



BONUS EPISODE:
20 YEARS OF SCIENCE

1
00:00:01,110 --> 00:00:03,300
WHEN WE ARE CALLED TO DO AN
EXPERIMENT, SOMETIMES IT'S

2
00:00:03,300 --> 00:00:04,560
A VERY SHORT LEAD TIME

3
00:00:04,590 --> 00:00:08,450
WE GET A 12 HOUR CALL AND
UH WE'RE IN

4
00:00:08,450 --> 00:00:09,380
MY ADVISOR AND I
WE HAVE TO WORK TOGETHER

5
00:00:09,380 --> 00:00:11,090
HE'S TALKING TO THE
ASTRONAUTS, I'M TALKING

6
00:00:11,090 --> 00:00:14,120
TO THE CADRE AND SO IT'S REALLY
DIFFICULT TO TAKE IT ALL IN

7
00:00:15,780 --> 00:00:16,530
VERY NICE.

8
00:00:16,920 --> 00:00:17,730
VERY GOOD

9
00:00:18,150 --> 00:00:19,920
TRY NOT TO BREAK THEM
UP, BUT THAT'S A VERY

10
00:00:19,920 --> 00:00:20,580
GOOD DISTURBANCE.

11
00:00:21,060 --> 00:00:22,680
AND NOW BACK AND FORTH,
THE OPPOSITE DIRECTION

12

00:00:23,180 --> 00:00:26,689
WHAT'S FUNNY IS I FORGET
WHO I'M TALKING TO

13

00:00:26,689 --> 00:00:28,790
SOMETIMES I'LL HAVE
CONVERSATIONS WHERE IT'S

14

00:00:28,790 --> 00:00:31,550
LIKE, OH YEAH, YOU KNOW, WE
HAD AN EXPERIMENT YESTERDAY

15

00:00:31,550 --> 00:00:32,540
IT WAS ON THE SPACE STATION

16

00:00:32,540 --> 00:00:34,190
WE WERE TALKING TO
THE ASTRONAUT, DOUG,

17

00:00:34,220 --> 00:00:35,360
AND IT'S SO CASUAL

18

00:00:37,040 --> 00:00:39,769
IT'S LIKE MOST PEOPLE
ARE LIKE, WHAT DO YOU DO?

19

00:01:01,065 --> 00:01:03,585
THROUGHOUT THE SEASON OF
NASA EXPLORERS, YOU'VE

20

00:01:03,585 --> 00:01:05,895
SEEN WHAT IT TAKES TO
SEND SCIENCE TO SPACE

21

00:01:05,895 --> 00:01:08,235
THROUGH THE EYES OF ONE
TEAM OF RESEARCHERS,

22

00:01:08,565 --> 00:01:11,715
BUT THEY AREN'T THE ONLY
ONES FOR TWO DECADES.

23

00:01:11,715 --> 00:01:13,605
THE INTERNATIONAL SPACE
STATION HAS HOSTED

24

00:01:13,824 --> 00:01:15,985
SCIENCE FROM THOUSANDS
OF RESEARCHERS

25

00:01:15,985 --> 00:01:16,945
ACROSS THE GLOBE

26

00:01:17,804 --> 00:01:20,744
THE IMPORTANCE OF THE ISS
TO THE RESEARCH COMMUNITY

27

00:01:20,774 --> 00:01:24,015
IS HUGE FROM THE VERY
BASIC PHENOMENON OF TAKING

28

00:01:24,015 --> 00:01:25,335
GRAVITY OUT OF THE EQUATION

29

00:01:25,425 --> 00:01:26,425
IS THAT THE ISS

30

00:01:26,425 --> 00:01:29,505
IS REALLY THE ONLY
PLATFORM WE HAVE RIGHT NOW

31

00:01:29,744 --> 00:01:32,595
THAT GIVES YOU ACCESS,
LONGTERM ACCESS TO A

32

00:01:32,945 --> 00:01:36,005
MICROGRAVITY ENVIRONMENT
YOU CAN DO THE EXPERIMENTS

33

00:01:36,634 --> 00:01:40,804
ON EARTH, BUT THOSE ARE
ALMOST A PRECURSOR TO, OKAY,

34

00:01:40,804 --> 00:01:42,755
NOW LET'S REMOVE GRAVITY
AND SEE WHAT HAPPENS

35

00:01:42,875 --> 00:01:43,715
DOES IT CHANGE?

