



1
00:00:05,190 --> 00:00:03,270
cosmonaut sergey of day of joining us

2
00:00:06,150 --> 00:00:05,200
today sergey thank you so much for your

3
00:00:09,190 --> 00:00:06,160
time

4
00:00:10,070 --> 00:00:09,200
uh you are to this day the most recent

5
00:00:12,470 --> 00:00:10,080
human

6
00:00:14,150 --> 00:00:12,480
to spend a year or more in space having

7
00:00:16,550 --> 00:00:14,160
accomplished that feat

8
00:00:20,470 --> 00:00:16,560
of 380 days in space

9
00:00:22,150 --> 00:00:20,480
between august 1998 and august 1999.

10
00:00:25,189 --> 00:00:22,160
what were the major highlights of that

11
00:00:26,870 --> 00:00:25,199
year in space and the low points of that

12
00:00:33,590 --> 00:00:26,880
marathon mission that you spent aboard

13
00:00:39,590 --> 00:00:34,950

was not

14

00:00:46,630 --> 00:00:42,470

one year long flight i mean prior to my

15

00:00:51,430 --> 00:00:49,190

right before me and then there was even

16

00:00:54,389 --> 00:00:51,440

another flight even earlier than that of

17

00:01:01,270 --> 00:00:58,229

and each of those three super long

18

00:01:05,830 --> 00:01:01,280

flights was different from another one

19

00:01:08,789 --> 00:01:05,840

but the previous two flights before mine

20

00:01:10,310 --> 00:01:08,799

were such that the crews actually knew

21

00:01:13,590 --> 00:01:10,320

all along that they're going to be

22

00:01:15,030 --> 00:01:13,600

flying a one year mission in my case it

23

00:01:17,830 --> 00:01:15,040

was different

24

00:01:19,590 --> 00:01:17,840

realistically i came to know about the

25

00:01:22,710 --> 00:01:19,600

nature of this flight the duration of

26

00:01:24,230 --> 00:01:22,720

this flight already being one orbit

27

00:01:28,070 --> 00:01:24,240

on the ground

28

00:01:34,469 --> 00:01:31,190

there were negotiations

29

00:01:35,910 --> 00:01:34,479

discussions regarding the actual status

30

00:01:38,950 --> 00:01:35,920

of the

31

00:01:41,109 --> 00:01:38,960

mere station

32

00:01:43,510 --> 00:01:41,119

but the decision was not made as to

33

00:01:45,830 --> 00:01:43,520

which sequence we're going to entertain

34

00:01:47,429 --> 00:01:45,840

when it comes to you know flying on a

35

00:01:50,550 --> 00:01:47,439

station

36

00:01:52,830 --> 00:01:50,560

i was prepared that my flight might turn

37

00:01:55,830 --> 00:01:52,840

out to be a little bit

38

00:01:58,310 --> 00:01:55,840

longer but i never thought that it'll

39

00:01:59,910 --> 00:01:58,320

be twice as long

40

00:02:03,910 --> 00:01:59,920

and more roles

41

00:02:06,310 --> 00:02:03,920

i came to know about that

42

00:02:09,270 --> 00:02:06,320

not even from

43

00:02:11,190 --> 00:02:09,280

the people on the ground

44

00:02:11,990 --> 00:02:11,200

not from the mission control center

45

00:02:15,270 --> 00:02:12,000

folks

46

00:02:17,270 --> 00:02:15,280

but i i came to know about that from the

47

00:02:19,350 --> 00:02:17,280

crew that arrived

48

00:02:21,510 --> 00:02:19,360

on orbit

49

00:02:24,229 --> 00:02:21,520

to replace

50

00:02:25,589 --> 00:02:24,239

um my first

51
00:02:28,150 --> 00:02:25,599
a half

52
00:02:30,309 --> 00:02:28,160
of the expedition

53
00:02:33,190 --> 00:02:30,319
actually namely it was uh french

54
00:02:35,910 --> 00:02:33,200
cosmonaut jean-pierre

55
00:02:38,949 --> 00:02:35,920
and he told me you know french space

56
00:02:40,309 --> 00:02:38,959
