



**EPISODE TWO**  
**FAMILY BUSINESS**

1  
00:00:04,610 --> 00:00:03,200  
you helped design how ash not to stay

2  
00:00:06,499 --> 00:00:04,620  
alive and comfortable while working on

3  
00:00:10,730 --> 00:00:06,509  
the moon science is something you test

4  
00:00:13,129 --> 00:00:10,740  
the experiments you get results and that

5  
00:00:15,890 --> 00:00:13,139  
you know modifies the way we look at the

6  
00:00:17,480 --> 00:00:15,900  
world where did all of this stuff come

7  
00:00:19,609 --> 00:00:17,490  
from how did it form what was the

8  
00:00:22,759 --> 00:00:19,619  
process does it happen all the time

9  
00:00:25,579 --> 00:00:22,769  
across the universe or are we somehow

10  
00:00:28,040 --> 00:00:25,589  
unique or at least unusual what does it

11  
00:00:30,829 --> 00:00:28,050  
all mean I'm Katie Atkinson and this is

12  
00:00:33,110 --> 00:00:30,839  
NASA explorers Apollo an audio series

13  
00:00:42,320 --> 00:00:33,120

where we tell stories about past present

14

00:00:44,540 --> 00:00:42,330

and future lunar science lunar science

15

00:00:46,880 --> 00:00:44,550

runs in the family for the petros in

16

00:00:49,400 --> 00:00:46,890

this episode of NASA explorers Apollo

17

00:00:51,380 --> 00:00:49,410

lunar scientists Noah Petro interviews

18

00:00:54,360 --> 00:00:51,390

his father Dennis who was an engineer

19

00:00:59,320 --> 00:00:57,310

[Music]

