



1
00:00:00,620 --> 00:00:02,060
>> GOOD MORNING, EVERYBODY.

2
00:00:02,060 --> 00:00:03,630
WELCOME TO THE NATIONAL PRESS
CLUB.

3
00:00:03,630 --> 00:00:07,629
MY NAME IS JOHN HUGHES I'M AN
EDITOR AT BLOOMBERG FIRST WORD

4
00:00:07,629 --> 00:00:11,500
THAT'S BLOOMBERG'S BREAKING NEWS
DESK HERE IN WASHINGTON AND I'M

5
00:00:11,500 --> 00:00:14,240
THE PRESIDENT OF THE NATIONAL
PRESS CLUB.

6
00:00:14,240 --> 00:00:17,860
WE HAVE A HISTORIC DAY HERE IN
THE NATIONAL PRESS CLUB.

7
00:00:17,860 --> 00:00:21,310
OUR GUEST LIVE VIA VIDEO LINK
FROM THE INTERNATIONAL SPACE

8
00:00:21,310 --> 00:00:25,890
STATION IS ASTRONAUT SCOTT
KELLY.

9
00:00:25,890 --> 00:00:30,040
HERE IN THE BALLROOM NEXT TO ME
WE WELCOME ASTRONAUTS MARK KELLY

10
00:00:30,040 --> 00:00:31,560
AND TERRY IT'S VERY.

11
00:00:31,560 --> 00:00:35,040

FIRST I WANT TO INTRODUCE OUR
DISTINGUISHED HEAD TABLE.

12
00:00:35,040 --> 00:00:39,670
THIS TABLE INCLUDES CLUB MEMBERS
AND GUESTS OF OUR SPEAKERS FROM

13
00:00:39,670 --> 00:00:43,660
THE AUDIENCE' RIGHT, DAVID
SHEPHERDSON WASHINGTON BUREAU

14
00:00:43,660 --> 00:00:46,550
CHIEF FOR THE DETROIT NEWS.

15
00:00:46,550 --> 00:00:50,579
ROBERT KOONTZ DEPUTY NEWS EDITOR
FOR PHYSICAL SCIENCE AT THE

16
00:00:50,579 --> 00:00:52,230
JOURNAL SCIENCE.

17
00:00:52,230 --> 00:00:56,769
COLONEL KATIE COLEMAN A NASA
ASTRONAUT.

18
00:00:56,769 --> 00:00:58,539
FRANK MORNING JR.

19
00:00:58,539 --> 00:01:02,269
EDITOR FOR
AVIATION WEEK.

20
00:01:02,269 --> 00:01:09,580
JERRY RIMSKY
CURRENT CHAIRMAN OF

21
00:01:09,580 --> 00:01:12,340
THE SPEAKER'S COMMITTEE.

22

00:01:12,340 --> 00:01:18,360
DANIEL SELNICK, PRESS CLUB
MEMBER WHO ORGANIZED THIS

23
00:01:18,360 --> 00:01:19,820
MORNING'S BREAKFAST.

24
00:01:19,820 --> 00:01:21,190
THANK YOU, DANNY.

25
00:01:21,190 --> 00:01:27,250
CAPTAIN SAMANTHA FERETTI A
EUROPEAN SPACE AGENCY ASTRONAUT.

26
00:01:27,250 --> 00:01:32,880
ANDRE SETOFF BUREAU CHIEF FOR
TASK THE NEWS AGENCY OF RUSSIA.

27
00:01:32,880 --> 00:01:35,520
A REPORTER.

28
00:01:35,520 --> 00:01:42,840
TOM McMAHON, VICE PRESIDENT OF
ADVOCACY AND PUBLIC AFFAIRS FOR

29
00:01:42,840 --> 00:01:46,310
UNMANNED VEHICLE SYSTEMS
INTERNATIONAL AND A NATIONAL

30
00:01:46,310 --> 00:01:48,280
PRESS CLUB BOARD MEMBER.

31
00:01:48,280 --> 00:01:53,520
WELCOME TO YOU ALL.

32
00:01:53,520 --> 00:01:56,910
[APPLAUSE]
I ALSO WANT TO WELCOME OUR

33

00:01:56,910 --> 00:02:00,550
C-SPAN AND PUBLIC RADIO
AUDIENCES AND OUR LIVE AUDIENCES

34
00:02:00,550 --> 00:02:03,210
WATCHING AROUND THE WORLD ON THE
INTERNET.

35
00:02:03,210 --> 00:02:08,810
CAN YOU FOLLOW THE ACTION ON
TWITTER, USE THE #NPCLIVE.

36
00:02:08,810 --> 00:02:15,829
#NPCLIVE ON TWITTER.
100 YEARS AGO ONE OF THE FIRST

37
00:02:15,829 --> 00:02:19,269
TRANSCONTINENTAL TELEPHONE CALLS
WAS MADE FROM THE NATIONAL PRESS

38
00:02:19,269 --> 00:02:23,269
CLUB, A PHOTO ON THE WALL
UPSTAIRS DOCUMENTS THAT HISTORIC

39
00:02:23,269 --> 00:02:24,269
MOMENT.

40
00:02:24,269 --> 00:02:26,909
I WANT ALSO MARKED THE FIRST
TIME THAT A HIGH RANKING U.S.

41
00:02:26,909 --> 00:02:30,640
OFFICIAL WAS PHOTOGRAPHED AT THE
NATIONAL PRESS CLUB BECAUSE IT

42
00:02:30,640 --> 00:02:34,940
WAS THEN SECRETARY OF STATE
WILLIAM JENNINGS BRYAN WHO MADE

43
00:02:34,940 --> 00:02:37,900

THAT HISTORIC CALL TO SAN FRANCISCO.

44
00:02:37,900 --> 00:02:43,080
EARLIER THIS YEAR, VINCE SURF WHO HAS BEEN DOING SOME WORK FOR

45
00:02:43,080 --> 00:02:48,680
NASA ASKED THE QUESTION WHAT TO BE WITH 2015 EQUIVALENT OF THAT

46
00:02:48,680 --> 00:02:51,689
1915 PHONE CALL?

47
00:02:51,689 --> 00:02:56,049
WELL, SOME CONVERSATIONS THAT RESULTED FROM THAT QUESTION AND

48
00:02:56,049 --> 00:03:00,040
SOME COOPERATION FROM NASA LED US HERE TODAY FOR ANOTHER FIRST

49
00:03:00,040 --> 00:03:03,950
FOR THE NATIONAL PRESS CLUB, A LIVE PRESS CONFERENCE, LIVE

50
00:03:03,950 --> 00:03:08,700
MESSAGING GOING UP TO SPACE AND IT'S A HISTORIC DAY.

51
00:03:08,700 --> 00:03:12,340
IT RAISES THE QUESTION FOR THE NATIONAL PRESS CLUB PRESIDENT OF

52
00:03:12,340 --> 00:03:16,950
2115 THAT IS WHO ARE YOU GOING TO CALL AND HOW FAR AWAY ARE

53
00:03:16,950 --> 00:03:18,549
YOU GOING TO REACH?

54

00:03:18,549 --> 00:03:24,590

SO IT'S VERY FASCINATING THAT
WE'RE HERE TODAY AND I WANT TO

55

00:03:24,590 --> 00:03:29,870

REMINDE YOU ALL OUR ASTRONAUT IN
SPACE IS SCOTT KELLY.

56

00:03:29,870 --> 00:03:35,739

KELLY WENT TO THE SPACE STATION
IN MAY TO BEGIN A 342 DAY STINT

57

00:03:35,739 --> 00:03:40,739

THERE, AND THAT WILL BE -- I'M
SORRY -- THAT WAS MARCH NOT MAY,

58

00:03:40,739 --> 00:03:43,450

THIS IS HIS BROTHER WHO JUST
CORRECTED ME.

59

00:03:43,450 --> 00:03:47,590

THIS WILL BE THE LONGEST EVER
STINT BY A U.S. ASTRONAUT.

60

00:03:47,590 --> 00:03:52,609

AND AS OF TODAY HE'S JUST UNDER
HALFWAY POINT TO MAKING HISTORY.

61

00:03:52,609 --> 00:03:55,809

HERE ON THE GROUND WE HAVE
SCOTT'S TWIN BROTHER, A RETIRED

62

00:03:55,809 --> 00:03:59,530

NASA ASTRONAUT CAPTAIN MARK
KELLY AND HE'S UNDERGOING A

63

00:03:59,530 --> 00:04:03,040

STUDY WITH HIS BROTHER TO
DETERMINE THE EFFECTS OF LONG

64

00:04:03,040 --> 00:04:06,579

DURATION SPACE FLIGHT ON THE
HUMAN BODY.

65

00:04:06,579 --> 00:04:11,109

WE ALSO HAVE HERE ON EARTH AIR
FORCE COLONEL TERRY VIRTS WHO IN

66

00:04:11,109 --> 00:04:15,710

JUNE WAS THE MOST RECENT
ASTRONAUT TO RETURN FROM THE

67

00:04:15,710 --> 00:04:18,010

INTERNATIONAL SPACE STATION.

68

00:04:18,010 --> 00:04:22,009

SO WE WELCOME OUR ASTRONAUTS
HERE ON THE GROUND AND I EXPECT

69

00:04:22,009 --> 00:04:26,090

THAT IN ABOUT A MINUTE WE WILL
BE HEARING FROM THE

70

00:04:26,090 --> 00:04:28,980

INTERNATIONAL SPACE STATION.

71

00:04:28,980 --> 00:04:33,780

WHAT YOUR GOING TO SAY TO YOUR
BROTHER IF YOU'RE ABLE TO SEND A

72

00:04:33,780 --> 00:04:35,080

MESSAGE TO HIM THIS MORNING?

73

00:04:35,080 --> 00:04:37,500

>> YOU WANT ME TO SAY IT TWICE?

74

00:04:37,500 --> 00:04:41,260

[LAUGHTER]

>> WAIT UNTIL WE GET HIM ON THE

75

00:04:41,260 --> 00:04:42,260
SCREEN.

76

00:04:42,260 --> 00:04:43,260
WE'LL BE SURPRISED.

77

00:04:43,260 --> 00:04:44,780
>> I TALKED TO HIM YESTERDAY.

78

00:04:44,780 --> 00:04:48,120
WE CAUGHT UP A LITTLE BIT ON
WHAT'S BEEN GOING ON.

79

00:04:48,120 --> 00:04:51,150
I HAD THE OPPORTUNITY TO --
THERE'S A PHONE ON THE SPACE

80

00:04:51,150 --> 00:04:54,150
STATION FOR FOLKS THAT DON'T
KNOW THAT.

81

00:04:54,150 --> 00:04:56,090
IT'S KIND OF LIKE AN INTERNET
CALL.

82

00:04:56,090 --> 00:04:58,090
THERE HE IS.

83

00:04:58,090 --> 00:04:59,420
>> THERE'S SCOTT.

84

00:04:59,420 --> 00:05:00,790
>> SCOTT, CAN YOU HEAR US?

85

00:05:00,790 --> 00:05:05,820
>> ARE YOU READY FOR THE EVENT?

86

00:05:05,820 --> 00:05:07,229

>> I'M READY FOR THE EVENT.

87

00:05:07,229 --> 00:05:12,889

>> NATIONAL PRESS CLUB THIS IS
MISSION CONTROL HOUSTON PLEASE

88

00:05:12,889 --> 00:05:13,889

CALL STATION FOR VOICE CHECK.

89

00:05:13,889 --> 00:05:15,389

>> STATION THIS IS NATIONAL
PRESS CLUB.

90

00:05:15,389 --> 00:05:18,199

HOW DO YOU HEAR ME?

91

00:05:18,199 --> 00:05:21,490

>> I HAVE YOU LOUD AND CLEAR.

92

00:05:21,490 --> 00:05:23,699

WELCOME ABOARD THE SPACE
STATION.

93

00:05:23,699 --> 00:05:25,020

>> WELCOME.

94

00:05:25,020 --> 00:05:27,389

THANKS FOR JOINING US, SCOTT.

95

00:05:27,389 --> 00:05:29,009

WE HAVE A FULL ROOM HERE.

96

00:05:29,009 --> 00:05:32,650

I KNOW IT'S AROUND LUNCH TIME UP
THERE.

97

00:05:32,650 --> 00:05:34,580

WE JUST HAD BREAKFAST.

98

00:05:34,580 --> 00:05:41,169

COULD YOU TELL US WHAT YOU'RE
DOING TODAY?

99

00:05:41,169 --> 00:05:44,169

>> FIRST OF ALL, IT'S GREAT TO
BE HERE WITH YOU GUYS TODAY.

100

00:05:44,169 --> 00:05:47,889

I KNOW YOU'RE HAVING BREAKFAST
BECAUSE BOTH MY BROTHER AND

101

00:05:47,889 --> 00:05:50,379

TERRY VIRTS THERE SENT ME
PICTURES OF THEIR FOOD.

102

00:05:50,379 --> 00:05:54,520

I GUESS THEY ARE TRYING TO MAKE
ME FEEL BAD ABOUT WHAT WE HAVE

103

00:05:54,520 --> 00:05:56,349

TO EAT UP HERE.

104

00:05:56,349 --> 00:05:59,319

BUT TODAY IS ACTUALLY A DAY OFF
FOR US BECAUSE WE HAD SOME CREW

105

00:05:59,319 --> 00:06:04,930

MEMBERS DEPARTING LATE LAST
WEEK, SO TODAY IS ACTUALLY A

106

00:06:04,930 --> 00:06:06,960

FREE DAY.

107

00:06:06,960 --> 00:06:09,410

>> AND WHAT DO YOU DO ON YOUR
DAY OFF ON THE INTERNATIONAL

108
00:06:09,410 --> 00:06:14,429
SPACE STATION?

109
00:06:14,429 --> 00:06:18,330
>> YOU KNOW, WE HAVE A LOT OF
WORK UP HERE WITH OVER 400

110
00:06:18,330 --> 00:06:22,360
DIFFERENT SCIENCE EXPERIMENTS
DOING ON THROUGHOUT THE YEAR.

111
00:06:22,360 --> 00:06:26,009
WE DO A LOT OF WORK ON THE
DIFFERENT SYSTEMS THAT KEEP US

112
00:06:26,009 --> 00:06:27,240
ALIVE.

113
00:06:27,240 --> 00:06:32,710
SO MOSTLY ON THE DAY OFF IT'S A
TIME TO REST AND RECOVER FROM

114
00:06:32,710 --> 00:06:34,270
THE VERY HECTIC SCHEDULE.

115
00:06:34,270 --> 00:06:39,360
I GENERALLY TAKE A LOT OF
PICTURES OF EARTH, DO E-MAIL,

116
00:06:39,360 --> 00:06:41,580
MAYBE WATCH SOMETHING ON TV.

117
00:06:41,580 --> 00:06:45,340
YESTERDAY WE WERE WATCHING THE
TEXAN GAME AND THE BRONCOS

118
00:06:45,340 --> 00:06:46,970
GAME LATER.