36

00:01:44,075 --> 00:01:46,285
IF YOU'RE LIKE ME, YOU'RE
A SCIENTIST IS WHO'S

37

00:01:46,285 --> 00:01:50,304
TRYING TO UNRAVEL THE
MYSTERIES OF SCIENCE

38

00:01:50,335 --> 00:01:53,185
AND SOMEONE SHOWS YOU
A SHINY NEW TOOL, WHICH

39

00:01:53,185 --> 00:01:55,164
IS MICROGRAVITY, WHICH
CAN, YOU KNOW, MAKE

40

00:01:55,164 --> 00:01:57,865
SCIENCE DIFFERENT AND
DIFFERENT IS WHAT WE

41

00:01:57,865 --> 00:01:59,175
CONSTANTLY SHOOT FOR

42

00:02:02,550 --> 00:02:05,910
AND DIFFERENT CAN TAKE
TIME BEFORE NEW SCIENTIFIC

43

00:02:05,910 --> 00:02:07,410
DISCOVERIES COULD BE MADE

44

00:02:07,620 --> 00:02:10,560
WE HAD TO TRANSFORM AN
ORBITAL OUTPOST INTO

45

00:02:10,560 --> 00:02:11,880
AN ORBITING LABORATORY

46

00:02:12,829 --> 00:02:16,520
IN THE EARLY DAYS, IT WAS
SO FOCUSED ON BUILDING

47

00:02:16,700 --> 00:02:19,250
CONSTRUCTING STATION
AND MAKING THINGS SAFE

48

00:02:19,620 --> 00:02:22,440
AND THEN WE STARTED
STEPPING UP THE NUMBER

49

00:02:22,440 --> 00:02:25,620
OF HOURS A WEEK THAT WE
CAN USE CREW TIME FOR

50

00:02:25,709 --> 00:02:26,970
EXPERIMENTS AND RESEARCH

51

00:02:27,350 --> 00:02:29,540
THAT WAS A VERY
EXCITING TIME

52

00:02:29,570 --> 00:02:31,310
THE SPACE STATION
WOULD HAVE MORE

53

00:02:31,310 --> 00:02:32,870
CAPABILITIES FOR SCIENCE

54

00:02:33,200 --> 00:02:35,269

THEY WOULD HAVE MORE
EQUIPMENT UP THERE

55

00:02:35,269 --> 00:02:39,019

THEY WOULD HAVE, YOU KNOW,
FREEZERS, GLOVE BOXES,

56

00:02:39,049 --> 00:02:43,040

MICROSCOPES, ET CETERA,
THINGS THAT WE COULD USE

57

00:02:43,040 --> 00:02:46,820

TO EXTEND THE SCOPE OF
OUR SCIENCE SPACE STATION

58

00:02:46,820 --> 00:02:48,440

BECAME A LABORATORY

59

00:02:48,800 --> 00:02:51,290

IT LENDS ITSELF VERY
WELL TO THIS CONCEPT

60

00:02:51,290 --> 00:02:52,880

OF FLYING EXPERIMENT

61

00:02:53,000 --> 00:02:55,400

YOU GET THE RESULTS BACK,
JUST LIKE YOU WOULD BE IN

62

00:02:55,400 --> 00:02:57,770

YOUR OWN LABORATORY AT HOME,
YOU GET MORE QUESTIONS

63

00:02:57,770 --> 00:02:58,640

AS WELL AS ANSWERS

64

00:02:59,320 --> 00:03:01,780

AND DURING THAT TIME,

A LOT WAS LEARNED

65

00:03:02,050 --> 00:03:03,670

A LOT OF SURPRISING
THINGS WERE LEARNED

66

00:03:03,940 --> 00:03:06,760

AND WITH THAT KNOWLEDGE, NOW
WE'RE DEVELOPING EXPERIMENTS

67

00:03:06,760 --> 00:03:08,590

THAT ARE MUCH MORE
ADVANCED IN TERMS OF THEIR

68

00:03:08,590 --> 00:03:09,730

ENGINEERING APPLICATIONS

69

00:03:10,364 --> 00:03:13,214

IT'S BEEN AN EXTRAORDINARY
JOURNEY TO WATCH OVER

70

00:03:13,214 --> 00:03:16,214

THE PAST 20 ODD YEARS,
HOW THIS HAS ALL KIND

71

