1
00:00:12,410 --> 00:00:16,290
why did you want to be a car

2
00:00:26,790 --> 00:00:20,170
honestly speaking I don't know really i

3
00:00:31,689 --> 00:00:26,800
don't know because i was almost five

4
00:00:39,070 --> 00:00:31,699
then yuri gagarin flu and i cannot

5
00:00:43,000 --> 00:00:39,080
remember this fool but in half a year in

6
00:00:46,390 --> 00:00:43,010
august of 1961 then Gavin Tito flew it

7
00:00:49,900 --> 00:00:46,400
was the second fly to one day flight on

8
00:00:53,979 --> 00:00:49,910
Burt was talk to so I can remember this

9
00:00:58,290 --> 00:00:53,989
flight very well and I was filed and i

10
00:01:01,470 --> 00:00:58,300
can say that then i was seven or eight I

11
00:01:08,800 --> 00:01:01,480
have no doubts and I'll be a cosmonaut

12
00:01:12,850 --> 00:01:08,810
so now now i can say that maybe i was

13
00:01:16,900 --> 00:01:12,860

born with this wish not likely but maybe

14
00:01:20,440 --> 00:01:16,910
with this especially this so i don't

15
00:01:22,410 --> 00:01:20,450
know why i don't know why maybe it was

16
00:01:29,290 --> 00:01:22,420
an influence of my father maybe

17
00:01:33,219 --> 00:01:29,300
something else but all my childhood was

18
00:01:36,050 --> 00:01:33,229
so very close to the evasion issues

19
00:01:39,960 --> 00:01:36,060
because my father

20
00:01:46,430 --> 00:01:39,970
then he was young he was a navigator and

21
00:01:53,010 --> 00:01:46,440
he jumped to his jump with toots and he

22
00:01:55,260 --> 00:01:53,020
but he he wasn't a pilot then he he was

23
00:01:59,640 --> 00:01:55,270
a civilian engineer but in excellent

24
00:02:01,920 --> 00:01:59,650
engineer and I was amazed at how he

25
00:02:05,760 --> 00:02:01,930
solved different technical problems

26
00:02:12,120 --> 00:02:05,770
different from some homework to some

27
00:02:15,060 --> 00:02:12,130
inventions and his own his work it was

28
00:02:21,830 --> 00:02:15,070
amazing for me and it's an excellent

29
00:02:27,830 --> 00:02:21,840
example of an engineer but then I

30
00:02:31,620 --> 00:02:27,840
finished high school I decided because

31
00:02:36,150 --> 00:02:31,630
before that I had two choices to be a

32
00:02:39,110 --> 00:02:36,160
cosmonaut to stay to be a military pilot

33
00:02:43,380 --> 00:02:39,120
all civilian engineer because I saw that

34
00:02:45,180 --> 00:02:43,390
the Soviet cosmonauts were either from

35
00:02:48,479 --> 00:02:45,190
military pilot so from civilian

36
00:02:50,610 --> 00:02:48,489
engineers and I guess that the civilian

37
00:02:55,229 --> 00:02:50,620
engineer civilian cosmonauts soviet

38
00:02:58,530 --> 00:02:55,239

cosmonauts were from a special

39
00:03:02,130 --> 00:02:58,540
organization and later I knew that it

40
00:03:11,030 --> 00:03:02,140
was a car love design girl now it's cold

41
00:03:14,400 --> 00:03:11,040
in there K so I had the choice and and

42
00:03:17,640 --> 00:03:14,410
first I decided to be a military pilot

43
00:03:21,780 --> 00:03:17,650
but later my father explained to me that

44
00:03:24,360 --> 00:03:21,790
and I understood by myself that it's

45
00:03:27,539 --> 00:03:24,370
more interesting and maybe more valuable

46
00:03:31,289 --> 00:03:27,549
to participate in designing and building

47
00:03:34,920 --> 00:03:31,299
spacecrafts and then fly then to be an

48
00:03:38,580 --> 00:03:34,930
only to fly with built by somebody

49
00:03:43,770 --> 00:03:38,590
planes so I decided to be a civilian

50
00:03:45,390 --> 00:03:43,780
engineer in aerospace industry and you

51
00:03:48,800 --> 00:03:45,400
had that in mind when you went when you

52
00:03:56,910 --> 00:03:51,720
yes of course yes of course at the end

53
00:03:59,250 --> 00:03:56,920
of high school I so I look I looked

54
00:04:04,970 --> 00:03:59,260
through the list of institutes in the

55
00:04:07,710 --> 00:04:04,980
Soviet Union to the thick book and I saw

56
00:04:10,289 --> 00:04:07,720
one institute in moscow moscow institute

57
00:04:12,410 --> 00:04:10,299
on physics and technology and one of the

58
00:04:14,789 --> 00:04:12,420
part of departments was called

59
00:04:19,969 --> 00:04:14,799
department of air physics and space

60
00:04:23,070 --> 00:04:19,979
research they thought or it's for me and

61
00:04:27,450 --> 00:04:23,080
it's on me and now i can say that i was

62
00:04:29,939 --> 00:04:27,460
like it to be in many many many times in

63
00:04:33,719 --> 00:04:29,949

my life I was like it to be at right

64
00:04:37,170 --> 00:04:33,729
time in the right place and that was the

65
00:04:41,670 --> 00:04:37,180
first example it was the first time of

66
00:04:49,499 --> 00:04:41,680
this rule we have in English we say it's

67
00:04:52,290 --> 00:04:49,509
better to be lucky than good so tell me

68
00:04:54,960 --> 00:04:52,300
about your career then you went to this

69
00:04:59,580 --> 00:04:54,970