119

00:06:46,970 --> 00:06:48,949

THAT WAS NICE.

120

00:06:48,949 --> 00:06:54,230

>> SO YOU'RE ABOUT HALFWAY TO
YOUR YEAR LONG GOAL.

121

00:06:54,230 --> 00:06:55,820

HOW DO YOU FEEL?

122

00:06:55,820 --> 00:07:00,569

WHAT EFFECTS HAVE MICROGRAVITY
HAD ON YOU SO FAR IN THIS ALMOST

123

00:07:00,569 --> 00:07:03,370

SIX MONTH PERIOD?

124

00:07:03,370 --> 00:07:05,290

>> YES.

125

00:07:05,290 --> 00:07:08,610

SO, YOU KNOW, I FEEL PRETTY GOOD
OVERALL.

126

00:07:08,610 --> 00:07:12,620

I DEFINITELY RECOGNIZE THAT I'VE
BEEN UP HERE A LONG TIME AND

127

00:07:12,620 --> 00:07:15,820

HAVE, YOU KNOW, JUST AS LONG
AHEAD OF ME.

128

00:07:15,820 --> 00:07:18,630

BUT I FEEL, YOU KNOW, POSITIVE
ABOUT IT.

129

00:07:18,630 --> 00:07:23,960

I THINK, YOU KNOW, IF I MANAGE
MY WORK, PACE OF WORK AND ENERGY

130

00:07:23,960 --> 00:07:27,710

RIGHT I'LL HAVE, YOU KNOW,
ENOUGH IN THE TANK TO GET TO THE

131

00:07:27,710 --> 00:07:28,710

END.

132

00:07:28,710 --> 00:07:29,710

I'M PRETTY SURE I WILL.

133

00:07:29,710 --> 00:07:33,620

AS FAR AS PHYSICALLY, YOU KNOW I
FEEL GOOD.

134

00:07:33,620 --> 00:07:36,830

YOU KNOW WE HAVE SOME PRETTY
GOOD EXERCISE EQUIPMENT UP HERE.

135

00:07:36,830 --> 00:07:39,870

BUT THERE ARE A LOT OF EFFECTS
OF THIS ENVIRONMENT THAT WE

136

00:07:39,870 --> 00:07:46,020

CAN'T SEE OR FEEL, LIKE BONE
LOSS, EFFECTS ON OUR VISION,

137

00:07:46,020 --> 00:07:51,780

GENETICS, RNA, DNA PROTEINS AND
THAT'S WHY WE'RE STEW DIG THIS

138

00:07:51,780 --> 00:07:55,199

MYSELF AND MISHA ON THIS ONE
YEAR FLIGHT.

139

00:07:55,199 --> 00:07:58,240

THE JURY IS OUT ON THAT.

140

00:07:58,240 --> 00:08:04,259

WE HAVE TO GET THE DATA AND HAVE
THE SCIENTISTS ANALYZE IT AND

141

00:08:04,259 --> 00:08:08,389
THEN, YOU KNOW, SUBMIT THE
RESULTS FOR PEER REVIEW, THE

142

00:08:08,389 --> 00:08:09,780
STUFF THAT SCIENTISTS DO.

143

00:08:09,780 --> 00:08:13,699
SO HOPEFULLY WE'LL FIND OUT SOME
GREAT THINGS ABOUT ME AND MY

144

00:08:13,699 --> 00:08:16,759
COLLEAGUES SPENDING A YEAR IN
SPACE.

145

00:08:16,759 --> 00:08:20,060
>> SO THERE'S A LOT OF
ATTENTION, A LOT OF INTEREST IN

146

00:08:20,060 --> 00:08:21,650
GETTING TO MARS.

147

00:08:21,650 --> 00:08:28,369
HOW WILL YOUR EFFORT UP THERE
HELP US GET TO MARS?

148

00:08:28,369 --> 00:08:35,469
>> SO, A LOT OF THE STUDIES
WE'RE DOING FOCUSES ON, YOU

149

00:08:35,469 --> 00:08:39,219
KNOW, PARTICULARLY ME AND MY
RUSSIAN COLLEAGUE MIKHAIL

150

00:08:39,219 --> 00:08:44,430
KORNIENKO LONGER DURATION SPACE
FLIGHT THAN WE'VE DONE BEFORE.

151

00:08:44,430 --> 00:08:47,459

THIS IS AN INCREDIBLE FACILITY
WE HAVE, THE INTERNATIONAL SPACE

152

00:08:47,459 --> 00:08:52,880

STATION HAS A LOT OF CAPABILITY
TO COLLECT DATA ON US.

153

00:08:52,880 --> 00:08:54,340

YOU KNOW WE HAVE AN ULTRASOUND.

154

00:08:54,340 --> 00:08:56,990

WE HAVE THESE DEVICES THAT
MEASURE OUR VISION.

155

00:08:56,990 --> 00:09:01,630

NEXT WEEK WE'LL DO A LOT OF THIS
IMAGING AND DATA COLLECTION AND

156

00:09:01,630 --> 00:09:07,279

A RUSSIAN DEVICE THAT PULLS THE
BLOOD DOWN TOWARDS OUR FEET.

157

00:09:07,279 --> 00:09:10,399

LOWER BODY NEGATIVE PRESSURE
DEVICE.

158

00:09:10,399 --> 00:09:14,110

AND, YOU KNOW, FROM THESE
EXPERIMENTS, WE'LL HOPEFULLY

159

00:09:14,110 --> 00:09:19,089

FIND OUT IF THERE ARE ANY CLIFFS
OUT THERE, IF OUR VISION GETS

160

00:09:19,089 --> 00:09:22,150

SIGNIFICANTLY WORSE, MAYBE
AFTER, YOU KNOW, NINE MONTHS OR

161

00:09:22,150 --> 00:09:26,100

A YEAR AND EVEN THOUGH THE
RUSSIANS HAVE FLOWN ON BOARD THE

162

00:09:26,100 --> 00:09:32,029

MIR SPACE STATION FOR A YEAR OR
LONGER IN A COUPLE OF CASES THEY

163

00:09:32,029 --> 00:09:36,320

DIDN'T HAVE THE TECHNOLOGY WE
HAVE TODAY TO FIGURE THIS OUT.

164

00:09:36,320 --> 00:09:40,459

YOU KNOW, THE SPACE STATION IS A
GREAT EXPERIMENT IN SUSTAINABLE

165

00:09:40,459 --> 00:09:44,209

ENERGY AND LIFE SUPPORT
EQUIPMENT AND UNDERSTANDING, YOU

166

00:09:44,209 --> 00:09:46,970

KNOW, HOW THAT WORKS AND HOW WE
CAN, YOU KNOW, MAINTAIN

167

00:09:46,970 --> 00:09:50,210

OURSELVES WITH THESE SYSTEMS FOR
LONGER PERIODS OF TIME.

168

00:09:50,210 --> 00:09:53,110

BOTH OF THOSE THINGS WILL HELP
US GO TO MARS SOME DAY AND

169

00:09:53,110 --> 00:09:56,410

HOPEFULLY IN THE NOT TOO DISTANT
FUTURE.

170

00:09:56,410 --> 00:10:00,110

>> AS PART OF WHAT'S HAPPENING
YOU'RE UNDERGOING A TWIN STUDY

171

00:10:00,110 --> 00:10:03,600

ALONG WITH YOUR BROTHER HERE ON
THE GROUND.

172

00:10:03,600 --> 00:10:04,980

EXPLAIN HOW THAT IS WORKING.

173

00:10:04,980 --> 00:10:09,940

DO YOU HAVE ANY RESULTS ON THE
TWIN STUDIES SO FAR, ANYTHING

174

00:10:09,940 --> 00:10:15,779

YOU CAN SHARE OR WON'T ANY OF
THIS BE KNOWN UNTIL AFTER YOUR

175

00:10:15,779 --> 00:10:23,090

EXPERIENCE IS DONE AND YOU
ANALYZE ALL THE DATA AFTERWARDS?

176

00:10:23,090 --> 00:10:26,230

>> YOU KNOW, I THINK MOST OF IT
WILL BE STUFF THAT WE LEARN

177

00:10:26,230 --> 00:10:27,310

AFTERWARDS.

178

00:10:27,310 --> 00:10:33,180

I HAVE HAD SOME INTERACTION WITH
SOME OF THE INVESTIGATORS.

179

00:10:33,180 --> 00:10:36,779

YOU KNOW, ONE THING THAT WAS, I
FOUND SOMEWHAT INTERESTING,

180

00:10:36,779 --> 00:10:43,050

MAYBE NOT TOO UNEXPECTED, IS OUR
MICROBIO, YOU KNOW THE STUFF

181

00:10:43,050 --> 00:10:45,750

INSIDE OF US THAT'S NOT US.

182

00:10:45,750 --> 00:10:50,480

WE HAVE MORE CELLS OF BACTERIA
THAT WE CARRY AROUND WITH US

183

00:10:50,480 --> 00:10:56,550

THAT, YOU KNOW, AREN'T, ISN'T
PART OF OUR BODY BUT THEY JUST

184

00:10:56,550 --> 00:10:58,610

LIVE INSIDE OF US.

185

00:10:58,610 --> 00:11:02,300

AND, YOU KNOW, ONE OF THE
PRINCIPLE INVESTIGATORS TOLD ME

186

00:11:02,300 --> 00:11:07,779

THAT WHILE I WAS UP HERE THAT
SHE FOUND IT INTERESTING THAT MY

187

00:11:07,779 --> 00:11:10,579

BROTHER'S AND I MICROBIO ARE
COMPLETELY DIFFERENT.

188

00:11:10,579 --> 00:11:16,029

IT'S NOT THAT UNEXPECTED BECAUSE
WE DO LIVE SEPARATE LIVES BUT IT

189

00:11:16,029 --> 00:11:20,529

WAS KIND OF AN INTERESTING
FACTOID I GUESS.

190

00:11:20,529 --> 00:11:24,480

>> THE GOAL, HOWEVER IS AT THE
END OF THIS YOU CAN DOCUMENT OR

191

00:11:24,480 --> 00:11:27,990

NASA WILL BE ABLE TO DOCUMENT AS
NEVER BEFORE THE EFFECTS OF

192

00:11:27,990 --> 00:11:35,370

MICROGRAVITY ON A HUMAN USING A
TWIN HUMAN TO REALLY GET IN AT A

193

00:11:35,370 --> 00:11:38,850

DETAILED LEVEL.

194

00:11:38,850 --> 00:11:41,600

>> YEAH.

195

00:11:41,600 --> 00:11:46,111

YOU KNOW, IT'S REALLY -- IT'S
KIND OF A THING THAT MY BROTHER

196

00:11:46,111 --> 00:11:49,590

AND I ARE IDENTICAL TWINS AND
ASTRONAUTS.

197

00:11:49,590 --> 00:11:54,410

THE FACT HE IS AN ASTRONAUT AND
HAS A LOT OF EXPERIENCE WITH

198

00:11:54,410 --> 00:11:58,000

NASA MEANS NOT ONLY IS HE
COMFORTABLE DOING ALL OF THESE

199

00:11:58,000 --> 00:12:02,240

TYPES OF EXPERIMENTS AS A
CONTROL PERSON, BUT ALSO NASA

200

00:12:02,240 --> 00:12:05,440

HAS A LOT OF DATA ON HIM GOING
BACK TO WHEN WE INTERVIEWED IN

201

00:12:05,440 --> 00:12:07,240

1995.

202

00:12:07,240 --> 00:12:10,070

SO THEY CAN LOOK AT THAT DATA
AND LOOK AT, YOU KNOW, THE DATA

203

00:12:10,070 --> 00:12:12,820
THEY COLLECT WITH HIM OVER THIS
YEAR.

204

00:12:12,820 --> 00:12:18,200
AND SEE WHAT KIND OF DEVIATIONS
WE HAVE ON A GENETIC LEVEL,

205

00:12:18,200 --> 00:12:21,920
WHICH, YOU KNOW, COULD BE A
RESULT OF THIS ENVIRONMENT, THE

206

00:12:21,920 --> 00:12:24,579
WEIGHTLESSNESS OF THE
ENVIRONMENT, THE RADIATION THAT

207

00:12:24,579 --> 00:12:25,579
WE SEE.

208

00:12:25,579 --> 00:12:29,459
AND, YOU KNOW, FROM THAT, FIGURE
OUT OTHER AREAS WE NEED TO

209

00:12:29,459 --> 00:12:33,089
INVESTIGATE SO WE CAN, YOU KNOW,
EVENTUALLY COMPLETE OUR JOURNEY

210

00:12:33,089 --> 00:12:36,590
TO MARS AND ELSEWHERE.

211

00:12:36,590 --> 00:12:40,180
>> NASA ESTIMATES THAT THE
RECENTLY DISCOVERED EARTH-LIKE

212

00:12:40,180 --> 00:12:45,320
PLANET IN THE KEPLER 452 STAR
SYSTEM HAS DOUBLED THE EARTH'S

213

00:12:45,320 --> 00:12:46,760

GRAVITY.

214

00:12:46,760 --> 00:12:50,800

THOSE SCIENTISTS MENTIONED YOUR
HEROIC EXPERIMENTS AND THE

215

00:12:50,800 --> 00:12:53,830

EFFECTS ON GRAVITY AND WHEN
TALKING ABOUT THIS.

216

00:12:53,830 --> 00:12:57,120

SO AS YOU ANTICIPATE THE
PHYSICAL RECOVERY NEEDED TO

217

00:12:57,120 --> 00:13:00,380

RETURN TO EARTH'S GRAVITY FROM
THE WEIGHTLESSNESS OF THE SPACE

218

00:13:00,380 --> 00:13:05,100

STATION, HOW DO YOU THINK HUMANS
COULD ONE DAY ADAPT TO GRAVITY

219

00:13:05,100 --> 00:13:12,260

STRONGER THAN EARTH?

220

00:13:12,260 --> 00:13:17,779

>> YOU KNOW, I GUESS, YOU KNOW,
CHARLES DARWIN PROVED THAT, YOU

221

00:13:17,779 --> 00:13:20,490

KNOW, THE SPECIES, DIFFERENT
SPECIES IN GENERAL ARE VERY

222

00:13:20,490 --> 00:13:24,540

ADAPTABLE TO THEIR ENVIRONMENT
AND, YOU KNOW, SO I THINK OVER

223

00:13:24,540 --> 00:13:29,839
THE LONG TERM IT WOULDN'T BE AN
ISSUE, JUST LIKE WE LEARNED TO

224
00:13:29,839 --> 00:13:33,779
LIVE AND WORK IN MICROGRAVITY
ENVIRONMENT I'M SURE PEOPLE

225
00:13:33,779 --> 00:13:37,030
WOULD BE ABLE TO LIVE AND WORK
IN A, YOU KNOW, IN AN

226
00:13:37,030 --> 00:13:40,269
ENVIRONMENT THAT'S TWICE THE
AMOUNT OF GRAVITY, ALTHOUGH I

227
00:13:40,269 --> 00:13:42,950
THINK, YOU KNOW, TO BE
COMFORTABLE WITH THAT, IN THAT

228
00:13:42,950 --> 00:13:46,350
SITUATION, PROBABLY TAKE A
LITTLE BIT LONGER THAN TO GET

229
00:13:46,350 --> 00:13:49,710
COMFORTABLE UP HERE, WEIGHING
TWICE AS MUCH.

