



1
00:00:13,250 --> 00:00:10,820
I guess one thing that comes to my mind

2
00:00:15,230 --> 00:00:13,260
is the situation around the program

3
00:00:17,240 --> 00:00:15,240
office during those days I think the

4
00:00:19,179 --> 00:00:17,250
one-word description of what went on in

5
00:00:21,470 --> 00:00:19,189
that program office is the word tense

6
00:00:23,810 --> 00:00:21,480
everybody was getting tense if you stop

7
00:00:26,179 --> 00:00:23,820
and think of the reasons why look what

8
00:00:28,040 --> 00:00:26,189
we had we had a presidential commitment

9
00:00:29,659 --> 00:00:28,050
that had about five months to run out

10
00:00:31,970 --> 00:00:29,669
and we were gonna make it and they had

11
00:00:33,350 --> 00:00:31,980
the NASA prestige the total thing that

12
00:00:35,660 --> 00:00:33,360
they've been shooting for all this time

13
00:00:37,580 --> 00:00:35,670

the country was behind it everything was

14

00:00:42,349 --> 00:00:37,590

behind it and look what we had to work

15

00:00:44,689 --> 00:00:42,359

with a monstrous rocket this is 36

16

00:00:47,810 --> 00:00:44,699

stories tall it weighed six and a half

17

00:00:49,880 --> 00:00:47,820

million pounds you only had a thrust of

18

00:00:51,739 --> 00:00:49,890

those five engines those 51 engines of

19

00:00:54,619 --> 00:00:51,749

seven 1/2 million pounds which means it

20

00:00:57,349 --> 00:00:54,629

took off pretty slow all these things

21

00:00:59,779 --> 00:00:57,359

going on meant that there is an awful

22

00:01:02,000 --> 00:00:59,789

lot of parts million parts in that thing

23

00:01:04,670 --> 00:01:02,010

that could go wrong and everybody was

24

00:01:06,290 --> 00:01:04,680

tense besides that there's a lot of

25

00:01:07,790 --> 00:01:06,300

people involved in this thing if you go

26
00:01:09,500 --> 00:01:07,800
down through the contractor structure

27
00:01:12,260 --> 00:01:09,510
and the subcontractor structure where

28
00:01:15,139 --> 00:01:12,270
there's about 230,000 people involved

29
00:01:17,899 --> 00:01:15,149
Saturn 5 so there's a lot of people to

30
00:01:20,030 --> 00:01:17,909
to create problems or at least to

31
00:01:21,679 --> 00:01:20,040
identify them and so there's a lot of

32
00:01:24,050 --> 00:01:21,689
things going on all the time this is a

33
00:01:25,429 --> 00:01:24,060
time of soul-searching do we forget

34
00:01:28,520 --> 00:01:25,439
anything there's anything that we

35
00:01:30,170 --> 00:01:28,530
haven't thought of yet everybody was

36
00:01:32,630 --> 00:01:30,180
concerned with that then there are these

37
00:01:35,149 --> 00:01:32,640
inventors you know the guy that did the

38
00:01:36,679 --> 00:01:35,159

gyros said I invented this gyro seven

39

00:01:38,120 --> 00:01:36,689

years ago and what you think me able to

40

00:01:40,010 --> 00:01:38,130

do a new one you know with modern

41

00:01:41,450 --> 00:01:40,020

technology and of course you have to

42

00:01:43,480 --> 00:01:41,460

tell him no if you did everything in

43

00:01:46,459 --> 00:01:43,490

their new we never would launch this

44

00:01:49,389 --> 00:01:46,469

monstrous thing so with the size of the

45

00:01:52,880 --> 00:01:49,399

project the number of people involved a

46

00:01:54,889 --> 00:01:52,890

very tense situation that we had there's

47

00:01:56,330 --> 00:01:54,899

no question but what there was a pretty

48

00:02:03,679 --> 00:01:56,340

tense office around there all the time

49

00:02:06,219 --> 00:02:05,749