agency was thinking to fly for about a

57
00:02:42,470 --> 00:02:40,319
month but

58
00:02:43,990 --> 00:02:42,480
recently all of a sudden it turned out

59
00:02:45,509 --> 00:02:44,000
that it's going to be a full-blown

60
00:02:47,350 --> 00:02:45,519
flight six months

61
00:02:49,670 --> 00:02:47,360
and that was the difference between my

62
00:02:51,990 --> 00:02:49,680
plight the flight and the flights that

63
00:02:53,509 --> 00:02:52,000

took place earlier and the one that is

64

00:02:54,869 --> 00:02:53,519

coming up in

65

00:02:56,949 --> 00:02:54,879

soon

66

00:02:59,910 --> 00:02:56,959

for those of us here on earth who are

67

00:03:01,589 --> 00:02:59,920

not astronauts or cosmonauts spending a

68

00:03:02,869 --> 00:03:01,599

year in space

69

00:03:04,790 --> 00:03:02,879

seems

70

00:03:05,910 --> 00:03:04,800

to be a very daunting

71

00:03:08,949 --> 00:03:05,920

task

72

00:03:11,190 --> 00:03:08,959

how challenging was

73

00:03:12,550 --> 00:03:11,200

your mission of spending a year or more

74

00:03:14,309 --> 00:03:12,560

in space and

75

00:03:16,309 --> 00:03:14,319

how much of your mission was designed to

76

00:03:18,309 --> 00:03:16,319

acquire information about the long

77

00:03:22,710 --> 00:03:18,319

duration effect of weightlessness on the

78

00:03:27,350 --> 00:03:24,470

when it comes to impact of the

79

00:03:28,390 --> 00:03:27,360

weightlessness on a human body

80

00:03:31,670 --> 00:03:28,400

probably

81

00:03:33,350 --> 00:03:31,680

the the mankind knows like 80 percent of

82

00:03:35,110 --> 00:03:33,360

what uh

83

00:03:37,030 --> 00:03:35,120

the entire amount of information that is

84

00:03:39,750 --> 00:03:37,040

available

85

00:03:42,229 --> 00:03:39,760

the information is still being gathered

86

00:03:50,470 --> 00:03:42,239

uh the analysis is still going on it's

87

00:03:56,390 --> 00:03:52,550

as for the singularities and

88

00:04:00,949 --> 00:03:59,190

as far as what recommendations i can

89

00:04:02,550 --> 00:04:00,959

give to cosmonauts

90

00:04:04,149 --> 00:04:02,560

and mostly

91

00:04:07,190 --> 00:04:04,159

management and the people who are in

92

00:04:08,869 --> 00:04:07,200

charge of developing those programs

93

00:04:10,229 --> 00:04:08,879

it's necessary to be extremely

94

00:04:12,470 --> 00:04:10,239

conscientious

95

00:04:13,670 --> 00:04:12,480

about several

96

00:04:16,949 --> 00:04:13,680

problems problems

97

00:04:18,710 --> 00:04:16,959

when it comes to pure physiology

98

00:04:20,469 --> 00:04:18,720

we every day

99

00:04:26,870 --> 00:04:20,479

exercise

100

00:04:28,790 --> 00:04:26,880

stretch muscles we take care of our

101
00:04:31,590 --> 00:04:28,800
bones

102
00:04:32,310 --> 00:04:31,600
and over the course of one year

103
00:04:34,469 --> 00:04:32,320
we

104
00:04:36,710 --> 00:04:34,479
are supposed to

105
00:04:39,430 --> 00:04:36,720
stay fit yes

106
00:04:40,830 --> 00:04:39,440
which is not an easy task

107
00:04:45,110 --> 00:04:40,840
you may get

108
00:04:48,390 --> 00:04:45,120
tired you just may hate the idea of

109
00:04:50,950 --> 00:04:48,400
exercising and you are sort of forced to

110
00:04:53,189 --> 00:04:50,960
skip a training session

111
00:04:55,030 --> 00:04:53,199
next time you may feel

112
00:04:58,150 --> 00:04:55,040
totally different

113
00:05:00,870 --> 00:04:58,160

you might be so energetic you're gonna

