



MARSHALL
REMEMBERS APOLLO

1
00:00:01,130 --> 00:00:14,380

[Music]

2
00:00:14,390 --> 00:00:18,070

you

3
00:00:25,370 --> 00:00:21,349

well it came from a coal mining family

4
00:00:28,429 --> 00:00:25,380

poor family and my mother nor dad went

5
00:00:31,429 --> 00:00:28,439

to college but they really thought

6
00:00:33,979 --> 00:00:31,439

education was the only way they were we

7
00:00:36,740 --> 00:00:33,989

were a big family nine children every

8
00:00:39,290 --> 00:00:36,750

one of us either took some kind of post

9
00:00:41,869 --> 00:00:39,300

high school our college either business

10
00:00:44,410 --> 00:00:41,879

courses I happen to have loved

11
00:00:48,560 --> 00:00:44,420

mathematics when I was in grammar school

12
00:00:51,049 --> 00:00:48,570

so my dad just thought I should pursue

13
00:00:54,380 --> 00:00:51,059

that but nothing that could not pursue

14

00:00:55,999 --> 00:00:54,390

it in except teaching I had won a

15

00:00:58,429 --> 00:00:56,009

scholarship through the coal mining

16

00:01:00,679 --> 00:00:58,439

company that he worked for so he thought

17

00:01:02,960 --> 00:01:00,689

I should go to the teacher's college and

18

00:01:08,149 --> 00:01:02,970

become a teacher and it was more work to

19

00:01:10,609 --> 00:01:08,159

me it wasn't as social they had no

20

00:01:13,340 --> 00:01:10,619

sororities or anything so I went to

21

00:01:16,600 --> 00:01:13,350

Florence State right at the age of 15

22

00:01:20,420 --> 00:01:16,610

out of high school and going to teach

23

00:01:22,910 --> 00:01:20,430

but never talked I did not want to go

24

00:01:25,160 --> 00:01:22,920

away from home to teach but Florida

25

00:01:27,919 --> 00:01:25,170

offered so much more money than Alabama

26

00:01:30,800 --> 00:01:27,929

in Huntsville had offered me a job at

27

00:01:35,590 --> 00:01:30,810

nineteen hundred dollars a year to teach

28

00:01:40,940 --> 00:01:35,600

math at a high school in Huntsville and

29

00:01:44,719 --> 00:01:40,950

Florida in Pop Beach they offered me 30

30

00:01:46,609 --> 00:01:44,729

100 year but that's a long way from home

31

00:01:47,989 --> 00:01:46,619

in Palm Beach it's not teachers don't

32

00:01:51,830 --> 00:01:47,999

make don't don't live too well I

33

00:01:53,539 --> 00:01:51,840

wouldn't think in Palm Beach but I did

34

00:01:55,849 --> 00:01:53,549

not I wanted to take it for the money

35

00:01:59,209 --> 00:01:55,859

but I did not want to either so my

36

00:02:01,340 --> 00:01:59,219

roommate said flip a coin and let the

37

00:02:03,679 --> 00:02:01,350

coin decide whether you take the job in

38

00:02:06,379 --> 00:02:03,689

Florida well I didn't like those odds

39

00:02:08,570 --> 00:02:06,389

but I said okay I'll flip it and if it

40

00:02:13,760 --> 00:02:08,580

stands on its edge I will take the job

41

00:02:16,280 --> 00:02:13,770

in Florida so I flipped a quarter no

42

00:02:21,559 --> 00:02:16,290

exaggeration it rolled up against my

43

00:02:24,650 --> 00:02:21,569

desk leg and stood on its edge so I

44

00:02:26,420 --> 00:02:24,660

accepted the job in Florida and was

45

00:02:28,640 --> 00:02:26,430

planning to go even though I'd only get

46

00:02:30,530 --> 00:02:28,650

home once a year so I got a telegram

47

00:02:31,070 --> 00:02:30,540

from them saying they had received my

48

00:02:34,070 --> 00:02:31,080

credenza

49

00:02:36,440 --> 00:02:34,080

and they assumed there had been an error

