
NASA
Josh Byerly
NASA PUBLIC AFFAIRS
Phil Engelauf
STS-95 FLIGHT DIRECTOR

1
00:00:03,990 --> 00:00:02,470
hi everybody josh barley once again here

2
00:00:05,749 --> 00:00:04,000
in mission control houston i'm joined by

3
00:00:07,749 --> 00:00:05,759
a very special guest today this is phil

4
00:00:09,990 --> 00:00:07,759
engeloff a uh former flight director

5
00:00:11,430 --> 00:00:10,000
here at the uh nasa johnson space center

6
00:00:13,509 --> 00:00:11,440
with all the celebration this week of

7
00:00:15,110 --> 00:00:13,519
john glenn's 50th anniversary of

8
00:00:16,630 --> 00:00:15,120
orbiting the earth

9
00:00:18,630 --> 00:00:16,640
you know he also flew a certain space

10
00:00:20,790 --> 00:00:18,640
shuttle mission sts 95 and phil was

11
00:00:22,230 --> 00:00:20,800
actually the lead flight director uh for

12
00:00:23,029 --> 00:00:22,240
that mission so phil talk a little bit

13
00:00:24,070 --> 00:00:23,039

about

14
00:00:24,950 --> 00:00:24,080
you know it's been a number of years

15
00:00:27,029 --> 00:00:24,960
since that flight but what do you

16
00:00:28,310 --> 00:00:27,039
remember about it and senator glenn you

17
00:00:29,830 --> 00:00:28,320
know it was really kind of interesting

18
00:00:31,990 --> 00:00:29,840
to be associated with that mission

19
00:00:34,069 --> 00:00:32,000
because i kind of grew up you know right

20
00:00:36,069 --> 00:00:34,079
in that era when uh

21
00:00:38,069 --> 00:00:36,079
john glenn's flight sort of steered a

22
00:00:40,310 --> 00:00:38,079
lot of us kids into our interest in the

23
00:00:42,389 --> 00:00:40,320
space program and for me personally it

24
00:00:43,670 --> 00:00:42,399
was really a big deal to to have the

25
00:00:45,750 --> 00:00:43,680
honor of being a flight director on a

26
00:00:47,750 --> 00:00:45,760
mission with this national icon of human

27
00:00:50,549 --> 00:00:47,760
space flight at the same time there was

28
00:00:52,150 --> 00:00:50,559
this huge contrast because it was a

29
00:00:54,470 --> 00:00:52,160
really very intense mission from a

30
00:00:55,590 --> 00:00:54,480
science standpoint and and it was really

31
00:00:57,350 --> 00:00:55,600
challenging

32
00:01:00,229 --> 00:00:57,360
to get everything scheduled so we had

33
00:01:02,549 --> 00:01:00,239
this this uh sort of sweet and sour

34
00:01:06,550 --> 00:01:02,559
contrast of all of this media attention

35
00:01:08,550 --> 00:01:06,560
and hype about this national hero flying

36
00:01:10,149 --> 00:01:08,560
against this backdrop of a lot of really

37
00:01:11,510 --> 00:01:10,159
hard work to get done in a short period

38
00:01:12,630 --> 00:01:11,520

of time yeah there was certain things

39
00:01:14,230 --> 00:01:12,640
that actually had to be done during the

40
00:01:15,749 --> 00:01:14,240
flight even with everything going on you

41
00:01:17,510 --> 00:01:15,759
know it was it was it was an intense

42
00:01:19,030 --> 00:01:17,520
mission that was back in 1998 right

43
00:01:19,990 --> 00:01:19,040
that's right so talk about some of the

44
00:01:21,350 --> 00:01:20,000
training you know whenever you were

45
00:01:23,109 --> 00:01:21,360
assigned as the lead flight director for

46
00:01:24,230 --> 00:01:23,119
the mission was senator glenn already

47
00:01:26,149 --> 00:01:24,240
assigned to it or did that happen

48
00:01:28,390 --> 00:01:26,159
