:16,790 --> 00:18:14,340
years compressed into seconds with a

363
00:18:18,799 --> 00:18:16,800

permanent crew on board international

364
00:18:21,320 --> 00:18:18,809
research project will be conducted on

365
00:18:28,010 --> 00:18:21,330
Space Station freedom well into the 21st

366
00:18:30,230 --> 00:18:28,020
century well what do you think it well I

367
00:18:32,000 --> 00:18:30,240
think it was great to just having you

368
00:18:34,490 --> 00:18:32,010
here today and being able to tell you

369
00:18:36,830 --> 00:18:34,500
about Space Station freedom and show you

370
00:18:39,560 --> 00:18:36,840
this videotape so thanks very much for

371
00:18:41,780 --> 00:18:39,570
coming by your folks are going to be

372
00:18:47,600 --> 00:18:41,790
here to pick you up in just a little bit

373
00:18:49,490 --> 00:18:47,610
so I'll be seeing you wasn't that family

374
00:18:51,230 --> 00:18:49,500
found out about Space Station freedom I

375
00:18:52,340 --> 00:18:51,240
know it takes all those shuttle flights

376
00:18:55,310 --> 00:18:52,350
to get it up there

377
00:18:57,860 --> 00:18:55,320
my dad drugs on the Japanese X momentum

378
00:18:59,419 --> 00:18:57,870
oh sure wouldn't it be good if a week of

379
00:19:10,190 --> 00:18:59,429
the astronauts working on Space Station

380
00:19:17,710 --> 00:19:10,200
freedom endeavour this is launch control

381
00:19:17,720 --> 00:19:24,729
that's the Sheena

382
00:19:30,729 --> 00:19:27,529
Roger all mission specialists go for

383
00:19:39,690 --> 00:19:34,969
ten nine we have a go for main engine

384
00:19:39,700 --> 00:19:50,040
come on we have ignition and liftoff

385
00:20:09,760 --> 00:19:53,419
he's dead now controlling

386
00:20:15,370 --> 00:20:13,210
three engines throttling back now to 65%

387
00:20:21,730 --> 00:20:15,380
as it's passes through the area of

388
00:20:33,750 --> 00:20:25,270

Rose now at 65% if he's working

389
00:20:45,900 --> 00:20:35,490
five for separation of the solid rocket

390
00:20:51,240 --> 00:20:48,240
separation of those RVs confirmed

391
00:20:57,909 --> 00:20:51,250
velocity now 4200 feet per second range

392
00:21:02,839 --> 00:21:00,499
freedom this is endeavour we have you in

393
00:21:05,239 --> 00:21:02,849
sight has to make 15 minutes to

394
00:21:07,789 --> 00:21:05,249
rendezvous Roger endeavour we're ready

395
00:21:09,619 --> 00:21:07,799
to greet the new crew okay kids let's

396
00:21:13,669 --> 00:21:09,629
take a spin around the station before we

397
00:21:16,069 --> 00:21:13,679
dock to give you a better view yeah and

398
00:21:20,080 --> 00:21:16,079
there's the u.s. laboratory Wow look at

399
00:21:20,090 --> 00:21:24,430
there's a European Columbus laboratory

400
00:21:32,960 --> 00:21:28,970
look at those solar arrays yes Japanese

401
00:21:33,590 --> 00:21:32,970
experiment module freedom this is

402
00:21:35,410 --> 00:21:33,600
endeavour

403
00:21:42,300 --> 00:21:35,420
we're starting our approach for birthing

404
00:21:42,310 --> 00:21:46,690
docking complete

405
00:21:53,629 --> 00:21:51,470
laughs oh right cool hi kids I'm station

406
00:21:55,729 --> 00:21:53,639
operator grant Jackson I'm working on a

407
00:21:56,239 --> 00:21:55,739
few electronics experiments welcome

408
00:21:58,729 --> 00:21:56,249
aboard

409
00:22:00,950 --> 00:21:58,739
hello I'm payload scientist dr. Sheldon

410
00:22:03,139 --> 00:22:00,960
McCall I'm loading some special film to

411
00:22:05,749 --> 00:22:03,149
record my observations hello there

412
00:22:07,879 --> 00:22:05,759