Institute in Moscow and and tell me how

70
00:05:02,550 --> 00:04:59,590
that led you on into your your place as

71
00:05:04,409 --> 00:05:02,560
a husband you see it was very very

72
00:05:08,490 --> 00:05:04,419
interesting because then i entered the

73
00:05:15,600 --> 00:05:08,500
Institute and during the first month of

74
00:05:16,980 --> 00:05:15,610
studying we we were found we students

75
00:05:21,409 --> 00:05:16,990
who are familiar with the system of

76
00:05:24,390 --> 00:05:21,419
education in this institute and at the

77
00:05:29,420 --> 00:05:24,400
third stage of education last stage of

78
00:05:36,709 --> 00:05:29,430
education we had a many

79
00:05:43,890 --> 00:05:36,719
activities in research centers in

80
00:05:48,170 --> 00:05:43,900
industrial enterprises with in this year

81
00:05:54,119 --> 00:05:48,180
in areas of our special abilities and

82
00:06:00,269 --> 00:05:54,129
our group of students were tight to the

83
00:06:07,080 --> 00:06:00,279
curl of designer or so it's a fate it's

84
00:06:10,469 --> 00:06:07,090
my free so after then I finished my

85
00:06:16,200 --> 00:06:10,479
school in the corner of designer or I

86
00:06:21,779 --> 00:06:16,210
had no doubts that i'll be working I I'd

87
00:06:26,730 --> 00:06:21,789
be working there and after graduation I

88
00:06:30,540 --> 00:06:26,740

entered to work in 1979 to design the

89
00:06:34,950 --> 00:06:30,550
road it was called already an egg at

90
00:06:37,170 --> 00:06:34,960
time and from the time I am unclear off

91
00:06:39,990 --> 00:06:37,180
in their gear now it's a Rockland space

92
00:06:42,659 --> 00:06:40,000
cooperation in there K and in that time

93
00:06:46,019 --> 00:06:42,669
you've been an engineer yes I was an

94
00:06:50,399 --> 00:06:46,029
engineer yes I was an engineer and it

95
00:06:57,149 --> 00:06:50,409
may be the previous selection of

96
00:07:03,269 --> 00:06:57,159
cosmonauts will took place in 1978 and I

97
00:07:13,800 --> 00:07:03,279
entrant in 1979 and then they started to

98
00:07:15,760 --> 00:07:13,810
select a new team in 1980-81 I was among

99
00:07:19,659 --> 00:07:15,770
the first persons

100
00:07:22,930 --> 00:07:19,669
and in turn in the nineteen eighty-four

101
00:07:27,520 --> 00:07:22,940
I was erected finally I was selected

102
00:07:30,309 --> 00:07:27,530
them now I'm a cosmonaut of anarchy the

103
00:07:33,730 --> 00:07:30,319
part of your job that involves you

104
00:07:36,159 --> 00:07:33,740
flying in space is a part that we know

105
00:07:38,909 --> 00:07:36,169
has its possible dangers you've

106
00:07:41,980 --> 00:07:38,919
experienced at yourself in your career

107
00:07:45,010 --> 00:07:41,990
but Alexander what is it that you feel

108
00:07:48,010 --> 00:07:45,020
that we human beings what is it that we

109
00:07:51,460 --> 00:07:48,020
are learning what do we get as a result

110
00:08:02,790 --> 00:07:51,470
of flying people in space that makes it

111
00:08:02,800 --> 00:08:05,490
and

112
00:08:13,290 --> 00:08:09,750
how to explain how to explain

113
00:08:17,760 --> 00:08:13,300

the necessity of going behind the

114
00:08:21,930 --> 00:08:17,770
horizon it's very human quality so it's

115
00:08:25,170 --> 00:08:21,940
a maybe most valuable frontier from

116
00:08:29,370 --> 00:08:25,180
human for humankind space flights and

117
00:08:35,460 --> 00:08:29,380
going into space and the lid off of

118
00:08:41,460 --> 00:08:35,470
Earth orbit and into the deep space so I

119
00:08:44,520 --> 00:08:41,470
think I cannot say me it's a very

120
00:08:51,270 --> 00:08:44,530
valuable for humans variable for

121
00:08:54,990 --> 00:08:51,280
humankind but how to explain it why why

122
00:09:01,460 --> 00:08:55,000
magallon went around the world down

123
00:09:07,190 --> 00:09:05,630
what kind of things you moved him you're

124
00:09:10,510 --> 00:09:07,200
a member of the International Space

125
00:09:13,310 --> 00:09:10,520
Station's expedition 25 and 26 cruise

126
00:09:15,980 --> 00:09:13,320
alexander can you summarize the overall

127
00:09:23,840 --> 00:09:15,990
goals of this six-month flight and tell

128
00:09:27,860 --> 00:09:23,850
me what your main jobs will be the main

129
00:09:30,740 --> 00:09:27,870
goal is tough to keep the station in

130
00:09:34,460 --> 00:09:30,750
good shape and to maintain all the

131
00:09:36,860 --> 00:09:34,470
equipment working and to perform a

132
00:09:41,180 --> 00:09:36,870
scientific program a huge scientific

133
00:09:44,510 --> 00:09:41,190
program for of all the international

134
00:09:47,840 --> 00:09:44,520
partners but personally I will do is

135
00:09:49,600 --> 00:09:47,850
pull all responsible about the Russian

136
00:09:53,750 --> 00:09:49,610
program of course and maybe some

137
00:09:57,470 --> 00:09:53,760
experiments in programs of different

138
00:10:00,440 --> 00:09:57,480