00:03:16,214 --> 00:03:18,765

OF COME TOGETHER AND
BECOME, I WOULDN'T SAY

72

00:03:18,765 --> 00:03:20,984

ROUTINE BUT ACCESSIBLE

73

00:03:21,404 --> 00:03:22,904

AND THAT'S A REALLY
POWERFUL THING

74

00:03:25,924 --> 00:03:28,355

THE SAME THING THAT GIVES
US NEW INSIGHTS ALSO

75

00:03:28,355 --> 00:03:29,915

CREATES UNIQUE CHALLENGES

76

00:03:30,364 --> 00:03:32,584

MICROGRAVITY CHANGES
THE WAY EVERYTHING

77

00:03:32,584 --> 00:03:34,084

WORKS INCLUDING SCIENCE

78

00:03:35,579 --> 00:03:37,980

WORKING IN SPACE, AS
YOU CAN IMAGINE, HAS

79

00:03:38,040 --> 00:03:39,119

A LOT OF CHALLENGES

80

00:03:39,149 --> 00:03:40,619

EVERYTHING HAS
TO BE COMPACT

81

00:03:40,619 --> 00:03:42,029

IF YOU'RE GOING TO SEND
SOMETHING INTO SPACE,

82

00:03:42,029 --> 00:03:43,109

IT HAS TO BE SMALL

83

00:03:43,290 --> 00:03:45,480

AND LIKE, HOW CAN YOU
FIT LIKE AN ENTIRE LAB

84

00:03:45,510 --> 00:03:48,779

BENCH WORTH OF SCIENCE
INTO SOMETHING, YOU KNOW,

85

00:03:48,839 --> 00:03:49,709

THE SIZE OF YOUR HAND

86

00:03:49,859 --> 00:03:52,109
AND YET WE STILL GET
GREAT INFORMATION

87

00:03:52,109 --> 00:03:54,200
WE STILL ARE
DISCOVERING THINGS,

88

00:03:54,209 --> 00:03:55,109
YOU KNOW, ALL THE TIME

89

00:03:55,200 --> 00:03:56,910
AND I THINK IT'S INCREDIBLE

90

00:03:57,959 --> 00:04:00,299
YOU KNOW, UP UNTIL THE
NASA TWIN STUDY, I WAS AN

91

00:04:00,299 --> 00:04:03,420
EARTH INVESTIGATOR
THE BIGGEST ADAPTATION I HAD

92

00:04:03,420 --> 00:04:05,220
TO MAKE WAS WELL
ON EARTH

93

00:04:05,570 --> 00:04:08,690
THERE IS AN AMPLE SUPPLY
OF ALL OF IT TISSUE,

94

00:04:09,350 --> 00:04:11,239
WHETHER YOU NEED BLOOD
OR YOU NEED URINE

95

00:04:11,570 --> 00:04:14,149
SO WE HAD TO WORK
TOGETHER AND FIGURE OUT

96

00:04:14,149 --> 00:04:15,950

A PLAN ON HOW TO USE

97

00:04:16,560 --> 00:04:19,469
ONE VIAL OF BLOOD INSTEAD
OF 10 VIALS OF BLOOD,

98

00:04:19,740 --> 00:04:22,620
THE STRESS OF THESE PRECIOUS,
PRECIOUS, THESE ARE THE

99

00:04:22,620 --> 00:04:24,479
MOST PRECIOUS SAMPLES
I'VE EVER WORKED WITH,

100

00:04:24,510 --> 00:04:25,469
WAS KIND OF NOVEL

101

00:04:25,950 --> 00:04:29,840
THERE WERE DIFFERENT STUDENTS
THAT ALL GOT TOGETHER

102

00:04:29,840 --> 00:04:31,099
TO CREATE THIS PROJECT

103

00:04:31,159 --> 00:04:34,250
UH, IT WAS REALLY
STRESSING ON EVERY REVIEW

104

00:04:34,280 --> 00:04:36,080
CAUSE OF COURSE, YOU'RE
LIKE, THEY'RE GOING TO

105

00:04:36,080 --> 00:04:38,419
SAY EVERYTHING'S WRONG
AND THEY'RE GONNA BLAME

106

00:04:38,419 --> 00:04:39,440
IT ON ME OR WHATEVER

107

00:04:39,650 --> 00:04:42,109
WE KNEW THAT IT WOULD BE