afterward like what was the timing of it

49
00:01:30,310 --> 00:01:28,400
yes uh it was kind of a conjunction of

50
00:01:32,149 --> 00:01:30,320
activities for me i had been heavily

51
00:01:35,350 --> 00:01:32,159
involved in the shuttle mirror program

52
00:01:37,429 --> 00:01:35,360
and we had just really completed uh that

53
00:01:39,109 --> 00:01:37,439
shuttle mirror program and there were

54
00:01:41,190 --> 00:01:39,119
some personnel changes going on inside

55
00:01:43,030 --> 00:01:41,200
the flight director office and i sort of

56
00:01:45,270 --> 00:01:43,040
inherited the flight in mid-stream i

57
00:01:47,910 --> 00:01:45,280
became available and somebody else moved

58
00:01:50,230 --> 00:01:47,920
up in the management chain so i i sort

59
00:01:51,830 --> 00:01:50,240
of inherited it and john glenn had

60
00:01:54,870 --> 00:01:51,840
was just becoming attached to that

61
00:01:56,310 --> 00:01:54,880
flight and as you alluded to the flight

62
00:01:57,830 --> 00:01:56,320
sort of already had an identity with

63
00:02:01,109 --> 00:01:57,840

some of the payloads with the spartan

64
00:02:03,190 --> 00:02:01,119
activities and the addition of john

65
00:02:04,550 --> 00:02:03,200
glenn to the crew

66
00:02:06,709 --> 00:02:04,560
sort of changed the complexion of the

67
00:02:08,949 --> 00:02:06,719
flight and i had to sort of step in as

68
00:02:11,190 --> 00:02:08,959
the new flight director assigned and

69
00:02:13,510 --> 00:02:11,200
tried to uh meld all these pieces

70
00:02:15,990 --> 00:02:13,520
together into a coherent mission and it

71
00:02:17,510 --> 00:02:16,000
was uh it was it was quite an experience

72
00:02:18,949 --> 00:02:17,520
we did a behind-the-scenes episode a

73
00:02:20,229 --> 00:02:18,959
couple years ago during one of the the

74
00:02:22,150 --> 00:02:20,239
shuttle missions and we talked to the

75
00:02:23,750 --> 00:02:22,160
training team and one of them was on the

76
00:02:25,510 --> 00:02:23,760
team that trained senator glenn and the

77
00:02:26,869 --> 00:02:25,520
rest of the 95 crew

78
00:02:28,790 --> 00:02:26,879
and they were laughing it was a true

79
00:02:30,550 --> 00:02:28,800
story but they were talking about how

80
00:02:32,229 --> 00:02:30,560
senator glenn commented about you know

81
00:02:33,589 --> 00:02:32,239
the checklist that he had

82
00:02:35,110 --> 00:02:33,599
back during his flight his original

83
00:02:36,470 --> 00:02:35,120
flight was probably a page page and a

84
00:02:38,150 --> 00:02:36,480
half long and now here we have these you

85
00:02:40,630 --> 00:02:38,160
know volumes of three-ring binders and

86
00:02:41,670 --> 00:02:40,640
how um how things can change so talk a

87
00:02:43,190 --> 00:02:41,680
little bit about how the training was a

88
00:02:44,869 --> 00:02:43,200

little bit different for the crew and

89
00:02:46,630 --> 00:02:44,879
some of his comments about that

90
00:02:49,589 --> 00:02:46,640
it really was very intensive and and

91
00:02:52,150 --> 00:02:49,599
it's sort of um i'd say divided into two

92
00:02:53,990 --> 00:02:52,160
different groups uh i actually spent the

93
00:02:55,830 --> 00:02:54,000
bulk of my time working with the core

94
00:02:58,070 --> 00:02:55,840
shuttle crew with commander kurt brown

95
00:03:01,110 --> 00:02:58,080
and pilot steve lindsey on the

96
00:03:03,350 --> 00:03:01,120
