



1  
00:00:25,750 --> 00:00:24,150  
so we're at the michoud assembly

2  
00:00:26,790 --> 00:00:25,760  
facility is that what's that is that

3  
00:00:28,790 --> 00:00:26,800  
where we're going that big building

4  
00:00:30,390 --> 00:00:28,800  
there what's inside of that building

5  
00:00:33,030 --> 00:00:30,400  
there's a tank inside of that building

6  
00:00:34,709 --> 00:00:33,040  
there's an external tank that has the

7  
00:00:35,750 --> 00:00:34,719  
carries the fuel for the space shuttle

8  
00:00:37,590 --> 00:00:35,760  
that's right

9  
00:00:40,069 --> 00:00:37,600  
for the main engines

10  
00:00:42,709 --> 00:00:40,079  
so they put the thing together here

11  
00:00:44,950 --> 00:00:42,719  
and then the barge takes it over to uh

12  
00:00:46,470 --> 00:00:44,960  
kennedy space center

13  
00:00:47,910 --> 00:00:46,480

so it can

14

00:00:49,350 --> 00:00:47,920

be hooked up with the shuttle and then

15

00:00:51,270 --> 00:00:49,360

go to space

16

00:00:54,389 --> 00:00:51,280

all right

17

00:00:54,399 --> 00:01:11,510

tanks inside of there

18

00:01:14,950 --> 00:01:13,190

what's amazing is you built you know one

19

00:01:18,469 --> 00:01:14,960

amazing things

20

00:01:21,030 --> 00:01:18,479

how it it uh

21

00:01:22,390 --> 00:01:21,040

combines the propellants

22

00:01:23,510 --> 00:01:22,400

and feeds the main engines of the

23

00:01:25,590 --> 00:01:23,520

shuttle

24

00:01:27,590 --> 00:01:25,600

right and of course the foam that's on

25

00:01:30,230 --> 00:01:27,600

the outside because it's liquid hydrogen

26

00:01:31,910 --> 00:01:30,240

oxygen has got it's got to be cool right

27

00:01:33,270 --> 00:01:31,920

so you have this because it's a liquid

28

00:01:34,390 --> 00:01:33,280

form which means what's the temperature

29

00:01:37,109 --> 00:01:34,400

is this stuff

30

00:01:39,590 --> 00:01:37,119

inside of there when you oh it's uh

31

00:01:42,550 --> 00:01:39,600

right yes the liquid hydrogen of liquid

32

00:01:45,030 --> 00:01:42,560

oxygen here i believe is negative 297.