20

00:01:01,000 --> 00:00:59,330

the moon is a really interesting place

21

00:01:02,620 --> 00:01:01,010

because we've been there there are 12

22

00:01:07,630 --> 00:01:02,630

sets of boot prints on the ground and

23

00:01:10,240 --> 00:01:07,640

you help get them there my name is Noah

24

00:01:11,850 --> 00:01:10,250

Petro and I am the project scientist for

25

00:01:15,070 --> 00:01:11,860

the Lunar Reconnaissance Orbiter and

26  
00:01:17,800 --> 00:01:15,080  
lunar scientists my name is Dennis Petro

27  
00:01:20,950 --> 00:01:17,810  
I worked on the Apollo program as an

28  
00:01:22,450 --> 00:01:20,960  
engineer you talk about families that

29  
00:01:24,520 --> 00:01:22,460  
passed down a business from generation

30  
00:01:26,350 --> 00:01:24,530  
generation we're in the moon business

31  
00:01:35,050 --> 00:01:26,360  
petros are in the moon business and so

32  
00:01:38,020 --> 00:01:35,060  
that's what got passed down let's walk

33  
00:01:40,600 --> 00:01:38,030  
through July 20th 1969 and where were

34  
00:01:43,710 --> 00:01:40,610  
you and how did it feel to have had that

35  
00:01:46,120 --> 00:01:43,720  
experience saying I built this thing and

36  
00:01:48,190 --> 00:01:46,130  
it's working on the moon did you watch

37  
00:01:51,040 --> 00:01:48,200  
it with a different eye than anyone else

38  
00:01:53,080 --> 00:01:51,050

because of your awareness of how

39

00:01:56,320 --> 00:01:53,090

dangerous the whole thing was it was an

40

00:01:58,810 --> 00:01:56,330

incredible sense of accomplishment in a

41

00:02:01,960 --> 00:01:58,820

certain way because this was something

42

00:02:05,740 --> 00:02:01,970

that's kind of hard to do when you think

43

00:02:07,899 --> 00:02:05,750

about it I had been involved in what are

44

00:02:10,419 --> 00:02:07,909

those factors that could actually cause

45

00:02:12,220 --> 00:02:10,429

them not to get to the moon and I'm

46

00:02:16,479 --> 00:02:12,230

sitting there same damn

47

00:02:18,130 --> 00:02:16,489

there they are the Sydenham Dennis was

48

00:02:20,770 --> 00:02:18,140

involved with a crucial aspect of the

49

00:02:22,539 --> 00:02:20,780

moon landing the astronaut suits he was

50

00:02:25,120 --> 00:02:22,549

involved with testing the oxygen system

51  
00:02:27,789 --> 00:02:25,130  
for the astronauts backpacks the initial

52  
00:02:30,520 --> 00:02:27,799  
designs had all been finalized but they

53  
00:02:32,740 --> 00:02:30,530  
were in the testing phase in my part of

54  
00:02:34,930 --> 00:02:32,750  
the program it was like well how much

55  
00:02:38,170 --> 00:02:34,940  
oxygen do you need how much of these

56  
00:02:41,380 --> 00:02:38,180  
other things how many BTUs or calories

57  
00:02:42,880 --> 00:02:41,390  
or these astronauts going to need you

58  
00:02:44,289 --> 00:02:42,890  
helped design how astronauts to stay

59  
00:02:46,690 --> 00:02:44,299  
alive and comfortable while working on

60  
00:02:49,750 --> 00:02:46,700  
the moon well right the object was to

61  
00:02:52,420 --> 00:02:49,760  
humanize it because you can do all the

62  
00:02:54,220 --> 00:02:52,430  
technical stuff about well they're going

63  
00:02:55,690 --> 00:02:54,230

to be there for a day and a half and

64

00:02:57,550 --> 00:02:55,700

they're supposed to do this than the

65

00:02:58,880 --> 00:02:57,560

other thing but can they actually do

66

00:03:02,759 --> 00:02:58,890

that and survive

67

00:03:05,309 --> 00:03:04,020

I don't know if you remember going at

68

00:03:05,759 --> 00:03:05,319

the cradle of aviation museum in

69

00:03:08,550 --> 00:03:05,769

Bethpage

70

00:03:11,130 --> 00:03:08,560

and seeing your your portable life

71

00:03:12,630 --> 00:03:11,140

support system a made and I think the

72

00:03:14,250 --> 00:03:12,640

little story you told me at the time was

73

00:03:16,170 --> 00:03:14,260

that there are the big sheets of metal

74

00:03:17,699 --> 00:03:16,180

that held it all together and you got to

75

00:03:19,920 --> 00:03:17,709

sign a name to them is that right right

76

00:03:22,289 --> 00:03:19,930

that was a no-no because it was in a

77

00:03:24,539 --> 00:03:22,299

clean room kind of concept but if you

78

00:03:26,819 --> 00:03:24,549

went in there with a scribe you know

79

00:03:28,770 --> 00:03:26,829

stainless steel scribe you could write

80

00:03:31,589 --> 00:03:28,780

your name on something that would be

81

00:03:33,240 --> 00:03:31,599

left on the moon if you look at you know

82

00:03:35,819 --> 00:03:33,250

the picture of the backpack you'll see

83

00:03:38,369 --> 00:03:35,829

that flat surface and that was a heat

84

00:03:41,339 --> 00:03:38,379

exchanger but it was also a flat piece

85

00:03:43,619 --> 00:03:41,349

of stainless steel very amenable to

86

00:03:44,819 --> 00:03:43,629

people writing on when I look at any of

87

00:03:47,849 --> 00:03:44,829

the pictures of the Apollo landing sites

88

00:03:49,580 --> 00:03:47,859

you can see those backpacks you can see

89

00:03:52,080 --> 00:03:49,590

the twelve portable life support systems

90

00:03:54,569 --> 00:03:52,090

sitting on the surface 50 years later