an interesting little story and that you

50

00:02:10,029 --> 00:02:06,229

mentioned

51
00:02:12,850 --> 00:02:10,039
run today I took over Saturn 5 he

52
00:02:15,130 --> 00:02:12,860
stopped me in the hall and he says Lee I

53
00:02:17,199 --> 00:02:15,140
think you and I ought to talk a minute

54
00:02:18,940 --> 00:02:17,209
about how we're gonna work together and

55
00:02:21,430 --> 00:02:18,950
I thought oh I wonder what this is going

56
00:02:23,259 --> 00:02:21,440
to be he says there seems to be two

57
00:02:25,660 --> 00:02:23,269
sides of this thing there is the project

58
00:02:28,809 --> 00:02:25,670
side yours and there's a laboratory side

59
00:02:30,550 --> 00:02:28,819
and I've noticed that you have all the

60
00:02:32,589 --> 00:02:30,560
money because in those days the

61
00:02:34,030 --> 00:02:32,599
headquarter sent the money direct to the

62
00:02:35,619 --> 00:02:34,040
program manager they felt they had a

63
00:02:37,750 --> 00:02:35,629

little more control that way so he

64

00:02:39,070 --> 00:02:37,760

didn't get to see the money so he says I

65

00:02:41,140 --> 00:02:39,080

just thought you should know that from

66

00:02:43,509 --> 00:02:41,150

now on I'm on the laboratory side a mini

67

00:02:45,699 --> 00:02:43,519

argument it comes up and it's about the

68

00:02:47,289 --> 00:02:45,709

way it worked in other words he wanted

69

00:02:49,089 --> 00:02:47,299

to watch after the technical excellence

70

00:02:51,789 --> 00:02:49,099

and he left it to us to watch it worry

71

00:02:55,809 --> 00:02:51,799

about those other two features charisma

72

00:02:57,670 --> 00:02:55,819

and knowledge he obviously knew what he

73

00:03:00,729 --> 00:02:57,680

was talking about charisma

74

00:03:02,860 --> 00:03:00,739

I remember going I never had a party in

75

00:03:06,160 --> 00:03:02,870

my house one night and had von Braun

76

00:03:08,800 --> 00:03:06,170

coming to it we had tea I don't know 75

77

00:03:12,250 --> 00:03:08,810

people there the last one to arrive as

78

00:03:15,340 --> 00:03:12,260

usual was von Braun and the party was

79

00:03:18,220 --> 00:03:15,350

noisy and everybody was talking and as

80

00:03:22,090 --> 00:03:18,230

he walked in the door and everybody saw

81

00:03:24,910 --> 00:03:22,100

him the whole place fell silent waiting

82

00:03:27,210 --> 00:03:24,920

for the man to speak and and I think

83

00:03:31,120 --> 00:03:27,220

it's an undescrivable thing about him

84

00:03:33,430 --> 00:03:31,130

but he commanded the presence of

85

00:03:38,349 --> 00:03:33,440

everybody wherever he wants he was as

86

00:03:40,360 --> 00:03:38,359

good as that he could change his ways in

87

00:03:42,309 --> 00:03:40,370

order to fit the situation in a

88

00:03:45,160 --> 00:03:42,319

delightful way one time I rode with him

89

00:03:47,710 --> 00:03:45,170

on the Gulf Stream out to California we

90

00:03:50,740 --> 00:03:47,720

were discussing Saturn 5 problems all

91

00:03:53,229 --> 00:03:50,750

the way out deep problems technical

92

00:03:55,629 --> 00:03:53,239

problems and as soon as we got in the

93

00:03:59,199 --> 00:03:55,639

flight pattern for landing and LA

94

00:04:02,319 --> 00:03:59,209

Airport I could see him change and began

95

00:04:04,180 --> 00:04:02,329

that they wouldn't listen to me more he

96

00:04:06,039 --> 00:04:04,190

was he was out of it and I didn't know

97

00:04:07,629 --> 00:04:06,049

why but as soon as he stepped out of the

98

00:04:10,059 --> 00:04:07,639