partners maybe I'm not sure about us but

139
00:10:04,850 --> 00:10:00,450
definitely from European not Japanese

140
00:10:10,670 --> 00:10:04,860
and so and for me mine for me personally

141
00:10:14,540 --> 00:10:10,680
mind main task will be to test the

142
00:10:18,370 --> 00:10:14,550
upgraded cell use in flight so for me

143
00:10:21,980 --> 00:10:18,380
the most important and most valuable

144
00:10:24,230 --> 00:10:21,990
flight stages will be from the launch to

145
00:10:27,590 --> 00:10:24,240
the docking from undocking to the

146
00:10:30,260 --> 00:10:27,600
landing and on the station will be the

147
00:10:33,740 --> 00:10:30,270
work for me to be ordinary stay with

148
00:10:37,130 --> 00:10:33,750
performing all the tasks very well now

149
00:10:39,470 --> 00:10:37,140
long known for me well you have of

150
00:10:41,480 --> 00:10:39,480
course done a tour of duty on the

151
00:10:44,000 --> 00:10:41,490
International Space Station before as

152
00:10:48,170 --> 00:10:44,010
well as several visits to the mirror

153
00:10:50,510 --> 00:10:48,180
station how do you compare a trip to

154
00:10:53,000 --> 00:10:50,520
this station as opposed to the MIR

155
00:11:04,800 --> 00:11:01,860
isn't it's interesting so it differs in

156
00:11:08,510 --> 00:11:04,810
some details you see it's a new

157
00:11:12,060 --> 00:11:08,520
corporation a new rules new rules of

158
00:11:14,910 --> 00:11:12,070
operational rules new flight rules new

159
00:11:18,710 --> 00:11:14,920
relations between partners so I think

160
00:11:23,070 --> 00:11:18,720
this is the most important and most most

161
00:11:26,160 --> 00:11:23,080
remarkable differences between these two

162
00:11:38,430 --> 00:11:33,259
speaking in general so and if say about

163
00:11:46,100 --> 00:11:38,440

the my previous flight to ISS then I

164
00:11:50,639 --> 00:11:46,110
think that this stage of station will be

165
00:11:55,939 --> 00:11:50,649
much more complicated and much more in

166
00:11:59,699 --> 00:11:55,949
in the size so now we will have at least

167
00:12:02,460 --> 00:11:59,709
four or five additional modules and

168
00:12:08,009 --> 00:12:02,470
cupola cupola is beautiful and too

169
00:12:17,519 --> 00:12:08,019
wonderful i er I to the earth and into

170
00:12:21,600 --> 00:12:17,529
space so I'm looking I'm looking forward

171
00:12:25,560 --> 00:12:21,610
to have a look from this window to the

172
00:12:29,790 --> 00:12:25,570
earth to space so I think I guess it

173
00:12:31,980 --> 00:12:29,800
will be exciting side you mentioned a

174
00:12:34,530 --> 00:12:31,990
moment ago that you are also flying to

175
00:12:37,590 --> 00:12:34,540
the station on a new edition of the

176
00:12:40,380 --> 00:12:37,600
Soyuz spacecraft this has some upgrades

177
00:12:43,530 --> 00:12:40,390
from the tehama model that has been in

178
00:12:45,960 --> 00:12:43,540
use since 2002 can you tell us a little

179
00:12:48,689 --> 00:12:45,970
bit about that what is new about this so

180
00:12:53,200 --> 00:12:48,699
use and how do these changes improve its

181
00:13:00,680 --> 00:12:56,750
mainly new changes took place in

182
00:13:02,570 --> 00:13:00,690
avionics take take place in avionics so

183
00:13:04,880 --> 00:13:02,580
we'll have new computer system onboard

184
00:13:10,490 --> 00:13:04,890
computer system new new on-board

185
00:13:15,080 --> 00:13:10,500
computer will have a controlling

186
00:13:20,920 --> 00:13:15,090
information or bus joining different

187
00:13:25,100 --> 00:13:20,930
computers in the complex onboard

188
00:13:28,310 --> 00:13:25,110

computer complex so we have some more

189
00:13:31,520 --> 00:13:28,320
redundancies in this case we have we

190
00:13:35,929 --> 00:13:31,530
have a new telemetry system so it's

191
00:13:48,679 --> 00:13:43,889
that is the new cosmonaut new crew

192
00:13:51,989 --> 00:13:48,689
interfaces like displays like some

193
00:13:56,220 --> 00:13:51,999
information on this place like some

194
00:13:59,999 --> 00:13:56,230
lights some switches and so it's

195
00:14:04,559 --> 00:14:00,009
interesting version and i think that the

196
00:14:06,689 --> 00:14:04,569
improving coughs I use will get us new

197
00:14:13,199 --> 00:14:06,699
possibilities to improve it more and

198
00:14:16,949 --> 00:14:13,209
more because the main main issue is that

199
00:14:20,429 --> 00:14:16,959
now we'll have an open architecture of

200
00:14:23,400 --> 00:14:20,439
the computer system on board because on

201
00:14:25,739 --> 00:14:23,410
the team a version like and the older

202
00:14:27,900 --> 00:14:25,749
versions had a closed architecture now

203
00:14:30,960 --> 00:14:27,910
we'll have an open architecture and we

204
00:14:33,720 --> 00:14:30,970
can and we can improve and improve it

205
00:14:36,720 --> 00:14:33,730
and continue to improve yes and

206