114

00:05:04,150 --> 00:05:00,880

get in there

115

00:05:06,790 --> 00:05:04,160

right then and as a result you may

116

00:05:10,710 --> 00:05:06,800

damage your muscle for instance and it's

117

00:05:13,990 --> 00:05:10,720

gonna take a month for this to heal

118

00:05:15,510 --> 00:05:14,000

which makes the overall situation even

119

00:05:17,990 --> 00:05:15,520

worse

120

00:05:20,070 --> 00:05:18,000

so in this regard it's necessary to be

121

00:05:32,790 --> 00:05:20,080

extremely

122

00:05:32,800 --> 00:05:46,790

who fly to space

123

00:05:49,189 --> 00:05:48,230

in such a way

124

00:05:52,790 --> 00:05:49,199

that

125

00:05:55,270 --> 00:05:52,800

a month before there is a huge crowd of

126
00:05:57,430 --> 00:05:55,280
people that surrounds the crew members

127
00:05:59,510 --> 00:05:57,440
at all times their

128
00:06:01,749 --> 00:05:59,520
festive atmosphere

129
00:06:03,909 --> 00:06:01,759
press conferences

130
00:06:06,390 --> 00:06:03,919
but the closer they get

131
00:06:10,629 --> 00:06:06,400
to the to getting on the rocket the

132
00:06:14,230 --> 00:06:10,639
fewer people have an access to the crew

133
00:06:18,790 --> 00:06:15,990
they

134
00:06:21,350 --> 00:06:18,800
go through the meeting of the uh

135
00:06:24,870 --> 00:06:21,360
government

136
00:06:26,390 --> 00:06:24,880
and then they get into a suit up area

137
00:06:30,550 --> 00:06:26,400
where they don

138
00:06:32,950 --> 00:06:31,430

and then

139

00:06:35,029 --> 00:06:32,960

only two

140

00:06:38,550 --> 00:06:35,039

crew members sit right next to each

141

00:06:42,469 --> 00:06:38,560

other and eventually the uh last person

142

00:06:44,469 --> 00:06:42,479

who closes the hedge behind them

143

00:06:46,390 --> 00:06:44,479

so the actual flight

144

00:06:49,589 --> 00:06:46,400

never starts

145

00:06:50,629 --> 00:06:49,599

when the rocket blasts off

146

00:06:52,070 --> 00:06:50,639

but

147

00:06:54,629 --> 00:06:52,080

way prior

148

00:06:57,510 --> 00:06:54,639

when the person who is so much immersed

149

00:07:06,309 --> 00:06:57,520

and submerged in the training he gets

150

00:07:11,110 --> 00:07:08,790

uh i could talk about crew members

151
00:07:13,430 --> 00:07:11,120
participating in this slide but i wanted

152
00:07:18,550 --> 00:07:13,440
to say a couple of words about the crew

153
00:07:23,670 --> 00:07:21,110
it was the flight as part of the program

154
00:07:24,790 --> 00:07:23,680
euro mir

155
00:07:27,589 --> 00:07:24,800
95

156
00:07:29,189 --> 00:07:27,599
was supposed to last six months but it

157
00:07:32,390 --> 00:07:29,199
was different

158
00:07:34,469 --> 00:07:32,400
in a sense that for the first time we've

159
00:07:36,469 --> 00:07:34,479
started working

160
00:07:37,990 --> 00:07:36,479
with our foreign partners foreign

161
00:07:39,990 --> 00:07:38,000
cosmonauts

162
00:07:43,909 --> 00:07:40,000
in a equal kind of manner in a

163
00:07:45,270 --> 00:07:43,919

reciprocal manner and thomas reiter was

164

00:07:47,110 --> 00:07:45,280

getting ready

165

00:07:49,670 --> 00:07:47,120

to fly with us

166

00:07:51,990 --> 00:07:49,680

for the entire amount of time not for 10

167

00:07:54,150 --> 00:07:52,000

days not for two weeks but for six

168

00:07:55,749 --> 00:07:54,160

months

169

00:07:57,510 --> 00:07:55,759

and at the same time

170

00:07:58,550 --> 00:07:57,520

walter petters

171