50

00:02:38,630 --> 00:02:36,450

made because according to the

51
00:02:41,840 --> 00:02:38,640
credentials I was 18 years old

52
00:02:44,450 --> 00:02:41,850
and in Florida you cannot teach under

53
00:02:47,600 --> 00:02:44,460
the in high school under the age of 21

54
00:02:51,050 --> 00:02:47,610
so if that were true then they would

55
00:02:53,960 --> 00:02:51,060
have to cancel the offer and it was true

56
00:02:56,060 --> 00:02:53,970
so I didn't have to go to the teaching

57
00:02:58,430 --> 00:02:56,070
job and I came to Huntsville to Redstone

58
00:03:00,920 --> 00:02:58,440
Arsenal and met my husband

59
00:03:05,390 --> 00:03:00,930
Huntsville was a single woman's paradise

60
00:03:10,580 --> 00:03:05,400
with all the engineers during the early

61
00:03:14,809 --> 00:03:13,220
Huntsville was so small you you really

62
00:03:18,350 --> 00:03:14,819
could not get a place to live it was

63
00:03:21,020 --> 00:03:18,360

very for a long time everybody made

64

00:03:23,150 --> 00:03:21,030

money that had land as I said no day

65

00:03:25,520 --> 00:03:23,160

care so naturally no connectors I don't

66

00:03:28,850 --> 00:03:25,530

think anywhere in the US but no no help

67

00:03:31,850 --> 00:03:28,860

I saw where you could get someone to

68

00:03:33,500 --> 00:03:31,860

stay at your home and I kept one for 23

69

00:03:35,990 --> 00:03:33,510

years because I didn't want my children

70

00:03:38,510 --> 00:03:36,000

coming home to an empty house too little

71

00:03:41,890 --> 00:03:38,520

of everything in Huntsville at the time

72

00:03:51,370 --> 00:03:41,900

too little services too little

73

00:03:58,930 --> 00:03:55,660

I came to a redstone before NASA came

74

00:04:00,790 --> 00:03:58,940

right out of college 18 years old too

75

00:04:02,830 --> 00:04:00,800

young to teach school which is what my

76

00:04:05,470 --> 00:04:02,840

training had been but studied

77

00:04:08,500 --> 00:04:05,480

mathematics so I went to work for Roman

78

00:04:11,140 --> 00:04:08,510

Haase a company for six months and

79

00:04:13,320 --> 00:04:11,150

realized that the army was really

80

00:04:17,229 --> 00:04:13,330

begging for mathematicians and engineers

81

00:04:20,290 --> 00:04:17,239

so I came to work for Redstone Arsenal

82

00:04:24,760 --> 00:04:20,300

as a mathematician on the von braun's of

83

00:04:27,460 --> 00:04:24,770

army ballistic missile team this was in

84

00:04:30,190 --> 00:04:27,470

1952 when I went to work for redstone I

85

00:04:32,890 --> 00:04:30,200

worked through the Redstone and Jupiter

86

00:04:35,470 --> 00:04:32,900

phase until dasa came and I was with the

87

00:04:42,610 --> 00:04:35,480

army whenever Marshall was formed and

88

00:04:48,100 --> 00:04:45,520

the engineers naturally their problems

89

00:04:50,020 --> 00:04:48,110

had to be solved by solving the

90

00:04:52,450 --> 00:04:50,030

equations that mathematical differential

91

00:04:55,990 --> 00:04:52,460

equations the trajectories the guidance

92

00:04:58,390 --> 00:04:56,000

and control studies and those had to be

93

00:05:00,010 --> 00:04:58,400

programmed to be solved by the computer

94

00:05:03,340 --> 00:05:00,020

but I worked for the army I don't

95

00:05:05,140 --> 00:05:03,350

develop a computer programming for the

96

00:05:08,020 --> 00:05:05,150

different computers beginning with a

97

00:05:11,080 --> 00:05:08,030

card program computer which was very