00:14:39,509 --> 00:14:36,730
continual hearsay said it must be it

207
00:14:41,309 --> 00:14:39,519
must be a nice thing to be have been

208
00:14:46,669 --> 00:14:41,319
selected to be the first to fly this new

209
00:14:49,139 --> 00:14:46,679
vehicle yeah yes I'm proud of it the

210
00:14:51,809 --> 00:14:49,149
Soyuz you will fly is different the

211
00:14:53,460 --> 00:14:51,819
station that you will arrive to as you

212
00:14:56,879 --> 00:14:53,470
mentioned is different than the one that

213
00:14:58,470 --> 00:14:56,889

you visited on expedition 8 and much

214
00:15:01,350 --> 00:14:58,480
different than the one that greeted

215
00:15:03,629 --> 00:15:01,360
expedition one when they first arrived

216
00:15:05,850 --> 00:15:03,639
and you shall be on board the station

217
00:15:08,999 --> 00:15:05,860
for the anniversary the the first 10

218
00:15:12,809 --> 00:15:09,009
years of full-time human occupancy on

219
00:15:16,230 --> 00:15:12,819
board the space station what do you

220
00:15:19,350 --> 00:15:16,240
think is the best thing that this

221
00:15:21,290 --> 00:15:19,360
partnership has done so far in these

222
00:15:29,769 --> 00:15:21,300
past 10 years

223
00:15:37,340 --> 00:15:29,779
I think the most important thing is that

224
00:15:40,370 --> 00:15:37,350
we work together and we learned how to

225
00:15:44,060 --> 00:15:40,380
work together in close partnerships and

226
00:15:50,120 --> 00:15:44,070
close cooperation I think this is the

227
00:15:53,690 --> 00:15:50,130
most important thing and it tells it's a

228
00:15:59,000 --> 00:15:53,700
huge station with a new architecture new

229
00:16:02,240 --> 00:15:59,010
possibilities what else and you see it's

230
00:16:05,480 --> 00:16:02,250
very interesting because then i talked

231
00:16:08,540 --> 00:16:05,490
with a surgical cut off after his flight

232
00:16:12,560 --> 00:16:08,550
and expedition one and was interesting

233
00:16:14,870 --> 00:16:12,570
because maybe half a year before I flew

234
00:16:17,360 --> 00:16:14,880
with Sergei's allusion to Mir station it

235
00:16:19,790 --> 00:16:17,370
was the last flight to mere and it was

236
00:16:24,230 --> 00:16:19,800
interesting because our flight was like

237
00:16:28,329 --> 00:16:24,240
a small model of the expedition one on

238
00:16:32,060 --> 00:16:28,339

ISS because we had the same problems in

239
00:16:36,079 --> 00:16:32,070
activation of station in configuring

240
00:16:41,389 --> 00:16:36,089
some system and maintaining so they were

241
00:16:43,250 --> 00:16:41,399
so close features so close details in to

242
00:16:50,470 --> 00:16:43,260
both different flights that it was

243
00:16:56,720 --> 00:16:50,480
amazing and now I think that we made a

244
00:16:59,090 --> 00:16:56,730
new big step forward in the utilization

245
00:17:01,699 --> 00:16:59,100
of not in the utilization of station but

246
00:17:03,800 --> 00:17:01,709
in building can't now we at the

247
00:17:08,030 --> 00:17:03,810
beginning of the real utilization of

248
00:17:09,180 --> 00:17:08,040
stage fiss process and it's I think it's

249
00:17:20,750 --> 00:17:09,190
the

250
00:17:26,450 --> 00:17:20,760
in this cooperation and I think that in

251
00:17:30,680 --> 00:17:26,460
next 10 years each other what can we

252
00:17:35,910 --> 00:17:30,690
wait from this I think it will perform

253
00:17:38,280 --> 00:17:35,920
new amazing experiments maybe for me

254
00:17:42,590 --> 00:17:38,290
most valuable and most important is to

255
00:17:46,500 --> 00:17:42,600
perform experiments for for improving

256
00:17:49,910 --> 00:17:46,510
human spaceflights maybe in techniques

257
00:17:53,400 --> 00:17:49,920
in methodology and aiming to the

258
00:17:56,640 --> 00:17:53,410
interplanetary flights it's the most

259
00:18:00,060 --> 00:17:56,650
available for me so it's my ratings for

260
00:18:01,890 --> 00:18:00,070
this ten-year spirit let's talk a bit

261
00:18:04,710 --> 00:18:01,900
about the utilization that will happen

262
00:18:07,020 --> 00:18:04,720
now there are of course a larger crew on

263
00:18:09,120 --> 00:18:07,030

board and many more laboratory

264
00:18:11,340 --> 00:18:09,130
facilities so there are a lot of

265
00:18:13,650 --> 00:18:11,350
experiments and a lot of them have to do

266
00:18:16,080 --> 00:18:13,660
with finding out how people will be able

267
00:18:18,240 --> 00:18:16,090
to live and work in the microgravity

268
00:18:22,620 --> 00:18:18,250
environment which we will need for those

269
00:18:24,980 --> 00:18:22,630
longer explorations beyond Earth tell me

270
00:18:27,480 --> 00:18:24,990
about some of the different kinds of

271
00:18:30,030 --> 00:18:27,490
investigations during your increment

272
00:18:33,360 --> 00:18:30,040
that you will be involved with as the

273
00:18:41,130 --> 00:18:37,440
it's research subject research subject

274