airplane this is when he was making the

99

00:04:12,220 --> 00:04:10,069

movie eyes upon the stars or something

100

00:04:14,770 --> 00:04:12,230

like that and when he got out of the

101
00:04:16,449 --> 00:04:14,780
airport there's a whole mob waiting for

102
00:04:19,210 --> 00:04:16,459
him for autographs and what-have-you he

103
00:04:19,960 --> 00:04:19,220
was already getting himself ready for

104
00:04:21,580 --> 00:04:19,970
that change

105
00:04:24,190 --> 00:04:21,590
he was about to have and he could do

106
00:04:30,040 --> 00:04:24,200
that not as well as anybody I knew he's

107
00:04:35,510 --> 00:04:33,080
you know out of all these problems that

108
00:04:38,840 --> 00:04:35,520
I pointed out to 230,000 people and so

109
00:04:41,150 --> 00:04:38,850
forth generate maybe there were only

110
00:04:42,890 --> 00:04:41,160
about four that we're filtering down to

111
00:04:45,380 --> 00:04:42,900
be concerned about about the time of the

112
00:04:48,230 --> 00:04:45,390
launch that came out of the board now

113
00:04:50,180 --> 00:04:48,240

the change board these were not really

114

00:04:51,800 --> 00:04:50,190

hardware problems as we'd had in the

115

00:04:53,750 --> 00:04:51,810

past we've treated a number of hardware

116

00:04:57,350 --> 00:04:53,760

problems but these were mostly systems

117

00:05:01,550 --> 00:04:57,360

problems these were problems like the

118

00:05:07,010 --> 00:05:01,560

pogo effect on the s1c stage a vibration

119

00:05:09,830 --> 00:05:07,020

on the s4 being staged a a kickback

120

00:05:11,780 --> 00:05:09,840

effect when the s2 and s4 be separated

121

00:05:13,910 --> 00:05:11,790

and then a lot of little fuel leaks and

122

00:05:16,610 --> 00:05:13,920

all these had been corrected to the best

123

00:05:18,950 --> 00:05:16,620

of our knowledge so what we had to watch

124

00:05:20,720 --> 00:05:18,960

for is watch him in flight we put an

125

00:05:22,880 --> 00:05:20,730

accumulator in there to correct the s-1

126

00:05:26,060 --> 00:05:22,890

see we increased the engine pressure to

127

00:05:27,980 --> 00:05:26,070

stop the vibration on s4 B and we shut

128

00:05:29,630 --> 00:05:27,990

down one engine early to stop the

129

00:05:33,350 --> 00:05:29,640

kickback and we had to wait to see if

130

00:05:37,190 --> 00:05:33,360

these are going to work now Sam Phillips

131

00:05:39,890 --> 00:05:37,200

hold changed meetings one month ahead

132

00:05:42,020 --> 00:05:39,900

and that was June the 14th and then he

133

00:05:44,990 --> 00:05:42,030

held another one at L minus 2 which was

134

00:05:47,330 --> 00:05:45,000

July the 14th or they do lie the 16th

135

00:05:49,700 --> 00:05:47,340

launch and we had everybody there I was

136

00:05:52,550 --> 00:05:49,710

there representing the launch vehicle

137

00:05:56,000 --> 00:05:52,560

George Lowell for the spacecraft patron

138

00:05:57,650 --> 00:05:56,010

for the monster facilities we had the

139

00:05:59,390 --> 00:05:57,660

doctor's error to speak about the health

140

00:06:01,040 --> 00:05:59,400

of the astronauts we had the astronaut

141

00:06:02,780 --> 00:06:01,050

office error we had the down range

142

00:06:06,890 --> 00:06:02,790

instrumentation people and we went over

143

00:06:08,840 --> 00:06:06,900

everything what you do then is separate

144

00:06:11,480 --> 00:06:08,850

out things that you think could happen

145

00:06:13,040 --> 00:06:11,490

during the countdown and then we had

146