230
00:13:49,710 --> 00:13:52,860
BUT, YOU KNOW, WHEN WE COME BACK
FROM THE SPACE STATION WE DO

231
00:13:52,860 --> 00:13:58,459
FEEL LIKE, YOU KNOW, YOU WEIGH
500 POUNDS, YOU KNOW, MORE THAN

232
00:13:58,459 --> 00:14:02,010
DOUBLE YOUR REAL WEIGHT.

233
00:14:02,010 --> 00:14:05,120

BUT IT'S SOMETHING YOU ADJUST TO
VERY QUICKLY AND I THINK WE AS A

234

00:14:05,120 --> 00:14:08,450
SPECIES, YOU KNOW, THROUGHOUT
EVOLUTION HAVE SHOWN WE'RE VERY

235

00:14:08,450 --> 00:14:11,069
ADAPTABLE.

236

00:14:11,069 --> 00:14:15,120
>> SO HOW LONG HAS IT AND THE TO
YOU GET USED TO THIS ENVIRONMENT

237

00:14:15,120 --> 00:14:20,310
OF MICROGRAVITY, AND IS IT A
CONSTANT PROCESS OF ADJUSTMENT

238

00:14:20,310 --> 00:14:24,889
OR IS IT SOMETHING THAT YOU
FIGURE OUT AND THEN IT'S JUST

239

00:14:24,889 --> 00:14:28,910
THERE?

240

00:14:28,910 --> 00:14:32,500
>> YOU KNOW, THAT'S A REALLY
GOOD QUESTION, AND, YOU KNOW,

241

00:14:32,500 --> 00:14:36,110
ONE I'VE NEVER BEEN ASKED
BEFORE, WHAT IS THE PROCESS OF

242

00:14:36,110 --> 00:14:37,110
ADJUSTING.

243

00:14:37,110 --> 00:14:42,680
AND, YOU KNOW, SO FAR I FOUND
THAT IT IS A CONTINUOUS THING.

244

00:14:42,680 --> 00:14:47,790

YOU KNOW IT GETS, YOU KNOW, LESS
SIGNIFICANT OVER TIME.

245

00:14:47,790 --> 00:14:52,319

BUT I DO NOTICE, YOU KNOW, I CAN
DO THINGS NOW THAT, YOU KNOW, I

246

00:14:52,319 --> 00:14:54,940

COULDN'T DO RIGHT WHEN I FIRST
GOT UP HERE EVEN THOUGH I HAD

247

00:14:54,940 --> 00:14:58,339

FLOWN 180 DAYS IN SPACE BEFORE.

248

00:14:58,339 --> 00:15:02,560

YOU KNOW MY ABILITY TO MOVE
AROUND IS REALLY IMPROVED OVER

249

00:15:02,560 --> 00:15:04,839

TIME AND CONTINUES TO IMPROVE.

250

00:15:04,839 --> 00:15:08,139

AND, YOU KNOW, YOU JUST GET MORE
COMFORTABLE.

251

00:15:08,139 --> 00:15:10,019

YOUR CLARITY OF THOUGHT IS
GREATER.

252

00:15:10,019 --> 00:15:13,259

YOUR ABILITY TO FOCUS, THINGS
LIKE THAT.

253

00:15:13,259 --> 00:15:19,610

SO, YOU KNOW, I FOUND THAT THE
ADAPTATION HAS NOT STOPPED AND,

254

00:15:19,610 --> 00:15:22,750

YOU KNOW, BE INTERESTING TO SEE
WHERE I'M AT SIX MONTHS FROM

255

00:15:22,750 --> 00:15:24,650
NOW.

256

00:15:24,650 --> 00:15:28,080
>> I KNOW THAT ON EARTH WHEN
THEY DO EXPERIMENTS, THERE YOU

257

00:15:28,080 --> 00:15:32,390
GO --
[LAUGHTER]

258

00:15:32,390 --> 00:15:33,390
-- THAT'S GOOD.

259

00:15:33,390 --> 00:15:36,740
THAT'S GOOD.

260

00:15:36,740 --> 00:15:40,740
ON EARTH WHEN THEY DO
EXPERIMENTS THEY OFTEN PUT

261

00:15:40,740 --> 00:15:45,149
PEOPLE DOWN IN A CLOSE
ENVIRONMENT AND LEAVE THEM THERE

262

00:15:45,149 --> 00:15:49,510
FOR MONTHS AT A TIME TO SEE HOW
THEY INTERACT WITH ONE ANOTHER.

263

00:15:49,510 --> 00:15:53,290
YOU'RE UP THERE FOR A LONG TIME
WITH YOUR COLLEAGUE.

264

00:15:53,290 --> 00:15:57,440
HOW ABOUT THE HUMAN COMPONENT OF
THIS, THE HUMAN INTERACTION?

265

00:15:57,440 --> 00:16:02,680

ARE THERE SUBJECTS THAT YOU NEED
TO AVOID IN TALKING ABOUT OR HOW

266

00:16:02,680 --> 00:16:08,019

DO YOU LEARN TO LIVE WITH ONE
PERSON FOR SUCH A LONG TIME OR

267

00:16:08,019 --> 00:16:14,990

PEOPLE SO LONG UP ON THE SPACE
STATION?

268

00:16:14,990 --> 00:16:19,180

>> YOU KNOW, I THINK PEOPLE FIND
IT HARD TO BELIEVE, BUT, YOU

269

00:16:19,180 --> 00:16:24,110

KNOW, SO FAR IN MY OVER 300
DAYS, ACTUALLY APPROACHING A

270

00:16:24,110 --> 00:16:27,930

YEAR IN SPACE, I'VE NOTICED VERY
FEW CONFLICTS.

271

00:16:27,930 --> 00:16:31,470

I THINK NOT ONLY DOES NASA BUT
OUR INTERNATIONAL PARTNERS DO A

272

00:16:31,470 --> 00:16:35,200

VERY GOOD JOB AT SELECTING
PEOPLE THAT ARE, YOU KNOW, EASY

273

00:16:35,200 --> 00:16:38,350

TO GET ALONG WITH IN THIS TYPE
OF A HARSH ENVIRONMENT.

274

00:16:38,350 --> 00:16:42,560

SO, YOU KNOW, ESPECIALLY ON THIS
FLIGHT I HAVEN'T HAD ANY ISSUES

275

00:16:42,560 --> 00:16:46,350

AND NOR I DO EXPECT TO HAVE ANY
OR, YOU KNOW, PEOPLE EXPECT TO

276

00:16:46,350 --> 00:16:49,579

HAVE ISSUES WITH ME, HOPEFULLY
NOT.

277

00:16:49,579 --> 00:16:53,130

WE GET ALONG GREAT AND IT'S, YOU
KNOW, WE'RE ALL ONE BIG TEAM UP

278

00:16:53,130 --> 00:16:54,130

HERE.

279

00:16:54,130 --> 00:16:57,300

WE REALIZE HOW WE RELY ON EACH
OTHER ON A PSYCHOLOGICAL LEVEL

280

00:16:57,300 --> 00:17:00,390

BUT FOR OUR OWN PERSONAL SAFETY.

281

00:17:00,390 --> 00:17:05,720

THAT GOES -- YOU KNOW IT'S JUST
AS IMPORTANT WITH MY, YOU KNOW,

282

00:17:05,720 --> 00:17:08,650

FELLOW ASTRONAUT UP HERE AS IT
IS WITH MY OTHER INTERNATIONAL

283

00:17:08,650 --> 00:17:12,699

COLLEAGUES INCLUDING THE RUSSIAN
COSMONAUTS ON BOARD.

284

00:17:12,699 --> 00:17:16,589

>> I'LL BRING IN YOUR BROTHER
HERE IN A MINUTE.

285

00:17:16,589 --> 00:17:21,230

DO YOU THINK THAT YOU OR MARK
GOT THE BETTER END OF THE DEAL

286

00:17:21,230 --> 00:17:25,500
ON THE TWIN STUDY?

287

00:17:25,500 --> 00:17:29,690
>> WELL, I THINK IT DEPENDS.

288

00:17:29,690 --> 00:17:35,610
YOU KNOW, IT'S A PRIVILEGE TO
FLY ON THIS FLIGHT BUT, YOU

289

00:17:35,610 --> 00:17:38,410
KNOW, SOMETIMES WHEN HE SENDS ME
PICTURES OF HIS BREAKFAST I'M A

290

00:17:38,410 --> 00:17:39,830
LITTLE ENVIOUS.

291

00:17:39,830 --> 00:17:44,520
[LAUGHTER]
>> AND, MARK, WHAT WOULD YOU SAY

292

00:17:44,520 --> 00:17:46,010
TO YOUR BROTHER?

293

00:17:46,010 --> 00:17:47,320
>> WHAT ABOUT BREAKFAST?

294

00:17:47,320 --> 00:17:49,289
[LAUGHTER]
>> SURE.

295

00:17:49,289 --> 00:17:52,530
>> I TALKED TO HIM YESTERDAY AND
WE CAUGHT UP ON A FEW THINGS.

296

00:17:52,530 --> 00:17:55,630

YOU KNOW THERE'S A PHONE ON THE
SPACE STATION SO WE CAN

297

00:17:55,630 --> 00:17:59,170
COMMUNICATE OTHER THAN, YOU
KNOW, THIS KIND OF SETTING.

298

00:17:59,170 --> 00:18:02,909
I WAS INTERESTED IN WHAT YOU
THOUGHT ABOUT THE HOUSTON TEXANS

299

00:18:02,909 --> 00:18:06,920
FIRST PERFORMANCE YESTERDAY.

300

00:18:06,920 --> 00:18:14,630
>> WELL, FORTUNATELY IT'S A LONG
SEASON, SO I'M VERY OPTIMISTIC

301

00:18:14,630 --> 00:18:15,630
THEY WILL IMPROVE.

302

00:18:15,630 --> 00:18:19,710
I THINK THERE ARE AREAS WHERE
THEY NEED TO.

303

00:18:19,710 --> 00:18:23,320
BUT REGARDLESS OF HOW THEY DO
I'M A HUGE FAN AND FEEL

304

00:18:23,320 --> 00:18:26,400
FORTUNATE TO HAVE FOOTBALL
SEASON HERE AND HAVE SOMETHING

305

00:18:26,400 --> 00:18:28,540
TO LOOK FORWARD TO ON THE
WEEKENDS.

306

00:18:28,540 --> 00:18:31,510
>> I HAVE ANOTHER QUESTION FOR
SCOTT PEOPLE MIGHT FIND

307

00:18:31,510 --> 00:18:32,510

INTERESTING.

308

00:18:32,510 --> 00:18:35,549

IN SPACE YOU HAVE HIS LEGS DOWN
BUT NOT STANDING.

309

00:18:35,549 --> 00:18:38,210

HIS FEET IS UNDER A HAND RAIL.

310

00:18:38,210 --> 00:18:43,460

I THINK IT'S INTERESTING WHAT
HAPPENS TO YOUR FEET IN SPACE.

311

00:18:43,460 --> 00:18:47,769

IF YOU'RE COMFORTABLE SHARING
THAT WITH FOLKS.

312

00:18:47,769 --> 00:18:50,620

>> YEAH.

313

00:18:50,620 --> 00:18:55,860

YOU KNOW, SO WE DON'T REALLY USE
THE BOTTOM OF OUR FEET MUCH AND

314

00:18:55,860 --> 00:19:00,150

SO OVER TIME ANY CALLUSES YOU
HAVE ON YOUR FEET KIND OF FALL

315

00:19:00,150 --> 00:19:05,159

OFF AND, YOU KNOW, AFTER ABOUT
FIVE MONTHS UP HERE YOU HAVE

316

00:19:05,159 --> 00:19:07,220

BABY FEET.

317

00:19:07,220 --> 00:19:11,039

BUT THEN YOU HAVE A BIG CALLOUS

ON THE TOP OF YOUR TOE, BIG TOE

318

00:19:11,039 --> 00:19:13,120

BECAUSE YOU USE THAT TO MOVE
AROUND.

319

00:19:13,120 --> 00:19:16,401

WHEN I GOT BACK FROM MY LAST
FLIGHT I WAS, YOU KNOW, A FEW

320

00:19:16,401 --> 00:19:19,660

DAYS AFTER THE FLIGHT I WAS
GETTING A MASSAGE AT ONE OF

321

00:19:19,660 --> 00:19:23,770

THOSE MASSAGE CHAIN PLACES
BECAUSE I WAS PRETTY SORE IN

322

00:19:23,770 --> 00:19:28,010

CERTAIN AREAS AND THE MASSEUSE
SAYS YOU HAVE THE SOFTEST FEET

323

00:19:28,010 --> 00:19:32,930

I'VE EVER FELT IN MY WHOLE LIFE
AND MY RESPONSE WAS THANK YOU,

324

00:19:32,930 --> 00:19:35,360

I'M VERY PROUD OF THEM.

325

00:19:35,360 --> 00:19:40,700

[LAUGHTER]

>> SCOTT, THIS IS OBVIOUSLY

326

00:19:40,700 --> 00:19:44,830

PROBABLY THE START OF WHAT WILL
BE A LONG EXPERIENCE OF LONG

327

00:19:44,830 --> 00:19:48,530

HUMAN SPACE FLIGHT MISSIONS AS
WE CONTEMPLATE MARS AND BEYOND

328

00:19:48,530 --> 00:19:49,990
IN OUR FUTURE.

329

00:19:49,990 --> 00:19:52,840
YOU HAVE BEEN UP THERE ABOUT
HALFWAY NOW TO YOUR FULL YEAR

330

00:19:52,840 --> 00:19:57,700
STINT, BUT DO YOU HAVE ANY
ADVICE THAT YOU WOULD GIVE TO

331

00:19:57,700 --> 00:20:02,320
FUTURE ASTRONAUTS WHO ARE GOING
TO BE SPENDING LONG DURATION IN

332

00:20:02,320 --> 00:20:10,409
SPACE, ANYTHING YOU'VE LEARNED
SO FAR THAT YOU PASS ON TO THEM?

333

00:20:10,409 --> 00:20:13,830
>> YOU KNOW, I WAS FORTUNATE
THAT I HAD FLOWN, YOU KNOW,

334

00:20:13,830 --> 00:20:16,610
ALMOST SIX MONTHS MY PREVIOUS
FLIGHT SO I SORT OF KNEW WHAT I

335

00:20:16,610 --> 00:20:18,010
WAS GETTING INTO.