00:18:43,980 --> 00:18:41,140
will be mostly bionet experiments so

275
00:18:47,570 --> 00:18:43,990
when when my body will be under in my

276
00:18:53,850 --> 00:18:51,360
honestly speaking I don't like very much

277
00:18:57,930 --> 00:18:53,860
these experiments but I understand that

278
00:19:03,090 --> 00:18:57,940
this is necessity to to to go further

279
00:19:08,940 --> 00:19:03,100
and further in space flights so for for

280
00:19:15,650 --> 00:19:08,950
example our Russian researchers will

281
00:19:19,130 --> 00:19:15,660
investigate the mentality or

282
00:19:21,460 --> 00:19:19,140
the experiment so-called topology they

283
00:19:29,720 --> 00:19:21,470
will investigate the possibilities of

284
00:19:32,870 --> 00:19:29,730
our brains to to to organize the mental

285
00:19:39,860 --> 00:19:32,880
process and to help in solving the

286
00:19:48,220 --> 00:19:39,870
problems problems in which is necessary

287
00:19:53,780 --> 00:19:48,230
to use either rational approach or

288
00:19:56,720 --> 00:19:53,790

emotional approach so some kind of

289
00:20:00,020 --> 00:19:56,730
psychological experiment will have some

290
00:20:03,020 --> 00:20:00,030
experiments in cardio in studying the

291
00:20:05,420 --> 00:20:03,030
cardiovascular system and some

292
00:20:08,810 --> 00:20:05,430
regulatory functions of cardiovascular

293
00:20:13,650 --> 00:20:08,820
and breathing can't

294
00:20:18,960 --> 00:20:13,660
and we'll test a new equipment for a new

295
00:20:21,710 --> 00:20:18,970
methodology for future experiments you

296
00:20:26,400 --> 00:20:21,720
see will have a new maybe in two years

297
00:20:29,970 --> 00:20:26,410
Russian segment will be fulfilled but

298
00:20:33,060 --> 00:20:29,980
not fulfilled or fooled by the new

299
00:20:38,100 --> 00:20:33,070
research module big research module am

300
00:20:41,370 --> 00:20:38,110
Alamo mrm in English and will help there

301
00:20:42,960 --> 00:20:41,380
a lot of scientific experiments a lot of

302
00:20:45,450 --> 00:20:42,970
scientific equipment for different

303
00:20:51,650 --> 00:20:45,460
experiments in different areas and will

304
00:20:54,510 --> 00:20:51,660
have serious intentions to perform the

305
00:20:58,230 --> 00:20:54,520
biomet experiments of new generation

306
00:21:01,500 --> 00:20:58,240
using ultrasound and electrical

307
00:21:08,220 --> 00:21:01,510
geography and in many many different

308
00:21:14,880 --> 00:21:08,230
kinds of equipment nowadays equipment so

309
00:21:17,340 --> 00:21:14,890
we have a lot of work you will have as a

310
00:21:19,740 --> 00:21:17,350
subject and you will have a lot of work

311
00:21:21,780 --> 00:21:19,750
as the operators of experiments in in

312
00:21:23,490 --> 00:21:21,790
other kinds of scientific disciplines

313
00:21:26,940 --> 00:21:23,500

tell me a little bit about the other

314
00:21:30,120 --> 00:21:26,950
sort of scientific research that you and

315
00:21:33,840 --> 00:21:30,130
your crew mates will be involved in well

316
00:21:36,090 --> 00:21:33,850
you see we have a different areas in

317
00:21:38,390 --> 00:21:36,100
house in Russian cited scientific

318
00:21:40,670 --> 00:21:38,400
program of different areas of

319
00:21:44,960 --> 00:21:40,680
investigations fundamental physics

320
00:21:48,540 --> 00:21:44,970
geophysics research astronomy

321
00:21:51,000 --> 00:21:48,550
biology medical experiments some

322
00:21:54,260 --> 00:21:51,010
education educational experiments so

323
00:21:59,250 --> 00:21:54,270
about biomed I've talked already and

324
00:22:01,800 --> 00:21:59,260
about we have a beautiful experiment by

325
00:22:05,889 --> 00:22:01,810
my opinion in fundamental physics called

326
00:22:14,649 --> 00:22:09,139
fundamental research example of

327
00:22:18,589 --> 00:22:14,659
fundamental researchers in in physics

328
00:22:25,759 --> 00:22:18,599
the specialists will investigate to

329
00:22:29,329 --> 00:22:25,769
follow help the dust plasma in some and

330
00:22:36,019 --> 00:22:29,339
some conditions and water it does plasma

331
00:22:37,930 --> 00:22:36,029
in this environment and applications the

332
00:22:43,940 --> 00:22:37,940
field of applications of this knowledge

333
00:22:48,109 --> 00:22:43,950
will be huge from maybe nah new

334
00:22:50,690 --> 00:22:48,119
technologies to cosmology you see the

335
00:22:54,889 --> 00:22:50,700
yes they really have an applications and

336
00:22:57,829 --> 00:22:54,899
some ideas too for to apply this

337
00:23:02,329 --> 00:22:57,839
knowledge for forming of planetary

338
00:23:08,259 --> 00:23:02,339

systems for planetary or clouds it's a

339
00:23:16,249 --> 00:23:08,269
cosmology in some areas in technologies

340
00:23:20,569 --> 00:23:16,259
of technologies in with radioactive

341
00:23:24,139 --> 00:23:20,579
materials so in atomic industry and in

342