00:06:15,110 --> 00:06:13,050

let's say they were proposing things

147

00:06:17,540 --> 00:06:15,120

guidance things and so forth and we had

148

00:06:20,390 --> 00:06:17,550

hundreds of people standing by here at

149

00:06:22,670 --> 00:06:20,400

Marshall in the what we called a

150

00:06:24,920 --> 00:06:22,680

communications room hundreds of people

151
00:06:27,170 --> 00:06:24,930
and suppose during the countdown we had

152
00:06:29,150 --> 00:06:27,180
a propulsion problem they call back up

153
00:06:31,280 --> 00:06:29,160
here and they say propulsion everybody

154
00:06:33,620 --> 00:06:31,290
on propulsion get in the room and then

155
00:06:35,450 --> 00:06:33,630
we detailed the problem and solve it

156
00:06:36,890 --> 00:06:35,460
right on the on the spot some of the

157
00:06:38,270 --> 00:06:36,900
best experts in the world and I'd like

158
00:06:40,100 --> 00:06:38,280
to say right here we had the best

159
00:06:41,330 --> 00:06:40,110
laboratories in the world at that time I

160
00:06:41,890 --> 00:06:41,340
don't think they've ever been matched

161
00:06:44,740 --> 00:06:41,900
before

162
00:06:46,300 --> 00:06:44,750
since they were good so I don't know of

163
00:06:48,370 --> 00:06:46,310

any problems we didn't solve during the

164

00:06:52,980 --> 00:06:48,380

countdown but then you go into that

165

00:06:55,420 --> 00:06:52,990

countdown that's a long nights work and

166

00:06:58,180 --> 00:06:55,430

you sweat out all the things that you

167

00:06:59,469 --> 00:06:58,190

turned down you sweat down everything

168

00:07:01,090 --> 00:06:59,479

that you can think of I went to a Life

169

00:07:04,240 --> 00:07:01,100

magazine party that night because I

170

00:07:06,370 --> 00:07:04,250

couldn't sleep anyway and went from

171

00:07:09,010 --> 00:07:06,380

there to the countdown at 11 p.m. you

172

00:07:11,620 --> 00:07:09,020

asked where I was and I was there till 8

173

00:07:13,330 --> 00:07:11,630

o'clock till the liftoff and by that

174

00:07:15,430 --> 00:07:13,340

time you're getting kind of tired but

175

00:07:17,920 --> 00:07:15,440

everything had gone pretty well and then

176

00:07:19,210 --> 00:07:17,930

we finally have that liftoff well this

177

00:07:22,120 --> 00:07:19,220

makes an interesting little story I

178

00:07:25,090 --> 00:07:22,130

watched the thing rise very very slowly

179

00:07:28,090 --> 00:07:25,100

as it does and finally picks up speed

180

00:07:30,670 --> 00:07:28,100

because it's burning about a railroad

181

00:07:32,409 --> 00:07:30,680

car full of fuel a minute and that

182

00:07:35,589 --> 00:07:32,419

lightens it up and it picks up at speed

183

00:07:38,500 --> 00:07:35,599

but it finally dropped the s1c stage

184

00:07:40,960 --> 00:07:38,510

didn't have Koval we finally dropped the

185

00:07:41,499 --> 00:07:40,970

s to stage we didn't have a separation

186

00:07:43,839 --> 00:07:41,509

problem

187

00:07:46,450 --> 00:07:43,849

the s4 be burned then and it did not

188

00:07:49,930 --> 00:07:46,460

vibrate so everything was feeling pretty

189

00:07:52,870 --> 00:07:49,940

darn good and finally the Saturn's work

190

00:07:55,210 --> 00:07:52,880

was done it was on its way we've done

191

00:07:58,629 --> 00:07:55,220

all we could do and if you can imagine

192

00:08:00,670 --> 00:07:58,639

that I was exhausted I remember this is

193

00:08:02,890 --> 00:08:00,680

just a little side story but I remember

194

00:08:05,409 --> 00:08:02,900