98

00:05:14,470 --> 00:05:11,090

very well first wasn't we had it now at

99

00:05:15,940 --> 00:05:14,480

Marshall and then own until the UNIVAC

100

00:05:18,100 --> 00:05:15,950

which was the one we used during the

101
00:05:22,330 --> 00:05:18,110
launch of Apollo that at that time

102
00:05:24,190 --> 00:05:22,340
though we needed more people to provide

103
00:05:26,100 --> 00:05:24,200
computation support because we had

104
00:05:28,030 --> 00:05:26,110
committed to go to the moon and we

105
00:05:29,320 --> 00:05:28,040
didn't understand how we were going to

106
00:05:32,219 --> 00:05:29,330
get there but we knew it was going to

107
00:05:36,040 --> 00:05:32,229
take a lot of work so rather than hire

108
00:05:38,770 --> 00:05:36,050
people that were government employees

109
00:05:40,719 --> 00:05:38,780
and it's difficult to retire or to get

110
00:05:43,719 --> 00:05:40,729
rid of some of those they hired a

111
00:05:46,360 --> 00:05:43,729
contractor which was very good General

112
00:05:48,520 --> 00:05:46,370
Electric came as a contractor and it was

113
00:05:50,890 --> 00:05:48,530

the first one I think but NASA had at

114

00:05:53,710 --> 00:05:50,900

Marshall but it was to provide all

115

00:05:56,950 --> 00:05:53,720

computational support I did not want to

116

00:05:59,830 --> 00:05:56,960

go to the contractor because my husband

117

00:06:02,380 --> 00:05:59,840

questioned if you they lose the contract

118

00:06:06,040 --> 00:06:02,390

what will you do I will be here working

119

00:06:08,170 --> 00:06:06,050

for NASA and I love my job but I they

120

00:06:10,719 --> 00:06:08,180

they said we'll have a place for you in

121

00:06:13,779 --> 00:06:10,729

NASA so I stayed with NASA did not go

122

00:06:17,260 --> 00:06:13,789

with the contractor but then I became a

123

00:06:20,290 --> 00:06:17,270

but the monitoring and interfacing the

124

00:06:22,450 --> 00:06:20,300

contractors work with NASA engineers so

125

00:06:25,300 --> 00:06:22,460

I stayed active in knowing what was

126

00:06:27,879 --> 00:06:25,310

needed and what was would take to do the

127

00:06:30,310 --> 00:06:27,889

job and and had a lot more people but

128

00:06:32,409 --> 00:06:30,320

they were contractor and the computers

129

00:06:35,050 --> 00:06:32,419

were changing all the time

130

00:06:38,640 --> 00:06:35,060

I mean improving they started as I said

131

00:06:42,930 --> 00:06:38,650

from a card program computer to a

132

00:06:44,800 --> 00:06:42,940

multitasking digital univac 1108

133

00:06:46,510 --> 00:06:44,810

air-conditioned building we had to have

134

00:06:48,969 --> 00:06:46,520

air conditioning for the computers but

135

00:06:54,420 --> 00:06:48,979

our offices were not air-conditioned in

136

00:06:58,770 --> 00:06:57,060

I did not know any women that was

137

00:07:02,070 --> 00:06:58,780

working here as a mathematician when I

138

00:07:04,740 --> 00:07:02,080

came they were what they call computers

139

00:07:09,950 --> 00:07:04,750

which the mathematicians we we

140

00:07:12,330 --> 00:07:09,960

programmed with big sheets of columns of

141

00:07:15,810 --> 00:07:12,340

instructions as to what they would do in

142

00:07:17,879 --> 00:07:15,820

they really were called officially math

143

00:07:20,580 --> 00:07:17,889

aides but they were known as computers

144

00:07:22,770 --> 00:07:20,590

they would actually take and do whatever

145

00:07:24,840 --> 00:07:22,780