DIFFICULT, BUT EVERYBODY

108
00:04:42,109 --> 00:04:45,260
THAT JUMPED INTO THE
PROJECT, UM, PULLED THROUGH

109
00:04:45,750 --> 00:04:48,659
AND AT THE END, WE ACHIEVED
A SUCCESSFUL MISSION

110
00:04:48,659 --> 00:04:50,010
SO I THINK THAT'S AWESOME

111
00:04:51,510 --> 00:04:54,230
WHAT WE'VE LEARNED FROM MORE
THAN 3000 SPACE STATION

112
00:04:54,230 --> 00:04:57,230
EXPERIMENTS IS HELPING
US BACK HERE ON EARTH AND

113
00:04:57,230 --> 00:05:00,740
ON OUR QUEST FARTHER INTO
SPACE TO THE MOON AND MARS

114
00:05:01,190 --> 00:05:03,590
THESE EXPERIMENTS ARE
AIDING DRUG DEVELOPMENT

115
00:05:03,590 --> 00:05:06,500
TO FIGHT DISEASES LIKE
ALZHEIMER'S AND PARKINSON'S.

116
00:05:06,930 --> 00:05:08,700
WE'VE LEARNED ABOUT
COMBATING BONE AND

117
00:05:08,700 --> 00:05:11,040

MUSCLE LOSS, WHICH COULD
ASSIST PEOPLE SUFFERING

118

00:05:11,040 --> 00:05:12,360
FROM OSTEOPOROSIS.

119

00:05:12,840 --> 00:05:15,390
WE'VE TESTED HOW TO GROW
PLANTS IN MICROGRAVITY,

120

00:05:15,450 --> 00:05:18,060
A CRITICAL COMPONENT
FOR FEEDING FUTURE SPACE

121

00:05:18,060 --> 00:05:20,550
EXPLORERS, NONE OF THIS
WOULD HAVE BEEN POSSIBLE

122

00:05:20,550 --> 00:05:23,130
WITHOUT THE ASTRONAUTS,
THE HUMANS LIVING AND

123

00:05:23,130 --> 00:05:25,620
WORKING ABOARD THE
INTERNATIONAL SPACE STATION

124

00:05:26,150 --> 00:05:29,659
HAVING THE ASTRONAUTS
THERE TO HELP US WAS A

125

00:05:29,659 --> 00:05:34,060
CRITICAL PART OF BEING ABLE
TO DO MORE COMPLICATED

126

00:05:34,130 --> 00:05:37,580
SCIENCE TO GET HIGHER
SCIENCE YIELD OUT OF THE

127

00:05:37,580 --> 00:05:38,870
SCIENCE THAT WE'RE DOING

128

00:05:38,990 --> 00:05:40,520

THEY WERE INCREDIBLE

129

00:05:40,610 --> 00:05:42,980

AS PEOPLE WHO WERE THERE
TO TROUBLESHOOT YOUR

130

00:05:42,980 --> 00:05:45,170

EXPERIMENTS, SHOULD
YOU NEED ANYTHING

131

00:05:46,360 --> 00:05:48,430

YOU CAN NEVER REPLACE
A SET OF HUMAN HANDS

132

00:05:48,430 --> 00:05:51,310

I DON'T CARE IF IT'S ON
STATION ON THE MOON ON MARS

133

00:05:51,550 --> 00:05:53,520

THERE'S JUST SOMETHING
THAT PEOPLE CAN

134

00:05:53,775 --> 00:05:55,215

ADAPTIVELY DO THAT

135

00:05:55,215 --> 00:05:56,685

YOU'LL NEVER GET
A MACHINE TO DO

136

00:05:57,075 --> 00:06:00,255

YOU CAN COLLECT A LOT OF
DATA WITH ROBOTICS SENSORS,

137

00:06:00,675 --> 00:06:03,555

BUT THERE IS STILL A VERY
BIG ROLE FOR HUMANS TO

138

00:06:03,555 --> 00:06:06,675
PLAY IN BEING ABLE TO
MAKE ON THE FLY DECISIONS

139
00:06:07,065 --> 00:06:08,895
AND THAT HAS A LITTLE BIT
OF A BUBBLE ON THE END

140
00:06:08,895 --> 00:06:10,035
YOU WANT ME TO
FORCE THAT OUT?