33

00:01:46,870 --> 00:01:45,040

negative 297 degrees fahrenheit right

34

00:01:48,310 --> 00:01:46,880

that's cold yeah remember when you see

35

00:01:50,710 --> 00:01:48,320

remember used to stick your lips on it

36

00:01:52,469 --> 00:01:50,720

on a fence when you're a kid it's colder

37

00:01:54,389 --> 00:01:52,479

than that

38

00:01:55,510 --> 00:01:54,399

it's colder than like even in canada

39

00:01:57,190 --> 00:01:55,520

like we're down here in mississippi

40

00:01:58,550 --> 00:01:57,200

where it's kind of warm but you start

41

00:02:00,310 --> 00:01:58,560

traveling like in new york it never gets

42

00:02:02,870 --> 00:02:00,320

that cold it's really cold actually

43

00:02:04,630 --> 00:02:02,880

right now what's next hydrogen is uh is

44

00:02:06,149 --> 00:02:04,640

what negative four twenty three you're

45

00:02:08,389 --> 00:02:06,159

kidding you're making that up harry

46

00:02:13,110 --> 00:02:08,399

really

47

00:02:14,710 --> 00:02:13,120

you have that insulation to keep it cold

48

00:02:16,229 --> 00:02:14,720

right it's like it's like a really good

49

00:02:18,070 --> 00:02:16,239

uh you also want to keep the ice from

50

00:02:19,670 --> 00:02:18,080

throwing around

51  
00:02:21,350 --> 00:02:19,680  
exactly yeah you don't want you don't

52  
00:02:23,350 --> 00:02:21,360  
want ice forming on this thing no ice

53  
00:02:25,589 --> 00:02:23,360  
neither so uh so this is the the

54  
00:02:27,270 --> 00:02:25,599  
material that you use for installation

55  
00:02:29,110 --> 00:02:27,280  
is really important the foam which is

56  
00:02:30,869 --> 00:02:29,120  
about one inch thick which is part of

57  
00:02:33,509 --> 00:02:30,879  
the thermal protection system you know

58  
00:02:36,710 --> 00:02:33,519  
it protects the tank in two ways it's

59  
00:02:38,790 --> 00:02:36,720  
sitting out there on the launch pad

60  
00:02:40,390 --> 00:02:38,800  
six weeks four weeks you know before

61  
00:02:42,070 --> 00:02:40,400  
launch right so

62  
00:02:44,229 --> 00:02:42,080  
any kind of weather depending on the

63  
00:02:45,750 --> 00:02:44,239

year if it's in january

64

00:02:47,589 --> 00:02:45,760

you know it was gonna be a hell they

65

00:02:49,670 --> 00:02:47,599

took hail damage there when it is and

66

00:02:52,229 --> 00:02:49,680

when they start putting these you know

67

00:02:55,270 --> 00:02:52,239

cryogenic fuels in here that are

68

00:02:57,270 --> 00:02:55,280

extremely cold right well the natural

69

00:03:00,070 --> 00:02:57,280

you know role of

70

00:03:02,309 --> 00:03:00,080

of components is to grow ice and so this

71

00:03:04,470 --> 00:03:02,319

protects against that the foam protects

72

00:03:05,350 --> 00:03:04,480

against ice and frost and those very

73

00:03:07,509 --> 00:03:05,360

cold

74

00:03:09,830 --> 00:03:07,519

ingredients when they start filling the

75

00:03:11,670 --> 00:03:09,840

tank up which takes three hours

76

00:03:14,229 --> 00:03:11,680

prior to launching

77

00:03:16,149 --> 00:03:14,239

but also and then when they launch you

78

00:03:18,949 --> 00:03:16,159

know so the temperature meter is way

79

00:03:21,030 --> 00:03:18,959

over here on the cold side but when they

80

00:03:23,509 --> 00:03:21,040

launch it swings you know when you fire

81

00:03:25,670 --> 00:03:23,519

the engines the foam helps you that way

82

00:03:28,710 --> 00:03:25,680

too because now you're looking at 2000

83

00:03:31,589 --> 00:03:28,720

degrees 2500 degrees and the foam is

84

00:03:33,110 --> 00:03:31,599

protecting the tank there

85

00:03:35,430 --> 00:03:33,120

remember seeing all those uh those

86

00:03:37,110 --> 00:03:35,440

apollo videos when it left off all the

87

00:03:38,470 --> 00:03:37,120