336

00:20:18,010 --> 00:20:26,260
BUT, YOU KNOW, DESPITE THAT I
DID HAVE, YOU KNOW, CERTAIN, YOU

337

00:20:26,260 --> 00:20:29,610
KNOW, APPREHENSIONS HAVING TO GO
INTO SOMETHING THAT WILL

338

00:20:29,610 --> 00:20:34,980
ADMONISH THAN TWICE AS LONG, SO
I INTENTIONALLY, YOU KNOW,

339

00:20:34,980 --> 00:20:39,270
THOUGHT ABOUT WAYS FOR ME TO GET
TO TEND OF THIS WITH AS MUCH

340

00:20:39,270 --> 00:20:41,529
ENERGY AS I HAD IN THE
BEGINNING.

341

00:20:41,529 --> 00:20:45,020
AND PART OF THAT IS HAVING A
GOOD BALANCE BETWEEN WORK AND

342

00:20:45,020 --> 00:20:50,700
REST AND I INTENTIONALLY DON'T
WORK AT THE SAME PACE I DID LAST

343

00:20:50,700 --> 00:20:55,380
TIME I WAS UP HERE WHERE, YOU
KNOW, I FELT LIKE I COULD GO AT

344

00:20:55,380 --> 00:20:58,270
100% SPEED, YOU KNOW, FOR THE
FULL SIX MONTHS.

345

00:20:58,270 --> 00:20:59,430
I CAN'T DO THAT.

346

00:20:59,430 --> 00:21:02,850
SO I CONSCIOUSLY TRIED TO
THROTTLE MYSELF BACK A LITTLE

347

00:21:02,850 --> 00:21:06,900
BIT AT CERTAIN TIMES AND HAVE A
REALLY GOOD BALANCE BETWEEN WORK

348

00:21:06,900 --> 00:21:12,480

AND REST AND THAT'S WHAT I WOULD
ENCOURAGE ANYONE WHO ATTEMPTS TO

349

00:21:12,480 --> 00:21:14,929

SPEND THIS AMOUNT OF TIME IN
THIS TIME OF ENVIRONMENT IS YOU

350

00:21:14,929 --> 00:21:17,700

JUST HAVE TO PACE YOURSELF.

351

00:21:17,700 --> 00:21:20,020

>> IN THE REMAINING TIME YOU
HAVE UP THERE, AS I SAID YOU'RE

352

00:21:20,020 --> 00:21:24,430

ABOUT HALFWAY, WHAT ARE YOU MOST
LOOKING FORWARD TO IN THE NEXT

353

00:21:24,430 --> 00:21:32,240

SIX MONTHS OR SO UP THERE?

354

00:21:32,240 --> 00:21:35,650

>> YOU KNOW, WE HAVE A COUPLE OF
SPACE WALKS COMING UP.

355

00:21:35,650 --> 00:21:38,140

AND, YOU KNOW, I LOOK FORWARD TO
THAT.

356

00:21:38,140 --> 00:21:39,840

I'VE HE IN REAR DONE A
SPACEWALK.

357

00:21:39,840 --> 00:21:42,620

I'LL BE DOING ONE WITH THE GUY
THAT JUST GOT SOMETHING OUT OF

358

00:21:42,620 --> 00:21:43,850

THE REFRIGERATOR.

359

00:21:43,850 --> 00:21:46,549

[LAUGHTER]

SO WE BOTH LOOK FORWARD TO THAT.

360

00:21:46,549 --> 00:21:50,809

THAT'S A CHALLENGE FOR THE TWO
OF US.

361

00:21:50,809 --> 00:21:54,610

BUT WHAT I'M LOOKING MOST
FORWARD TO IS JUST GETTING TO

362

00:21:54,610 --> 00:22:00,789

THE END OF THIS WITH AS MUCH
ENERGY AND ENTHUSIASM AS I HAD

363

00:22:00,789 --> 00:22:03,680

IN THE BEGINNING AND DOING IT
SAFELY AND COMPLETING ALL OUR

364

00:22:03,680 --> 00:22:07,149

MISSION OBJECTIVES AND GETTING
ALL THE SCIENCE DONE.

365

00:22:07,149 --> 00:22:10,669

>> OKAY, LAST QUESTION.

366

00:22:10,669 --> 00:22:16,210

WHAT IS THE -- OF ALL THINGS
THAT YOU MISS IN YOUR TIME AWAY

367

00:22:16,210 --> 00:22:20,591

FROM EARTH AND NOW AFTER SUCH A
LONG TIME, WHAT'S THE TOP OF

368

00:22:20,591 --> 00:22:28,620

YOUR LIST THINGS YOU MISS FROM
BECOME DOWN ON THE PLANET?

369

00:22:28,620 --> 00:22:33,130
>> SO AFTER BEING WITH OTHER
PEOPLE, YOU KNOW, PEOPLE YOU

370
00:22:33,130 --> 00:22:37,610
CARE ABOUT, YOUR FAMILY, YOUR
FRIENDS, JUST GOING OUTSIDE.

371
00:22:37,610 --> 00:22:41,400
I MEAN, THIS IS A VERY CLOSED
ENVIRONMENT.

372
00:22:41,400 --> 00:22:44,100
YOU KNOW, WE CAN NEVER LEAVE.

373
00:22:44,100 --> 00:22:46,340
THE LIGHTING IS ALWAYS PRETTY
MUCH THE SAME.

374
00:22:46,340 --> 00:22:49,500
THE SMELLS, THE SOUNDS,
EVERYTHING IS THE SAME.

375
00:22:49,500 --> 00:22:54,130
SO, YOU KNOW, EVEN I THINK MOST
PRISONERS CAN GET OUTSIDE

376
00:22:54,130 --> 00:22:58,820
OCCASIONALLY, YOU KNOW IN A
WEEK.

377
00:22:58,820 --> 00:23:00,029
BUT WE CAN'T.

378
00:23:00,029 --> 00:23:04,080
AND, YOU KNOW, THAT'S WHAT I
MISS AFTER PEOPLE.

379
00:23:04,080 --> 00:23:06,650
>> SCOTT KELLY, I WANT TO THANK

YOU FOR JOINING US TODAY ON THIS

380

00:23:06,650 --> 00:23:10,410

HISTORIC DAY AT THE NATIONAL
PRESS CLUB AND THE AUDIENCE

381

00:23:10,410 --> 00:23:13,051

WANTS TO SHOW ITS APPRECIATION
BY GIVING YOU SOME APPLAUSE.

382

00:23:13,051 --> 00:23:14,051

THANK YOU.

383

00:23:14,051 --> 00:23:21,720

[APPLAUSE]

>> MY PLEASURE.

384

00:23:21,720 --> 00:23:30,030

>>> ALL RIGHT.

385

00:23:30,030 --> 00:23:33,470

SEE YOU LATER.

386

00:23:33,470 --> 00:23:35,540

SOMEBODY PASSED UP A QUESTION
AND MAYBE IT WAS ONE OF OUR --

387

00:23:35,540 --> 00:23:37,340

>> BYE-BYE.

388

00:23:37,340 --> 00:23:39,430

>> ONE OF OUR NEWS PHOTOGRAPHERS
IN THE ROOM.

389

00:23:39,430 --> 00:23:45,039

THERE WERE SOME LARGE CAMERAS IN
THE PICTURES, TELEPHOTO LENS

390

00:23:45,039 --> 00:23:46,200

CAMERAS.

391

00:23:46,200 --> 00:23:50,860

ARE THOSE TO TAKE PICTURES OF
EARTH OR WHAT ARE THOSE USED

392

00:23:50,860 --> 00:23:51,860

FOR?

393

00:23:51,860 --> 00:23:55,780

>> THOSE ARE FOR EARTH LAB WHERE
SCOTT WAS, HAS A VERY LARGE

394

00:23:55,780 --> 00:23:58,470

WINDOW, VERY HIGH QUALITY.

395

00:23:58,470 --> 00:24:00,490

SOMETIMES WE HAVE EXPERIMENTS IN
THERE THAT TAKE PICTURES OF

396

00:24:00,490 --> 00:24:04,909

FARM, FIELDS, HOW THOSE ARE USED
OR DIFFERENT EXPERIMENTS.

397

00:24:04,909 --> 00:24:07,120

WHEN WE DON'T HAVE THE
EXPERIMENT BLOCKING THE WINDOW

398

00:24:07,120 --> 00:24:09,970

WE CAN GRAB THE CAMERA AND TAKE
PICTURES.

399

00:24:09,970 --> 00:24:11,350

SCOTT IS REALLY GOOD.

400

00:24:11,350 --> 00:24:15,779

I HAVE A TENDENCY TO TAKE BIG
PICTURE VIEW WHERE YOU CAN SEE

401

00:24:15,779 --> 00:24:17,539

THE EARTH.

402

00:24:17,539 --> 00:24:21,320

SCOTT IS A FAN OF GETTING THAT
800 MILLIMETER TELESCOPE AND

403

00:24:21,320 --> 00:24:25,289

ZOOMING IN ON THE EARTH.

404

00:24:25,289 --> 00:24:28,170

ONE OF THE FAVORITE THINGS WE DO
IN SPACE TO TAKE PICTURES.

405

00:24:28,170 --> 00:24:30,980

>> WHAT WAS THE ROOM THAT HE WAS
COMING TO US FROM?

406

00:24:30,980 --> 00:24:33,220

WHAT WAS THE PURPOSE OF THAT
SPACE?

407

00:24:33,220 --> 00:24:35,760

>> WE WERE IN THE LAB AND WE
WERE LOOKING BACKWARDS TOWARDS

408

00:24:35,760 --> 00:24:39,490

THE RUSSIAN SEGMENT AND WHERE
THE SHELF CAME FROM IS EXERCISE

409

00:24:39,490 --> 00:24:40,490

EQUIPMENT.

410

00:24:40,490 --> 00:24:44,730

HE WAS EITHER RUNNING ON THE
TREADMILL OR WE HAVE AN EXERCISE

411

00:24:44,730 --> 00:24:52,750

MACHINE THAT ALLOWS TO YOU DO
BENCH PRESS AND SQUATS.

412

00:24:52,750 --> 00:24:53,750

>> A U.S. LABORATORY.

413

00:24:53,750 --> 00:24:57,460

HOW WOULD YOU AVOID -- HE
MENTIONED MISSING GOING OUTSIDE.

414

00:24:57,460 --> 00:25:01,700

WHAT WOULD YOU DO TO AVOID BEING
STIR CRAZY UP THERE?

415

00:25:01,700 --> 00:25:05,440

>> IT WAS FUNNY, I THINK IT WAS
RIGHT AFTER SCOTT GOT THERE,

416

00:25:05,440 --> 00:25:07,890

SAMANTHA AND I WERE THERE.

417

00:25:07,890 --> 00:25:11,590

I MISSED EARTH AND THE RUSSIANS
ACTUALLY WERE SENDING AUDIO

418

00:25:11,590 --> 00:25:15,649

CLIPS OF RAIN AND WIND AND BIRDS
AND STUFF.

419

00:25:15,649 --> 00:25:18,610

SO THERE WAS ONE WEEKEND WHERE
EVERY LAPTOP -- THE STATION HAS

420

00:25:18,610 --> 00:25:21,539

100 LAPTOPS AND WE PUT THIS RAIN
SOUND.

421

00:25:21,539 --> 00:25:24,020

IT WAS RAINING IN THE STATION
FOR THE WHOLE WEEKEND.

422

00:25:24,020 --> 00:25:25,020
IT WAS PRETTY COOL.

423
00:25:25,020 --> 00:25:27,429
EVERY WHERE YOU WENT IT SOUNDED
LIKE RAIN.

424
00:25:27,429 --> 00:25:28,990
THAT WAS GOOD.

425
00:25:28,990 --> 00:25:31,630
THAT'S ONE WAY TO COPE WITH IT.

426
00:25:31,630 --> 00:25:35,580
>> MARK, I TALKED WITH YOUR
BROTHER ABOUT THE TWIN STUDY.

427
00:25:35,580 --> 00:25:39,029
WHAT IS YOUR ROLE IN THE TWIN
STUDY HERE ON THE GROUND AND HOW

428
00:25:39,029 --> 00:25:42,419
MUCH TIME DOES IT TAKE?

429
00:25:42,419 --> 00:25:45,191
HOW OFTEN ARE YOU BEING TESTED
AND THE LIKE?

430
00:25:45,191 --> 00:25:48,860
>> SO FAR MY ROLE HAS BEEN TO
PROVIDE SAMPLES.

431
00:25:48,860 --> 00:25:55,490
BLOOD, SALIVA, OTHER THINGS I
WON'T GO INTO.

432
00:25:55,490 --> 00:26:00,480
AND BE THERE FOR MRIs AND
ULTRASOUNDS AND SOME

433

00:26:00,480 --> 00:26:01,480

EXPERIMENTS.

434

00:26:01,480 --> 00:26:03,840

SOMETIMES I'M LAYING IN A
CONTRAPTION, I DON'T KNOW WHAT

435

00:26:03,840 --> 00:26:05,390

THEY ARE TRYING TO FIGURE OUT.

436

00:26:05,390 --> 00:26:08,390

DO WHATEVER YOU HAVE TO DO.

437

00:26:08,390 --> 00:26:12,279

SO IT'S PROVIDING DATA OVER AN
EXTENDED PERIOD OF TIME.

438

00:26:12,279 --> 00:26:14,670

SO SOMETIMES I'LL VISIT HOUSTON.

439

00:26:14,670 --> 00:26:18,510

AND MEET WITH THE RESEARCHERS
AND SPEND A WHOLE DAY GIVING

440

00:26:18,510 --> 00:26:20,010

DATA.

441

00:26:20,010 --> 00:26:23,090

SOMETIMES THEY WILL SEND
SOMEBODY TO TUCSON OR EVEN ONCE

442

00:26:23,090 --> 00:26:26,360

TO NEW YORK CITY TO COLLECT DATA
FROM ME.

443

00:26:26,360 --> 00:26:29,070

WE'LL DO THIS WHILE MY BROTHER
IS IN SPACE BUT THEN I THINK

444

00:26:29,070 --> 00:26:36,090

ALSO AFTER HE GETS BACK FOR A PERIOD OF TIME.

445

00:26:36,090 --> 00:26:40,840

FROM WHAT WE UNDERSTAND FROM SOME OF THESE RESEARCHERS, ONE

446

00:26:40,840 --> 00:26:42,680

OF THEM RECENT LEADERSHIP SAID THAT THEY ARE GOING TO HAVE MORE

447

00:26:42,680 --> 00:26:47,899

INFORMATION ON SCOTT AND I ON OUR, YOU KNOW, MOLECULAR AND

448

00:26:47,899 --> 00:26:51,910

GENETIC INFORMATION THAN ANY OTHER HUMAN EVER, YOU KNOW, THAT

449

00:26:51,910 --> 00:26:54,860

WAS NOT AN OFFICIAL POSITION BUT THIS IS WHAT ONE OF THE

450

00:26:54,860 --> 00:26:58,799

RESEARCHERS, THEIR COMMENTS ON THIS STUDY.