00:08:00,309 --> 00:07:58,560

who

172

00:08:02,790 --> 00:08:00,319

was the head of this

173

00:08:05,909 --> 00:08:02,800

program on behalf of european space

174

00:08:09,350 --> 00:08:05,919

agency currently he is the director of a

175

00:08:10,950 --> 00:08:09,360

strasbourg space university

176

00:08:14,309 --> 00:08:10,960

he

177

00:08:17,350 --> 00:08:14,319

was thinking through every single tiny

178

00:08:19,510 --> 00:08:17,360

detail of this fight like very minor

179

00:08:22,469 --> 00:08:19,520

thing and those minor things all of a

180

00:08:24,629 --> 00:08:22,479

sudden used to turn out very big for us

181

00:08:25,430 --> 00:08:24,639

for instance

182

00:08:28,869 --> 00:08:25,440

he

183

00:08:31,350 --> 00:08:28,879

found a pair of glasses

184

00:08:33,750 --> 00:08:31,360

very interesting glasses

185

00:08:36,149 --> 00:08:33,760

and he bought them off the shelf at a

186

00:08:38,949 --> 00:08:36,159

regular ordinary store but if you look

187

00:08:41,829 --> 00:08:38,959

in a window in these glasses they get

188

00:08:44,710 --> 00:08:41,839

darker the lenses get darker

189

00:08:45,829 --> 00:08:44,720

then he designed a special vest for the

190

00:08:47,430 --> 00:08:45,839

crew members

191

00:08:49,430 --> 00:08:47,440

with smaller

192

00:08:52,470 --> 00:08:49,440

pockets

193

00:08:56,310 --> 00:08:52,480

with different types of velcro and it

194

00:08:59,750 --> 00:08:56,320

was all done for convenience of the crew

195

00:09:01,509 --> 00:08:59,760

they also conducted two different events

196

00:09:04,310 --> 00:09:01,519

that i still remember

197

00:09:07,030 --> 00:09:04,320

one orbit we with their help we managed

198

00:09:11,509 --> 00:09:07,040

to celebrate the new year because

199

00:09:16,310 --> 00:09:14,550

christmas new year's orthodox christmas

200

00:09:18,310 --> 00:09:16,320

so it's a stretch of holidays that

201
00:09:21,670 --> 00:09:18,320
equals two weeks and all of a sudden we

202
00:09:24,550 --> 00:09:21,680
receive a gift which was delivered by by

203
00:09:27,829 --> 00:09:24,560
the cargo vehicle progress vehicle

204
00:09:30,070 --> 00:09:27,839
and in this gift there is a disc

205
00:09:34,230 --> 00:09:30,080
with the recording

206
00:09:37,030 --> 00:09:35,269
and this

207
00:09:40,070 --> 00:09:37,040
video was shot on the ground and

208
00:09:43,670 --> 00:09:40,080
delivered to us on orbit

209
00:09:46,550 --> 00:09:43,680
and uh it came from europeans from group

210
00:09:48,829 --> 00:09:46,560
ground personnel from cologne all kinds

211
00:09:51,590 --> 00:09:48,839
of different places mission control

212
00:09:53,670 --> 00:09:51,600
center all working in support of our

213
00:09:55,030 --> 00:09:53,680

flight including strasbourg by the way

214

00:09:58,070 --> 00:09:55,040

and all

215

00:10:00,070 --> 00:09:58,080

personnel involved in this effort in

216

00:10:02,949 --> 00:10:00,080

flight support extended there

217

00:10:05,509 --> 00:10:02,959

congratulations to uh to us they used to

218

00:10:07,590 --> 00:10:05,519

fly up the roofs of the buildings there

219

00:10:10,069 --> 00:10:07,600

were fir trees they were

220

00:10:11,750 --> 00:10:10,079

colorful balloons and it was all

221

00:10:14,949 --> 00:10:11,760

magnificent also we received

222

00:10:15,990 --> 00:10:14,959

congratulations from our families which

223

00:10:17,910 --> 00:10:16,000