ice breaking up right you wouldn't want

88

00:03:39,910 --> 00:03:38,480

that coming off and uh because the

89

00:03:40,949 --> 00:03:39,920

problems that could damage the shuttle

90

00:03:42,070 --> 00:03:40,959

that's right that's the problem so

91

00:03:43,670 --> 00:03:42,080

that's what he was talking about with

92

00:03:45,990 --> 00:03:43,680

the ice we don't want that coming up on

93

00:03:47,990 --> 00:03:46,000

apollo that was okay because it you know

94

00:03:49,670 --> 00:03:48,000

this way but with ours you have to

95

00:03:51,830 --> 00:03:49,680

protect the thermal protection system of

96

00:03:53,509 --> 00:03:51,840

the of the shuttle so you can't have any

97

00:03:55,670 --> 00:03:53,519

so it's a very tricky engineering

98

00:03:57,110 --> 00:03:55,680

problem so hurry this this line right

99

00:03:59,190 --> 00:03:57,120

here why don't you describe that if you

100

00:04:00,309 --> 00:03:59,200

you know this uh yeah this looks like a

101  
00:04:03,429 --> 00:04:00,319  
cable line or something like that

102  
00:04:07,270 --> 00:04:05,670  
that's part of the pressurization system

103  
00:04:09,350 --> 00:04:07,280  
runs all the way through the aft

104  
00:04:11,830 --> 00:04:09,360  
umbilical runs through your engine

105  
00:04:14,229 --> 00:04:11,840  
assemblies and keeps the pressure a

106  
00:04:16,390 --> 00:04:14,239  
pressure on the uh goes from the aft

107  
00:04:17,990 --> 00:04:16,400  
over all the way to the you can see the

108  
00:04:19,590 --> 00:04:18,000  
pressurization line here that we're

109  
00:04:22,230 --> 00:04:19,600  
looking at right here on the uh for the

110  
00:04:24,150 --> 00:04:22,240  
oxygen tank but then the like kind of a

111  
00:04:25,670 --> 00:04:24,160  
rectangular uh that's a cable tray right

112  
00:04:28,469 --> 00:04:25,680  
yeah that's basically your liquid level

113  
00:04:30,390 --> 00:04:28,479

sensor in interconnects okay

114

00:04:35,270 --> 00:04:30,400

your chem sensor for the nose cone

115

00:04:37,510 --> 00:04:35,280

aspects your lip liquid levels and uh

116

00:04:39,189 --> 00:04:37,520

mint valve actuation uh

117

00:04:40,629 --> 00:04:39,199

signals and things like that and then

118

00:04:43,030 --> 00:04:40,639

that big old what's that how big would

119

00:04:44,310 --> 00:04:43,040

you say that big lo2 feed line is there

120

00:04:45,909 --> 00:04:44,320

rick yeah

121

00:04:48,230 --> 00:04:45,919

that's one of the

122

00:04:50,550 --> 00:04:48,240

that's one of our uh

123

00:04:52,070 --> 00:04:50,560

ablater coated fairings and that's the

124

00:04:54,150 --> 00:04:52,080

one that they put the camera and that's

125

00:04:55,590 --> 00:04:54,160

what you get off yeah yeah oh yeah

126

00:04:58,390 --> 00:04:55,600

that's right and how big is that feed

127

00:04:59,749 --> 00:04:58,400

line that's going on in the 17 17-inch

128

00:05:02,150 --> 00:04:59,759

feed line

129

00:05:05,110 --> 00:05:02,160

but this tank is about to roll

130

00:05:06,629 --> 00:05:05,120

and about 24 hours from now this tank

131

00:05:09,029 --> 00:05:06,639

will be finished

132

00:05:12,070 --> 00:05:09,039

and then we will roll it one mile to the

133

00:05:14,629 --> 00:05:12,080

harbor to the michoud harbor

134

00:05:17,110 --> 00:05:14,639

deepwater harbor and

135

00:05:20,070 --> 00:05:17,120

the barge will meet it there pegasus the

136

00:05:21,990 --> 00:05:20,080

barge and we'll roll it onto the barge

137

00:05:24,550 --> 00:05:22,000

and then we take it to gulfport where

138

00:05:27,110 --> 00:05:24,560

the freedom star the the solid rocket

139

00:05:29,350 --> 00:05:27,120

booster retrieval ship is waiting on it

140

00:05:31,510 --> 00:05:29,360