451

00:26:58,799 --> 00:27:02,251

AND THERE'S PROBABLY 10 TO 12 DIFFERENT EXPERIMENTS OR AT

452

00:27:02,251 --> 00:27:05,779

LEAST DIFFERENT UNIVERSITIES DOING EXPERIMENTS FROM ALL THE

453

00:27:05,779 --> 00:27:09,440

WAY FROM THE UNIVERSITY OF FRANKFURT TO STANFORD, HARVARD

454

00:27:09,440 --> 00:27:13,680

MEDICAL SCHOOL, JOHNS HOPKINS,
UNIVERSITY OF PENNSYLVANIA,

455

00:27:13,680 --> 00:27:14,970

PURDUE.

456

00:27:14,970 --> 00:27:18,050

SO RESEARCH UNIVERSITIES.

457

00:27:18,050 --> 00:27:24,029

IT WILL BE INTERESTING TO SEE
WHAT THE DATA SHOWS ON THE

458

00:27:24,029 --> 00:27:28,280

GENETIC AND MOLECULAR MOSTLY
EFFECTS FROM THIS LONG DURATION

459

00:27:28,280 --> 00:27:29,280

SPACE FLIGHT.

460

00:27:29,280 --> 00:27:34,049

MY BROTHER MENTIONED THAT THERE
MIGHT BE A CLIFF, AND I DON'T

461

00:27:34,049 --> 00:27:38,460

THINK -- YOU KNOW, I THINK THAT
NEED A LITTLE BIT FURTHER

462

00:27:38,460 --> 00:27:39,500

EXPLANATION, RIGHT.

463

00:27:39,500 --> 00:27:42,769

WE HAVE DATA ON A LOT OF PEOPLE
AFTER SIX MONTHS FOR BEING IN

464

00:27:42,769 --> 00:27:43,799

SPACE.

465

00:27:43,799 --> 00:27:47,380

WE HAVE A PRETTY GOOD IDEA OF
WHAT HAPPENS IN THAT SIX MONTH

466

00:27:47,380 --> 00:27:48,380

PERIOD.

467

00:27:48,380 --> 00:27:50,440

WE HAVE NO DATA BEYOND SIX
MONTHS.

468

00:27:50,440 --> 00:27:52,490

SO MAYBE THERE BECOMES A BEND IN
THE CURVE.

469

00:27:52,490 --> 00:27:55,460

WHAT I MEAN BY IS THAT WE KNOW
PEOPLE'S VISION GETS WORSE OVER

470

00:27:55,460 --> 00:27:57,049

THE SIX MONTH PERIOD.

471

00:27:57,049 --> 00:28:00,200

MAYBE AT NINE MONTHS OR TEN
MONTHS MAYBE IT GETS REALLY,

472

00:28:00,200 --> 00:28:01,870

REALLY BAD.

473

00:28:01,870 --> 00:28:05,490

IMAGINE YOU'RE TRYING TO SEND A
CREW TO GO WORK AND LIVE ON MARS

474

00:28:05,490 --> 00:28:08,620

FOR AN EXTENDED PERIOD OF TIME
BUT BY THE TIME THEY GET THERE

475

00:28:08,620 --> 00:28:13,220

WE FIND OUT THEY WILL BE NEARLY

BLIND FROM THE ENVIRONMENT.

476

00:28:13,220 --> 00:28:14,680

THAT'S A BIG PROBLEM.

477

00:28:14,680 --> 00:28:18,029

SO THAT'S PART OF THE IDEA OF
DOING THIS RESEARCH OVER A ONE

478

00:28:18,029 --> 00:28:21,910

YEAR PERIOD IS TO FIGURE OUT IF
THERE ARE ANY OF THESE BENDS IN

479

00:28:21,910 --> 00:28:23,250

THE CURVE.

480

00:28:23,250 --> 00:28:27,850

>> WHAT ARE THE THOUGHTS OF BOTH
OF YOU ON HOW SOON WE CAN GET TO

481

00:28:27,850 --> 00:28:28,850

HARASS?

482

00:28:28,850 --> 00:28:30,759

-- TO MARS?

483

00:28:30,759 --> 00:28:36,830

>> OUR ABILITY TO GET TO MARS IS
NOT SO MUCH BASED ON THE

484

00:28:36,830 --> 00:28:38,460

TECHNOLOGY TO DO THAT.

485

00:28:38,460 --> 00:28:40,440

THAT PART WE CAN FIGURE IT OUT.

486

00:28:40,440 --> 00:28:42,590

WE CAN FIGURE OUT THE
ENGINEERING AND PROPULSION

487

00:28:42,590 --> 00:28:48,159

SYSTEM AND WE CAN FIGURE OUT
WHAT IT WILL TAKE TO MITIGATE

488

00:28:48,159 --> 00:28:51,080

THESE PHYSIOLOGICAL EFFECTS.

489

00:28:51,080 --> 00:28:55,360

THE LIMITING FACTOR AND THE
THINGS, REALLY THAT CONTROLS

490

00:28:55,360 --> 00:29:00,779

WHEN WE ACTUALLY DO THIS IS THE
PUBLIC'S DESIRE TO DO IT.

491

00:29:00,779 --> 00:29:05,529

YOU KNOW, WE WILL NEED A LOT OF
PUBLIC SUPPORT IF WE'RE GOING TO

492

00:29:05,529 --> 00:29:10,050

TAKE ON THAT KIND OF ENDEAVOR TO
PUT A PERSON ON MARS AND THAT

493

00:29:10,050 --> 00:29:14,720

PUBLIC SUPPORT THEN MEANS WE GET
CONGRESSIONAL SUPPORT AND

494

00:29:14,720 --> 00:29:17,429

ADMINISTRATION, YOU KNOW,
SUPPORT OF THE ADMINISTRATION IN

495

00:29:17,429 --> 00:29:18,700

THE WHITE HOUSE.

496

00:29:18,700 --> 00:29:20,480

THAT'S THE MOST IMPORTANT THING.

497

00:29:20,480 --> 00:29:24,519

BECAUSE, YOU KNOW, A CHALLENGE
LIKE SENDING SOMEBODY TO, YOU

498

00:29:24,519 --> 00:29:27,769

KNOW, SENDING PEOPLE TO MARS IS
GOING TO BE EXPENSIVE AND TAKE A

499

00:29:27,769 --> 00:29:29,630

LONG TIME.

500

00:29:29,630 --> 00:29:33,809

SO WITHOUT THAT PUBLIC SUPPORT,
I WOULD SAY IT WON'T HAPPEN.

501

00:29:33,809 --> 00:29:37,780

>> NOW BOTH OF YOU HAVE SPENT
TIME IN THE STATION AND HAD THAT

502

00:29:37,780 --> 00:29:42,220

EXPERIENCE OF ADJUSTING BACK TO
EARTH'S GRAVITY AND SCOTT WILL

503

00:29:42,220 --> 00:29:45,409

HAVE THAT IN A MORE SIGNIFICANT
WAY ONE IMAGINES BECAUSE OF THE

504

00:29:45,409 --> 00:29:47,990

LENGTH OF TIME HE'LL BE UP
THERE.

505

00:29:47,990 --> 00:29:51,840

BUT WHAT ARE THE THREE OR SO
MOST UNIQUE THINGS THAT YOUR

506

00:29:51,840 --> 00:29:55,940

BODY EXPERIENCES THAT YOU GO
THROUGH WHEN YOU TRANSITION BACK

507

00:29:55,940 --> 00:29:59,920

TO EARTH FROM A PERIOD OF TIME

UP IN THE SPACE STATION?

508

00:29:59,920 --> 00:30:00,920

>> IT'S INTERESTING.

509

00:30:00,920 --> 00:30:03,570

AFTER MY SHUTTLE FLIGHT WHICH
WAS RELATIVELY SHORT DURATION,

510

00:30:03,570 --> 00:30:07,600

ONLY TWO WEEKS, I REALLY FELT
HEAVY, MORE THAN ANYTHING.

511

00:30:07,600 --> 00:30:11,690

I FELT SENSE OF GRAVITY WAS
PRETTY SIGNIFICANT.

512

00:30:11,690 --> 00:30:16,159

AND AFTER MY STATION FLIGHT OF
200 DAYS IT WAS, I FELT HEAVY

513

00:30:16,159 --> 00:30:20,470

BUT THE MAIN SENSATION I HAD WAS
ONE OF BEING DIZZY.

514

00:30:20,470 --> 00:30:23,720

YOU COULD STILL WALK AND STUFF
BUT I REALLY -- IT TOOK A FEW

515

00:30:23,720 --> 00:30:26,450

DAYS BEFORE THAT DIZZINESS
ABATED.

516

00:30:26,450 --> 00:30:29,600

BUT THE THING THAT REALLY
SURPRISED ME ABOUT THE STATION

517

00:30:29,600 --> 00:30:33,309

FLIGHT 200 DAYS WAS HOW QUICKLY
I ADAPTED BACK TO EARTH.

518

00:30:33,309 --> 00:30:38,140

I WAS PREPARED FOR MUCH WORSE
AND HAD MONTHS OF, YOU KNOW,

519

00:30:38,140 --> 00:30:39,140

LINGERING EFFECTS.

520

00:30:39,140 --> 00:30:43,349

I ADAPTED A LOT QUICKER THAN I
THOUGHT.

521

00:30:43,349 --> 00:30:46,259

>> WAS THAT ALSO YOUR EXPERIENCE
FROM THE TRANSITION?

522

00:30:46,259 --> 00:30:50,169

>> WELL, I FLEW FOUR FLIGHTS BUT
THEY WERE ALL AROUND TWO WEEKS

523

00:30:50,169 --> 00:30:52,070

OR A LITTLE BIT MORE OR A LITTLE
BIT LESS.

524

00:30:52,070 --> 00:30:54,610

SO I DON'T HAVE THAT EXPERIENCE
OF BEING IN SPACE FOR AT THAT

525

00:30:54,610 --> 00:30:55,660

LONG PERIOD OF TIME.

526

00:30:55,660 --> 00:31:00,441

MY OBSERVATION HAS BEEN THAT
WHEN YOU'RE FLYING A SPACE

527

00:31:00,441 --> 00:31:05,419

SHUTTLE MISSION, YOU KNOW, IT IS
LIKE A TWO WEEK TRAIN WRECK OF

528

00:31:05,419 --> 00:31:09,510
TRYING TO OPERATE AND GET
EVERYTHING YOU NEED TO COMPLETE

529
00:31:09,510 --> 00:31:10,860
IN THIS VERY SHORT PERIOD OF
TIME.

530
00:31:10,860 --> 00:31:13,799
SO YOU HAVE A LOT OF CREW
MEMBERS WORKING VERY FAST.

531
00:31:13,799 --> 00:31:15,770
YOU DON'T HAVE A LOT OF TIME TO
EXERCISE.

532
00:31:15,770 --> 00:31:18,230
IMPORTANT TO EXERCISE IN SPACE.

533
00:31:18,230 --> 00:31:20,980
SO ON A SPACE SHUTTLE MISSION
I'LL EXERCISE TWO OR THREE

534
00:31:20,980 --> 00:31:21,980
TIMES.

535
00:31:21,980 --> 00:31:23,649
WHERE YOU HAVE SPACE STATION
CREW MEMBERS AND THEN THEY ARE

536
00:31:23,649 --> 00:31:27,169
IN SPACE FOR SIX MONTHS THEY ARE
DOING A SIGNIFICANT AMOUNT OF

537
00:31:27,169 --> 00:31:30,299
EXERCISE ALMOST EVERY SINGLE
DAY.

538
00:31:30,299 --> 00:31:31,700
SO I THINK THAT'S WHAT REALLY

HELPS.

539

00:31:31,700 --> 00:31:37,169

I THINK THAT'S WHY YOU
ACCLIMATED PRETTY WELL AFTER 200

540

00:31:37,169 --> 00:31:41,740

DAYS IN SPACE, AND IT PROBABLY
DIDN'T FEEL A LOT DIFFERENT THAN

541

00:31:41,740 --> 00:31:44,159

BEING IN SPACE FOR JUST A COUPLE
OF WEEKS, PROBABLY BECAUSE OF

542

00:31:44,159 --> 00:31:47,580

THE AMOUNT, YOU KNOW, THE AMOUNT
OF EXERCISE AND AMOUNT OF WORK

543

00:31:47,580 --> 00:31:51,759

YOU'RE DOING, YOU KNOW, DURING
THAT TIME IN SPACE.

544

00:31:51,759 --> 00:31:56,519

>> I THINK BOTH OF YOU WOULD
AGREE THAT TECHNOLOGY IS

545

00:31:56,519 --> 00:31:58,669

IMAGINABLE ON GETTING TO MARS.

546

00:31:58,669 --> 00:32:03,320

WHAT HAPPENS WITH OUR ASTRONAUTS
ONCE THEY GET THERE, HOW DO WE

547

00:32:03,320 --> 00:32:08,620

HANDLE MAKING IT SO ASTRONAUTS
CAN LIVE THERE, HOW DIFFICULT

548

00:32:08,620 --> 00:32:09,620

WILL THAT BE?

549

00:32:09,620 --> 00:32:12,519

DO WE HAVE ANY IDEA HOW LONG
THEY WOULD BE ABLE TO STAY

550

00:32:12,519 --> 00:32:16,720

BEFORE COMING BACK OR WOULD THEY
JUST NOT COME BACK?

551

00:32:16,720 --> 00:32:19,960

>> WILL WE SEE THAT IN A MOVIE
IN ABOUT A WEEK OR SO?

552

00:32:19,960 --> 00:32:20,960

>> YEAH.

553

00:32:20,960 --> 00:32:24,179

WAIT TO SEE THE MOVIE AND READ
THE BOOK ALSO.

554

00:32:24,179 --> 00:32:27,809

I THINK THERE'S TWO WAYS TO GO
TO MARS AND THIS IS A BIG

555

00:32:27,809 --> 00:32:28,950

QUESTION THAT NEEDS ANSWERED.

556

00:32:28,950 --> 00:32:32,060

YOU CAN GO THE SLOW BOAT WAY
USING THE TRADITIONAL CHEMICAL

557

00:32:32,060 --> 00:32:34,250

ROBERT.

558

00:32:34,250 --> 00:32:37,590

IF YOU DO THAT IT TAKES SIX TO
NINE NOS GET THERE.

559

00:32:37,590 --> 00:32:40,171

THEN YOU HAVE TO WAIT FOR EARTH

AND MARS TO GO AROUND THE SUN TO

560

00:32:40,171 --> 00:32:42,850

CATCH UP AGAIN BEFORE YOU CAN
COME HOME.

561

00:32:42,850 --> 00:32:44,740

YOU SPEND A YEAR AND A HALF ON
THE SURFACE.