141
00:06:10,775 --> 00:06:12,575
IF IT'S POSSIBLE,
IF YOU THINK YOU CAN

142
00:06:12,575 --> 00:06:13,355
DO IT WITH THE TIP

143
00:06:13,385 --> 00:06:15,575
YEAH, WE WOULD APPRECIATE
THAT AT THIS POINT FORWARD,

144
00:06:15,575 --> 00:06:17,225
THIS IS OUR DNA TO SEQUENCE

145
00:06:17,315 --> 00:06:19,745
SO THE MOST WE CAN
RETAIN THE BETTER

146
00:06:20,900 --> 00:06:24,110
IT WAS REWARDING TO BE
ABLE TO PUT MY HANDS

147
00:06:24,110 --> 00:06:26,090
ON AND KNOW THAT WE'RE
DOING PRODUCTIVE WORK

148
00:06:26,330 --> 00:06:29,480
SOMETIMES WE GET

THROWN A CURVE BALL AND

149

00:06:29,510 --> 00:06:30,620
SOMETHING GOES WRONG

150

00:06:32,050 --> 00:06:34,750
STATION HUNTSVILLE ON
TWO FOR TJ AND ABRS

151

00:06:36,130 --> 00:06:38,830
SO NOW THEY GO, ALL RIGHT,
WE GOT TO GET YOU TO GO

152

00:06:38,830 --> 00:06:40,300
INTO THE GUTS OF THIS THING

153

00:06:40,840 --> 00:06:42,340
GO FIND THESE TWO WIRES

154

00:06:42,430 --> 00:06:44,890
HAVE YOU EVER SEEN THOSE
SCARY MOVIES WHERE THE BOMB

155

00:06:44,890 --> 00:06:47,200
DIFFUSER SAYS WHATEVER YOU
DO, DON'T CUT THE RED WIRE

156

00:06:47,530 --> 00:06:49,120
THAT'S KIND OF
WHAT IT FEELS LIKE

157

00:06:49,695 --> 00:06:51,855
YOU'VE GOT SOMEBODY
WHO'S SPENT THEIR LIFE

158

00:06:51,885 --> 00:06:54,015
DEVELOPING THE RESEARCH
THAT YOU'RE WORKING ON.

159

00:06:54,015 --> 00:06:58,275
AND YOU'RE ABOUT TO GO INTO
THE GUTS OF HIS EXPERIMENT,

160
00:06:58,545 --> 00:07:02,085
TRUSTING YOU VERY WELL TO DO
THE RIGHT THING AND NOT CUT

161
00:07:02,085 --> 00:07:04,365
THE WRONG WIRE, BUT THAT'S
THE KIND OF STUFF WE NEED

162
00:07:04,365 --> 00:07:06,575
TO DO WHEN WE START GOING
FARTHER AND FARTHER AWAY

163
00:07:06,605 --> 00:07:09,015
WHEN WE STARTED ENCOUNTERING
ANOMALIES, WE DIDN'T

164
00:07:09,015 --> 00:07:09,975
THINK WERE LIKELY

165
00:07:10,125 --> 00:07:12,225
AND SO THE CREW HAS TO
BE ABLE TO BE ADAPTABLE,

166
00:07:12,225 --> 00:07:13,005
TO BE ABLE TO DO THAT

167
00:07:13,005 --> 00:07:14,895
AND THAT WAS REALLY
EXCITING AND FUN TO

168
00:07:14,895 --> 00:07:15,645
BE ABLE TO ACCOMPLISH

169
00:07:16,830 --> 00:07:18,000
TJ, WE COPY THAT

170

00:07:18,000 --> 00:07:19,920

AND WHO WOULD'VE THOUGHT
A BLOWN FUSE WOULD MAKE SO

171

00:07:19,920 --> 00:07:24,590

MANY PEOPLE SO HAPPY
JEFF HAPPENED TO BE ORBITING

172

00:07:24,680 --> 00:07:27,830

AND LOOKED OUTSIDE OF
THE WINDOW AND SAW THIS

173

00:07:27,830 --> 00:07:29,150

ERUPTION JUST HAPPENING

174

00:07:29,210 --> 00:07:31,430

AND THEN HE SAID, HEY, I
WONDER IF ANYBODY KNOWS

175

00:07:31,430 --> 00:07:32,630

THIS VOLCANO IS ERUPTING

176

00:07:33,080 --> 00:07:38,270

AND SO HE ACTUALLY CALLED
THE USGS AND SAID, HEY,

177

00:07:38,330 --> 00:07:39,860

I SEE A VOLCANO ERUPTING

178

00:07:39,860 --> 00:07:40,820

DO YOU GUYS KNOW ABOUT IT?