91

00:03:56,550 --> 00:03:54,579

that you know someday we go back and we

92

00:04:01,979 --> 00:03:56,560

crack one of those things open there's

93

00:04:03,449 --> 00:04:01,989

going to be Dennis cosign on and I'm

94

00:04:06,059 --> 00:04:03,459

probably one of the few people that has

95

00:04:07,979 --> 00:04:06,069

that very personal connection when I see

96

00:04:10,319 --> 00:04:07,989

those those landing sites that I can

97

00:04:12,180 --> 00:04:10,329

have that personal emotional response to

98

00:04:13,890 --> 00:04:12,190

it as opposed to just a purely Wow it's

99

00:04:15,420 --> 00:04:13,900

you know great exploration site is

100

00:04:18,479 --> 00:04:15,430

there's something there that's very

101  
00:04:20,879 --> 00:04:18,489  
tangible to me very close to me and very

102  
00:04:26,550 --> 00:04:20,889  
real because I know the person who built

103  
00:04:33,480 --> 00:04:29,490  
I think early on you had an interest in

104  
00:04:35,730 --> 00:04:33,490  
curiosity about the whole universe you

105  
00:04:38,610 --> 00:04:35,740  
know your passion for for science and

106  
00:04:40,560 --> 00:04:38,620  
learning was clearly passed on to me and

107  
00:04:42,870 --> 00:04:40,570  
one of the things that most influenced

108  
00:04:45,840 --> 00:04:42,880  
me was when we would do when we go to

109  
00:04:47,970 --> 00:04:45,850  
the Air and Space Museum or the cradle

110  
00:04:50,460 --> 00:04:47,980  
of aviation and to me that opened up

111  
00:04:52,050 --> 00:04:50,470  
this mindset that okay exploration of

112  
00:04:54,840 --> 00:04:52,060  
space exploration of the Moon most

113  
00:04:56,100 --> 00:04:54,850

importantly is a real thing not just yes

114

00:04:57,420 --> 00:04:56,110

that it happened but that there were

115

00:04:59,400 --> 00:04:57,430

people behind it and that you were

116

00:05:01,230 --> 00:04:59,410

behind it you and I would take road

117

00:05:05,300 --> 00:05:01,240

trips and a lot through the the u.s.

118

00:05:07,620 --> 00:05:05,310

Southwest and it's no mystery why

119

00:05:09,659 --> 00:05:07,630

particularly Apollo astronauts trained

120

00:05:11,640 --> 00:05:09,669

in the desert Southwest because it's a

121

00:05:13,590 --> 00:05:11,650

barren landscape much like the moon but

122

00:05:16,440 --> 00:05:13,600

the geology is really awesome and and

123

00:05:19,980 --> 00:05:16,450

and it's a great place to fall in love

124

00:05:22,080 --> 00:05:19,990

with studying the earth or studying

125

00:05:24,510 --> 00:05:22,090

planets is seeing it laid out in front

126

00:05:27,000 --> 00:05:24,520

of you these environments are telling us

127

00:05:28,650 --> 00:05:27,010

something about how the planet works and

128

00:05:32,010 --> 00:05:28,660

and that connection between something

129

00:05:33,690 --> 00:05:32,020

real tangible touching a rock on the

130

00:05:35,730 --> 00:05:33,700

earth or sending people to the moon and

131

00:05:39,590 --> 00:05:35,740

doing the same exact thing was very

132

00:05:42,810 --> 00:05:39,600

impactful and got me here today

133

00:05:46,410 --> 00:05:42,820

[Music]

134

00:05:51,480 --> 00:05:46,420

Noah has a Grail really I think a real

135

00:05:53,300 --> 00:05:51,490

concrete awareness about the reality of

136

00:05:57,840 --> 00:05:53,310

science science is something you test

137

00:06:00,990 --> 00:05:57,850

you do the experiments you get results

138

00:06:03,180 --> 00:06:01,000

and that you know modifies the way we

139

00:06:03,930 --> 00:06:03,190

look at the world for me I'm very proud

140

00:06:11,550 --> 00:06:03,940

of him

141

00:06:13,200 --> 00:06:11,560

as far as carrying the flag and then

142

00:06:15,720 --> 00:06:13,210

when you look at the Apollo program and

143

00:06:18,360 --> 00:06:15,730

look what they did you know we sent 12

144

00:06:22,560 --> 00:06:18,370

of the most highly programmed computers

145

00:06:27,270 --> 00:06:22,570

humans to the moon they all tremendously

146

00:06:29,550 --> 00:06:27,280

successful and you know within four

147

00:06:30,870 --> 00:06:29,560

years we had gone from never having sent

148

00:06:32,130 --> 00:06:30,880

humans the moon to having people living

149

00:06:34,650 --> 00:06:32,140

on the moon for three days driving

150

00:06:38,040 --> 00:06:34,660

around and doing real hardcore field

151  
00:06:40,140 --> 00:06:38,050  
geology but it took engineering to make

152  
00:06:41,820 --> 00:06:40,150  
it happen I hope that people when they

153  
00:06:43,980 --> 00:06:41,830  
look at Apollo and they look at the

154  
00:06:46,800 --> 00:06:43,990  
films the movies the pictures it's not

155  
00:06:48,060 --> 00:06:46,810  
just ok there's Buzz Aldrin standing on

156  
00:06:50,160 --> 00:06:48,070  
the surface of the Moon oh my goodness

157  
00:06:54,090 --> 00:06:50,170  
that's impressive but there's also

158  
00:06:56,490 --> 00:06:54,100  
400,000 people behind the scenes who

159  
00:06:58,460 --> 00:06:56,500  
made that moment happen and that's

160  
00:06:59,999 --> 00:06:58,470  
important

161  
00:07:02,399 --> 00:07:00,009  
[Music]

