1
00:00:40,069 --> 00:00:37,830
i think if we look at station you know

2
00:00:41,990 --> 00:00:40,079
we've kind of really spent the

3
00:00:43,830 --> 00:00:42,000
past 10 years assembling space station

4
00:00:44,709 --> 00:00:43,840
we've built a tremendous facility in

5
00:00:46,790 --> 00:00:44,719
space

6
00:00:48,549 --> 00:00:46,800
you know we have probably the most

7
00:00:50,869 --> 00:00:48,559
phenomenal research facility ever

8
00:00:53,670 --> 00:00:50,879
available in in space to take advantage

9
00:00:56,150 --> 00:00:53,680
of microgravity has a vacuum system high

10
00:00:56,869 --> 00:00:56,160
rate data video all kinds of capability

11
00:00:59,349 --> 00:00:56,879
that

12
00:01:01,590 --> 00:00:59,359
any research lab and on the ground would

13
00:01:02,950 --> 00:01:01,600

be would be proud to have so our next

14
00:01:05,109 --> 00:01:02,960
challenge will be to take that same

15
00:01:07,030 --> 00:01:05,119
energy that same zeal that we put into

16
00:01:09,350 --> 00:01:07,040
assembly and apply it to research and

17
00:01:11,030 --> 00:01:09,360
utilization so we've done research all

18
00:01:12,630 --> 00:01:11,040
along as we were assembling but we

19
00:01:14,469 --> 00:01:12,640
weren't able to focus and spend the

20
00:01:16,149 --> 00:01:14,479
quality time on the research activities

21
00:01:18,149 --> 00:01:16,159
that we will be able to now it's nice we

22
00:01:19,990 --> 00:01:18,159
know we have a nice 10-year period as

23
00:01:21,910 --> 00:01:20,000
congress has given some extension dates

24
00:01:23,510 --> 00:01:21,920
out to 2020 so we know we have a good

25
00:01:24,710 --> 00:01:23,520
period of time and it's up to us and the

26
00:01:26,390 --> 00:01:24,720
team to go

27
00:01:27,910 --> 00:01:26,400
utilize the research community that's

28
00:01:29,590 --> 00:01:27,920
out there and then make sure we get some

29
00:01:33,510 --> 00:01:29,600
really quality research on board space

30
00:01:38,469 --> 00:01:36,710
well the the g whiz thing is the

31
00:01:42,550 --> 00:01:38,479
zero gravity

32
00:01:44,630 --> 00:01:42,560
having a long-term laboratory

33
00:01:48,630 --> 00:01:44,640
with zero gravity

34
00:01:50,469 --> 00:01:48,640
is very unique and i think it's one that

35
00:01:52,550 --> 00:01:50,479
i hope that we will reap the benefits

36
00:01:54,469 --> 00:01:52,560
from in the future

37
00:01:59,350 --> 00:01:54,479
from a scientific perspective

38
00:02:03,749 --> 00:02:02,069

we are the experiment

39
00:02:05,270 --> 00:02:03,759
and initially when people hear me say

40
00:02:07,270 --> 00:02:05,280
that they think that i'm talking about

41
00:02:10,309 --> 00:02:07,280
the crew members being guinea pigs for

42
00:02:11,910 --> 00:02:10,319
life sciences experiments

43
00:02:14,630 --> 00:02:11,920
and certainly there's an element of that

44
00:02:15,510 --> 00:02:14,640
we we give a little blood and other

45
00:02:17,270 --> 00:02:15,520
things

46
00:02:19,030 --> 00:02:17,280
in pursuit of that kind of research but

47
00:02:21,030 --> 00:02:19,040
when i say we are the experiment i'm

48
00:02:23,589 --> 00:02:21,040
talking about the entire

49
00:02:25,030 --> 00:02:23,599
team of government agencies in the

50
00:02:28,070 --> 00:02:25,040
international partnership and all the

51
00:02:29,670 --> 00:02:28,080
contractor teams that support

52
00:02:31,350 --> 00:02:29,680
in the development of the iss the

53
00:02:32,790 --> 00:02:31,360
hardware software the integration the

54
00:02:34,070 --> 00:02:32,800
testing

55
00:02:36,390 --> 00:02:34,080
the assembly

56
00:02:38,790 --> 00:02:36,400
and then the day-to-day operations

57
00:02:41,750 --> 00:02:38,800
all of that is so significant in scope

58
00:02:43,910 --> 00:02:41,760
and magnitude and complexity but the

59
00:02:46,470 --> 00:02:43,920
team has pulled it off to that extent i

60
00:02:50,229 --> 00:02:46,480
think that that is the great experiment

61
00:02:53,750 --> 00:02:51,910
we don't just

62
00:02:55,670 --> 00:02:53,760
take the money and launch it into space

63
00:02:57,990 --> 00:02:55,680

we aren't sending

64
00:03:00,550 --> 00:02:58,000