179

00:07:41,145 --> 00:07:43,485

FIRST, HE HAD TO CONVINCED
THEM THAT HE WAS ACTUALLY

180

00:07:43,485 --> 00:07:46,335

WHO HE WAS AND WAS
ACTUALLY CALLING THEM

181

00:07:46,335 --> 00:07:47,325
FROM THE SPACE STATION

182

00:07:47,475 --> 00:07:50,085
BUT ONCE HE GOT PAST THAT,
THEY THEN CONFIRMED WITH

183

00:07:50,085 --> 00:07:51,585
OTHER DATA LIKE WELL

184

00:07:51,615 --> 00:07:52,005
YOU'RE RIGHT

185

00:07:52,215 --> 00:07:52,995
IT IS ERUPTING

186

00:07:53,615 --> 00:07:55,805
SO I THINK THOSE ARE SOME
OF THE WAYS IN WHICH THE

187

00:07:55,805 --> 00:07:59,765
ASTRONAUTS JUST PLAY AN
INCREDIBLY VALUABLE ROLE

188

00:07:59,795 --> 00:08:01,715
WHEN THEY'RE UP THERE
HELPING US WITH THE

189

00:08:01,715 --> 00:08:02,915
EXPERIMENTS THAT WE DO

190

00:08:16,025 --> 00:08:18,785
THESE PAST TWO DECADES
OF MICROGRAVITY SCIENCE.

