

JANUARY 28 | 10AM



Go to Inside Marshall for viewing link

1  
00:00:01,590 --> 00:00:14,150

[Music]

2  
00:00:17,430 --> 00:00:15,749

good morning

3  
00:00:19,830 --> 00:00:17,440

and thank you for being here today to

4  
00:00:21,429 --> 00:00:19,840

honor the brave men and women who paid

5  
00:00:24,630 --> 00:00:21,439

the ultimate sacrifice

6  
00:00:27,429 --> 00:00:24,640

in the pursuit of space exploration

7  
00:00:29,830 --> 00:00:27,439

today we remember the apollo 1 the

8  
00:00:32,870 --> 00:00:29,840

challenger

9  
00:00:35,670 --> 00:00:32,880

and the columbia sts-107 cruise and

10  
00:00:37,110 --> 00:00:35,680

all other fallen members of the nasa

11  
00:00:39,110 --> 00:00:37,120

family

12  
00:00:40,229 --> 00:00:39,120

every now and then it's important for us

13  
00:00:43,350 --> 00:00:40,239

to step back

14

00:00:45,430 --> 00:00:43,360

and consider the vast scope of our work

15

00:00:47,510 --> 00:00:45,440

to remind ourselves of what it really

16

00:00:49,590 --> 00:00:47,520

means to be in this business

17

00:00:50,950 --> 00:00:49,600

where we do the impossible and break

18

00:00:54,150 --> 00:00:50,960

exploration barriers

19

00:00:56,389 --> 00:00:54,160

beyond earth and towards the stars

20

00:00:57,990 --> 00:00:56,399

we know and recognize that human space

21

00:01:01,029 --> 00:00:58,000

flight will always be filled

22

00:01:02,549 --> 00:01:01,039

with risk for those of you like me who

23

00:01:04,789 --> 00:01:02,559

have been a part of marshall space

24

00:01:07,109 --> 00:01:04,799

flight center or nasa long enough

25

00:01:08,630 --> 00:01:07,119

you've experienced both the ultimate joy

26

00:01:12,230 --> 00:01:08,640

of mission success

27

00:01:14,950 --> 00:01:12,240

and the tragic consequences of failure

28

00:01:15,749 --> 00:01:14,960

just like me i'm sure you can remember

29

00:01:17,429 --> 00:01:15,759

where you were

30

00:01:20,149 --> 00:01:17,439

when you heard the news or read an

31

00:01:22,230 --> 00:01:20,159

article about these tragedies

32

00:01:24,070 --> 00:01:22,240

some of you may have even watched them

33

00:01:26,310 --> 00:01:24,080

on television

34

00:01:27,510 --> 00:01:26,320

and afterwards many of us work together

35

00:01:29,910 --> 00:01:27,520

for the solutions

36

00:01:31,350 --> 00:01:29,920

to keep those bad days from happening

37

00:01:34,310 --> 00:01:31,360

again

38

00:01:36,310 --> 00:01:34,320

today marks the 35th anniversary of the

39

00:01:38,870 --> 00:01:36,320

challenger accident

40

00:01:40,550 --> 00:01:38,880

as we commemorate the 35th anniversary

41

00:01:43,270 --> 00:01:40,560

of losing challenger

42

00:01:44,710 --> 00:01:43,280

we pause and remember those crew members

43

00:01:47,109 --> 00:01:44,720

who have given their lives

44

00:01:48,630 --> 00:01:47,119

in pursuit of space exploration and

45

00:01:51,109 --> 00:01:48,640

discovery

46

00:01:52,630 --> 00:01:51,119

they were our colleagues our friends and

47

00:01:56,069 --> 00:01:52,640

more

48

00:01:56,789 --> 00:01:56,079

they were our nasa family challenger and

49

00:01:59,590 --> 00:01:56,799

columbia

50

00:02:02,230 --> 00:01:59,600

were woven into our hearts solemn

51

00:02:03,749 --> 00:02:02,240

reminders of what is at stake

52

00:02:06,230 --> 00:02:03,759

they are why we are committed to

53

00:02:08,309 --> 00:02:06,240

vigilance and safety

54

00:02:09,749 --> 00:02:08,319

with risks comes a responsibility to

55

00:02:11,910 --> 00:02:09,759

honor what we lost

56

00:02:13,030 --> 00:02:11,920

but also learn from the mistakes of the

57

00:02:14,869 --> 00:02:13,040

past

58

00:02:16,710 --> 00:02:14,879

one of my points of emphasis for the

59

00:02:19,350 --> 00:02:16,720

management team at marshall

60

00:02:20,550 --> 00:02:19,360

is risk leadership and that is because

61

00:02:23,270 --> 00:02:20,560

nothing worthwhile

62

00:02:26,070 --> 00:02:23,280

is accomplished without taking risk it's

63

00:02:28,869 --> 00:02:26,080

our job at nasa to leap into the unknown

64

00:02:31,750 --> 00:02:28,879

of our mission of discovery

65

00:02:34,150 --> 00:02:31,760

we must have the courage to jump but

66

00:02:35,190 --> 00:02:34,160

first we must make the risk as small as