00:23:27,680 --> 00:23:24,149
some growing crystals control that

343
00:23:31,389 --> 00:23:27,690
growth growing of crystals so it's a

344
00:23:36,349 --> 00:23:31,399
huge amount as I said from nano

345
00:23:38,329 --> 00:23:36,359
technology took us much along with the

346
00:23:40,729 --> 00:23:38,339
science research there is of course

347
00:23:43,009 --> 00:23:40,739
regular maintenance that crew members on

348
00:23:45,619 --> 00:23:43,019
the station will do and the current plan

349
00:23:47,569 --> 00:23:45,629
for your mission is calling for three

350
00:23:49,459 --> 00:23:47,579
spacewalks from the Russian section of

351
00:23:52,399 --> 00:23:49,469
the station in the latter part of the

352
00:23:55,579 --> 00:23:52,409
year tell me about who will be going

353
00:24:04,479 --> 00:23:55,589
outside on these evs and what work will

354
00:24:08,449 --> 00:24:04,489
be done you see I am too not too old to

355
00:24:12,360 --> 00:24:08,459
these EVs but I decided not to

356
00:24:21,030 --> 00:24:18,060
I'll support and but I decided that

357
00:24:24,150 --> 00:24:21,040
to EVS will perform me further your

358
00:24:28,260 --> 00:24:24,160
chicken from expedition 25 and Ally

359
00:24:30,450 --> 00:24:28,270
Excalibur chica and the third one Alec

360
00:24:33,450 --> 00:24:30,460
will perform with me jerkin directive

361
00:24:38,100 --> 00:24:33,460
from the next crew but I will be a

362
00:24:43,950 --> 00:24:38,110
supporter but I am ready to do something

363
00:24:48,270 --> 00:24:43,960

extraordinary if necessary so I am ready

364
00:24:53,490 --> 00:24:48,280
for any four evaa and I am ready to

365
00:24:59,790 --> 00:24:53,500
perform typical operation so but I'm not

366
00:25:02,730 --> 00:24:59,800
involved in this unit these days you

367
00:25:05,490 --> 00:25:02,740
made a lot of EPA's of your own not not

368
00:25:09,900 --> 00:25:05,500
many not a lot of it is i have only five

369
00:25:12,990 --> 00:25:09,910
days it's not so many but each of these

370
00:25:16,770 --> 00:25:13,000
vehicles with some big peculiarities and

371
00:25:19,590 --> 00:25:16,780
i can say that three of these CBS i

372
00:25:22,740 --> 00:25:19,600
performed not being trained on the earth

373
00:25:25,500 --> 00:25:22,750
on the ground to these days so i had on

374
00:25:30,920 --> 00:25:25,510
the onboard trainings do it and do them

375
00:25:34,200 --> 00:25:30,930
so it's the most interesting for me and

376
00:25:38,580 --> 00:25:34,210
although the CVS will be aimed to

377
00:25:42,930 --> 00:25:38,590
scientific purposes it's for scientific

378
00:25:47,310 --> 00:25:42,940
purposes to install a new working place

379
00:25:52,530 --> 00:25:47,320
for scientific specific equipment to

380
00:25:56,280 --> 00:25:52,540
install some items of equipment to rain

381
00:26:00,560 --> 00:25:56,290
to reinstall to the mountain to bring

382
00:26:05,940 --> 00:26:00,570
back in the civic expose its the

383
00:26:08,100 --> 00:26:05,950
materials of European Space Agency some

384
00:26:13,910 --> 00:26:08,110
and maybe some biological objects

385
00:26:18,750 --> 00:26:13,920
exposed from the expedition 18 then

386
00:26:23,910 --> 00:26:18,760
robotics a European experiment

387
00:26:32,520 --> 00:26:23,920
for robotic arms and to the extent

388
00:26:40,630 --> 00:26:36,750

ability to work in different moods for

389
00:26:47,110 --> 00:26:40,640
robotic joints for some effectors for

390
00:26:49,600 --> 00:26:47,120
some motors and it's working maybe 45

391
00:26:55,560 --> 00:26:49,610
years already so they are interested to

392
00:26:59,230 --> 00:26:55,570
to take it to bring it back and to

393
00:27:01,570 --> 00:26:59,240
return to the earth some of details of

394
00:27:07,510 --> 00:27:01,580
this equipment we will install the

395
00:27:11,760 --> 00:27:07,520
equipment for laser communications

396
00:27:16,240 --> 00:27:11,770
communications but laser beams and many

397
00:27:18,610 --> 00:27:16,250
other experiments the current plan for

398
00:27:21,730 --> 00:27:18,620
the sequence of events in your flight

399
00:27:24,610 --> 00:27:21,740
calls for shuttle discovery to arrive at

400
00:27:27,010 --> 00:27:24,620
the station on mission sts-133 in

401
00:27:29,470 --> 00:27:27,020
November can you tell me just a little

402
00:27:31,480 --> 00:27:29,480
bit about what's on the agenda for when

403
00:27:38,430 --> 00:27:31,490
you get that shuttle visit near the end

404
00:27:43,090 --> 00:27:38,440
of the year I don't know exactly the

405
00:27:51,460 --> 00:27:43,100
flight plan and the cargo and the

406
00:27:54,280 --> 00:27:51,470
payload of this of this flight but i'm

407
00:27:58,180 --> 00:27:54,290
looking forward to meet with steve

408
00:28:03,120 --> 00:27:58,190
lindsey this crew commander because we

409
00:28:06,220 --> 00:28:03,130
worked very tightly on the earth