191

00:08:18,905 --> 00:08:21,785
THEY'RE JUST THE BEGINNING,
THE START OF HUMANITY'S

192

00:08:21,785 --> 00:08:24,905
CONTINUOUS PRESENCE IN
SPACE AND THE IMPACT OF

193

00:08:24,905 --> 00:08:27,485
THE RESEARCH AND THIS NOVEL
ENVIRONMENT IS ALREADY

194

00:08:27,485 --> 00:08:28,955
BEING FELT AROUND THE WORLD

195

00:08:30,675 --> 00:08:33,975
I THINK MOST PEOPLE WOULD
NOT REALIZE HOW IMPACTED

196

00:08:33,975 --> 00:08:35,445
THEIR LIFE IS BY SPACE

197

00:08:35,534 --> 00:08:37,605
THERE'S A FINITE NUMBER
OF EXPERIMENTS, BUT

198

00:08:37,605 --> 00:08:40,034
THAT IS FINITE NUMBER OF
EXPERIMENTS IN A VERY,

199

00:08:40,034 --> 00:08:41,414
VERY SMART COMMUNITY

200

00:08:41,835 --> 00:08:43,635
THAT'S VERY GOOD AT
SHARING THE RESULTS

201

00:08:43,664 --> 00:08:46,095
THERE IS A REAL SENSE
OF THE BETTERMENT OF

202

00:08:46,095 --> 00:08:47,385

HUMANITY IN SPACE

203

00:08:47,565 --> 00:08:49,875

YOU KNOW, IT'S ONE PLACE WE
CAN ALL REALLY COLLABORATE

204

00:08:49,875 --> 00:08:51,105

AND ALL REALLY GET ALONG

205

00:08:51,905 --> 00:08:53,975

I THINK IT'S SAFE TO
SAY THAT MICROGRAVITY

206

00:08:54,360 --> 00:08:58,280

UM, HAS ALLOWED WRITING
SEVERAL NEW TEXTBOOKS

207

00:08:58,280 --> 00:09:01,430

AND THE MORE WE HAVE MORE AND
MORE SCIENTISTS WORKING

208

00:09:01,430 --> 00:09:04,939

IN DIFFERENT ARENAS TO
HELP INFORM THE SCIENCE

209

00:09:05,000 --> 00:09:07,939

I THINK THE BETTER IT WILL
BE FOR THE, FOR THE SAFETY

210

00:09:08,240 --> 00:09:11,480

AND HEALTH OF THE ASTRONAUTS
AND THE PEOPLE THAT FOLLOW

211

00:09:11,750 --> 00:09:14,540

WE ARE JUST AT THE
TIP OF THE ICEBERG

212

00:09:14,569 --> 00:09:17,420

WE HAVE A LOT MORE
INFORMATION THAT WE'RE

213

00:09:17,420 --> 00:09:18,380
GOING TO FIND OUT

214

00:09:18,849 --> 00:09:21,189
A LOT MORE INFORMATION
THAT WE'RE GOING TO NEED

215

00:09:21,189 --> 00:09:24,280
TO FIND OUT IN ORDER
TO GET US PREPARED FOR

216

00:09:24,280 --> 00:09:25,599
LONGTERM EXPLORATION

217

00:09:25,599 --> 00:09:29,310
AS, AS WE, HUMANS ARE ALWAYS
EXCITED TO DO SPACE STATION

218

00:09:29,310 --> 00:09:32,969
NOW IS ACTING LIKE A TEST
BED, THE PROVING GROUND

219

00:09:32,969 --> 00:09:36,270
FOR NEW DEVELOPMENT, NEW
SYSTEM HARDWARE, AS WELL AS

220

00:09:36,270 --> 00:09:38,069
HOW WE'RE GOING TO BE DOING
RESEARCH AND WHAT KIND OF

221

00:09:38,069 --> 00:09:40,709
RESEARCH WE WANT TO BE ABLE
TO DO IN A NEAR ENVIRONMENT,

222

00:09:40,709 --> 00:09:43,770
YOU KNOW, 240 MILES
ABOVE THE SURFACE VERSUS

223

00:09:44,430 --> 00:09:47,370
SERIOUSLY ALONG DISTANCE
AWAY WHERE THERE'S TIME

224
00:09:47,370 --> 00:09:50,010
DELAYS UP TO HALF AN
HOUR ISH THAT WE NEED

225
00:09:50,010 --> 00:09:51,120
TO BE PRACTICING FOR

226
00:09:51,450 --> 00:09:52,860
AND NOW'S THE TIME TO
BE ABLE TO DO THAT

227
00:09:53,450 --> 00:09:55,580
YOU KNOW, I WOULD SAY
BEFORE I STARTED WORKING

228
00:09:55,580 --> 00:09:58,460
AT THE LAB, IT WAS KIND
OF AN ABSTRACT IDEA AND

229
00:09:58,460 --> 00:10:00,500
THERE WAS ALWAYS THE JOKE
ABOUT, OH YEAH, HUMANS

230
00:10:00,500 --> 00:10:03,650
WILL GO TO MARS AND IT
DIDN'T REALLY FEEL REAL

231
00:10:04,100 --> 00:10:05,480
AND NOW IT FEELS REAL

232
00:10:05,780 --> 00:10:08,390
AND WHAT'S INCREDIBLE
IS, YOU KNOW, I

233
00:10:08,390 --> 00:10:09,650
WILL HAVE A SMALL.

234

00:10:10,785 --> 00:10:11,535

A PIECE OF THAT

235

00:10:12,995 --> 00:10:16,565

I LIKE TO THINK THAT SOME
OF THE WORK THAT IS BEING

236

00:10:16,565 --> 00:10:19,895

DONE ON THE SPACE STATION
LAYS THE FOUNDATION FOR

237

00:10:19,895 --> 00:10:22,655

US TO BE SUCCESSFUL ON
ANOTHER PLANETARY SURFACE

238

00:10:23,135 --> 00:10:24,485

WILL I EVER GET THERE?

239

00:10:24,815 --> 00:10:27,995

NO, IT'S NOT LIKELY, BUT
I DO HOPE THAT SOMEDAY

240

00:10:28,145 --> 00:10:30,275

THAT SOMEBODY THINKS
BACK ON , WOW

241

00:10:30,599 --> 00:10:33,540

IT'S REALLY GREAT THAT YOU
LEARNED ABOUT X, Y, AND Z

242

00:10:33,540 --> 00:10:36,449

THINGS FROM THE PAUL AND
FERL RESEARCH, BECAUSE

243

00:10:36,449 --> 00:10:38,339

WE'D NEVER BE SUCCESSFUL
ON MARS WITH THAT

244

00:10:42,140 --> 00:10:44,180
WE'LL LEARN MORE AND
MORE, THE FARTHER

245
00:10:44,180 --> 00:10:45,109
AND FARTHER WE GO

246
00:10:45,530 --> 00:10:47,510
THE FIRST STEPPING STONE
THOUGH, IS THE PROVING