dollar bills or 100 bills into space

65
00:03:03,110 --> 00:03:00,560
we're actually investing the money so

66
00:03:05,670 --> 00:03:03,120
all of the effort that goes into

67
00:03:09,589 --> 00:03:05,680
conceiving and designing and

68
00:03:11,110 --> 00:03:09,599
constructing and operating and launching

69
00:03:13,430 --> 00:03:11,120
a space vehicle

70
00:03:15,190 --> 00:03:13,440
requires a lot of thought and that

71
00:03:18,790 --> 00:03:15,200
thought actually

72
00:03:21,270 --> 00:03:18,800
produces things that are over and above

73
00:03:22,229 --> 00:03:21,280
what was the intention in the beginning

74
00:03:24,789 --> 00:03:22,239
so

75
00:03:27,270 --> 00:03:24,799
the classic example is that because of

76
00:03:28,949 --> 00:03:27,280
the effort to get to the moon in the 60s

77
00:03:30,869 --> 00:03:28,959
there was a lot of miniaturization and

78
00:03:33,350 --> 00:03:30,879
that miniaturization ended up spinning

79
00:03:35,670 --> 00:03:33,360
off into a lot of things and for which

80
00:03:38,149 --> 00:03:35,680
we today can do things like talk on cell

81
00:03:39,589 --> 00:03:38,159
phones and take hd video with cameras

82
00:03:41,670 --> 00:03:39,599
that fit in your pocket and that sort of

83
00:03:43,430 --> 00:03:41,680
thing so likewise

84
00:03:46,229 --> 00:03:43,440
in the future people will be reaping the

85
00:03:47,670 --> 00:03:46,239
benefits of the efforts that are

86
00:03:50,229 --> 00:03:47,680
underway today

87
00:03:53,190 --> 00:03:50,239
to go into low earth orbit to operate

88
00:03:54,789 --> 00:03:53,200

the iss or someday go beyond there and

89
00:03:56,309 --> 00:03:54,799
we don't know what they are today but

90
00:03:58,149 --> 00:03:56,319
the one thing that i'm sure of is that

91
00:04:01,429 --> 00:03:58,159
something more than just space flight

92
00:04:03,750 --> 00:04:01,439
itself will come out of it

93
00:04:06,390 --> 00:04:03,760
i think the more glorious part of space

94
00:04:08,229 --> 00:04:06,400
travel is the launch and so everybody

95
00:04:10,710 --> 00:04:08,239
thinks about space travel during a

96
00:04:12,149 --> 00:04:10,720
shuttle launch or a soyuz launch but the

97
00:04:13,990 --> 00:04:12,159
international space station is a little

98
00:04:16,629 --> 00:04:14,000
bit more unique because people are

99
00:04:19,909 --> 00:04:16,639
actually living and working up in space

100
00:04:22,150 --> 00:04:19,919
24 hours a day seven days a week 365

101
00:04:23,270 --> 00:04:22,160
days a year and what that means is that

102
00:04:25,270 --> 00:04:23,280
there's a

103
00:04:27,990 --> 00:04:25,280
myriad of people on the ground all over

104
00:04:29,830 --> 00:04:28,000
the world making sure that every aspect

105
00:04:31,830 --> 00:04:29,840
of that spacecraft is working correctly

106
00:04:36,790 --> 00:04:31,840
and the crew on board is healthy and

107
00:04:39,909 --> 00:04:38,310
the shuttle's been invaluable to

108
00:04:41,510 --> 00:04:39,919
allowing us to build station the

109
00:04:42,950 --> 00:04:41,520
components that were delivered to space

110
00:04:44,870 --> 00:04:42,960
by the shuttle there's no other way we

111
00:04:46,150 --> 00:04:44,880
could have really got those elements to

112
00:04:47,030 --> 00:04:46,160
orbit other than through the space

113
00:04:50,070 --> 00:04:47,040

shuttle

114
00:04:52,150 --> 00:04:50,080
than just a delivery of these elements

115
00:04:54,550 --> 00:04:52,160
it's been our work platform it brings

116
00:04:56,310 --> 00:04:54,560
its own robotic arm to help with

117
00:04:58,710 --> 00:04:56,320
assembly it brings its own airlock which

118
00:05:01,029 --> 00:04:58,720
we used early on for the crews to to go

119
00:05:03,189 --> 00:05:01,039
do space walks from so and it also

120
00:05:04,390 --> 00:05:03,199
brings a working crew the seven crew

121
00:05:06,310 --> 00:05:04,400
members are

122
00:05:08,950 --> 00:05:06,320
there to help and assist in the assembly

123
00:05:11,510 --> 00:05:08,960
operation so so each assembly flight was

124
00:05:13,029 --> 00:05:11,520
unique in its own right the shuttle not

125
00:05:15,029 --> 00:05:13,039