67

00:02:38,229 --> 00:02:35,200

possible

68

00:02:40,229 --> 00:02:38,239

and then go forward as we prepare for a

69

00:02:41,830 --> 00:02:40,239

new era of space exploration with the

70

00:02:44,630 --> 00:02:41,840

space launch system

71

00:02:46,869 --> 00:02:44,640

now is the time to recommit ourselves to

72

00:02:48,470 --> 00:02:46,879

safety and excellence

73

00:02:49,990 --> 00:02:48,480

we will never forget the courage it

74

00:02:53,030 --> 00:02:50,000

takes or the lives given

75

00:02:55,190 --> 00:02:53,040

in the name of space exploration and we

76

00:02:57,350 --> 00:02:55,200

will carry the lessons of apollo

77

00:02:58,630 --> 00:02:57,360

challenger and columbia with us as we

78

00:03:01,509 --> 00:02:58,640

design and build

79

00:03:04,070 --> 00:03:01,519

the sls the human landing system and

80

00:03:07,589 --> 00:03:04,080

assist in nasa's commercial crew program

81

00:03:08,790 --> 00:03:07,599

in order to fly again we also want to

82

00:03:11,030 --> 00:03:08,800

remember

83

00:03:12,949 --> 00:03:11,040

many others who have dedicated their

84

00:03:16,149 --> 00:03:12,959

lives to space exploration

85

00:03:17,270 --> 00:03:16,159

and have passed away we recognize their

86

00:03:19,750 --> 00:03:17,280

sacrifices

87

00:03:21,110 --> 00:03:19,760

and accomplishments which have propelled

88

00:03:24,390 --> 00:03:21,120

us to where we are

89

00:03:26,390 --> 00:03:24,400

today as part of today's program we will

90

00:03:28,630 --> 00:03:26,400

have two guest speakers

91

00:03:30,149 --> 00:03:28,640

astronaut butch will moore followed by

92

00:03:32,149 --> 00:03:30,159

our safety and mission assurance

93

00:03:34,710 --> 00:03:32,159

director bill hill

94

00:03:36,869 --> 00:03:34,720

upon the conclusion of their remarks we

95

00:03:38,309 --> 00:03:36,879

will view a presentation of those we've

96

00:03:41,830 --> 00:03:38,319

lost in the pursuit

97

00:03:42,630 --> 00:03:41,840

of space exploration thank you again for

98

00:03:45,430 --> 00:03:42,640

your interest

99

00:03:46,630 --> 00:03:45,440

in this important day we must continue

100

00:03:50,869 --> 00:03:46,640

the legacy

101  
00:03:55,110 --> 00:03:53,509  
good day my name is butch wilmore i've

102  
00:03:57,429 --> 00:03:55,120  
been an astronaut with nasa going back

103  
00:03:59,990 --> 00:03:57,439  
to 2000 so quite a few years

104  
00:04:01,110 --> 00:04:00,000  
and this is a day every year that we

105  
00:04:04,229 --> 00:04:01,120  
remember

106  
00:04:06,710 --> 00:04:04,239  
reasons to

107  
00:04:08,390 --> 00:04:06,720  
recall back to some of the issues the

108  
00:04:09,910 --> 00:04:08,400  
things that have taken place in the in

109  
00:04:11,750 --> 00:04:09,920  
the decades past

110  
00:04:13,750 --> 00:04:11,760  
specifically we want to remember the

111  
00:04:17,909 --> 00:04:13,760  
names we'll remember the people

112  
00:04:21,749 --> 00:04:17,919  
ed white virgil gus grissom

113  
00:04:23,830 --> 00:04:21,759

roger chafee the apollo 1 astronauts

114

00:04:25,270 --> 00:04:23,840

and of course the astronauts from

115

00:04:28,710 --> 00:04:25,280

challenger

116

00:04:32,390 --> 00:04:28,720

dick scobee michael smith

117

00:04:35,909 --> 00:04:32,400

ellison onozuka judith reznik

118

00:04:39,909 --> 00:04:35,919

ronald mcnair gregory jarvis

119

00:04:44,469 --> 00:04:39,919

and krista mcauliffe and from columbia

120

00:04:47,590 --> 00:04:44,479

back in 2003 we remember rick husband

121

00:04:51,189 --> 00:04:47,600

willie mccoool laurel clark

122

00:04:54,310 --> 00:04:51,199

kalpana chala michael anderson

123

00:04:56,950 --> 00:04:54,320

david brown elon ramon

124

00:04:58,150 --> 00:04:56,960

and remember them for good reason they

125

00:05:00,790 --> 00:04:58,160

bravely went forward

126  
00:05:01,189 --> 00:05:00,800  
into the unknown and unknown that even

127  
00:05:03,110 --> 00:05:01,199  
now

128  
00:05:05,430 --> 00:05:03,120  
after all 50 years of flying in space

129  
00:05:08,070 --> 00:05:05,440  
humans in space there's so many unknowns

130  
00:05:08,790 --> 00:05:08,080  
that lie just uh beyond our atmosphere

131  
00:05:11,189 --> 00:05:08,800  
and we're still

132  