turning away from the big window that

195

00:08:07,629 --> 00:08:05,419

was right there and leaning my hands on

196

00:08:10,300 --> 00:08:07,639

the desk feeling totally exhausted and

197

00:08:12,969 --> 00:08:10,310

about that time astronaut Frank Borman

198

00:08:15,610 --> 00:08:12,979

was escorting the vice president United

199

00:08:17,260 --> 00:08:15,620

States and as he came by me I guess he

200

00:08:20,260 --> 00:08:17,270

meant it to be congratulations he gave

201
00:08:21,969 --> 00:08:20,270
me a nice swift shot in the small of the

202
00:08:24,909 --> 00:08:21,979
back at the point it kind of makes you

203
00:08:27,370 --> 00:08:24,919
mad and I spun around I was going to

204
00:08:28,750 --> 00:08:27,380
tell somebody something and there are my

205
00:08:30,850 --> 00:08:28,760
nose was right up against the vice

206
00:08:33,820 --> 00:08:30,860
president itid states so he says very

207
00:08:35,860 --> 00:08:33,830
nice shot and walked on but that's a

208
00:08:43,230 --> 00:08:35,870
that's where I was and that was a mighty

209
00:08:47,379 --> 00:08:45,850
well first we shouldn't say it or no

210
00:08:49,240 --> 00:08:47,389
computers right across from the

211
00:08:52,090 --> 00:08:49,250
headquarters building dr. holsters

212
00:08:53,350 --> 00:08:52,100
computer lab had a computer in there

213
00:08:56,379 --> 00:08:53,360

that took up the whole building

214

00:08:58,569 --> 00:08:56,389

I imagine that whole computer today

215

00:09:01,090 --> 00:08:58,579

could go in a half a room but anyway

216

00:09:02,590 --> 00:09:01,100

there was a lot of central computing

217

00:09:04,210 --> 00:09:02,600

down but you didn't see a computer on

218

00:09:06,400 --> 00:09:04,220

everybody's desk nobody even thought of

219

00:09:09,009 --> 00:09:06,410

such things what held it together

220

00:09:11,439 --> 00:09:09,019

no von Braun for one thing he's a

221

00:09:13,540 --> 00:09:11,449

cohesive type I mean he makes people

222

00:09:17,170 --> 00:09:13,550

work together and like to want to work

223

00:09:20,499 --> 00:09:17,180

together and the other thing I think is

224

00:09:23,230 --> 00:09:20,509

is a number of meetings that we all had

225

00:09:26,079 --> 00:09:23,240

to try to make sure we understood each

226

00:09:27,699 --> 00:09:26,089

other but I guess I was speaking of all

227

00:09:32,350 --> 00:09:27,709

the problems that might come up know

228

00:09:34,030 --> 00:09:32,360

about the time of Apollo 11 and might

229

00:09:36,639 --> 00:09:34,040

wonder how those were handled well those

230

00:09:38,710 --> 00:09:36,649

are handled by a series of change boards

231

00:09:41,710 --> 00:09:38,720

there's the different levels of change

232

00:09:43,150 --> 00:09:41,720

boards if somebody wanted to make a

233

00:09:44,769 --> 00:09:43,160

change that they thought was absolutely

234

00:09:47,079 --> 00:09:44,779

necessary and that would usually

235

00:09:49,210 --> 00:09:47,089

originate from our laboratories are from

236

00:09:52,269 --> 00:09:49,220

the contractor they would start in on

237

00:09:54,100 --> 00:09:52,279

the contractors change board if the

238

00:09:56,319 --> 00:09:54,110

contractor signed off that that change

239

00:09:58,449 --> 00:09:56,329

had to be made in his opinion then it

240

00:10:00,400 --> 00:09:58,459

went to the local resident project

241

00:10:03,030 --> 00:10:00,410

office and they examined the change and

242

00:10:05,999 --> 00:10:03,040