410
00:28:10,000 --> 00:28:06,230
assigning crews and discussing the crew

411
00:28:15,190 --> 00:28:10,010
tasks in mcp so multilateral

412
00:28:19,270 --> 00:28:15,200
corporations panel and now we can meet

413
00:28:21,730 --> 00:28:19,280

we can meet on board the SS so for me

414
00:28:25,860 --> 00:28:21,740
for both of us it's very interesting and

415
00:28:28,480 --> 00:28:25,870
very exciting we're looking at the

416
00:28:30,370 --> 00:28:28,490
sts-133 bringing that permanent

417
00:28:30,950 --> 00:28:30,380
multi-purpose module and adding another

418
00:28:33,320 --> 00:28:30,960
room on

419
00:28:37,190 --> 00:28:33,330
the station and then early in the next

420
00:28:39,100 --> 00:28:37,200
year sts-134 will come and it will will

421
00:28:41,779 --> 00:28:39,110
bring the Alpha Magnetic Spectrometer

422
00:28:44,539 --> 00:28:41,789
and at that point you'll have the

423
00:28:47,149 --> 00:28:44,549
opportunity to see your commander Scott

424
00:28:53,120 --> 00:28:47,159
Kelly on orbit with his twin brother yes

425
00:28:57,019 --> 00:28:53,130
yes and and they had many thoughts about

426
00:29:02,690 --> 00:28:57,029
how to how to distinguish them houghton

427
00:29:05,600 --> 00:29:02,700
not to Nixon he is 134 before close of

428
00:29:07,279 --> 00:29:05,610
your exes the shuttle mission that Mark

429
00:29:09,200 --> 00:29:07,289
Kelly is commanding is the last

430
00:29:12,289 --> 00:29:09,210
scheduled flight of the space shuttle

431
00:29:14,810 --> 00:29:12,299
program and so you will be on board to

432
00:29:17,870 --> 00:29:14,820
see that as well what are your thoughts

433
00:29:20,090 --> 00:29:17,880
about the space shuttle's place in the

434
00:29:28,539 --> 00:29:20,100
history of human space flight and its

435
00:29:34,779 --> 00:29:31,039
it was a good and very interesting

436
00:29:41,510 --> 00:29:34,789
vehicle during the whole program it's

437
00:29:43,789 --> 00:29:41,520
almost 30 years almost 30 years and it

438
00:29:46,970 --> 00:29:43,799

was amazing program it was amazing

439
00:29:53,200 --> 00:29:46,980
problem and a huge amount of astronauts

440
00:29:57,669 --> 00:29:53,210
flew board shuttle so it seems me that

441
00:30:00,770 --> 00:29:57,679
at least seventy-five eighty percent of

442
00:30:05,060 --> 00:30:00,780
gospel of us American astronauts flew

443
00:30:09,260 --> 00:30:05,070
and bought Chateau and only maybe 20 or

444
00:30:11,930 --> 00:30:09,270
25 persons of all because all the

445
00:30:17,720 --> 00:30:11,940
astronauts flew on different tabs like

446
00:30:20,149 --> 00:30:17,730
Mercury Gemini Apollo so the

447
00:30:26,510 --> 00:30:20,159
contribution to the space program of

448
00:30:32,300 --> 00:30:26,520
shuttle is huge as amazing and as to

449
00:30:37,400 --> 00:30:32,310
ISS let's see almost one-third of all

450
00:30:43,700 --> 00:30:37,410
the shuttle flights were performed for

451
00:30:47,930 --> 00:30:43,710
ISS beginning from sts 88 towards the

452
00:30:51,890 --> 00:30:47,940
first flight to ISS excluding maybe two

453
00:30:55,400 --> 00:30:51,900
or three flights like for Hubble

454
00:30:58,190 --> 00:30:55,410
servicing it seems me two flights and

455
00:31:02,630 --> 00:30:58,200
one was calendar unfortunately the

456
00:31:14,210 --> 00:31:02,640
column based is one on seven so almost

457
00:31:17,450 --> 00:31:14,220
30 45 45 of 134 one third exactly so I

458
00:31:22,880 --> 00:31:17,460
says it cannot cannot be built in this

459
00:31:27,730 --> 00:31:22,890
shape in this forms and sizes so without

460
00:31:30,980 --> 00:31:27,740
shuttle so sorry what can I say anymore

461
00:31:34,070 --> 00:31:30,990
well thank you thank you rattle for

462
00:31:37,250 --> 00:31:34,080
doing this when the shuttle is not

463
00:31:39,320 --> 00:31:37,260

flying a major means of supplying the

464
00:31:42,560 --> 00:31:39,330
space station will be gone but there are

465
00:31:45,500 --> 00:31:42,570
three other proven cargo ships that are

466
00:31:47,330 --> 00:31:45,510
flying to supply the station and each of

467
00:31:49,160 --> 00:31:47,340
them is supposed to make at least one

468
00:31:52,460 --> 00:31:49,170
visit to the station during expedition

469
00:31:56,000 --> 00:31:52,470
26 tell me briefly about the

470
00:32:05,970 --> 00:31:56,010
capabilities of these unpiloted Russian

471
00:32:14,760 --> 00:32:09,160
well they are very different we're very

472
00:32:23,440 --> 00:32:14,770
different the first progress and

473
00:32:26,170 --> 00:32:23,450
European ATV we call can doc can dog

474
00:32:30,070 --> 00:32:26,180
directly to the station from the

475
00:32:33,520 --> 00:32:30,080
autonomous flight and Japanese HTV can

476
00:32:40,210 --> 00:32:33,530
be docked only by station manipulator so

477
00:32:45,210 --> 00:32:40,220
it goes to the to the close vicinity of