162  
00:07:05,309 --> 00:07:02,409  
fifty years after the historic moon

163  
00:07:08,040 --> 00:07:05,319

landing Noah is continuing his father's

164

00:07:11,999 --> 00:07:08,050

legacy contributing to the lunar science

165

00:07:13,769 --> 00:07:12,009

they both love the petrol family's

166

00:07:15,989 --> 00:07:13,779

connection to the moon is just one

167

00:07:22,120 --> 00:07:15,999

example of the huge impact that the

168

00:07:27,730 --> 00:07:24,880

we asked you to help NASA tell the story

169

00:07:30,970 --> 00:07:27,740

of Apollo hundreds of people answered

170

00:07:34,240 --> 00:07:30,980

from all over the world here's what

171

00:07:35,290 --> 00:07:34,250

Jenny from Kentucky remembers hi NASA

172

00:07:38,110 --> 00:07:35,300

it's me

173

00:07:40,810 --> 00:07:38,120

Ginny you know fifty years later I got

174

00:07:44,620 --> 00:07:40,820

in such trouble after the moon landing

175

00:07:48,040 --> 00:07:44,630

so here's what happened the morning

176

00:07:50,710 --> 00:07:48,050

after my brothers Bucky and Monty and my

177

00:07:55,120 --> 00:07:50,720

next-door neighbor Melissa and our

178

00:07:58,870 --> 00:07:55,130

friend Reedy and I decided to celebrate

179

00:08:02,980 --> 00:07:58,880

with a lemonade stand we used up all of

180

00:08:05,740 --> 00:08:02,990

my grandmother's aluminum foil to make

181

00:08:08,770 --> 00:08:05,750

space helmets and then we made

182

00:08:12,610 --> 00:08:08,780

eliminating kool-aid using all of the

183

00:08:15,640 --> 00:08:12,620

grandmother's sugar and we set up our

184

00:08:19,300 --> 00:08:15,650

stand on the side of the road and we we

185

00:08:22,420 --> 00:08:19,310

called it homemade moon made lemonade in

186

00:08:24,550 --> 00:08:22,430

kool-aid and we thought we were just the

187

00:08:27,490 --> 00:08:24,560

best in the smartest kids on the whole

188

00:08:32,409 --> 00:08:27,500

planet Earth until my grandmother got

189

00:08:34,839 --> 00:08:32,419

home my goodness she was not happy we

190

00:08:38,020 --> 00:08:34,849

had used all of her precious aluminum

191

00:08:40,240 --> 00:08:38,030

and Oliver precious sugar and goodness

192

00:08:42,580 --> 00:08:40,250

knows how many lemons and you know those

193

00:08:45,540 --> 00:08:42,590

little packets of kool-aid that were

194

00:08:48,810 --> 00:08:45,550

just stashed for special occasions I

195

00:08:53,170 --> 00:08:48,820

don't reckon I sat down for a week I

196

00:08:56,530 --> 00:08:53,180

love this memory of the moon landing so

197

00:08:58,600 --> 00:08:56,540

much and every year when this comes up I

198

00:09:01,930 --> 00:08:58,610

think of it as that homemade mermaid

199

00:09:04,150 --> 00:09:01,940

lemonade and kool-aid and just a Cheers

200

00:09:08,560 --> 00:09:04,160

all of my little friends who helped me

201  
00:09:13,689 --> 00:09:08,570  
make it happen so happy 50th NASA love

202  
00:09:19,040 --> 00:09:16,069  
thanks Jenny for sharing that story with

203  
00:09:22,699 --> 00:09:19,050  
us what do you remember about the moon

204  
00:09:25,250 --> 00:09:22,709  
landing or what space exploration do you

205  
00:09:28,310 --> 00:09:25,260  
hope to see in your lifetime we want to

206  
00:09:30,770 --> 00:09:28,320  
hear your Apollo story visit [nasa.gov](http://nasa.gov)

207  
00:09:34,660 --> 00:09:30,780  
slash Apollo stories to learn more

208  
00:09:39,530 --> 00:09:36,949  
there's still so many questions locked

209  
00:09:42,050 --> 00:09:39,540  
up in these rocks sex I in times just to

210  
00:09:44,389 --> 00:09:42,060  
be study in them so we have a big window

211  
00:09:47,090 --> 00:09:44,399  
a big gap in our understanding of the

212  
00:09:49,819 --> 00:09:47,100  
early Earth and the moon preserves that

213  
00:09:51,410 --> 00:09:49,829

history where did all of this stuff come

214

00:09:53,449 --> 00:09:51,420

from how did it form what was the

215

00:09:56,600 --> 00:09:53,459

process does it happen all the time

216

00:09:59,420 --> 00:09:56,610

across the universe or are we somehow

217

00:09:59,910 --> 00:09:59,430

unique or at least unusual what does it