we said do in a particular column we

146

00:07:27,390 --> 00:07:24,850

coded these columns to solve the

147

00:07:29,969 --> 00:07:27,400

equations and they would compute that

148

00:07:32,520 --> 00:07:29,979

for us so that we could analyze and

149

00:07:35,370 --> 00:07:32,530

decide what the the solution to the

150

00:07:38,430 --> 00:07:35,380

problem I was the only mathematician at

151

00:07:40,740 --> 00:07:38,440

the time that I came to work for the

152

00:07:43,110 --> 00:07:40,750

rich stone arsenal that I knew they gave

153

00:07:45,150 --> 00:07:43,120

me a lot of publicity very embarrassing

154

00:07:48,180 --> 00:07:45,160

but they wrote me up for magazines and

155

00:07:51,029 --> 00:07:48,190

had pictures taken off my house and my

156

00:07:53,640 --> 00:07:51,039

family and I well I'd only had a husband

157

00:07:55,800 --> 00:07:53,650

at that time but even my daughter when

158

00:07:58,529 --> 00:07:55,810

she was born which was tending about ten

159

00:08:00,870 --> 00:07:58,539

years later they gave her publicity

160

00:08:05,360 --> 00:08:00,880

because it was so strange there were no

161

00:08:08,129 --> 00:08:05,370

daycares so we had to provide help to

162

00:08:11,520 --> 00:08:08,139

take care of the children naturally and

163

00:08:15,210 --> 00:08:11,530

I had a daughter in a wonderful day mama

164

00:08:17,460 --> 00:08:15,220

and as my husband said she and I made

165

00:08:21,060 --> 00:08:17,470

about the same salary because I paid her

166

00:08:23,159 --> 00:08:21,070

dearly so but she was very reliable yes

167

00:08:25,950 --> 00:08:23,169

I worked for Doris Chandler she was so

168

00:08:29,100 --> 00:08:25,960

she had gone to Suffolk Nukem College it

169

00:08:32,040 --> 00:08:29,110

was later but not the and she was much

170

00:08:34,649 --> 00:08:32,050

much smarter than I so she came to work

171

00:08:37,800 --> 00:08:34,659

for Marshall she yes she even came to

172

00:08:41,760 --> 00:08:37,810

work for the army before NASA came but

173

00:08:44,040 --> 00:08:41,770

it was after I did and she came in not

174

00:08:47,160 --> 00:08:44,050

in the same section I was in but in the

175

00:08:49,460 --> 00:08:47,170

fire ballistics laboratory and she

176

00:08:51,870 --> 00:08:49,470

worked with me in developing the program

177

00:08:55,140 --> 00:08:51,880

the targeting program for the tactical

178

00:08:59,670 --> 00:08:55,150

Jupiter missile for the Air Force so she

179

00:09:01,740 --> 00:08:59,680

was one of the the brain nothing of this

180

00:09:03,990 --> 00:09:01,750

as you know is accomplished individually

181

00:09:06,810 --> 00:09:04,000

we all work together but she was one of

182

00:09:07,730 --> 00:09:06,820

the great contributors to I did a job

183

00:09:10,790 --> 00:09:07,740

that Norman

184

00:09:13,220 --> 00:09:10,800

a man would do but I did it not because

185

00:09:16,370 --> 00:09:13,230

I was a woman I did it because of the

186

00:09:18,740 --> 00:09:16,380

desire to work and to succeed as we as a

187

00:09:23,240 --> 00:09:18,750

team work everyone worked so it showed

188

00:09:26,660 --> 00:09:23,250

that equality was necessary and I think

189

00:09:28,250 --> 00:09:26,670

laws were passed because of this but

190

00:09:30,560 --> 00:09:28,260

that was another thing that came the

191

00:09:33,860 --> 00:09:30,570

equal rights law and your race did not

192