decided we had to be made if after that

243

00:10:09,069 --> 00:10:06,009

they approved it it came up to the

244

00:10:11,800 --> 00:10:09,079

particular stage Chiefs for instance the

245

00:10:14,019 --> 00:10:11,810

s1c stage hadn't had a leader yes two

246

00:10:16,449 --> 00:10:14,029

stage had a leader yes for being the

247

00:10:18,639 --> 00:10:16,459

instrument unit so forth and who's ever

248

00:10:21,009 --> 00:10:18,649

stage this was in examined that same

249

00:10:23,199 --> 00:10:21,019

thing if they thought it had to be made

250

00:10:27,759 --> 00:10:23,209

then it was forward to me to my change

251

00:10:29,710 --> 00:10:27,769

Morton now this is a very tough job I

252

00:10:31,210 --> 00:10:29,720

would imagine that during the time I had

253

00:10:34,480 --> 00:10:31,220

Apollo we've had hundreds of changes

254

00:10:36,309 --> 00:10:34,490

reached my change board and I would say

255

00:10:38,679 --> 00:10:36,319

we approved less than half of them and

256

00:10:40,389 --> 00:10:38,689

worried like the dickens about the half

257

00:10:42,400 --> 00:10:40,399

he didn't approve because you never know

258

00:10:44,139 --> 00:10:42,410

but we had to wrestle with was about

259

00:10:46,120 --> 00:10:44,149

three variables one of them is this

260

00:10:48,309 --> 00:10:46,130

scheduling very very tight you can only

261

00:10:50,470 --> 00:10:48,319

make so many changes and live within it

262

00:10:51,939 --> 00:10:50,480

the next thing is a budget it didn't

263

00:10:53,889 --> 00:10:51,949

change you had to stay within your

264

00:10:55,049 --> 00:10:53,899

budget but the last thing and very

265

00:10:56,699 --> 00:10:55,059

important was it

266

00:10:59,299 --> 00:10:56,709

technical excellence that you had to

267

00:11:02,789 --> 00:10:59,309

have in this thing I would imagine that

268

00:11:04,559 --> 00:11:02,799

if time and money were not a factor in

269

00:11:06,199 --> 00:11:04,569

this thing I would probably like to have

270

00:11:09,119 --> 00:11:06,209

approved every change that I ever saw

271

00:11:11,009 --> 00:11:09,129

but after turning down more than half of

272

00:11:12,449 --> 00:11:11,019

them well I don't think you don't sweat

273

00:11:15,389 --> 00:11:12,459

during a countdown if one of those

274

00:11:17,429 --> 00:11:15,399

things comes up on us on a hold we'd

275

00:11:19,109 --> 00:11:17,439

have a lot of telecoms or telephone

276

00:11:20,519 --> 00:11:19,119

conversations with Philips in Washington

277

00:11:23,729 --> 00:11:20,529

and they had questions about house

278

00:11:26,159 --> 00:11:23,739

Saturn coming on this and that von Braun

279

00:11:27,749 --> 00:11:26,169

would drop in quite often because maybe

280

00:11:29,759 --> 00:11:27,759

one of his lab Chiefs has said I'm

281

00:11:32,219 --> 00:11:29,769

concerned about such-and-such and they'd

282

00:11:34,079 --> 00:11:32,229

tell him and he would come down and say

283

00:11:36,329 --> 00:11:34,089

what are we doing about this or are you

284

00:11:38,879 --> 00:11:36,339

concerned about this something like that

285

00:11:41,909 --> 00:11:38,889

so there's a lot of time spent that way

286

00:11:44,069 --> 00:11:41,919

then there's a lot of questions coming

287

00:11:47,129 --> 00:11:44,079

up from the project's office than the

288

00:11:50,549 --> 00:11:47,139

program office we'd have little meetings

289

00:11:52,649 --> 00:11:50,559

and we had a boardroom where we try to