I'm station scientist dr. Milton smiley

413
00:22:09,109 --> 00:22:07,889

I'm inspecting this rack prior to

414
00:22:11,299 --> 00:22:09,119
starting my test

415
00:22:12,979 --> 00:22:11,309
I'm commander Scott let me show you

416
00:22:14,539 --> 00:22:12,989
where you'll be living you'll have to

417
00:22:16,940 --> 00:22:14,549
get used to floating and moving at the

418
00:22:19,580 --> 00:22:16,950
same time we're now in the habitation

419
00:22:21,739 --> 00:22:19,590
module or hab for short the hab will be

420
00:22:24,799 --> 00:22:21,749
your living quarters who wants to try a

421
00:22:26,389 --> 00:22:24,809
bunk on for size I do I do the crew

422
00:22:28,190 --> 00:22:26,399
quarters will serve as your bedroom and

423
00:22:30,169 --> 00:22:28,200
provide storage space for your clothing

424
00:22:32,090 --> 00:22:30,179
and personal effects they have

425
00:22:34,549 --> 00:22:32,100
communications equipment so you can talk

426
00:22:36,259 --> 00:22:34,559
with your families on earth now who

427
00:22:38,479 --> 00:22:36,269
would like to try out the shower I'll

428
00:22:41,090 --> 00:22:38,489
try it the crew hygiene system is

429
00:22:43,909 --> 00:22:41,100
composed of a shower toilet plumbing and

430
00:22:46,989 --> 00:22:43,919
equipment now after that long trip to

431
00:22:49,789 --> 00:22:46,999
horbet who has to go to the bathroom

432
00:22:51,560 --> 00:22:49,799
well as you can see you're going to have

433
00:22:53,930 --> 00:22:51,570
to go in turn and you'll need special

434
00:22:56,389 --> 00:22:53,940
instructions how does it work

435
00:23:00,739 --> 00:22:56,399
what's that thing where does it go

436
00:23:04,310 --> 00:23:00,749
forget it sooner or later you'll all be

437
00:23:06,259 --> 00:23:04,320
in here here's a healthcare area where

438
00:23:08,690 --> 00:23:06,269

you can exercise and monitor your health

439
00:23:11,060 --> 00:23:08,700
throughout your 90-day stay onboard and

440
00:23:12,769 --> 00:23:11,070
if you get sick provisions are available

441
00:23:15,669 --> 00:23:12,779
to take care of minor accidents and

442
00:23:18,229 --> 00:23:15,679
illnesses have a seat in the galley

443
00:23:19,970 --> 00:23:18,239
here you'll be able to cook and dispense

444
00:23:22,489 --> 00:23:19,980
your daily meals using the galleys

445
00:23:24,669 --> 00:23:22,499
microwave and convection ovens beverage

446
00:23:27,080 --> 00:23:24,679
dispensers and food preparation counters

447
00:23:29,690 --> 00:23:27,090
there's also a dishwasher so you can

448
00:23:32,840 --> 00:23:29,700
clean up your mess after your meals you

449
00:23:34,700 --> 00:23:32,850
can sit and talk and call home well that

450
00:23:36,349 --> 00:23:34,710
completes the tour of the hab tomorrow

451
00:23:37,970 --> 00:23:36,359
the crew and I leave and the station

452
00:23:39,560 --> 00:23:37,980
will be all yours to conduct your

453
00:23:41,479 --> 00:23:39,570
experiments Kiara

454
00:23:45,200 --> 00:23:41,489
you'll be taking my places commander

455
00:23:47,720 --> 00:23:45,210
Roger that oh right I can't wait I need

456
00:23:48,649 --> 00:23:47,730
some sleep let's get ready for a big day

457
00:23:51,979 --> 00:23:48,659
tomorrow

458
00:23:53,779 --> 00:23:51,989
already well we're on our own a fellow

459
00:23:55,460 --> 00:23:53,789
mission specialist I'm going to use a

460
00:23:58,040 --> 00:23:55,470
special camera to photograph the plant

461
00:24:00,770 --> 00:23:58,050
room you won't always have the shelter

462