00:05:12,790 --> 00:05:11,199  
discovering and still exploring and even

133  
00:05:14,950 --> 00:05:12,800  
now as we seek to go deeper

134  
00:05:17,510 --> 00:05:14,960  
deeper into space than we've gone in

135  
00:05:20,310 --> 00:05:17,520  
decades with the space launch system

136  
00:05:21,510 --> 00:05:20,320  
and orion out to the vicinity of the

137  
00:05:24,310 --> 00:05:21,520  
moon and beyond

138  
00:05:25,909 --> 00:05:24,320

perhaps uh in the not too distant future

139

00:05:28,230 --> 00:05:25,919

we always want to recall back

140

00:05:30,870 --> 00:05:28,240

from where we've been to where we are

141

00:05:32,310 --> 00:05:30,880

now and what has gotten us to this point

142

00:05:35,590 --> 00:05:32,320

and these individuals these names we

143

00:05:37,590 --> 00:05:35,600

just mentioned are part of our family

144

00:05:40,629 --> 00:05:37,600

they're part of the family that we've

145

00:05:43,430 --> 00:05:40,639

been ensconced with and we work together

146

00:05:45,350 --> 00:05:43,440

various nasa centers and we do things

147

00:05:46,629 --> 00:05:45,360

that are very very difficult and they

148

00:05:48,390 --> 00:05:46,639

knew the challenges they knew the

149

00:05:51,590 --> 00:05:48,400

difficulties that lie ahead

150

00:05:53,029 --> 00:05:51,600

yet they went boldly forward anyway

151  
00:05:55,029 --> 00:05:53,039  
them and their families they were

152  
00:05:57,270 --> 00:05:55,039  
passionate about their jobs

153  
00:05:59,029 --> 00:05:57,280  
passionate about exploration passion

154  
00:06:01,029 --> 00:05:59,039  
about human space flight

155  
00:06:02,230 --> 00:06:01,039  
and they went forward again knowing the

156  
00:06:05,430 --> 00:06:02,240  
risks

157  
00:06:05,990 --> 00:06:05,440  
and they paid with their lives so that

158  
00:06:09,110 --> 00:06:06,000  
we could

159  
00:06:11,430 --> 00:06:09,120  
be here today continuing to go forward

160  
00:06:13,590 --> 00:06:11,440  
for the right reasons but reflecting

161  
00:06:15,830 --> 00:06:13,600  
back also for the right reasons

162  
00:06:17,029 --> 00:06:15,840  
lessons learned that we've incorporated

163  
00:06:20,070 --> 00:06:17,039

into much that we've done

164

00:06:22,790 --> 00:06:20,080

over these decades and we continue to do

165

00:06:24,469 --> 00:06:22,800

we never forget because remembering is

166

00:06:26,710 --> 00:06:24,479

vitaly important

167

00:06:28,150 --> 00:06:26,720

we remember that uh letting schedules

168

00:06:30,070 --> 00:06:28,160

push us forward

169

00:06:31,189 --> 00:06:30,080

and blindly forward is not the way we

170

00:06:33,749 --> 00:06:31,199

should go

171

00:06:35,110 --> 00:06:33,759

i remember myself dating back to when i

172

00:06:36,629 --> 00:06:35,120

was a fleet aviator

173

00:06:38,150 --> 00:06:36,639

doing flight tests there was one

174

00:06:38,710 --> 00:06:38,160

specific thing that happened in my

175

00:06:40,950 --> 00:06:38,720

career

176

00:06:42,870 --> 00:06:40,960

i thought i'd share with you this is a

177

00:06:44,710 --> 00:06:42,880

t-45 goss hawk

178

00:06:46,469 --> 00:06:44,720

and i had the honor to do the initial

179

00:06:49,270 --> 00:06:46,479

flight test with this aircraft

180

00:06:51,189 --> 00:06:49,280

back in the early 90s did many things

181

00:06:52,150 --> 00:06:51,199

many exciting things including taking it

182

00:06:55,350 --> 00:06:52,160

to the ship

183

00:06:56,629 --> 00:06:55,360

for the very first time for its initial

184

00:06:58,390 --> 00:06:56,639

trials

185

00:07:00,230 --> 00:06:58,400

and part of what we were doing just to

186

00:07:01,110 --> 00:07:00,240

put it briefly was the approach handling

187

00:07:04,150 --> 00:07:01,120

qualities

188

00:07:06,150 --> 00:07:04,160

and also minimum in-speed

189

00:07:07,589 --> 00:07:06,160  
assessment for this aircraft every

190

00:07:08,390 --> 00:07:07,599  
airplane that lands on an aircraft

191

00:07:11,350 --> 00:07:08,400  
carrier

192

00:07:11,749 --> 00:07:11,360  
has a documented minimum end speed and

193

00:07:14,469 --> 00:07:11,759  
that's

194

00:07:16,950 --> 00:07:14,479  
with relation to how much wind is going

195

00:07:19,189 --> 00:07:16,960  
over the aircraft as it hits the end

196