traditional operation of the vehicle and

97
00:03:06,070 --> 00:03:03,360
and the training that we normally do and

98
00:03:08,869 --> 00:03:06,080
then there was sort of this uh separate

99
00:03:10,710 --> 00:03:08,879
group of activities of the payload folks

100
00:03:12,949 --> 00:03:10,720
working on the payload experiments and

101
00:03:14,790 --> 00:03:12,959
of course we had john and shiakimukai

102
00:03:17,190 --> 00:03:14,800
and pedro duque and they had this whole

103
00:03:19,190 --> 00:03:17,200
suite of science experiments to go on

104
00:03:22,550 --> 00:03:19,200
back in the space hab and so those two

105
00:03:24,390 --> 00:03:22,560
things almost went on in parallel but at

106
00:03:26,390 --> 00:03:24,400
the same time the timing and scheduling

107
00:03:28,149 --> 00:03:26,400
had to be integrated so

108
00:03:31,110 --> 00:03:28,159
it was quite a challenge to get all of

109
00:03:33,910 --> 00:03:31,120
the training activities scheduled

110
00:03:35,750 --> 00:03:33,920
but then also the reality was that got

111
00:03:37,830 --> 00:03:35,760
complicated a little bit by the media

112
00:03:39,350 --> 00:03:37,840
attention because every time the crew

113
00:03:40,789 --> 00:03:39,360

would go over to building nine for some

114
00:03:43,030 --> 00:03:40,799
training event there'd be an army of

115
00:03:43,990 --> 00:03:43,040
media folks over there to videotape that

116
00:03:45,830 --> 00:03:44,000
and uh

117
00:03:47,430 --> 00:03:45,840
it was um i don't want to say it was a

118
00:03:49,830 --> 00:03:47,440
distraction but it added a level of

119
00:03:51,350 --> 00:03:49,840
challenge to everything

120
00:03:53,030 --> 00:03:51,360
well you know it's part of what we do

121
00:03:56,070 --> 00:03:53,040
here is to try to keep the public

122
00:03:59,589 --> 00:03:56,080
informed and and to convey what we do

123
00:04:01,030 --> 00:03:59,599
to uh to the stakeholders so it

124
00:04:02,869 --> 00:04:01,040
i don't want to downplay the importance

125
00:04:04,309 --> 00:04:02,879
of doing that but it did increase the

126
00:04:05,429 --> 00:04:04,319
level of difficulty well it's you know

127
00:04:06,869 --> 00:04:05,439
we see that with the high profile

128
00:04:08,710 --> 00:04:06,879
flights especially you know the last

129
00:04:10,550 --> 00:04:08,720
last few that we had ironically steve

130
00:04:12,390 --> 00:04:10,560
lindsey flew that very same shuttle

131
00:04:13,509 --> 00:04:12,400
again on its final on its final mission

132
00:04:14,470 --> 00:04:13,519
so uh

133
00:04:16,390 --> 00:04:14,480
you know discovery was a pretty

134
00:04:17,990 --> 00:04:16,400
important shuttle for him but talk about

135
00:04:19,349 --> 00:04:18,000
you know senator glenn you know there's

136
00:04:20,390 --> 00:04:19,359
a lot of reflection back on this flight

137
00:04:21,909 --> 00:04:20,400
you know the fact that it's been 50

138
00:04:23,909 --> 00:04:21,919

years you know whenever you look back at

139
00:04:25,909 --> 00:04:23,919
the sts-95 mission what's what's the one

140
00:04:26,870 --> 00:04:25,919
memory you walk away from is it is it

141
00:04:29,510 --> 00:04:26,880
the attention of the flight is it

142
00:04:30,870 --> 00:04:29,520
working with senator glenn

143
00:04:32,950 --> 00:04:30,880
the attention of the flight was a big

144
00:04:34,469 --> 00:04:32,960