also

224

00:10:19,430 --> 00:10:17,920

turned out to be very instrumental in

225

00:10:21,910 --> 00:10:19,440

being able to

226

00:10:25,030 --> 00:10:21,920

support each other and

227

00:10:29,030 --> 00:10:25,040

create required rapport between the crew

228

00:10:33,110 --> 00:10:30,870

and i would like to wish

229

00:10:37,430 --> 00:10:33,120

that the upcoming flight

230

00:10:40,389 --> 00:10:37,440

of miguel carnienka and scott kelly

231

00:10:42,949 --> 00:10:40,399

would be just as successful and would be

232

00:10:45,509 --> 00:10:42,959

momentous not only for the crew members

233

00:10:47,829 --> 00:10:45,519

but also for the entire flight support

234

00:10:49,829 --> 00:10:47,839

personnel on the ground

235

00:10:52,230 --> 00:10:49,839

with their upcoming launch

236

00:10:53,110 --> 00:10:52,240

scott kelly and mikhail kronyenko will

237

00:10:55,110 --> 00:10:53,120

soon

238

00:10:57,350 --> 00:10:55,120

embark on spending a year aboard the

239

00:10:59,350 --> 00:10:57,360

international space station

240

00:11:01,829 --> 00:10:59,360

this is the first such mission of that

241

00:11:04,230 --> 00:11:01,839

duration since yours

242

00:11:07,829 --> 00:11:04,240

what are your thoughts on their flight

243

00:11:10,310 --> 00:11:07,839

to gain modern day biomedical data

244

00:11:12,870 --> 00:11:10,320

for that period of time and the benefit

245

00:11:14,630 --> 00:11:12,880

that that data will yield with the

246

00:11:19,350 --> 00:11:14,640

ultimate goal being a trip to mars

247

00:11:21,350 --> 00:11:20,069

uh

248

00:11:23,030 --> 00:11:21,360

in order to

249

00:11:25,750 --> 00:11:23,040

answer this question let me give you the

250

00:11:30,069 --> 00:11:25,760

opinion one of our medical doctors

251
00:11:33,190 --> 00:11:30,079
russian medical doctors experts they uh

252
00:11:34,470 --> 00:11:33,200
on several occasions they used to uh

253
00:11:36,630 --> 00:11:34,480
state

254
00:11:39,030 --> 00:11:36,640
and last time around by the way i heard

255
00:11:41,350 --> 00:11:39,040
this opinion back in houston

256
00:11:43,829 --> 00:11:41,360
at the rice university as part of the

257
00:11:47,030 --> 00:11:43,839
medical summit

258
00:11:49,670 --> 00:11:47,040
and they used to say and they say it now

259
00:11:51,190 --> 00:11:49,680
that we should not expect

260
00:11:54,150 --> 00:11:51,200
anything new

261
00:11:57,509 --> 00:11:54,160
uh from the purely medical standpoint

262
00:11:58,550 --> 00:11:57,519
we have uh the flight of musa vladimir

263
00:12:01,910 --> 00:11:58,560

tito

264

00:12:04,470 --> 00:12:01,920

we have the flight of valeri polyakov

265

00:12:06,949 --> 00:12:04,480

uh we have my flight four flights all

266

00:12:10,069 --> 00:12:07,910

tell us

267

00:12:12,629 --> 00:12:10,079

that from the medical standpoint we

268

00:12:15,910 --> 00:12:12,639

shouldn't be expecting any breakthroughs

269

00:12:21,990 --> 00:12:18,710

this is the opinion of one single

270

00:12:26,949 --> 00:12:24,710

let him be just a physiologist but there

271

00:12:29,750 --> 00:12:26,959

is also physiology there is also

272

00:12:33,110 --> 00:12:29,760

psychology there is also sociology there

273

00:12:35,190 --> 00:12:33,120

is also a concept of flight control

274

00:12:36,870 --> 00:12:35,200

there is a concept of reasonable

275

00:12:39,110 --> 00:12:36,880

performance of the mission control