00:24:02,720 --> 00:24:00,780
deep space we're going to need to grow

463
00:24:04,760 --> 00:24:02,730

our own food on the Moon and Mars what

464
00:24:06,620 --> 00:24:04,770
are you working on Donovan well

465
00:24:08,810 --> 00:24:06,630
commander I'm installing a modified

466
00:24:11,240 --> 00:24:08,820
computer board into my electronics

467
00:24:13,700 --> 00:24:11,250
experiment I hope to discover a faster

468
00:24:15,500 --> 00:24:13,710
circuit using a special chip containing

469
00:24:18,350 --> 00:24:15,510
material developed in the microgravity

470
00:24:21,170 --> 00:24:18,360
of space good luck with your experiment

471
00:24:23,990 --> 00:24:21,180
Donovan what are you working on Chad I'm

472
00:24:25,730 --> 00:24:24,000
going to examine how it affects the

473
00:24:27,830 --> 00:24:25,740
growth of crystals when these

474
00:24:31,190 --> 00:24:27,840
near-perfect crystals are returned to

475
00:24:33,650 --> 00:24:31,200
Earth they may help to identify new ways

476
00:24:36,590 --> 00:24:33,660
to treat illnesses how about you and

477
00:24:39,860 --> 00:24:36,600
sushi I'm awarding my experiment I'm

478
00:24:43,010 --> 00:24:39,870
curious about how a mixture of different

479
00:24:45,830 --> 00:24:43,020
foods react that sounds neat at sushi

480
00:24:48,020 --> 00:24:45,840
keep up the good work what are you doing

481
00:24:49,940 --> 00:24:48,030
Nina I'm getting my gear together took

482
00:24:52,070 --> 00:24:49,950
up to the cupola I'm gonna get a good

483
00:24:54,470 --> 00:24:52,080
view of Earth and Florida tall tower

484
00:24:56,540 --> 00:24:54,480
looks from the cupola Nina Wow look at

485
00:24:58,070 --> 00:24:56,550
our earth I can see all of Florida I

486
00:25:00,640 --> 00:24:58,080
want to keep it looking that beautiful

487
00:25:03,680 --> 00:25:00,650
that's a view I won't soon forget

488
00:25:05,780 --> 00:25:03,690

well fellow mission specialists all good

489
00:25:07,400 --> 00:25:05,790
things must come to an end our mission

490
00:25:09,530 --> 00:25:07,410
is over and we must leave our

491
00:25:12,140 --> 00:25:09,540
experiments for the next crew it's time

492
00:25:14,690 --> 00:25:12,150
to catch a shuttle ride home don't in

493
00:25:17,990 --> 00:25:14,700
space station we don't puff too quickly

494
00:25:19,940 --> 00:25:18,000
I must continue my walk that's good I

495
00:25:22,430 --> 00:25:19,950
can't wait to tell the kids at school

496
00:25:24,380 --> 00:25:22,440
about this perfect crystal segment my

497
00:25:27,050 --> 00:25:24,390
computer test went well but I wish I had

498
00:25:28,550 --> 00:25:27,060
more time I know my sleep will always be

499
00:25:30,230 --> 00:25:28,560
filled with dreams of Space Station

500
00:25:32,420 --> 00:25:30,240
freedom and the view of Earth from the

501
00:25:34,550 --> 00:25:32,430
cupola assume your positions on board

502
00:25:36,830 --> 00:25:34,560
the shuttle they say the re-entry to

503
00:25:43,080 --> 00:25:36,840
earth is really spectacular this should

504
00:25:58,500 --> 00:25:45,750
just an energy ground track and now

505
00:26:00,900 --> 00:25:58,510
Margo I'm sure it does Rick now we're

506
00:26:01,560 --> 00:26:00,910
looking at anything right now looks

507
00:26:07,730 --> 00:26:01,570
pretty good

508
00:26:07,740 --> 00:26:43,720
companies

509
00:26:53,570 --> 00:26:48,140
ready to go home Wow

510
00:26:59,930 --> 00:26:53,580
what happened ready to go home kids come

511
00:27:06,110 --> 00:26:59,940
on us you ready to go home come on let's