and it will take it five days tow it

141

00:05:33,270 --> 00:05:31,520

across the gulf of mexico around key

142

00:05:35,110 --> 00:05:33,280

west yeah it goes all the way around up

143

00:05:36,070 --> 00:05:35,120

the atlantic side of florida to the

144

00:05:38,629 --> 00:05:36,080

banana

145

00:05:39,430 --> 00:05:38,639

there's some kind of enterprise

146

00:05:42,629 --> 00:05:39,440

yeah

147

00:05:46,629 --> 00:05:42,639

closed

148

00:05:47,990 --> 00:05:46,639

shortcut they had yeah that's why they

149

00:05:49,990 --> 00:05:48,000

had the main

150

00:05:51,749 --> 00:05:50,000

they blamed them the main flood so they

151  
00:05:54,950 --> 00:05:51,759  
closed that so they can't go down the

152  
00:05:57,029 --> 00:05:54,960  
mississippi river golf outlet mr go

153  
00:05:59,909 --> 00:05:57,039  
mississippi

154  
00:06:01,909 --> 00:05:59,919  
that was a straight 85 mile shot from

155  
00:06:05,029 --> 00:06:01,919  
here to the gulf of mexico

156  
00:06:07,830 --> 00:06:05,039  
and that that let us get the tanks to

157  
00:06:10,710 --> 00:06:07,840  
kennedy space center one day earlier

158  
00:06:13,189 --> 00:06:10,720  
now we have to go down the intercoastal

159  
00:06:15,909 --> 00:06:13,199  
canal which rick was saying so it's it's

160  
00:06:17,830 --> 00:06:15,919  
just added one day to the trip all right

161  
00:06:19,430 --> 00:06:17,840  
there's a tank right there

162  
00:06:21,510 --> 00:06:19,440  
is this one ready to go outside yet or

163  
00:06:24,150 --> 00:06:21,520

no it is okay all right we're gonna go

164

00:06:27,350 --> 00:06:25,189

we're pretty close i mean it's hard to

165

00:06:28,950 --> 00:06:27,360

get an idea of how big but it's huge

166

00:06:31,029 --> 00:06:28,960

oh yeah but we're just seeing just the

167

00:06:33,350 --> 00:06:31,039

top part of it right now

168

00:06:35,270 --> 00:06:33,360

15 stories tall because uh there's a lot

169

00:06:37,189 --> 00:06:35,280

riding on this thing there's a whole lot

170

00:06:38,870 --> 00:06:37,199

a big expensive space shuttle and people

171

00:06:40,550 --> 00:06:38,880

inside of it that's the most important

172

00:06:42,790 --> 00:06:40,560

part of the people inside of it i like

173

00:06:45,909 --> 00:06:42,800

to hear you say that a good man well we

174

00:06:47,510 --> 00:06:45,919

do it for you guys well well thanks

175

00:06:49,589 --> 00:06:47,520

we appreciate it and it doesn't leave

176

00:06:50,950 --> 00:06:49,599

here until it's ready right that's the

177

00:06:52,950 --> 00:06:50,960

great that's the attitude around here

178

00:06:54,390 --> 00:06:52,960

isn't it yeah i know people really

179

00:06:55,990 --> 00:06:54,400

appreciate that the dedication that

180

00:06:58,629 --> 00:06:56,000

everybody has down here you got a good

181

00:07:01,430 --> 00:06:58,639

workforce here yeah that has been

182

00:07:02,950 --> 00:07:01,440

dedicated for many years right and i'm

183

00:07:04,950 --> 00:07:02,960

not sure if everyone understands that

184

00:07:05,830 --> 00:07:04,960

because you know this is a very critical

185

00:07:07,670 --> 00:07:05,840

uh

186

00:07:09,189 --> 00:07:07,680

piece of equipment here this giant tank

187

00:07:10,629 --> 00:07:09,199

with all the fuel in it

188

00:07:13,510 --> 00:07:10,639

and we got to make sure it works right

189

00:07:16,309 --> 00:07:14,550

we're gonna

190

00:07:17,510 --> 00:07:16,319

really be sad when we get down the last

191

00:07:19,670 --> 00:07:17,520

one yeah

192

00:07:21,909 --> 00:07:19,680

but you know all good things must come

193

00:07:24,469 --> 00:07:21,919

to an end apparently so

194

00:07:26,150 --> 00:07:24,479

apparently so so we'll see this is not

195

00:07:30,469 --> 00:07:26,160