00:07:21,990 --> 00:07:19,199  
of the aircraft carrier so that is

197

00:07:23,670 --> 00:07:22,000  
predicated on many things but basically

198

00:07:26,550 --> 00:07:23,680  
you want to have an end speed that will

199

00:07:29,510 --> 00:07:26,560  
give you no greater than 10 or so feet

200

00:07:29,990 --> 00:07:29,520  
sink off the bow so that is established

201  
00:07:32,710 --> 00:07:30,000  
in flight

202  
00:07:33,589 --> 00:07:32,720  
test and you can see here a picture on

203  
00:07:35,510 --> 00:07:33,599  
the catapult

204  
00:07:37,430 --> 00:07:35,520  
with the launch bar down and this is

205  
00:07:37,909 --> 00:07:37,440  
what would sling the aircraft into the

206  
00:07:39,830 --> 00:07:37,919  
air

207  
00:07:41,029 --> 00:07:39,840  
so just real briefly just a quick video

208  
00:07:42,870 --> 00:07:41,039  
to show you that

209  
00:07:44,550 --> 00:07:42,880  
so some carrier quality was long after i

210  
00:07:51,670 --> 00:07:44,560  
did the flight test but just to show you

211  
00:07:55,909 --> 00:07:53,430  
now you notice no sink off the bow there

212  
00:07:59,029 --> 00:07:55,919  
are plenty of wind over the air aircraft

213  
00:08:01,270 --> 00:07:59,039

as it lifts into the air this next video

214

00:08:02,950 --> 00:08:01,280

shows uh it's it's vintage of course you

215

00:08:05,510 --> 00:08:02,960

can see from the way it looks

216

00:08:07,589 --> 00:08:05,520

but it shows an a6 intruder on a normal

217

00:08:09,749 --> 00:08:07,599

catapult launch on a deployment

218

00:08:11,430 --> 00:08:09,759

and this intruder got what is called a

219

00:08:13,350 --> 00:08:11,440

cold catapult in the day

220

00:08:14,950 --> 00:08:13,360

they're very very very uncommon they

221

00:08:15,909 --> 00:08:14,960

were very uncommon but even more so in

222

00:08:19,270 --> 00:08:15,919

common now

223

00:08:20,230 --> 00:08:19,280

but it did not get the the force off the

224

00:08:23,350 --> 00:08:20,240

end of the stroke

225

00:08:25,350 --> 00:08:23,360

that was necessary to enable it to fly

226

00:08:27,350 --> 00:08:25,360

so uh what happens is it goes down the

227

00:08:29,270 --> 00:08:27,360

stroke and it doesn't have flying speed

228

00:08:31,270 --> 00:08:29,280

so it sinks off the bow

229

00:08:33,829 --> 00:08:31,280

the pilot pulls the nose up it continues

230

00:08:36,469 --> 00:08:33,839

to sink he puts his landing gear up

231

00:08:38,389 --> 00:08:36,479

and eventually he what we call does what

232

00:08:38,870 --> 00:08:38,399

we call pickles off his drop tank to try

233

00:08:41,589 --> 00:08:38,880

to give him

234

00:08:43,350 --> 00:08:41,599

make him less less heavy so reduce some

235

00:08:43,750 --> 00:08:43,360

weight you see the pic drop tank pickle

236

00:08:45,350 --> 00:08:43,760

off

237

00:08:46,790 --> 00:08:45,360

then the airplane ceases to fly and

238

00:08:49,190 --> 00:08:46,800

starts to depart flight

239

00:08:50,550 --> 00:08:49,200

and they eject regrettably the first

240

00:08:52,150 --> 00:08:50,560

person did not survive

241

00:08:53,750 --> 00:08:52,160

and the second barely got to shoot

242

00:08:56,710 --> 00:08:53,760

before he impacted the water

243

00:08:58,070 --> 00:08:56,720

and he did survive so this is obviously

244

00:08:59,590 --> 00:08:58,080

something that you would not want

245

00:09:01,190 --> 00:08:59,600

to happen and this is part of what our

246

00:09:02,710 --> 00:09:01,200

minimum in speed test is

247

00:09:05,190 --> 00:09:02,720

to make sure something like this doesn't

248

00:09:07,430 --> 00:09:05,200

happen so again briefly

249

00:09:09,350 --> 00:09:07,440

on the very first catapult launch we're

250

00:09:10,870 --> 00:09:09,360

targeting three feet of sync off the bow

251  
00:09:14,470 --> 00:09:10,880  
of the aircraft carrier

252  
00:09:14,949 --> 00:09:14,480  
and as i go down the stroke uh because

253  
00:09:16,949 --> 00:09:14,959  
i've done

254  
00:09:18,710 --> 00:09:16,959  
a lot of catapult launches leading up to

255  
00:09:21,590 --> 00:09:18,720  
this as we worked ourselves up

256  
00:09:22,550 --> 00:09:21,600  
it was a very it was a lot less thrust

257  
00:09:25,750 --> 00:09:22,560  
or

258  
00:09:27,750 --> 00:09:25,760  