00:09:37,280 --> 00:09:33,870

determine your thinking ability your

193

00:09:39,080 --> 00:09:37,290

education might but your race and sex

194

00:09:41,480 --> 00:09:39,090

tits are so gender I guess you'd call it

195

00:09:46,010 --> 00:09:41,490

would not determine what job you could

196

00:09:53,380 --> 00:09:50,630

my role was to in these particular early

197

00:09:56,450 --> 00:09:53,390

launches of the Apollo missions was

198

00:10:01,190 --> 00:09:56,460

training - for the final one really I

199

00:10:03,200 --> 00:10:01,200

was responsible for all computer support

200

00:10:06,770 --> 00:10:03,210

for Marshall Space Flight Center whether

201
00:10:09,470 --> 00:10:06,780
it was programming machine time or

202
00:10:12,250 --> 00:10:09,480
interface with other centers I was

203
00:10:15,020 --> 00:10:12,260
responsible to see if that was done and

204
00:10:17,930 --> 00:10:15,030
there were no guidelines we had a

205
00:10:20,210 --> 00:10:17,940
computer that was capable of solving any

206
00:10:23,510 --> 00:10:20,220
engineers problems but when you throw

207
00:10:27,100 --> 00:10:23,520
all engineers problems into the computer

208
00:10:30,410 --> 00:10:27,110
it would move them in and out so that

209
00:10:33,530 --> 00:10:30,420
nothing would get done we'll say so we

210
00:10:37,190 --> 00:10:33,540
we had simulations that we actually

211
00:10:39,080 --> 00:10:37,200
before any mission I knew what programs

212
00:10:41,690 --> 00:10:39,090
were necessary but I did not know which

213
00:10:44,060 --> 00:10:41,700

ones would run and get completed so we

214

00:10:48,100 --> 00:10:44,070

would simulate just take over the

215

00:10:50,540 --> 00:10:48,110

computer and simulate a real launch and

216

00:10:52,940 --> 00:10:50,550

determine which wouldn't and we learned

217

00:10:55,850 --> 00:10:52,950

that way since we had no documents no

218

00:10:59,420 --> 00:10:55,860

guidelines only one person could do it

219

00:11:02,330 --> 00:10:59,430

and the director dr. Holzer had

220

00:11:06,110 --> 00:11:02,340

appointed me in fact I wish I had kept

221

00:11:08,360 --> 00:11:06,120

it but I did not dr. von Braun sent a

222

00:11:11,630 --> 00:11:08,370

handwritten note to the computation

223

00:11:14,570 --> 00:11:11,640

laboratory and said during the launch

224

00:11:17,690 --> 00:11:14,580

Billy Robertson will say what goes on

225

00:11:20,480 --> 00:11:17,700

the computer and I don't know why I did

226

00:11:23,060 --> 00:11:20,490

not say that Henry denote because it was

227

00:11:25,610 --> 00:11:23,070

quite a responsibility but it was

228

00:11:27,620 --> 00:11:25,620

showing how fast we had to move we did

229

00:11:30,200 --> 00:11:27,630

not know what we would need until

230

00:11:32,360 --> 00:11:30,210

because each mission was so different

231

00:11:34,220 --> 00:11:32,370

you needed different you had different

232

00:11:37,040 --> 00:11:34,230

problems and different solutions were

233

00:11:39,950 --> 00:11:37,050

needed so when President Kennedy said we

234

00:11:43,070 --> 00:11:39,960

would go to the moon I thought it's not

235

00:11:46,060 --> 00:11:43,080

possible we can't no no there's no way I

236

00:11:50,060 --> 00:11:46,070

really thought it was impossible and for

237

00:11:52,520 --> 00:11:50,070

for a long time I did not think we would

238

00:11:54,860 --> 00:11:52,530

ever you had to have computers and

239

00:11:55,580 --> 00:11:54,870