only brought the hardware but it brought

126
00:05:17,430 --> 00:05:15,039
the workers it brought the work platform

127
00:05:19,029 --> 00:05:17,440
to work off of and it was

128
00:05:20,790 --> 00:05:19,039
it was the asset that made station

129
00:05:22,469 --> 00:05:20,800
possible if it wasn't for shuttle we

130
00:05:27,830 --> 00:05:22,479
could not have built this station that

131
00:05:32,230 --> 00:05:29,990
space station

132
00:05:34,310 --> 00:05:32,240
is the culminating engineering effort of

133
00:05:35,830 --> 00:05:34,320
15 countries

134
00:05:37,990 --> 00:05:35,840
children

135
00:05:39,830 --> 00:05:38,000
should be able to look up and in simple

136
00:05:41,110 --> 00:05:39,840
all and wonder

137
00:05:42,469 --> 00:05:41,120
that we have accomplished this

138
00:05:44,629 --> 00:05:42,479

engineering feat

139
00:05:46,150 --> 00:05:44,639
that folks can float and do wonderful

140
00:05:49,270 --> 00:05:46,160
science and learn more about what we're

141
00:05:51,029 --> 00:05:49,280
doing on earth as well as going farther

142
00:05:53,110 --> 00:05:51,039
and the third thing i would say is it

143
00:05:55,189 --> 00:05:53,120
provides a goal

144
00:05:56,950 --> 00:05:55,199
maybe an inspiration for the for the

145
00:05:59,430 --> 00:05:56,960
children to be able to want to

146
00:06:02,870 --> 00:05:59,440
contribute to our future together we are

147
00:06:06,070 --> 00:06:04,469
to participate

148
00:06:08,150 --> 00:06:06,080
is much much more than somebody who

149
00:06:09,990 --> 00:06:08,160
understands math and science it is

150
00:06:11,590 --> 00:06:10,000
individuals that understand math and

151
00:06:13,270 --> 00:06:11,600
science it's individuals that can

152
00:06:15,510 --> 00:06:13,280
communicate clearly

153
00:06:18,309 --> 00:06:15,520
individuals that understand other

154
00:06:19,510 --> 00:06:18,319
languages and other cultures and so kids

155
00:06:21,270 --> 00:06:19,520
should go to school they should

156
00:06:23,510 --> 00:06:21,280
specialize in what they're good at and

157
00:06:25,189 --> 00:06:23,520
what they're interested in

158
00:06:27,830 --> 00:06:25,199
with an understanding that that will

159
00:06:30,309 --> 00:06:27,840
apply their goals hopefully to

160
00:06:36,390 --> 00:06:30,319
participate in the exploration

161
00:06:38,870 --> 00:06:37,590
looking back

162
00:06:46,469 --> 00:06:38,880
on

163
00:06:48,230 --> 00:06:46,479

when we have

164
00:06:49,029 --> 00:06:48,240
you know school children now in middle

165
00:06:51,189 --> 00:06:49,039
school

166
00:06:52,629 --> 00:06:51,199
you know and then building a colony and

167
00:06:56,070 --> 00:06:52,639
living there and

168
00:06:58,550 --> 00:06:56,080
having their kids there and we say that

169
00:06:59,830 --> 00:06:58,560
this one step in low earth orbit with

170
00:07:01,909 --> 00:06:59,840
the iss

171
00:07:02,710 --> 00:07:01,919
was what got us there you know it was

172
00:07:10,150 --> 00:07:02,720
the

173
00:07:11,990 --> 00:07:10,160
and that's what legacy is all about

174
00:07:13,749 --> 00:07:12,000
building from one piece

175
00:07:15,990 --> 00:07:13,759
and then looking back and saying that's

176
00:07:18,070 --> 00:07:16,000
what got us to where we are now and it's

177
00:07:20,070 --> 00:07:18,080
all about you know inspiring the next

178
00:07:21,909 --> 00:07:20,080
generation of explorers that

179
00:07:25,589 --> 00:07:21,919
will be those people walking on the

180
00:07:29,350 --> 00:07:27,749
we have built this with nations that

181
00:07:30,870 --> 00:07:29,360
have not always been friendly with each

182
00:07:33,270 --> 00:07:30,880
other

183
00:07:34,469 --> 00:07:33,280
and together here we've actually built

184
00:07:36,070 --> 00:07:34,479
this platform

185
00:07:38,710 --> 00:07:36,080
together here we're building what's

186
00:07:41,350 --> 00:07:38,720
going to happen next and together

187
00:07:46,710 --> 00:07:41,360
we are responsible for the future

188
00:07:46,720 --> 00:07:51,510

fifteen nations

189
00:07:51,520 --> 00:07:55,189
one

190
00:07:55,199 --> 00:07:59,990
international space station