sink off the bow

259  
00:09:29,829 --> 00:09:27,760  
and as i went to the end of the carrier

260  
00:09:31,430 --> 00:09:29,839  
i sank more than three feet i think i

261  
00:09:32,070 --> 00:09:31,440  
did not know how much of the time but i

262  
00:09:34,070 --> 00:09:32,080  
knew

263  
00:09:35,110 --> 00:09:34,080

it was an enormous amount of rated

264

00:09:36,389 --> 00:09:35,120

descent

265

00:09:38,070 --> 00:09:36,399

one hand on the stick and the other hand

266

00:09:38,550 --> 00:09:38,080

i had on the ejection handle ready to

267

00:09:40,230 --> 00:09:38,560

pull it

268

00:09:42,710 --> 00:09:40,240

if it looked like i needed it the

269

00:09:43,670 --> 00:09:42,720

airplane fortunately did continue to fly

270

00:09:46,790 --> 00:09:43,680

however

271

00:09:48,949 --> 00:09:46,800

and uh cleared the the water barely

272

00:09:51,030 --> 00:09:48,959

and this began to climb out so i came

273

00:09:52,710 --> 00:09:51,040

around i landed on the aircraft carrier

274

00:09:54,470 --> 00:09:52,720

and we did an assessment was it the

275

00:09:55,910 --> 00:09:54,480

catapult that had a problem was it the

276

00:09:57,910 --> 00:09:55,920

airplane that had a problem

277

00:10:00,230 --> 00:09:57,920

what was the issue that caused this

278

00:10:02,389 --> 00:10:00,240

excessive sink off the bow

279

00:10:03,990 --> 00:10:02,399

that unexpected sink off the bow what

280

00:10:05,670 --> 00:10:04,000

what caused it so as we went through

281

00:10:07,350 --> 00:10:05,680

several days of iterations the catapult

282

00:10:10,069 --> 00:10:07,360

was fine the airplane was fine

283

00:10:11,190 --> 00:10:10,079

and we determined that the engineers

284

00:10:12,870 --> 00:10:11,200

that had uh

285

00:10:14,710 --> 00:10:12,880

done the calculations for what was

286

00:10:15,750 --> 00:10:14,720

necessary to get a three foot sink off

287

00:10:19,190 --> 00:10:15,760

the bow

288

00:10:22,389 --> 00:10:19,200

had done the equivalent of transposing

289

00:10:26,630 --> 00:10:22,399

a fraction in their calculations so

290

00:10:28,949 --> 00:10:26,640

one very very small mistake caused this

291

00:10:29,990 --> 00:10:28,959

very big change obviously in the thrust

292

00:10:31,910 --> 00:10:30,000

of this catapult

293

00:10:33,509 --> 00:10:31,920

slinging this airplane off and a very

294

00:10:35,910 --> 00:10:33,519

excessive sink off the bow the aircraft

295

00:10:38,150 --> 00:10:35,920

carrier 60 feet above the water

296

00:10:40,550 --> 00:10:38,160

and it surmised based on camera angles

297

00:10:44,069 --> 00:10:40,560

and whatnot that i was at least

298

00:10:47,190 --> 00:10:44,079

16 feet from the water if not closer

299

00:10:47,670 --> 00:10:47,200

so again it was a lack of attention to

300

00:10:49,430 --> 00:10:47,680

detail

301  
00:10:51,030 --> 00:10:49,440  
going over their calculations triple

302  
00:10:52,949 --> 00:10:51,040  
checking making sure everything was good

303  
00:10:55,350 --> 00:10:52,959  
but like i said not even noticing the

304  
00:10:58,230 --> 00:10:55,360  
trans transposing of a fraction

305  
00:11:00,150 --> 00:10:58,240  
uh could have been very um a very bad

306  
00:11:01,670 --> 00:11:00,160  
day for me and for the program

307  
00:11:03,350 --> 00:11:01,680  
fortunately like i said it worked out

308  
00:11:05,350 --> 00:11:03,360  
okay we learn from that

309  
00:11:07,350 --> 00:11:05,360  
and we go forward and there are various

310  
00:11:08,870 --> 00:11:07,360  
ways that since that happened during

311  
00:11:10,710 --> 00:11:08,880  
that carrier qualification

312  
00:11:11,990 --> 00:11:10,720  
that the navy goes through other

313  
00:11:13,509 --> 00:11:12,000

stringent rules that have been

314

00:11:15,190 --> 00:11:13,519  
incorporated to ensure

315

00:11:16,790 --> 00:11:15,200  
that all calculations are correct of

316

00:11:20,069 --> 00:11:16,800  
course this was back

317

00:11:21,509 --> 00:11:20,079  
before we had super computers

318

00:11:23,430 --> 00:11:21,519  
it was not back in the day of slide

319

00:11:24,870 --> 00:11:23,440  
rules but it was a far back before we

320

00:11:25,670 --> 00:11:24,880  
had a lot of ways to check it which we

321

00:11:28,389 --> 00:11:25,680  