computers would not fit in this room you

240

00:11:59,990 --> 00:11:55,590

know and

241

00:12:02,330 --> 00:12:00,000

and what technology changes and everyone

242

00:12:05,240 --> 00:12:02,340

was working to make the impossible

243

00:12:06,350 --> 00:12:05,250

possible but the it was exciting except

244

00:12:11,379 --> 00:12:06,360

it was a dream I thought would never

245

00:12:17,919 --> 00:12:15,280

whenever we realized it was a Apollo 11

246

00:12:20,739 --> 00:12:17,929

and we were in the countdown

247

00:12:21,579 --> 00:12:20,749

we'll say every emotion I've ever

248

00:12:26,710 --> 00:12:21,589

experienced

249

00:12:30,549 --> 00:12:26,720

room because as I said we did not have

250

00:12:33,100 --> 00:12:30,559

we did not have written guidelines as to

251
00:12:38,019 --> 00:12:33,110
what we would do but but we knew what we

252
00:12:40,780 --> 00:12:38,029
were to do but the excitement the fear

253
00:12:44,679 --> 00:12:40,790
there was one thing I had never dreamed

254
00:12:46,329 --> 00:12:44,689
of until that might happen but we had

255
00:12:49,269 --> 00:12:46,339
taken care of it we thought and that was

256
00:12:51,819 --> 00:12:49,279
the loss of electricity which that meant

257
00:12:54,129 --> 00:12:51,829
the computers would glitch or something

258
00:12:57,489 --> 00:12:54,139
we had but we had never practiced that

259
00:13:00,999 --> 00:12:57,499
so I suddenly had that fear what what if

260
00:13:04,629 --> 00:13:01,009
we lose electricity which we did not but

261
00:13:09,369 --> 00:13:04,639
it was everyone was working it was very

262
00:13:15,299 --> 00:13:09,379
quiet nobody was laughing talking it was

263
00:13:18,669 --> 00:13:15,309

just work serious but would we got

264

00:13:21,309 --> 00:13:18,679

through Marshalls responsibility which

265

00:13:23,919 --> 00:13:21,319

there once we were knew we could go to

266

00:13:26,379 --> 00:13:23,929

the moon the conditions were right well

267

00:13:29,859 --> 00:13:26,389

then it was just sort of joy this is

268

00:13:33,519 --> 00:13:29,869

just a complete letdown of relaxation I

269

00:13:35,590 --> 00:13:33,529

guess you'd say so it was every emotion

270

00:13:40,960 --> 00:13:35,600

I have ever experienced I felt fear

271

00:13:42,909 --> 00:13:40,970

happiness excitement in and worried when

272

00:13:45,850 --> 00:13:42,919

that was over of course then all of the

273

00:13:49,419 --> 00:13:45,860

other was just learning and appreciating

274

00:13:51,999 --> 00:13:49,429

and saying well it happened you know by

275

00:13:53,559 --> 00:13:52,009

that time I realized or Marshall

276

00:13:57,249 --> 00:13:53,569
realized we had to have written

277

00:13:59,530 --> 00:13:57,259
documents so in case what if I had not

278

00:14:01,090 --> 00:13:59,540
been there not that anyone's

279

00:14:02,530 --> 00:14:01,100
indispensable I'm sure someone would

280

00:14:05,189 --> 00:14:02,540
have picked up that had worked with me

281

00:14:07,780 --> 00:14:05,199
but still it's so you need you need

282

00:14:13,299 --> 00:14:07,790
guidelines you need documents for people

283

00:14:15,519 --> 00:14:13,309
to go by and for launches so I wrote the

284

00:14:17,979 --> 00:14:15,529
document that they accepted its to what

285

00:14:21,159 --> 00:14:17,989
it was to be done for the Apollo mission

286

00:14:23,079 --> 00:14:21,169
and therefore they said well you aren't

287

00:14:24,280 --> 00:14:23,089