276

00:12:41,990 --> 00:12:39,120

center and there's

277

00:12:44,870 --> 00:12:42,000

very many different tiny subtleties and

278

00:12:46,949 --> 00:12:44,880

nuances that we should be striving to

279

00:12:49,110 --> 00:12:46,959

get compared to what we used to have in

280

00:12:50,230 --> 00:12:49,120

the past and that's that's what my car

281

00:12:53,190 --> 00:12:50,240

is on that

282

00:12:54,069 --> 00:12:53,200

and finally sergey what in your opinion

283

00:12:56,230 --> 00:12:54,079

um

284

00:12:57,910 --> 00:12:56,240

would be the most significant challenge

285

00:13:00,389 --> 00:12:57,920

to accomplishing

286

00:13:02,629 --> 00:13:00,399

a mission to mars both from a physical

287

00:13:03,590 --> 00:13:02,639

and technical standpoint is a mission to

288

00:13:05,670 --> 00:13:03,600

mars

289

00:13:07,190 --> 00:13:05,680

feasible if you had all the money in the

290

00:13:10,710 --> 00:13:07,200

world to do it

291

00:13:13,990 --> 00:13:13,110

all projects

292

00:13:15,350 --> 00:13:14,000

that i

293

00:13:17,509 --> 00:13:15,360

have seen

294

00:13:30,150 --> 00:13:17,519

regarding the uh

295

00:13:30,160 --> 00:13:42,470

which are figuratively speaking

296

00:13:46,710 --> 00:13:45,430

just for two three or up to ten crew

297

00:13:49,750 --> 00:13:46,720

members

298

00:13:52,389 --> 00:13:49,760

but it's a just a replica

299

00:13:54,230 --> 00:13:52,399

we need to be just as the planet of

300

00:13:55,829 --> 00:13:54,240

earth the crew needs to be protected

301
00:13:58,310 --> 00:13:55,839
from radiation

302
00:13:59,670 --> 00:13:58,320
the crew just as planet of earth is

303
00:14:03,350 --> 00:13:59,680
supposed to be

304
00:14:06,230 --> 00:14:03,360
having a magnetic field

305
00:14:07,829 --> 00:14:06,240
because they the crew the humankind

306
00:14:10,230 --> 00:14:07,839
have to be

307
00:14:11,829 --> 00:14:10,240
protected by the magnetic field so

308
00:14:16,230 --> 00:14:11,839
basically what we're going to be flying

309
00:14:18,949 --> 00:14:16,240
to mars is a spacecraft called the earth

310
00:14:19,750 --> 00:14:18,959
which is very complex

311
00:14:21,670 --> 00:14:19,760
from

312
00:14:23,829 --> 00:14:21,680
every aspect

313
00:14:25,910 --> 00:14:23,839

cosmonauts sergey of dev thank you so

314

00:14:27,829 --> 00:14:25,920

much for your time and insight today uh

315

00:14:30,710 --> 00:14:27,839

we appreciate it very much and uh good

316

00:14:32,629 --> 00:14:30,720

luck to you too thank you

317

00:14:36,069 --> 00:14:32,639

for pleasure

318

00:14:39,110 --> 00:14:36,079

best wishes for this flight for all

319

00:14:41,269 --> 00:14:39,120

colleagues who help them

320

00:15:29,990 --> 00:14:41,279

to work

321

00:15:34,389 --> 00:15:33,269

thomas it has been wonderful to see you

322

00:15:36,550 --> 00:15:34,399

again

323

00:15:39,110 --> 00:15:36,560

to work with you and fly with you

324

00:15:40,629 --> 00:15:39,120

the russians i think it's most difficult

325

00:15:42,629 --> 00:15:40,639

to say goodbye

326

00:15:45,509 --> 00:15:42,639

and the russians have a much better uh

327

00:15:48,389 --> 00:15:45,519

expression which is dasvidanya until we

328

00:15:50,470 --> 00:15:48,399

so we see each other again the even

329

00:15:51,430 --> 00:15:50,480

better uh

330

00:16:03,030 --> 00:15:51,440

so

331

00:16:03,040 --> 00:16:58,389

um