562

00:32:44,740 --> 00:32:46,590

ANOTHER SIX MONTHS TO COME HOME.

563

00:32:46,590 --> 00:32:51,160

THREE YEAR MISSION WHICH IS A
LONG TIME FOR YOUR WATER SYSTEMS

564

00:32:51,160 --> 00:32:54,120

NETWORK AND YOUR CARBON DIOXIDE
TO WORK.

565

00:32:54,120 --> 00:32:55,770

IT'S A LOT OF FOOD TO PACK.

566

00:32:55,770 --> 00:32:57,559

IT'S A BIG THING.

567

00:32:57,559 --> 00:33:01,110

THE FAST BOAT TO MARS IS TO DO
WHAT WE CALL ELECTRIC

568

00:33:01,110 --> 00:33:02,200

PROPULSION.

569

00:33:02,200 --> 00:33:06,960

IT'S USING ELECTRICITY, PUMP OUT
THE PROPELLANT REALLY FAST OUT

570

00:33:06,960 --> 00:33:10,169

THE BACK END AND THE SPACESHIP
GOES FASTER.

571

00:33:10,169 --> 00:33:12,580

GET TO MARS IN A FEW WEEKS.

572

00:33:12,580 --> 00:33:14,840

SPEND A COUPLE OF MONTHS AND
COME BACK.

573

00:33:14,840 --> 00:33:22,080

BUT YOU NEED A NUCLEAR REACTOR
IN SPACE.

574

00:33:22,080 --> 00:33:28,110

HUMAN BODY IS MITIGATED.

575

00:33:28,110 --> 00:33:30,690

YOUR SYSTEMS DON'T HAVE TO LAST
AS LONG.

576

00:33:30,690 --> 00:33:33,669

THAT'S A DECISION WE HAVE TO
MAKE HOW TO GET THERE EITHER THE

577

00:33:33,669 --> 00:33:35,840

FAST OR SLOW WAY.

578

00:33:35,840 --> 00:33:40,760

>> IF WE MADE THE DECISION AND
IF CONGRESS GOT BEHIND IT, HOW

579

00:33:40,760 --> 00:33:44,289

FAR AWAY ARE WE FROM
REALISTICALLY ACHIEVING THIS, DO

580

00:33:44,289 --> 00:33:45,309

YOU THINK?

581

00:33:45,309 --> 00:33:50,010
>> WELL THE FIRST HUMAN IN SPACE
HAPPENED IN 1961 AND WE WERE ON

582
00:33:50,010 --> 00:33:52,820
THE MOON IN 1969.

583
00:33:52,820 --> 00:33:55,389
SO THERE'S A HISTORICAL CONTEXT.

584
00:33:55,389 --> 00:33:57,580
GETTING TO MARS, ACTUALLY
GETTING TO MARS TAKES LONGER

585
00:33:57,580 --> 00:33:59,470
THAN GETTING TO THE MOON.

586
00:33:59,470 --> 00:34:03,779
IT COULD TO BE DONE IN A DECADE
OR TWO, MAYBE.

587
00:34:03,779 --> 00:34:07,720
BUT I THINK MARK SAID IT, HIS
ANSWER WAS VERY WELL, BUT IT'S

588
00:34:07,720 --> 00:34:10,620
MORE A QUESTION OF POLITICAL
SCIENCE THAN ROCKET SCIENCE.

589
00:34:10,620 --> 00:34:14,500
>> LEAPT ME ASK YOU ABOUT NASA
IN GENERAL.

590
00:34:14,500 --> 00:34:19,390
AS SOMEONE WHO GREW UP WITH
APOLLO AND FOR ME APOLLO 15 WAS

591
00:34:19,390 --> 00:34:21,990
THE END ALL BECAUSE I WAS 7
YEARS OLD.

592

00:34:21,990 --> 00:34:29,080

I DIDN'T REMEMBER "APOLLO 11,"
BUT I HAD THE ASTRONAUT THE

593

00:34:29,080 --> 00:34:31,690

DOLLS OR WHATEVER YOU WANT TO
CALL THEM, THE LITTLE GUYS I

594

00:34:31,690 --> 00:34:33,340

PLAYED WITH.

595

00:34:33,340 --> 00:34:35,390

NASA WAS A HUGE DEAL.

596

00:34:35,390 --> 00:34:36,390

RIGHT?

597

00:34:36,390 --> 00:34:40,210

THEN IN MORE RECENT YEARS THERE
WAS SOME THOUGHT THAT NASA HAD

598

00:34:40,210 --> 00:34:41,430

COME ON HARDER TIMES.

599

00:34:41,430 --> 00:34:45,530

WE WERE RELYING ON THE RUSSIANS
MORE AND NASA'S GLORY DAYS WERE

600

00:34:45,530 --> 00:34:46,530

OVER.

601

00:34:46,530 --> 00:34:50,000

THEN WHEN HE THE PLUTO THROUGH
BY, SO MUCH EXCITEMENT CREATED

602

00:34:50,000 --> 00:34:54,310

AND NASA SEEMED TO BE HIP AGAIN.

603

00:34:54,310 --> 00:34:58,770

WHAT IS YOUR VIEW OF WHERE WE
ARE WITH OUR SPACE AGENCY HERE

604

00:34:58,770 --> 00:34:59,950

IN THE UNITED STATES?

605

00:34:59,950 --> 00:35:03,590

AND WHAT DO WE NEED TO DO IF
ANYTHING TO PUT IT ON THE RIGHT

606

00:35:03,590 --> 00:35:04,640

FUTURE COURSE?

607

00:35:04,640 --> 00:35:07,810

>> I CAN TALK ABOUT WHAT WE'RE
DOING NOW AND I'LL LET MARK

608

00:35:07,810 --> 00:35:08,810

FINISH.

609

00:35:08,810 --> 00:35:10,660

THERE'S A LOT GOING ON AT NASA.

610

00:35:10,660 --> 00:35:15,280

THE PLUTO MISSION OBVIOUSLY,
MARS ROVERS, THREE ROVERS ACTIVE

611

00:35:15,280 --> 00:35:19,190

NOW.

612

00:35:19,190 --> 00:35:21,390

THE MARS PROGRAM IS VERY ROBUST.

613

00:35:21,390 --> 00:35:23,120

HUMAN SPACE FLIGHT IS VERY
ROBUST.

614

00:35:23,120 --> 00:35:28,090
SAMANTHA AND I GOT BACK FROM A
LONG FLIGHT.

615
00:35:28,090 --> 00:35:30,890
SO NASA IS VERY INVOLVED IN
SPACE EXPLORATION ALL ASPECTS

616
00:35:30,890 --> 00:35:35,530
OF IT ROBOTICALLY AND HUMANLY.

617
00:35:35,530 --> 00:35:37,580
IT'S NOT GONE AWAY AT ALL.

618
00:35:37,580 --> 00:35:41,340
WE ARE FLYING WITH THE RUSSIANS
RIGHT NOW AND THAT WAS ONE OF

619
00:35:41,340 --> 00:35:44,440
THE HIGHLIGHTS OF MY MISSION WAS
GETTING A CHANCE TO WORK WITH

620
00:35:44,440 --> 00:35:45,700
RUSSIAN COLLEAGUES AND WORK ON
THE SOYUZ.

621
00:35:45,700 --> 00:35:47,340
THAT WAS A GREAT EXPERIENCE.

622
00:35:47,340 --> 00:35:50,630
SOON WE'LL BE FLYING ON AMERICAN
VEHICLES AGAIN.

623
00:35:50,630 --> 00:35:52,070
NASA IS VERY BUSY.

624
00:35:52,070 --> 00:35:55,590
IT HASN'T ENDED IN ANY WAY,
SHAPE OR FORM AND THERE'S A VERY

625

00:35:55,590 --> 00:35:57,620

BRIGHT FUTURE.

626

00:35:57,620 --> 00:36:00,320

>> HERE IN THE UNITED STATES WE
HAVE THE BEST SCIENTISTS AND

627

00:36:00,320 --> 00:36:02,160

ENGINEERS IN THE WORLD.

628

00:36:02,160 --> 00:36:05,130

AND I THINK WE CAN DO ANYTHING
WE SET OUR MINDS TO.

629

00:36:05,130 --> 00:36:06,230

REALLY ANYTHING.

630

00:36:06,230 --> 00:36:10,090

WE WANT TO, ESPECIALLY, YOU
KNOW, IN SPACE FLIGHT, IT'S

631

00:36:10,090 --> 00:36:13,730

CHALLENGING BUT WE HAVE THE
RESOURCES TO DO THESE THINGS.

632

00:36:13,730 --> 00:36:16,650

I THINK WHAT WE NEED TO DO IS
PICK EXCITING MISSIONS THAT THE

633

00:36:16,650 --> 00:36:18,770

PUBLIC WILL BE INTERESTED IN.

634

00:36:18,770 --> 00:36:21,680

LIKE THE PLUTO MISSION.

635

00:36:21,680 --> 00:36:28,190

BEING SOMEBODY WHO USED TO WORK
AT NASA AND FLY IN SPACE, EVEN I

636

00:36:28,190 --> 00:36:31,980

THOUGHT THAT WAS PRETTY NEAT TO
SEE PLUTO UP CLOSE FOR THE FIRST

637

00:36:31,980 --> 00:36:35,740

TIME, SO SEE THOSE IMAGES COME
BACK AND START TO LEARN MORE

638

00:36:35,740 --> 00:36:39,600

ABOUT SOMETHING THAT IS OR ISN'T
A PLANET, I DON'T KNOW WHAT IT

639

00:36:39,600 --> 00:36:41,890

IS TODAY.

640

00:36:41,890 --> 00:36:43,820

SO WE GOT PICK THESE EXCITING
MISSIONS.

641

00:36:43,820 --> 00:36:47,070

WE GOT TO ALLOW NASA TO DO THIS.

642

00:36:47,070 --> 00:36:51,900

WHAT OFTEN HAPPENS IS YOU'LL
SEE, YOU KNOW, WE'LL BE ASKED TO

643

00:36:51,900 --> 00:36:56,880

DO SOMETHING AND THEN EITHER
SOMETIMES NASA WILL CANCEL A

644

00:36:56,880 --> 00:36:59,890

PROGRAM OR CONGRESS WILL CANCEL
IT OR THE WHITE HOUSE WILL

645

00:36:59,890 --> 00:37:01,470

CANCEL IT.

646

00:37:01,470 --> 00:37:05,100

YOU KNOW WE GOT UNDER THAT THESE

THINGS, DESPITE, YOU KNOW, THE

647

00:37:05,100 --> 00:37:08,310

ABILITY OF OUR SCIENTISTS AND
ENGINEERS TO DO THESE THINGS

648

00:37:08,310 --> 00:37:11,020

THEY DO TAKE A LONG PERIOD OF
TIME.

649

00:37:11,020 --> 00:37:14,310

OFTEN, YOU KNOW, FROM ONE
ADMINISTRATION IN THE WHITE

650

00:37:14,310 --> 00:37:15,770

HOUSE TO THE NEXT.

651

00:37:15,770 --> 00:37:17,530

SO I THINK PEOPLE JUST NEED TO
PATIENT.

652

00:37:17,530 --> 00:37:20,930

WE NEED TO GIVE NASA THE
RESOURCES TO DO THESE HARD

653

00:37:20,930 --> 00:37:21,930

THINGS.

654

00:37:21,930 --> 00:37:25,340

BUT, YOU KNOW, WE HAVE THE
PEOPLE AND THE ABILITY TO

655

00:37:25,340 --> 00:37:28,200

ACCOMPLISH EXCITING THINGS IN
SPACE.

656

00:37:28,200 --> 00:37:32,000

>> TERRY, WE HEARD SCOTT EARLIER
SAY HE WAS LOOKING FORWARD TO

657
00:37:32,000 --> 00:37:34,050
HIS SPACEWALK.

658
00:37:34,050 --> 00:37:37,680
YOU COMPLETED THREE SPACE WALKS
DURING YOUR MISSION AND THIS

659
00:37:37,680 --> 00:37:41,080
HEAD PREPARE THE SPACE STATION
FOR THE BOEING AND SPACEX

660
00:37:41,080 --> 00:37:46,790
COMMERCIAL CREW VESSELS AND YOU
GAVE US SOME AMAZING GO FROM

661
00:37:46,790 --> 00:37:50,430
IMAGERY AND MADE US FEEL LIKE WE
WERE THERE TOO.

662
00:37:50,430 --> 00:37:55,000
BUT CAN YOU TELL US WHAT IT WAS
LIKE TO BE OUT ON THESE SPACE

663
00:37:55,000 --> 00:37:58,700
WALKS AND DOING THIS SORT OF
WORK?

664
00:37:58,700 --> 00:37:59,750
>> YEAH.

665
00:37:59,750 --> 00:38:02,400
IT WAS DEFINITELY A UNIQUE -- I
HAD A CHANCE TO DO A LOT OF

666
00:38:02,400 --> 00:38:03,400
STUFF IN LIFE.

667
00:38:03,400 --> 00:38:05,030
THAT WAS UNIQUE.

668

00:38:05,030 --> 00:38:07,090

GOING OUTSIDE FOR THE FIRST
TIME.

669

00:38:07,090 --> 00:38:11,450

IN THE POOL WE PRACTICED DOING
SPACE WALKS IN WEIGHTLESS POOL.

670

00:38:11,450 --> 00:38:15,320

YOU GO OUT OF THE AIR LOCK,
THERE'S A MODULE.

671

00:38:15,320 --> 00:38:16,870

IT'S ABOUT FROM THERE TO THERE.

672

00:38:16,870 --> 00:38:20,670

I REACH OVER AND GREEN BAY AND
MOVE ON TO WHERE I'M DOING MY

673

00:38:20,670 --> 00:38:21,670

WORK.

674

00:38:21,670 --> 00:38:24,760

ON MY VERY FIRST SPACEWALK I
WENT TO DO THAT.

675

00:38:24,760 --> 00:38:26,080

NOPE I'M NOT GOING TO DO THAT.

676

00:38:26,080 --> 00:38:28,990

I STAYED ON THE SIDE OF THE
SPACE STATION AND DIDN'T TAKE

677

00:38:28,990 --> 00:38:30,650

THE SHORTCUT.

678

00:38:30,650 --> 00:38:34,750

BUT IT IS AN AMAZING EXPERIENCE

TO LOOK AND SEE THE EARTH.

679

00:38:34,750 --> 00:38:37,460

I FELT LIKE MAYBE A MINUTE OR
TWO TO DO THAT.

680

00:38:37,460 --> 00:38:42,360

ALL THREE OF MYSPACE WALKS THEY
ARE SO BUSY AND SO MANY TASKS TO

681

00:38:42,360 --> 00:38:43,360

HAPPEN.

682

00:38:43,360 --> 00:38:46,090

I DIDN'T FEEL I HAD FREE TIME.

683

00:38:46,090 --> 00:38:47,740

IT WAS LIKE WORK, WORK.