thing obviously and people remember that

145
00:04:35,670 --> 00:04:34,479
as the john glenn flight and they don't

146
00:04:36,790 --> 00:04:35,680
really you know they can't remember

147
00:04:38,870 --> 00:04:36,800
there was some science that went on

148
00:04:40,870 --> 00:04:38,880
there but that gets lost but for me the

149
00:04:43,270 --> 00:04:40,880
thing that i took away as i said i sort

150
00:04:44,950 --> 00:04:43,280
of started out with my interest in the

151
00:04:47,350 --> 00:04:44,960
program

152
00:04:49,990 --> 00:04:47,360
when john flew in mercury

153
00:04:51,670 --> 00:04:50,000
and as you alluded to with the checklist

154
00:04:53,670 --> 00:04:51,680
here we were

155
00:04:56,550 --> 00:04:53,680
35 years later

156
00:04:58,950 --> 00:04:56,560
flying a 10-day missions with seven

157
00:04:59,749 --> 00:04:58,960
people on a reusable spacecraft doing

158
00:05:02,629 --> 00:04:59,759
just

159
00:05:05,270 --> 00:05:02,639
an eye-watering suite of science and to

160
00:05:07,909 --> 00:05:05,280
me that was very symbolic of the

161
00:05:10,390 --> 00:05:07,919
progress that we had managed to make in

162
00:05:13,189 --> 00:05:10,400
human space flight since john glenn flew

163
00:05:15,110 --> 00:05:13,199

the first time and i saw that in some

164
00:05:16,230 --> 00:05:15,120
way you know john glenn's first and his

165
00:05:19,670 --> 00:05:16,240
second flight to sort of putting

166
00:05:20,950 --> 00:05:19,680
bookends on an era of advancement that

167
00:05:22,469 --> 00:05:20,960
that's sort of the way i remember the

168
00:05:23,670 --> 00:05:22,479
flight so

169
00:05:24,629 --> 00:05:23,680
it's funny you mentioned you know how

170
00:05:25,749 --> 00:05:24,639
things have changed and how they've

171
00:05:26,629 --> 00:05:25,759
transitioned talk a little bit about

172
00:05:27,990 --> 00:05:26,639
what you're doing now with the

173
00:05:29,990 --> 00:05:28,000
commercial crew program because you're

174
00:05:31,909 --> 00:05:30,000
very active uh with that program which

175
00:05:33,990 --> 00:05:31,919
obviously nasa is working very hard on

176
00:05:35,830 --> 00:05:34,000
so what uh talk a little bit about that

177
00:05:38,469 --> 00:05:35,840
well that's right um you know we've come

178
00:05:41,430 --> 00:05:38,479
now to an era in space flight where the

179
00:05:43,590 --> 00:05:41,440
technology and the capability to do

180
00:05:46,790 --> 00:05:43,600
orbital space flight is within the grasp

181
00:05:48,230 --> 00:05:46,800
of commercial industry and in fairness i

182
00:05:50,390 --> 00:05:48,240
think it's been pointed out many times

183
00:05:52,310 --> 00:05:50,400
before that even the shuttle was built

184
00:05:54,230 --> 00:05:52,320
by industry it may have been sponsored

185
00:05:56,950 --> 00:05:54,240
and overseen by nasa but

186
00:05:58,870 --> 00:05:56,960
it's uh it's the engineering and talent

187
00:06:00,550 --> 00:05:58,880
out there in industry that makes this

188
00:06:02,710 --> 00:06:00,560

all happen

189
00:06:03,510 --> 00:06:02,720
as nasa turns our attention

190
00:06:07,270 --> 00:06:03,520
to

191
00:06:09,510 --> 00:06:07,280
exploration further away from earth

192
00:06:12,070 --> 00:06:09,520
you can see this transition happening of

193
00:06:13,830 --> 00:06:12,080
handing more and more duties over to

194