478
00:32:48,670 --> 00:32:45,220
the station then stays there and then

479
00:32:52,390 --> 00:32:48,680
manipulator controlled by the operator

480
00:32:55,300 --> 00:32:52,400
from station captured it and dock to the

481
00:33:00,990 --> 00:32:55,310
docking port special docking port it's

482
00:33:04,300 --> 00:33:01,000
the first difference then I can say that

483
00:33:06,310 --> 00:33:04,310
they have different cargoes different

484
00:33:10,650 --> 00:33:06,320
possibilities to deliver cargos

485
00:33:15,430 --> 00:33:10,660
necessary to the station HTV can deliver

486
00:33:22,010 --> 00:33:15,440
dry cargo liquids and cargoes not not

487
00:33:25,710 --> 00:33:22,020
liquids only dry cargoes mainly for

488
00:33:28,890 --> 00:33:25,720

japanese modules it's it's like logistic

489
00:33:32,720 --> 00:33:28,900
flights but it can deliver it can

490
00:33:37,590 --> 00:33:32,730
deliver the car goes both and

491
00:33:42,960 --> 00:33:37,600
pressurized volume or outside on the

492
00:33:47,760 --> 00:33:42,970
unpressurized platform ATV cannot

493
00:33:52,170 --> 00:33:47,770
deliver unpressurized car goes in and

494
00:33:55,230 --> 00:33:52,180
outside the pressurized mugen progress

495
00:33:57,630 --> 00:33:55,240
can deliver some special notifications

496
00:34:00,720 --> 00:33:57,640
of progress and we had this experience

497
00:34:02,370 --> 00:34:00,730
on near onboard meal now we it's not

498
00:34:06,540 --> 00:34:02,380
necessary for us but we are ready

499
00:34:10,220 --> 00:34:06,550
Russian side is ready to modify the

500
00:34:19,430 --> 00:34:10,230
progress to deliver some unpressurized

501
00:34:22,950 --> 00:34:19,440
carbis so but a TV in progress are like

502
00:34:35,140 --> 00:34:29,379
in the big city some cargo cargo

503
00:34:41,149 --> 00:34:38,500
cargo vehicles in the city trucks trucks

504
00:34:44,300 --> 00:34:41,159
big truck and small truck you need both

505
00:34:48,339 --> 00:34:44,310
of them you need both of them so they

506
00:34:52,659 --> 00:34:48,349
are necessary both but I can say that

507
00:34:56,559 --> 00:34:52,669
progress can dock in any conditions in

508
00:34:59,499 --> 00:34:56,569
any conditions and it can be manually

509
00:35:01,569 --> 00:34:59,509
controlled by the crew atv cannot be

510
00:35:04,749 --> 00:35:01,579
controlled by the crew so we are only

511
00:35:08,880 --> 00:35:04,759
monitoring the automated approach and

512
00:35:13,420 --> 00:35:08,890
final approach and we can only stop it

513
00:35:17,739 --> 00:35:13,430

to be secure to secure on the safe

514
00:35:20,259 --> 00:35:17,749
station not more so they are very

515
00:35:23,440 --> 00:35:20,269
different but until they are very

516
00:35:27,489 --> 00:35:23,450
similar in their functions and you add

517
00:35:30,670 --> 00:35:27,499
to that the oncoming work that NASA is

518
00:35:32,259 --> 00:35:30,680
doing to try to bring in private cargo

519
00:35:35,019 --> 00:35:32,269
ship so there are lots of different ways

520
00:35:36,549 --> 00:35:35,029
to bring things bring supplies to the

521
00:35:38,819 --> 00:35:36,559
International Space Station in the

522
00:35:41,440 --> 00:35:38,829
future I'd like to ask you to look

523
00:35:43,749 --> 00:35:41,450
beyond that into the to the further

524
00:35:46,719 --> 00:35:43,759
future and and tell me where you think

525
00:35:50,349 --> 00:35:46,729
human spaceflight is headed in the next

526
00:35:51,880 --> 00:35:50,359
20 or 50 years or so and how is the

527
00:35:57,730 --> 00:35:51,890
International Space Station going to

528
00:36:06,730 --> 00:36:01,450
I hope that will be aimed to the

529
00:36:09,850 --> 00:36:06,740
interplanetary flights and the ISS or

530
00:36:13,330 --> 00:36:09,860
speed or future space station will be a

531
00:36:17,620 --> 00:36:13,340
platform for for doing some activities

532
00:36:21,690 --> 00:36:17,630
for to get ready for these

533
00:36:26,170 --> 00:36:21,700
interplanetary flights the testing

534
00:36:33,700 --> 00:36:26,180
equipment methodology some computer

535
00:36:37,660 --> 00:36:33,710
systems and software and of course will

536
00:36:41,680 --> 00:36:37,670
work I hope who together in cooperation

537
00:36:45,010 --> 00:36:41,690
and international partnership and tell

538
00:36:51,460 --> 00:36:45,020

sort and will try new approaches new

539
00:36:57,850 --> 00:36:51,470
approaches to perform some maybe sales /

540
00:37:09,410 --> 00:37:04,400
and jet in jail injecting to their low

541
00:37:12,410 --> 00:37:09,420
Earth orbit car goes by maybe private

542
00:37:15,950 --> 00:37:12,420
cargo ships like dragon like signals

543
00:37:18,980 --> 00:37:15,960
like some others it's very interesting

544
00:37:21,700 --> 00:37:18,990
for me and I think that it's this

545
00:37:28,190 --> 00:37:21,710
feature will be very interesting for our