do now

322

00:11:29,030 --> 00:11:28,399  
so i share that just as one example that

323

00:11:38,230 --> 00:11:29,040  
i

324

00:11:39,910 --> 00:11:38,240  
so today we're under some very very

325

00:11:41,670 --> 00:11:39,920  
difficult circumstances

326

00:11:43,509 --> 00:11:41,680

we don't even see each other face to

327

00:11:45,190 --> 00:11:43,519

face we have very

328

00:11:47,350 --> 00:11:45,200

little interaction during these covet

329

00:11:48,630 --> 00:11:47,360

time frames so i encourage you to

330

00:11:52,389 --> 00:11:48,640

continue

331

00:11:54,870 --> 00:11:52,399

to check the details on every aspect of

332

00:11:57,750 --> 00:11:54,880

what you do because human space flight

333

00:11:59,509 --> 00:11:57,760

is vitally important for our nation and

334

00:12:02,550 --> 00:11:59,519

for our global community

335

00:12:04,230 --> 00:12:02,560

as we continue to explore and reach out

336

00:12:06,230 --> 00:12:04,240

and go beyond so as you're sitting at

337

00:12:07,269 --> 00:12:06,240

home or maybe occasionally you do come

338

00:12:10,550 --> 00:12:07,279

in or wherever you

339

00:12:11,190 --> 00:12:10,560

are do your work diligently remembering

340

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

the past

341

00:12:14,710 --> 00:12:12,560

remembering those individuals whose

342

00:12:16,710 --> 00:12:14,720

names we we mentioned earlier

343

00:12:18,949 --> 00:12:16,720

and others that have gone before because

344

00:12:20,790 --> 00:12:18,959

we are a team

345

00:12:22,870 --> 00:12:20,800

uh yes the astronauts are the pink

346

00:12:25,110 --> 00:12:22,880

bodies to get to sit in the seat

347

00:12:26,710 --> 00:12:25,120

and enjoy the ride though it's a very

348

00:12:27,829 --> 00:12:26,720

professional environment inside of a

349

00:12:31,430 --> 00:12:27,839

cockpit as you're

350

00:12:33,430 --> 00:12:31,440

uh on ascent leaving the planet

351

00:12:36,310 --> 00:12:33,440

but it's also a joy we get to do those

352

00:12:38,790 --> 00:12:36,320

things but it's the team

353

00:12:41,110 --> 00:12:38,800

going forward with our national goals

354

00:12:44,310 --> 00:12:41,120

that make this whole program work

355

00:12:45,750 --> 00:12:44,320

so today like we said we look back

356

00:12:47,350 --> 00:12:45,760

and we do remember in this day of

357

00:12:48,310 --> 00:12:47,360

remembrance of those that have gone

358

00:12:50,389 --> 00:12:48,320

before us

359

00:12:51,430 --> 00:12:50,399

again those that names we mentioned and

360

00:12:53,430 --> 00:12:51,440

many more

361

00:12:55,190 --> 00:12:53,440

who have given their all passionate

362

00:12:57,110 --> 00:12:55,200

about human space flight

363

00:12:59,030 --> 00:12:57,120

passionate about what we do day in and

364

00:12:59,829 --> 00:12:59,040

day out and it's my prayer that that is

365

00:13:01,750 --> 00:12:59,839

you as well

366

00:13:03,990 --> 00:13:01,760

you continue your passion even in

367

00:13:06,310 --> 00:13:04,000

difficult circumstances as we go forward

368

00:13:07,509 --> 00:13:06,320

because what we do is vitally important

369

00:13:10,230 --> 00:13:07,519

vital important to

370

00:13:10,870 --> 00:13:10,240

us as a as a nasa community to our

371

00:13:16,310 --> 00:13:10,880

nation

372

00:13:20,150 --> 00:13:18,310

hi i'm bill hill i'm the director for

373

00:13:21,670 --> 00:13:20,160

safety mission insurance here at the

374

00:13:24,790 --> 00:13:21,680

marshall space flight center

375

00:13:26,710 --> 00:13:24,800

as we pause to reflect our past on this

376

00:13:28,069 --> 00:13:26,720

day of remembrance i want to share a few

377

00:13:30,230 --> 00:13:28,079

thoughts with you

378

00:13:32,470 --> 00:13:30,240

first and foremost we must learn from

379

00:13:34,629 --> 00:13:32,480

our failures especially the

380

00:13:35,750 --> 00:13:34,639

the larger incidents that we've had like

381

00:13:39,030 --> 00:13:35,760

apollo

382

00:13:40,310 --> 00:13:39,040

uh challenger in colombia failure for

383

00:13:43,350 --> 00:13:40,320

the most part

384

00:13:45,750 --> 00:13:43,360

is an option and we have to

385

00:13:46,629 --> 00:13:45,760

we have to fail to learn and as long as

386