the last one though no this is the

196

00:07:33,550 --> 00:07:31,749

someone said this is the third to last

197

00:07:37,110 --> 00:07:33,560

well we have um

198

00:07:39,110 --> 00:07:37,120

et122 which got damaged in the vab back

199

00:07:41,430 --> 00:07:39,120

in uh hurricane katrina

200

00:07:45,189 --> 00:07:41,440

and it's our resurrection tank is that

201  
00:07:46,469 --> 00:07:45,199  
gonna launch i need tank yes so this is

202  
00:07:48,309 --> 00:07:46,479  
where is it who's this one you got you

203  
00:07:50,950 --> 00:07:48,319  
got this one and one other one before

204  
00:07:52,550 --> 00:07:50,960  
the launch i need tank right all right

205  
00:07:54,749 --> 00:07:52,560  
so this this one is destined for the

206  
00:07:56,710 --> 00:07:54,759  
next station that goes after

207  
00:07:58,710 --> 00:07:56,720  
sts-132

208  
00:07:59,749 --> 00:07:58,720  
and everything looks good so far

209  
00:08:01,990 --> 00:07:59,759  
you happy with the way this one's

210  
00:08:03,749 --> 00:08:02,000  
turning oh yeah it looks great yeah all

211  
00:08:05,430 --> 00:08:03,759  
right so you're getting everything just

212  
00:08:06,710 --> 00:08:05,440  
nice so you don't have any anything

213  
00:08:07,990 --> 00:08:06,720

flying off the tank and hitting the

214

00:08:09,189 --> 00:08:08,000

shuttle you wanted to be perfect and

215

00:08:12,390 --> 00:08:09,199

what are the tools you're using you're

216

00:08:14,629 --> 00:08:12,400

the master machinist i'm telling you

217

00:08:17,189 --> 00:08:14,639

and you're working with uh these tools

218

00:08:20,629 --> 00:08:17,199

to do it so these these tools is what

219

00:08:21,670 --> 00:08:20,639

what makes this high-tech tank work

220

00:08:25,430 --> 00:08:21,680

your hands

221

00:08:26,950 --> 00:08:25,440

me ask you a question what do you want

222

00:08:28,230 --> 00:08:26,960

to know two missions why you have one

223

00:08:30,150 --> 00:08:28,240

patch

224

00:08:31,589 --> 00:08:30,160

what do you mean well i got one here

225

00:08:33,029 --> 00:08:31,599

and then i got other flight suits with

226

00:08:34,949 --> 00:08:33,039

the other one you're only supposed to

227

00:08:36,709 --> 00:08:34,959

have one at a time so you know what

228

00:08:38,230 --> 00:08:36,719

happened because some guys have like

229

00:08:39,909 --> 00:08:38,240

show-offs they put a bunch of patches on

230

00:08:41,750 --> 00:08:39,919

themselves below so every mission you

231

00:08:43,990 --> 00:08:41,760

get a new uniform

232

00:08:45,350 --> 00:08:44,000

uh yeah you got a new flight suit plus

233

00:08:46,949 --> 00:08:45,360

sometimes you get a little bigger you

234

00:08:47,910 --> 00:08:46,959

know as you get older and you start

235

00:08:49,430 --> 00:08:47,920

eating more

236

00:08:50,949 --> 00:08:49,440

i don't know you know you're in good

237

00:08:52,470 --> 00:08:50,959

shape but you know for us you come back

238

00:08:53,829 --> 00:08:52,480

from space you start eating and the next

239

00:08:55,590 --> 00:08:53,839

thing you know hey you need a new flight

240

00:08:57,750 --> 00:08:55,600

sir how long are you doing uh only i

241

00:08:59,590 --> 00:08:57,760

only go for two weeks at a time both my

242

00:09:00,550 --> 00:08:59,600

flights are about two weeks

243

00:09:01,910 --> 00:09:00,560

yeah

244

00:09:03,269 --> 00:09:01,920

so

245

00:09:04,710 --> 00:09:03,279

but that's what else you any other

246

00:09:08,710 --> 00:09:04,720

questions

247

00:09:11,509 --> 00:09:10,630

i've been here for uh i've been here 14

248

00:09:13,350 --> 00:09:11,519

years

249

00:09:16,550 --> 00:09:13,360

1996.

250

00:09:18,470 --> 00:09:16,560

how long have you been inverted 29 29.