684

00:38:47,740 --> 00:38:51,830

IT WAS MORE A SHUTTLE FLIGHT
THAN A STATION FLIGHT.

685

00:38:51,830 --> 00:38:55,060

>> MARK WITH THE INTERNATIONAL
SPACE STATION IT'S ALMOST LIKE

686

00:38:55,060 --> 00:38:58,240

WE'RE SO USED TO IT WE'RE ALMOST
TAKING IT FOR GRANTED.

687

00:38:58,240 --> 00:39:02,360

WHAT CAN TO BE DONE IMPROVE THE
SCIENTIFIC OUTPUT OF THE SPACE

688

00:39:02,360 --> 00:39:05,130

STATION AND THE IMPACT IT HAS?

689

00:39:05,130 --> 00:39:08,810

>> WELL, MY BROTHER MENTIONED
THAT THEY'VE GOT OVER THE PERIOD

690

00:39:08,810 --> 00:39:11,420
OF TIME HE'S GOING BE THERE
THERE'S 400 DIFFERENT

691

00:39:11,420 --> 00:39:15,340
EXPERIMENTS GOING ON IN A BUNCH
OF DIFFERENT LABORATORIES.

692

00:39:15,340 --> 00:39:19,580
U.S. LABORATORY, JAPANESE
LABORATORY, A EUROPEAN

693

00:39:19,580 --> 00:39:21,150
LABORATORY ON BOARD.

694

00:39:21,150 --> 00:39:25,620
THE RUSSIANS DO SCIENCE IN THE
RUSSIAN SEGMENT.

695

00:39:25,620 --> 00:39:28,540
IT'S AN INCREDIBLE, YOU KNOW,
FACILITY.

696

00:39:28,540 --> 00:39:30,010
THERE'S A LOT GOING ON.

697

00:39:30,010 --> 00:39:35,240
TO EXPAND, YOU KNOW, THE OUTPUT
OF THE SPACE STATION YOU JUST

698

00:39:35,240 --> 00:39:38,750
NEED MORE PEOPLE.

699

00:39:38,750 --> 00:39:41,090
SPACE STATION WAS FIRST LAUNCHED
IN 1998.

700
00:39:41,090 --> 00:39:42,350
SO 17 YEARS NOW.

701
00:39:42,350 --> 00:39:43,840
STARTING TO GET KIND OF OLD.

702
00:39:43,840 --> 00:39:45,220
THINGS BREAK.

703
00:39:45,220 --> 00:39:48,060
PEOPLE HAVE TO FIX THINGS WHEN
THEY BREAK.

704
00:39:48,060 --> 00:39:51,040
THAT TAKES TIME AWAY FROM DOING
THE SCIENCE.

705
00:39:51,040 --> 00:39:53,840
YOU KNOW, YOU DON'T HAVE AN
ELECTRICIAN OR PLUMBER.

706
00:39:53,840 --> 00:39:56,790
YOU DON'T HAVE SOMEBODY TO CLEAN
THE PLACE UP.

707
00:39:56,790 --> 00:39:59,820
SO CREW MEMBERS ARE THE, YOU
KNOW, THEY ARE THE MECHANICS,

708
00:39:59,820 --> 00:40:04,620
SCIENTIST, THE SECRETARY, THE
GUY WHO IS FIXING THE TOILET

709
00:40:04,620 --> 00:40:06,900
WHEN THAT BREAKS.

710
00:40:06,900 --> 00:40:09,640
YOU HAVE -- YOU'RE THE MAID,
YOU'RE CLEANING UP ON THE

711

00:40:09,640 --> 00:40:10,750
WEEKEND.

712

00:40:10,750 --> 00:40:11,920
OR DURING THE WEEK.

713

00:40:11,920 --> 00:40:15,110
SO IT REALLY COMES DOWN TO CREW
TIME.

714

00:40:15,110 --> 00:40:17,700
BUT TO ADD CREW MEMBERS IT'S
COMPLICATED.

715

00:40:17,700 --> 00:40:21,970
YOU HAVE MORE CREW MEMBERS ON
BOARD NOW YOU NEED ANOTHER

716

00:40:21,970 --> 00:40:24,920
RETURN VEHICLE ON BOARD THAT
ACTS AS A LIFEBOAT IF SOMETHING

717

00:40:24,920 --> 00:40:26,300
HAPPENS.

718

00:40:26,300 --> 00:40:29,691
IT ALSO NEEDS THEN THOSE EXTRA
PEOPLE YOU NEED BE ABLE TO

719

00:40:29,691 --> 00:40:35,030
SUPPORT THEM NOT ONLY WITH FOOD
AND WATER, BUT OXYGEN.

720

00:40:35,030 --> 00:40:39,340
AIR TO BREATHE AND CARBON DIOXIDE
OUT OF THE ATMOSPHERE.

721

00:40:39,340 --> 00:40:43,000

IT GETS REALLY COMPLICATED AND
HARD TO DO.

722

00:40:43,000 --> 00:40:45,270
JUST TO ANSWER YOUR QUESTION WE
WOULD NEED MORE PEOPLE TO GET

723

00:40:45,270 --> 00:40:46,840
MORE OUT OF IT.

724

00:40:46,840 --> 00:40:49,520
>> THE INTERNATIONAL SPACE
STATION LIVING UP TO ITS NAME

725

00:40:49,520 --> 00:40:51,680
HAS BEEN SUCH AN INTERNATIONAL
EFFORT.

726

00:40:51,680 --> 00:40:55,720
DO YOU FORESEE WHEN HE LOOK AT
MARS AND LONG SPACE FLIGHT

727

00:40:55,720 --> 00:40:58,670
MISSIONS IN THE FUTURE, DO YOU
ENVISION THESE WILL BE

728

00:40:58,670 --> 00:41:04,110
INTERNATIONAL COLLABORATIONS OR
MORE U.S. EFFORTS.

729

00:41:04,110 --> 00:41:07,970
>> MY OWN PERSONAL VIEW IT WILL
DEFINITELY BE INTERNATIONAL.

730

00:41:07,970 --> 00:41:10,880
THE REASON THE INTERNATIONAL
SPACE STATION SURVIVED IF YOU

731

00:41:10,880 --> 00:41:14,580
LOOK AT THE HISTORY OF IT BACK

IN THE '90s, THE INTERNATIONAL

732

00:41:14,580 --> 00:41:17,840

PROGRAM ASPECT OF IT ALLOWED IT
TO MAKE IT THROUGH CONGRESS AND

733

00:41:17,840 --> 00:41:20,920

GOING BACK TO THE POLITICAL
SCIENCE VERSUS ROCKET SCIENCE

734

00:41:20,920 --> 00:41:24,260

ASPECT OF IT, THE INTERNATIONAL
PROGRAM MAKES IT SOMETHING THAT

735

00:41:24,260 --> 00:41:27,060

CAN SURVIVE OVER LONGER PERIOD
OF TIME.

736

00:41:27,060 --> 00:41:31,650

>> PLUS IT'S GREAT TO HAVE THE
INGENUITY AND GAIN SOME

737

00:41:31,650 --> 00:41:34,760

EFFICIENCIES HAVING DIFFERENT
COUNTRIES BUMMED DIFFERENT

738

00:41:34,760 --> 00:41:38,470

MODELS SO ONE COUNTRY DOESN'T
HAVE TO BUILD THE ENTIRE

739

00:41:38,470 --> 00:41:39,470

PROGRAM.

740

00:41:39,470 --> 00:41:44,120

>> SOMEBODY PASSED UP A QUESTION
ABOUT ELON MUSK WHO RECENTLY

741

00:41:44,120 --> 00:41:49,660

TALKED ABOUT MARS AND USING A
THERMAL NUCLEAR DEVICE AS AN

742

00:41:49,660 --> 00:41:52,450

OPTION TO MAKE MARS MORE
HABITABLE.

743

00:41:52,450 --> 00:41:54,760

ANY THOUGHT, COMMENT ON THAT?

744

00:41:54,760 --> 00:41:58,220

>> I SAW THAT IN THE NEWSPAPER.

745

00:41:58,220 --> 00:42:02,560

I DON'T KNOW THE SCIENCE BEHIND
NUKING A PLANET.

746

00:42:02,560 --> 00:42:05,100

[LAUGHTER]

BUT I WILL TELL YOU ELON IS A

747

00:42:05,100 --> 00:42:08,650

VERY SMART GUY AND HE DOES THINK
OUTSIDE OF THE BOX.

748

00:42:08,650 --> 00:42:11,760

WHEN YOU LOOK WHAT HE'S BEEN
ABLE TO ACCOMPLISH NOT ONLY WITH

749

00:42:11,760 --> 00:42:15,400

SPACEX LAUNCHING CARGO TO THE
INTERNATIONAL SPACE STATION,

750

00:42:15,400 --> 00:42:18,750

HOPEFULLY PEOPLE HERE PRETTY
SOON, YOU KNOW, INCREDIBLE CAR

751

00:42:18,750 --> 00:42:20,460

COMPANY, BIG SOLAR COMPANY.

752

00:42:20,460 --> 00:42:25,650

YOU KNOW, HE TENDS TO KNOW WHAT HE'S TALKING ABOUT.

753

00:42:25,650 --> 00:42:31,150

BUT I DON'T KNOW THE SCIENCE BEHIND NUKING THE PLANET.

754

00:42:31,150 --> 00:42:35,420

>> ANOTHER PERSON IN THE AUDIENCE HERE WRITES U.S./RUSSIA

755

00:42:35,420 --> 00:42:39,650

RELATIONS ARE TENSE ON EARTH BUT SEEM VERY PRODUCTIVE IN SPACE.

756

00:42:39,650 --> 00:42:43,190

WHAT CAN LEADERS ON EARTH LEARN FROM YOUR COOPERATION ABOARD THE

757

00:42:43,190 --> 00:42:46,210

INTERNATIONAL SPACE STATION?

758

00:42:46,210 --> 00:42:48,750

>> I CAN SECOND THAT MOTION.

759

00:42:48,750 --> 00:42:52,890

IT WAS RELATIONSHIPS IN SPACE AND ON EARTH, TRAINING OR

760

00:42:52,890 --> 00:42:55,240

PREPARING TO LAUNCH INTO SPACE ARE GREAT.

761

00:42:55,240 --> 00:42:57,650

OUR COLLEAGUES THERE ARE VERY CAPABLE.

762

00:42:57,650 --> 00:42:58,900

THEY ARE VERY FRIENDLY.

763

00:42:58,900 --> 00:43:04,750

I HAD A GREAT TIME IN SPACE WITH
ANTON AND SASHA AND MISHA WHO IS

764

00:43:04,750 --> 00:43:06,720

UP THERE WITH SCOTT.

765

00:43:06,720 --> 00:43:10,610

WE HAD A GREAT EXPERIENCE WITH
THEM.

766

00:43:10,610 --> 00:43:14,090

I THINK THE STATION HAS
ACCOMPLISHED A LOT OF THINGS AND

767

00:43:14,090 --> 00:43:18,240

THE MOST IMPORTANT THING IS THE
INTERNATIONAL RELATION ASPECT OF

768

00:43:18,240 --> 00:43:19,240

IT.

769

00:43:19,240 --> 00:43:22,411

OF ALL THE UPS AND DOWNS OF
RELATIONSHIPS ON EARTH THE SPACE

770

00:43:22,411 --> 00:43:26,740

STATION HAS BEEN VERY POSITIVE
BEACON OF LIGHT.

771

00:43:26,740 --> 00:43:30,470

>> SO TERRY, YOU WERE ON THE
SPACE STATION DURING EXPERIMENTS

772

00:43:30,470 --> 00:43:32,990

WITH 3-D PRINTING.

773

00:43:32,990 --> 00:43:40,250

PLEASE EXPLAIN THIS FOR THE

SPACE STATION NOW AND IN THE

774

00:43:40,250 --> 00:43:43,120
FUTURE.

775

00:43:43,120 --> 00:43:46,170
WERE THERE ANY PARTS PRODUCED
DURING THE TEST RUN THAT WERE

776

00:43:46,170 --> 00:43:49,610
USED AND ANY LESSONS LEARNED
THAT CAN IMPROVE THE TECHNOLOGY

777

00:43:49,610 --> 00:43:50,610
IN THE NEAR TERM.

778

00:43:50,610 --> 00:43:54,100
>> I'LL LET SAMANTHA ANSWER.

779

00:43:54,100 --> 00:43:58,600
THE 3-D PRINT CIGARETTE A GREAT
CONCEPT IN THAT YOU CAN IMAGINE

780

00:43:58,600 --> 00:44:02,830
GOING TO MARS, YOUR CLOSET IS
FULL AND YOU'RE LIMITED TO ONE

781

00:44:02,830 --> 00:44:04,680
BAG ONLY.

782

00:44:04,680 --> 00:44:06,930
SO YOU CAN'T BRING ALL THE TOOLS
YOU NEED.

783

00:44:06,930 --> 00:44:10,870
IF YOU COULD POTENTIALLY PRINT
OUT PARTS OR TOOLS, FOR EXAMPLE,

784

00:44:10,870 --> 00:44:13,190

THAT COULD REALLY SAVE ON THE
AMOUNT OF MASS YOU HAVE TO

785

00:44:13,190 --> 00:44:14,640

LAUNCH.

786

00:44:14,640 --> 00:44:19,020

WE DID MAKE A LITTLE WRENCH AND
IT WAS MADE OUT OF PLASTIC.

787

00:44:19,020 --> 00:44:21,430

IT WASN'T LIKE A HARD METAL
WRENCH.

788

00:44:21,430 --> 00:44:23,920

IT WAS THE FIRST TIME IT'S EVER
BEEN DONE IN SPACE.

789

00:44:23,920 --> 00:44:26,820

MORE OF A TECHNOLOGY
DEMONSTRATOR.

790

00:44:26,820 --> 00:44:30,650

IT WAS PRETTY COOL TO SEE A TOOL
PRINT MD OUT IN SPACE AND WE

791

00:44:30,650 --> 00:44:32,280

SENT IT BACK TO EARTH FOR
ANALYSIS.

792

00:44:32,280 --> 00:44:34,320

WE DIDN'T KEEP IT.

793

00:44:34,320 --> 00:44:37,800

THAT'S A TECHNOLOGY THAT HAS A
LOT OF PROMISE I THINK.

794

00:44:37,800 --> 00:44:41,290

>> MARK, WHAT'S THE LASTING
IMPRESSION THAT SPACE HAS GIVEN

795

00:44:41,290 --> 00:44:44,240

YOU WHEN YOU THINK OF YOUR TIME
UP THERE.

796

00:44:44,240 --> 00:44:48,460

WHAT'S THE THING THAT STRIKES
YOU THE MOST LATER ON?