00:13:50,389 --> 00:13:46,639

we don't

387

00:13:53,509 --> 00:13:50,399

injure or or have a death

388

00:13:55,110 --> 00:13:53,519

during the incident it's it's all

389

00:13:57,990 --> 00:13:55,120

lessons learned it's all

390

00:14:00,550 --> 00:13:58,000

good data we need to push the envelope

391

00:14:03,590 --> 00:14:00,560

we need to understand where the cliff is

392

00:14:05,670 --> 00:14:03,600

and and this helps us better understand

393

00:14:08,069 --> 00:14:05,680

what our systems can do

394

00:14:09,590 --> 00:14:08,079

uh as we test them on the ground as we

395

00:14:12,550 --> 00:14:09,600

operate them in the air

396

00:14:14,150 --> 00:14:12,560

or in flight it helps us reduce the

397

00:14:16,470 --> 00:14:14,160

unknown unknowns

398

00:14:18,230 --> 00:14:16,480

critical among the things we do is we

399

00:14:21,269 --> 00:14:18,240

must stay curious

400

00:14:23,910 --> 00:14:21,279

uh curiosity is one of those things that

401  
00:14:25,030 --> 00:14:23,920  
uh you know if you if you hear something

402  
00:14:28,629 --> 00:14:25,040  
or see something

403  
00:14:32,710 --> 00:14:28,639  
that doesn't make sense ask a question

404  
00:14:34,949 --> 00:14:32,720  
try to try to seek what's going on um

405  
00:14:37,189 --> 00:14:34,959  
and and we must explain what's going on

406  
00:14:41,509 --> 00:14:37,199  
uh to better understand

407  
00:14:44,629 --> 00:14:41,519  
uh it's key too that we don't forget

408  
00:14:45,189 --> 00:14:44,639  
that physics does not change we cannot

409  
00:14:48,949 --> 00:14:45,199  
defy

410  
00:14:50,870 --> 00:14:48,959  
physics and we must explain uh

411  
00:14:53,350 --> 00:14:50,880  
what we don't understand through the use

412  
00:14:55,670 --> 00:14:53,360  
of physics laws of physics are great

413  
00:14:57,509 --> 00:14:55,680

for helping us do that our business is

414

00:15:00,870 --> 00:14:57,519

risky

415

00:15:04,230 --> 00:15:00,880

we live in a risk-reward paradigm

416

00:15:05,509 --> 00:15:04,240

uh not uh the reward if the reward is

417

00:15:07,750 --> 00:15:05,519

substantial

418

00:15:08,870 --> 00:15:07,760

we might be willing to accept more risk

419

00:15:10,870 --> 00:15:08,880

as a nation as

420

00:15:12,150 --> 00:15:10,880

as an agency and this is going to be

421

00:15:15,030 --> 00:15:12,160

critical as we

422

00:15:16,870 --> 00:15:15,040

push out into the solar system risk

423

00:15:19,990 --> 00:15:16,880

acceptance is left up to a few

424

00:15:21,910 --> 00:15:20,000

senior leaders in our agency uh

425

00:15:23,430 --> 00:15:21,920

not everyone has to personally accept

426

00:15:26,150 --> 00:15:23,440

the risk i know

427

00:15:26,870 --> 00:15:26,160

a lot of people think that way but there

428

00:15:29,749 --> 00:15:26,880

are only

429

00:15:31,350 --> 00:15:29,759

a few risk acceptors our job is to

430

00:15:34,069 --> 00:15:31,360

identify the risk

431

00:15:35,189 --> 00:15:34,079

identify potential mitigations quantify

432

00:15:36,710 --> 00:15:35,199

it if we can

433

00:15:38,790 --> 00:15:36,720

and then present that to the senior

434

00:15:40,790 --> 00:15:38,800

leaders for decisions

435

00:15:41,990 --> 00:15:40,800

i have been touched personally by all

436

00:15:45,430 --> 00:15:42,000

three major uh

437

00:15:46,949 --> 00:15:45,440

accidents that we've had i came to nasa

438

00:15:49,269 --> 00:15:46,959

through a contractor that

439

00:15:50,550 --> 00:15:49,279

supported the office of safety emission

440

00:15:53,910 --> 00:15:50,560

insurance in

441

00:15:56,069 --> 00:15:53,920

washington after challenger i had the

442

00:15:59,030 --> 00:15:56,079

opportunity to go visit

443

00:16:00,470 --> 00:15:59,040

the apollo 1 hardware at langley and put

444

00:16:04,150 --> 00:16:00,480

hands on

445

00:16:06,069 --> 00:16:04,160

some of the hardware gloved hands

446

00:16:08,069 --> 00:16:06,079

to try to seek the answers to a question

447

00:16:10,550 --> 00:16:08,079

that we were asking me outside

448

00:16:13,430 --> 00:16:10,560

and then i after columbia i led the

449

00:16:16,949 --> 00:16:13,440

agency's return to flight

450

00:16:20,470 --> 00:16:16,959

activity to get us to uh the first

451  
00:16:21,829 --> 00:16:20,480  