290

00:11:55,229 --> 00:11:52,659

keep a display of status of everything

291

00:11:57,149 --> 00:11:55,239

in that in that program we'd sit down

292

00:11:59,039 --> 00:11:57,159

with all of our key people all the stage

293

00:12:01,499 --> 00:11:59,049

managers and everybody else and discuss

294

00:12:04,199 --> 00:12:01,509

these things time and time again to see

295

00:12:05,939 --> 00:12:04,209

if there's anything had changed it's a

296

00:12:07,829 --> 00:12:05,949

busy place they had a team that worked

297

00:12:09,599 --> 00:12:07,839

together that whole team was used to

298

00:12:12,659 --> 00:12:09,609

working with John that's von Braun in

299

00:12:15,359 --> 00:12:12,669

Pina Monday and they had people around

300

00:12:16,379 --> 00:12:15,369

him of Americans that liked to work with

301
00:12:19,589 --> 00:12:16,389
him

302
00:12:22,049 --> 00:12:19,599
everybody was open I don't think anybody

303
00:12:23,999 --> 00:12:22,059
was trying to hide anything and I think

304
00:12:31,100 --> 00:12:24,009
it's just the people-to-people contact

305
00:12:35,720 --> 00:12:33,650
that once the Apollo was over the big

306
00:12:37,430 --> 00:12:35,730
job was over I didn't see that we were

307
00:12:39,410 --> 00:12:37,440
going to have anything like that in the

308
00:12:41,420 --> 00:12:39,420
future and some but I think we felt a

309
00:12:43,880 --> 00:12:41,430
great loss after the Apollo program

310
00:12:47,569 --> 00:12:43,890
because this was a thing we worked on

311
00:12:49,490 --> 00:12:47,579
for over 10 years and all the little

312
00:12:51,650 --> 00:12:49,500
Apollo was the little Saturn Saturn one

313
00:12:54,259 --> 00:12:51,660

Saturn 1b were all always leading up to

314

00:12:55,670 --> 00:12:54,269

it we knew that they were four so we've

315

00:12:58,040 --> 00:12:55,680

been working on this thing for over 10

316

00:13:00,230 --> 00:12:58,050

years and all of a sudden it's over even

317

00:13:01,699 --> 00:13:00,240

though we flew a number of flights up to

318

00:13:03,920 --> 00:13:01,709

the moon you could see the end of it

319

00:13:06,500 --> 00:13:03,930

coming and of course it's too expensive

320

00:13:08,569 --> 00:13:06,510

a vehicle just to fly it for fun so

321

00:13:10,670 --> 00:13:08,579

there was no other mission that that

322

00:13:12,680 --> 00:13:10,680

would serve very well it was a big

323

00:13:18,210 --> 00:13:12,690

drop-off and I think in spirit and

324

00:13:24,060 --> 00:13:21,870

what I wish I could do today or could

325

00:13:26,640 --> 00:13:24,070

have done a long time ago was somehow

326

00:13:28,200 --> 00:13:26,650

arrange that all these many hundreds of

327

00:13:30,930 --> 00:13:28,210

dedicated people could be better

328

00:13:33,150 --> 00:13:30,940

recognized and they were a few of us

329

00:13:35,040 --> 00:13:33,160

were well recognized I had two dinners

330

00:13:38,280 --> 00:13:35,050

at the White House and lots of medals

331

00:13:41,550 --> 00:13:38,290

and governors of Indiana Kentucky and

332

00:13:44,670 --> 00:13:41,560

Alabama but not very many got into our

333

00:13:47,640 --> 00:13:44,680

lap there are so many people that did so

334

00:13:49,470 --> 00:13:47,650

much I would like to take this

335

00:13:51,630 --> 00:13:49,480

opportunity to say that I certainly do

336

00:13:53,370 --> 00:13:51,640

express my thanks to thousands of people

337

00:13:55,290 --> 00:13:53,380

who worked so hard on that project and