needed here we can follow this so you

288

00:14:26,920 --> 00:14:24,290

can go to

289

00:14:29,879 --> 00:14:26,930

it's the launch which was very very good

290

00:14:35,350 --> 00:14:29,889

so my husband and I and two children

291

00:14:39,939 --> 00:14:35,360

went to the Cape and VIP treatment they

292

00:14:42,069 --> 00:14:39,949

were very it was very exciting but and I

293

00:14:43,840 --> 00:14:42,079

wasn't in the computer room I wasn't

294

00:14:45,699 --> 00:14:43,850

even there and I don't know that they

295

00:14:47,620 --> 00:14:45,709

used my manual that I had written but

296

00:14:52,920 --> 00:14:47,630

but it was there in case they need he

297

00:14:57,810 --> 00:14:55,350

I worked with Clyde a lot as a

298

00:15:01,769 --> 00:14:57,820

mathematician and then he was promoted

299

00:15:04,019 --> 00:15:01,779

to a bigger more responsible job he did

300

00:15:05,850 --> 00:15:04,029

it for the computation laboratory and

301

00:15:09,660 --> 00:15:05,860

then also for the Equal Opportunity

302

00:15:11,550 --> 00:15:09,670

office I consider it a bonus that I got

303

00:15:14,280 --> 00:15:11,560

to even have known glad because he was

304

00:15:20,390 --> 00:15:14,290

very very helpful to a lot of people

305

00:15:26,540 --> 00:15:23,390

the Germans were very very cordial very

306

00:15:29,480 --> 00:15:26,550

smart very studious and it was

307

00:15:30,710 --> 00:15:29,490

contagious we all worked harder I guess

308

00:15:33,740 --> 00:15:30,720

when you around people that are working

309

00:15:37,880 --> 00:15:33,750

hard but I worked for dr. Hulk er

310

00:15:41,660 --> 00:15:37,890

Rudolph Hooker and he if I had any spare

311

00:15:43,070 --> 00:15:41,670

time which we didn't have much but he

312

00:15:46,160 --> 00:15:43,080

taught me how to let her

313

00:15:49,400 --> 00:15:46,170

after leaving arrow ballistics lab I

314

00:15:52,190 --> 00:15:49,410

went truly programming for the computers

315

00:15:55,760 --> 00:15:52,200

with the doctor helmet holster they were

316

00:15:58,460 --> 00:15:55,770

they they were wonderful wonderful - to

317

00:16:01,180 --> 00:15:58,470

me and to everyone dr. Holt sir the

318

00:16:04,370 --> 00:16:01,190

janitor was just as important to him as

319

00:16:06,140 --> 00:16:04,380

the top engineer on his staff they

320

00:16:09,380 --> 00:16:06,150

worked very hard they worked

321

00:16:12,710 --> 00:16:09,390

continuously they did not take coffee

322

00:16:14,540 --> 00:16:12,720

breaks because I worked my doctor Holker

323

00:16:16,600 --> 00:16:14,550

who was with me in Aero ballistics

324

00:16:19,160 --> 00:16:16,610

laboratory when I first came to NASA

325

00:16:21,800 --> 00:16:19,170

there was no air conditioning as I said

326

00:16:25,430 --> 00:16:21,810

in the building he bought a unit and put

327

00:16:28,040 --> 00:16:25,440

in his office window for his room and

328

00:16:31,100 --> 00:16:28,050

moved me into the room with him so I

329

00:16:33,170 --> 00:16:31,110

shared an office with the director so I

330

00:16:34,910 --> 00:16:33,180

would have air conditioning I know he

331

00:16:37,940 --> 00:16:34,920

worked all the time and as I said what I

332

00:16:40,070 --> 00:16:37,950

had free time he gave me a training and

333

00:16:43,070 --> 00:16:40,080

something I had never had in school he

334

00:16:46,540 --> 00:16:43,080

was I found the same thing with dr.