251  
00:09:19,910 --> 00:09:18,480  
you've been here for the whole thing hey

252  
00:09:21,990 --> 00:09:19,920  
for the whole shuttle program haven't

253  
00:09:22,870 --> 00:09:22,000  
you from the first flight from the first

254  
00:09:25,990 --> 00:09:22,880  
one

255  
00:09:27,350 --> 00:09:26,000  
wow

256  
00:09:29,350 --> 00:09:27,360  
we're headed down to the water we're

257  
00:09:31,030 --> 00:09:29,360  
headed that's where the barges so the

258  
00:09:32,949 --> 00:09:31,040  
process that happens here harry is that

259  
00:09:34,790 --> 00:09:32,959  
you build this fancy tank that we see

260  
00:09:36,389 --> 00:09:34,800  
inside yes sir and then you put it on

261  
00:09:37,750 --> 00:09:36,399  
some kind of truck or something what do

262  
00:09:39,590 --> 00:09:37,760  
you do with it you put it on it on a

263  
00:09:42,230 --> 00:09:39,600

transfer on a transporter and we bring

264

00:09:43,509 --> 00:09:42,240

it very slowly going about one mile an

265

00:09:44,790 --> 00:09:43,519

hour

266

00:09:46,389 --> 00:09:44,800

it takes the same road right yeah

267

00:09:47,990 --> 00:09:46,399

because here it is oh it is the road we

268

00:09:49,590 --> 00:09:48,000

just took and look at this

269

00:09:51,030 --> 00:09:49,600

and then it goes inside of that thing

270

00:09:52,630 --> 00:09:51,040

yes that's the end we drive right in

271

00:09:55,829 --> 00:09:52,640

there

272

00:09:58,310 --> 00:09:55,839

go all right all right but this is what

273

00:10:00,790 --> 00:09:58,320

do you call it uh this is pegasus

274

00:10:03,590 --> 00:10:00,800

pegasus enclosed

275

00:10:05,990 --> 00:10:03,600

it has its own crew the barge does

276

00:10:08,150 --> 00:10:06,000

okay we'll accompany it of course the

277

00:10:11,110 --> 00:10:08,160

barge has no propulsion so it has to be

278

00:10:13,030 --> 00:10:11,120

towed all right and a uh

279

00:10:15,190 --> 00:10:13,040

freedom star one of the solid rocket

280

00:10:17,509 --> 00:10:15,200

booster retrieval ships will tow it it's

281

00:10:19,670 --> 00:10:17,519

not here yet is it it is not here okay

282

00:10:21,990 --> 00:10:19,680

because they're building this big rock

283

00:10:24,470 --> 00:10:22,000

wall and it's a little too big of a ship

284

00:10:28,470 --> 00:10:24,480

for the intracoastal canal so we'll have

285

00:10:30,949 --> 00:10:28,480

two ocean going barges uh tugs excuse me

286

00:10:32,630 --> 00:10:30,959

just take it down to gulfport and then

287

00:10:34,470 --> 00:10:32,640

uh and then when's it when does it pull

288

00:10:37,350 --> 00:10:34,480

away from here it takes about four to

289

00:10:39,829 --> 00:10:37,360

six hours to fasten it down and to get

290

00:10:41,750 --> 00:10:39,839

ready to make sure it's secure

291

00:10:44,630 --> 00:10:41,760

and everything and then it'll where it

292

00:10:46,470 --> 00:10:44,640

is and it's 12 hours to gulfport so will

293

00:10:48,710 --> 00:10:46,480

they will this thing push away on

294

00:10:50,630 --> 00:10:48,720

saturday afternoon yes yes it will

295

00:10:52,870 --> 00:10:50,640

that's our plan do they drive the

296

00:10:53,750 --> 00:10:52,880

transporter right on here yes they do

297

00:10:57,030 --> 00:10:53,760

all right

298

00:11:02,470 --> 00:10:59,990

and uh it will stay on the transporter

299

00:11:05,110 --> 00:11:02,480

you know until until it gets to the

300

00:11:06,870 --> 00:11:05,120

vertical vehicle assembly building at

301

00:11:08,069 --> 00:11:06,880

kennedy space center

302

00:11:09,829 --> 00:11:08,079

wow

303

00:11:11,509 --> 00:11:09,839

big barge i think sure looks like they