mission sts-114

452  
00:16:22,949 --> 00:16:21,839  
i swore at the time i would do

453  
00:16:24,710 --> 00:16:22,959  
everything to make certain that we

454  
00:16:27,350 --> 00:16:24,720  
weren't stupid like we were

455  
00:16:29,269 --> 00:16:27,360  
in the days ahead of uh the columbia

456  
00:16:31,350 --> 00:16:29,279  
launch and when i say that

457  
00:16:33,269 --> 00:16:31,360  
i mean it that you know we just weren't

458  
00:16:34,710 --> 00:16:33,279  
listening we weren't paying attention

459  
00:16:37,509 --> 00:16:34,720  
to the hardware we weren't paying

460  
00:16:39,829 --> 00:16:37,519  
attention to the physics

461  
00:16:41,990 --> 00:16:39,839  
in closing i want you to keep in mind

462  
00:16:46,310 --> 00:16:42,000  
the families of our

463  
00:16:48,710 --> 00:16:46,320

lost astronauts they are as important as

464

00:16:49,430 --> 00:16:48,720

as the astronauts they carry the burden

465

00:16:51,269 --> 00:16:49,440

to

466

00:16:52,710 --> 00:16:51,279

move ahead with their lives without

467

00:16:55,829 --> 00:16:52,720

their loved ones

468

00:16:58,870 --> 00:16:55,839

i had a good opportunity to meet with

469

00:17:02,550 --> 00:16:58,880

mrs onizuko and mrs mcnaair

470

00:17:05,110 --> 00:17:02,560

both wives of challenger astronauts

471

00:17:07,270 --> 00:17:05,120

and their jubilation and and support for

472

00:17:10,630 --> 00:17:07,280

colombia just kind of buoyed me

473

00:17:14,150 --> 00:17:10,640

and and made me want to do better and

474

00:17:17,270 --> 00:17:14,160

made me want to uh to to seek

475

00:17:18,230 --> 00:17:17,280

how to better do safe space flight i

476  
00:17:19,750 --> 00:17:18,240  
hope that

477  
00:17:23,029 --> 00:17:19,760  
you all reflect on what you've heard

478  
00:17:24,549 --> 00:17:23,039  
today from jody and butch and myself

479  
00:17:27,029 --> 00:17:24,559  
and use this information to become

480  
00:17:31,350 --> 00:17:27,039  
better engineers scientists

481  
00:17:34,310 --> 00:17:31,360  
and technicians stay curious

482  
00:17:35,669 --> 00:17:34,320  
ask questions and continue to the best

483  
00:17:38,630 --> 00:17:35,679  
of your ability

484  
00:17:43,350 --> 00:17:38,640  
to support safe human space flight thank

485  
00:17:48,549 --> 00:17:46,230  
today is the annual day of remembrance a

486  
00:17:50,630 --> 00:17:48,559  
day for the nasa family to come together

487  
00:17:52,789 --> 00:17:50,640  
to remember those who gave their lives

488  
00:17:54,950 --> 00:17:52,799

in pursuit of exploration

489

00:17:56,070 --> 00:17:54,960

knowledge and a better future for

490

00:17:58,630 --> 00:17:56,080

humanity

491

00:17:59,510 --> 00:17:58,640

we solemnly remember the crews of apollo

492

00:18:02,549 --> 00:17:59,520

1

493

00:18:03,909 --> 00:18:02,559

challenger and columbia and all those

494

00:18:06,710 --> 00:18:03,919

who have lost their lives

495

00:18:07,350 --> 00:18:06,720

so others could reach the stars thank

496

00:18:11,750 --> 00:18:07,360

you

497

00:18:27,270 --> 00:18:16,000

today we remember the crew of apollo 1.

498

00:18:42,750 --> 00:18:29,510

we also remember the crew of the space

499

00:18:57,669 --> 00:18:42,760

shuttle challenger

500

00:19:17,930 --> 00:18:59,750

and we remember the crew of the space

501  
00:19:46,789 --> 00:19:44,390

[Music]

502  
00:19:47,830 --> 00:19:46,799

we remember and honor all these brave

503  
00:19:49,909 --> 00:19:47,840

women and men

504  
00:19:52,630 --> 00:19:49,919

along with all the others who dedicated

505  
00:19:55,430 --> 00:19:52,640

their lives to the cause of exploration

506  
00:19:56,710 --> 00:19:55,440

and discovery please join us for a

507  
00:19:59,190 --> 00:19:56,720

moment of silence

508  
00:20:00,950 --> 00:19:59,200

as we honor these fallen heroes and all

509  
00:20:01,510 --> 00:20:00,960

members of the nasa family that have

510  
00:20:03,669 --> 00:20:01,520

passed

511  
00:21:19,550 --> 00:20:03,679

since the conception of nasa and in

512  
00:21:25,510 --> 00:21:23,669

[Music]

513  
00:21:26,870 --> 00:21:25,520

this concludes today's day of

514

00:21:29,669 --> 00:21:26,880

remembrance program

515

00:21:30,470 --> 00:21:29,679

from nasa's marshall space flight center