335

00:16:49,550 --> 00:16:46,550

Holzer they were very very

336

00:16:52,190 --> 00:16:49,560

non-discriminatory or maybe maybe they

337

00:16:54,890 --> 00:16:52,200

were a little bit more helpful to the

338

00:16:57,500 --> 00:16:54,900

women than me and I don't know but to me

339

00:17:00,050 --> 00:16:57,510

they showed no discrimination at all my

340

00:17:01,640 --> 00:17:00,060

husband was in World War two and a lot

341

00:17:06,410 --> 00:17:01,650

of them they had been trained you know

342

00:17:08,720 --> 00:17:06,420

the Germans were the enemies so it took

343

00:17:14,350 --> 00:17:08,730

some serious thinking to not to get over

344

00:17:18,429 --> 00:17:17,769

but it had to be the the launch of going

345

00:17:21,130 --> 00:17:18,439

to the moon

346

00:17:22,840 --> 00:17:21,140

it might have been just as exciting when

347

00:17:27,159 --> 00:17:22,850

we went around the moon

348

00:17:30,669 --> 00:17:27,169

the very first figure 8 trip I guess

349

00:17:33,070 --> 00:17:30,679

you'd call it and I remember my husband

350

00:17:35,950 --> 00:17:33,080

had to work on Christmas Eve night I

351
00:17:37,870 --> 00:17:35,960
remember and but we were all excited the

352
00:17:41,769 --> 00:17:37,880
children and I was home I did not work I

353
00:17:44,139 --> 00:17:41,779
only had to work during launches during

354
00:17:49,600 --> 00:17:44,149
the actual launch because once it was on

355
00:17:54,710 --> 00:17:49,610
his way to the out of orbit Marshall had

356
00:18:02,599 --> 00:18:00,049
we learned so much in science space

357
00:18:04,389 --> 00:18:02,609
technology they were so many things

358
00:18:07,539 --> 00:18:04,399
building materials became much ladder

359
00:18:09,560 --> 00:18:07,549
computers much smaller

360
00:18:12,589 --> 00:18:09,570
semiconductors all of this was from the

361
00:18:15,589 --> 00:18:12,599
space program or from the research that

362
00:18:19,369 --> 00:18:15,599
we had to do to learn to go to the

363
00:18:21,649 --> 00:18:19,379

moon's personally it was proved to me

364

00:18:23,659 --> 00:18:21,659

that there is a god out there it's so

365

00:18:26,779 --> 00:18:23,669

big we're so tiny on this little blue

366

00:18:29,599 --> 00:18:26,789

marble without a god we could not

367

00:18:33,440 --> 00:18:29,609

survive and yet all mankind depends on

368

00:18:36,649 --> 00:18:33,450

the earth so to me it was proof in a god

369

00:18:41,790 --> 00:18:36,659

or a super natural to to provide this

370

00:18:49,860 --> 00:18:47,610

the entire NASA employment I will tell

371

00:18:53,520 --> 00:18:49,870

your job was very exciting

372

00:18:57,650 --> 00:18:53,530

I really never met a person that did not

373

00:19:01,620 --> 00:18:57,660

enjoy working for NASA and I don't mean

374

00:19:03,960 --> 00:19:01,630

happy happy I mean it was exciting

375

00:19:04,700 --> 00:19:03,970

pleasure you feel like you accomplished

376

00:19:06,870 --> 00:19:04,710

something

377

00:19:09,630 --> 00:19:06,880

even though we were learning everyday

378

00:19:13,320 --> 00:19:09,640

new stuff and it was a new challenge it

379

00:19:14,100 --> 00:19:13,330

seemed like every day but very very

380

00:19:16,799 --> 00:19:14,110

exciting

381

00:19:19,590 --> 00:19:16,809

we truly everyone and I say we because

382

00:19:24,060 --> 00:19:19,600

everyone I knew loved working for NASA

383

00:19:26,190 --> 00:19:24,070

it was a job that the country thought

384

00:19:29,760 --> 00:19:26,200

was impossible but we were gonna do our

385

00:19:31,860 --> 00:19:29,770

best and and truly have found out if we