00:06:15,430 --> 00:06:13,840
industry and those are the kinds of

195
00:06:17,029 --> 00:06:15,440
things that are really going to enable

196
00:06:18,309 --> 00:06:17,039
the long-term

197
00:06:21,270 --> 00:06:18,319
uh deeper

198
00:06:23,029 --> 00:06:21,280
exploration of space traditionally as in

199
00:06:24,629 --> 00:06:23,039
the early days of the american space

200
00:06:26,390 --> 00:06:24,639
program

201
00:06:29,670 --> 00:06:26,400
the government

202
00:06:31,510 --> 00:06:29,680
used taxpayer funding to stand up

203
00:06:34,150 --> 00:06:31,520
capabilities that didn't exist they were

204
00:06:36,870 --> 00:06:34,160
doing it for the first time and a major

205
00:06:39,270 --> 00:06:36,880
program like apollo took huge taxpayer

206
00:06:41,110 --> 00:06:39,280
resources but today we have many

207
00:06:43,590 --> 00:06:41,120
industries that can support space flight

208
00:06:45,110 --> 00:06:43,600
we have telecommunication industries

209
00:06:47,510 --> 00:06:45,120
that can provide

210
00:06:50,390 --> 00:06:47,520
communications services on a commercial

211
00:06:52,790 --> 00:06:50,400
basis for not only nasa but other

212
00:06:55,110 --> 00:06:52,800
operators of space systems

213
00:06:57,189 --> 00:06:55,120

launch services exist for reasons other

214
00:06:59,670 --> 00:06:57,199
than launching government astronauts and

215
00:07:02,070 --> 00:06:59,680
payloads so you've built up this sort of

216
00:07:04,390 --> 00:07:02,080
infrastructure that can sustain a base

217
00:07:05,350 --> 00:07:04,400
and then nasa can advance

218
00:07:07,670 --> 00:07:05,360
by

219
00:07:10,550 --> 00:07:07,680
leveraging off of those capabilities and

220
00:07:12,230 --> 00:07:10,560
using the taxpayer investment to move

221
00:07:14,230 --> 00:07:12,240
beyond that point

222
00:07:16,230 --> 00:07:14,240
and my personal opinion is that's the

223
00:07:19,430 --> 00:07:16,240
way i see us getting to the moon or to

224
00:07:22,710 --> 00:07:19,440
mars is there will be infrastructure in

225
00:07:25,430 --> 00:07:22,720
place that can be utilized and lower

226
00:07:28,550 --> 00:07:25,440
the investment cost of the taxpayer to

227
00:07:31,029 --> 00:07:28,560
do the inherently government parts of

228
00:07:32,870 --> 00:07:31,039
exploration of space so i think the

229
00:07:34,950 --> 00:07:32,880
shift towards commercial activity is

230
00:07:36,790 --> 00:07:34,960
really an important enabler for future

231
00:07:38,070 --> 00:07:36,800
exploration well it's amazing the way

232
00:07:40,150 --> 00:07:38,080
things have changed in 50 years it

233
00:07:41,430 --> 00:07:40,160
doesn't seem like it's that long but

234
00:07:43,670 --> 00:07:41,440
things have radically changed over the

235
00:07:44,950 --> 00:07:43,680
last few few decades again when you look

236
00:07:47,270 --> 00:07:44,960
back at

237
00:07:49,350 --> 00:07:47,280
john glenn's

238
00:07:53,110 --> 00:07:49,360

mercury capsule lifting off on an atlas

239
00:07:55,589 --> 00:07:53,120
on a pretty spartan pad at

240
00:07:57,110 --> 00:07:55,599
at the time cape canaveral

241
00:07:58,629 --> 00:07:57,120
it was

242
00:08:00,869 --> 00:07:58,639
it's quite a bit different today to look

243
00:08:02,230 --> 00:08:00,879
at the infrastructure and the facilities

244
00:08:03,990 --> 00:08:02,240
and capabilities that we have we