797

00:44:48,460 --> 00:44:54,690

>> WELL, I THINK, YOU KNOW, WHAT
BECAME VERY OBVIOUS TO ME IN

798

00:44:54,690 --> 00:44:59,820

2001 DURING MY FIRST SPACE
MISSION WAS THAT WE LIVE ON AN

799

00:44:59,820 --> 00:45:03,270

ISLAND, REALLY UNFORGIVING
ENVIRONMENT.

800

00:45:03,270 --> 00:45:06,950

YOU KNOW YOU LOOK BACK AT THE
EARTH FROM A DISTANCE AND YOU

801

00:45:06,950 --> 00:45:09,691

HAVE VERY FEW PEOPLE ON BOARD
THE SPACE SHUTTLE AND SPACE

802

00:45:09,691 --> 00:45:10,880

STATION.

803

00:45:10,880 --> 00:45:15,550

WE GOT 7.5 BILLION PEOPLE ON
THIS ROUND BALL JUST FLOATING

804

00:45:15,550 --> 00:45:17,810

THERE IN THE BLACKNESS OF SPACE.

805

00:45:17,810 --> 00:45:20,480
WE REALLY HAVE NO PLACE ELSE TO
GO.

806
00:45:20,480 --> 00:45:24,720
THAT BECOMES A VERY -- THAT WAS
PRETTY STRIKING AND PRETTY

807
00:45:24,720 --> 00:45:27,510
QUICK.

808
00:45:27,510 --> 00:45:30,520
YOU KNOW, OBSERVATION ON MY PART
AND I IMAGINE BY OTHER

809
00:45:30,520 --> 00:45:32,510
ASTRONAUTS THAT FLY IN SPACE.

810
00:45:32,510 --> 00:45:36,730
IT GIVES YOU A LITTLE BIT MORE
OF AN APPRECIATION FOR OUR

811
00:45:36,730 --> 00:45:41,330
PLANET AND WHAT IT DOES FOR ALL
OF US AND THE NEED FOR US TO

812
00:45:41,330 --> 00:45:42,700
CONSIDER THAT.

813
00:45:42,700 --> 00:45:45,310
AND TAKE CARE OF IT.

814
00:45:45,310 --> 00:45:46,400
>> RIGHT.

815
00:45:46,400 --> 00:45:50,160
TERRY, AS WE'VE TALKED ABOUT,
THE SPACE STATION CREW HAS

816

00:45:50,160 --> 00:45:54,030
CONDUCTED HUNDREDS OF
EXPERIMENTS, INCLUDING MANY THAT

817
00:45:54,030 --> 00:45:57,800
HAVE BEEN DEVELOPED BY SCIENCE
STUDENTS AND TRANSMITTED UP

818
00:45:57,800 --> 00:45:58,800
THERE.

819
00:45:58,800 --> 00:46:02,540
DO YOU CONSULT WITH THESE SAME
STUDENTS WHEN QUESTIONS ARISE

820
00:46:02,540 --> 00:46:04,590
AND IF SO HOW?

821
00:46:04,590 --> 00:46:07,710
AND WHICH SCIENCE STUDENT
EXPERIMENTS WERE THE MOST

822
00:46:07,710 --> 00:46:11,530
INTERESTING OR CHALLENGING?

823
00:46:11,530 --> 00:46:14,650
>> WE DO HAVE -- IT DEPENDS ON
THE EXPERIMENTS.

824
00:46:14,650 --> 00:46:18,880
SOMETIMES THEY WILL -- WE JUST
TALKED TO HOUSTON OR HUNTSVILLE

825
00:46:18,880 --> 00:46:21,880
AS THE NASA CONTROL CENTER WHEN WE
DO EXPERIMENTS.

826
00:46:21,880 --> 00:46:25,790
SOMETIMES IF IT'S COMPLICATED
THEY TIE US INTO THE SCIENTISTS

827

00:46:25,790 --> 00:46:26,790

THAT MADE IT UP.

828

00:46:26,790 --> 00:46:30,960

IT DEPENDS ON THE EXPERIMENT.

829

00:46:30,960 --> 00:46:36,330

AND I'M TRYING TO THINK OF WHAT
STUDENT ONLY EXPERIMENTS WE HAD.

830

00:46:36,330 --> 00:46:39,060

MOST OF THE EXPERIMENTS WE DID
YOU KIND OF DON'T -- YOU JUST DO

831

00:46:39,060 --> 00:46:42,200

THE EXPERIMENT AND DON'T REALLY
KNOW WHO CAME UP WITH IT.

832

00:46:42,200 --> 00:46:45,700

BUT AS FAR AS STUDENT
EXPERIMENTS, THE STUDENT THINGS

833

00:46:45,700 --> 00:46:48,850

I DO REMEMBER IS THEY BUILT SOME
EQUIPMENT LIKE SOME STORAGE BAGS

834

00:46:48,850 --> 00:46:54,420

OR STORAGE LOCATION AND STUFF.

835

00:46:54,420 --> 00:46:56,180

SO I WAS NOT INVOLVED IN THIS
BUT THERE'S A THING CALLED

836

00:46:56,180 --> 00:47:06,620

SEARS, LITTLE SATELLITES OF AIR
JET AND THAT WAS A STUDENT LED

837

00:47:06,620 --> 00:47:09,490

EXPERIMENT WITH M.I.T.

838

00:47:09,490 --> 00:47:10,760

MY CREW
MATES WERE TALKING ON THE

839

00:47:10,760 --> 00:47:12,290

GROUND.

840

00:47:12,290 --> 00:47:15,300

VERY INTERACTIVE.

841

00:47:15,300 --> 00:47:19,900

LIKE THESE ROBOTIC COMPETITION
THAT KIDS DO ALTHOUGH SATELLITE

842

00:47:19,900 --> 00:47:22,900

SPACE COMPETITION THEY WERE
FLYING AROUND.

843

00:47:22,900 --> 00:47:27,460

>> MARK, I MENTIONED EARLIER
RELYING ON OTHERS FOR TRANSPORT

844

00:47:27,460 --> 00:47:29,300

UP TO THE SPACE STATION.

845

00:47:29,300 --> 00:47:32,980

DO YOU THINK ENDING THE SPACE
SHUTTLE PROGRAM BEFORE THERE WAS

846

00:47:32,980 --> 00:47:36,390

A REPLACEMENT SLOWED THE U.S.
SPACE PROGRAM?

847

00:47:36,390 --> 00:47:41,920

IN OTHER WORDS, WAS IT A GOOD
TRANSITION OR COULD WE HAVE DONE

848

00:47:41,920 --> 00:47:42,920

BETTER?

849

00:47:42,920 --> 00:47:47,920

>> SO, WE HAD THE COLUMBIA
ACCIDENT HAPPEN IN 2003.

850

00:47:47,920 --> 00:47:52,550

AND AFTER COLUMBIA THERE WAS A
JOINT DECISION MADE TO RETIRE

851

00:47:52,550 --> 00:47:55,550

THE SPACE SHUTTLE BECAUSE WE
REALIZED THAT IF WE CONTINUE TO

852

00:47:55,550 --> 00:47:59,060

FLY IT, YOU KNOW, OVER ANOTHER
DECADE WE PROBABLY WOULD LOSE

853

00:47:59,060 --> 00:48:01,320

ANOTHER SPACECRAFT AND A CREW.

854

00:48:01,320 --> 00:48:03,270

WE DIDN'T WANT TO DO THAT.

855

00:48:03,270 --> 00:48:06,590

SO THIS IS A DECISION MADE BY
THE WHITE HOUSE, BY CONGRESS AND

856

00:48:06,590 --> 00:48:09,130

BY NASA INCLUDING THE ASTRONAUT
OFFICE.

857

00:48:09,130 --> 00:48:11,410

THIS WAS THE RIGHT THING TO DO.

858

00:48:11,410 --> 00:48:14,240

TO RETIRE THE SPACE SHUTTLE.

859

00:48:14,240 --> 00:48:16,620
WHAT IT ALLOWED US TO DO IS
SPEED UP THE DEVELOPMENT OF WHAT

860
00:48:16,620 --> 00:48:20,760
THE NEXT SPACECRAFT WOULD BE.

861
00:48:20,760 --> 00:48:25,190
WHEN YOU GET INTO TESTING AND
DEVELOPING AND BUILDING THE

862
00:48:25,190 --> 00:48:29,960
HARDWARE FOR A NEW SYSTEM, A NEW
LAUNCH SYSTEM, A NEW ROCKET, A

863
00:48:29,960 --> 00:48:33,260
NEW SPACECRAFT IT GETS REALLY
EXPENSIVE REALLY QUICKLY LIKE

864
00:48:33,260 --> 00:48:37,600
UPWARDS OF \$2 TO \$3 BILLION A
YEAR TO DO THIS.

865
00:48:37,600 --> 00:48:41,600
HAPPENS THE SPACE SHUTTLE
OPERATING BUDGET WAS \$2 TO \$3

866
00:48:41,600 --> 00:48:44,190
BILLION A YEAR.

867
00:48:44,190 --> 00:48:45,330
TWO THINGS WE COULD HAVE DONE.

868
00:48:45,330 --> 00:48:48,560
WE COULD HAVE RETIRED THE SPACE
SHUTTLE AND USE THAT MONEY TO

869
00:48:48,560 --> 00:48:55,320
DEVELOP A NEW SPACECRAFT OR WE
COULD HAVE GOTTEN \$2 TO \$3

870

00:48:55,320 --> 00:48:59,090

BILLION MORE OUT OF CONGRESS AND
THE WHITE HOUSE TO DEVELOP A NEW

871

00:48:59,090 --> 00:49:00,760

SPACECRAFT AT THE SAME TIME.

872

00:49:00,760 --> 00:49:04,520

NASA'S BUDGET IS ONLY ABOUT \$19
BILLION.

873

00:49:04,520 --> 00:49:08,400

SO YOU'RE TALKING ABOUT A 15%
INCREASE IN NASA'S BUDGET TO

874

00:49:08,400 --> 00:49:10,020

BUILD A NEW SPACECRAFT.

875

00:49:10,020 --> 00:49:13,700

IN THIS FISCAL ENVIRONMENT OVER
THE LAST DECADE, I MEAN HOW HARD

876

00:49:13,700 --> 00:49:18,650

DO YOU THINK IT WOULD BE FOR AN
AGENCY TO GET AN INCREASE OF 15%

877

00:49:18,650 --> 00:49:20,430

IN ITS YEARLY BUDGET.

878

00:49:20,430 --> 00:49:23,610

IT WOULD BE REALLY, REALLY HARD
TO DO.

879

00:49:23,610 --> 00:49:27,740

SO, YOU KNOW, I ABSOLUTELY
BELIEVE WE MADE THE RIGHT

880

00:49:27,740 --> 00:49:28,740

DECISION.

881

00:49:28,740 --> 00:49:31,870

WE WANTED -- NOW I WOULD HAVE
PERSONALLY WOULD HAVE REFUNDED

882

00:49:31,870 --> 00:49:38,390

THE SPACE SHUTTLE FOR THE REST
OF MY LIFE IF I COULD.

883

00:49:38,390 --> 00:49:40,820

I LOVED IT.

884

00:49:40,820 --> 00:49:42,770

PART OF ME STILL WISHES IT WAS
STILL AROUND.

885

00:49:42,770 --> 00:49:47,440

BUT AT THE SAME TIME WE DID MAKE
THE RIGHT DECISION BECAUSE THE

886

00:49:47,440 --> 00:49:49,980

SPACE SHUTTLE WAS DESIGNED --
THEY WERE EACH DESIGNED TO FLY

887

00:49:49,980 --> 00:49:52,460

ABOUT 100 FLIGHTS.

888

00:49:52,460 --> 00:49:56,220

ENDEAVOR WHICH I FLEW ON ITS
LAST FLIGHT THAT WAS FLIGHT

889

00:49:56,220 --> 00:49:57,890

NUMBER 25.

890

00:49:57,890 --> 00:50:01,200

SO THEY WERE DESIGNED TO FLY 100
FLIGHTS BUT NOT DESIGNED TO FLY

891

00:50:01,200 --> 00:50:07,010
FOR 30 OR 40 YEARS AND THAT'S
TISSUE WE WERE DEALING WITH.

892
00:50:07,010 --> 00:50:10,830
SO, IT PUT US IN A POSITION
WHERE WE HAVE TO RELY ON OUR

893
00:50:10,830 --> 00:50:14,461
RUSSIAN PARTNERS TO GET CREW
MEMBERS TO AND FROM THE SPACE

894
00:50:14,461 --> 00:50:19,250
STATION RIGHT NOW AND NEXT
COUPLE OF YEARS.

895
00:50:19,250 --> 00:50:23,830
WE'LL BE BACK FLYING U.S. CREW
MEMBERS ON U.S. ROBERTS FROM

896
00:50:23,830 --> 00:50:28,280
U.S. SOIL HERE IN NO TIME AND I
THINK IT PUTS US ON A GOOD PATH

897
00:50:28,280 --> 00:50:29,280
GOING FORWARD.

898
00:50:29,280 --> 00:50:31,280
>> DO EITHER ONE OF YOU, IF YOU
WERE IN CONGRESS OR THE

899
00:50:31,280 --> 00:50:35,210
PRESIDENT WHERE WOULD YOU FOCUS
OUR RESOURCES FOR NASA?

900
00:50:35,210 --> 00:50:42,150
WOULD IT BE MARS MISSION,
MISSIONS LIKE PLUTO FLY BY GOING

901
00:50:42,150 --> 00:50:43,510

BACK TO THE MOON?

902

00:50:43,510 --> 00:50:44,850

THE SPACE STATION?

903

00:50:44,850 --> 00:50:46,550

WHERE DO WE NEED TO PUT OUR
FOCUS?

904

00:50:46,550 --> 00:50:47,550

>> WE WOULD DO EVERYTHING.

905

00:50:47,550 --> 00:50:48,550

>> DO IT ALL?

906

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

>> IF IT WAS UP TO ME.

907

00:50:50,240 --> 00:50:52,920

>> WHAT IF YOU DIDN'T HAVE
UNLIMITED RESOURCES WHAT WOULD

908

00:50:52,920 --> 00:50:53,940

YOU PRIORITIZE.

909

00:50:53,940 --> 00:50:55,000

>> THAT'S HARDER.

910

00:50:55,000 --> 00:50:59,910

I'LL LET TERRY ANSWER THAT.

911

00:50:59,910 --> 00:51:00,910

>> NO.

912

00:51:00,910 --> 00:51:04,940

I THINK NASA DOES NOT HAVE JUST
ONE -- I WOULD NOT FOCUS JUST ON

913

00:51:04,940 --> 00:51:05,940

ONE THING.

914

00:51:05,940 --> 00:51:10,510

NASA HAS A BROAD MISSION TO DO
BOTH AIRCRAFT RESEARCH AND

915

00:51:10,510 --> 00:51:13,320

ROBOTIC SPACE EXPLORATION AND
HUMAN SPACE EXPLORATION.

916

00:51:13,320 --> 00:51:16,130

SO I WOULD DIVIDE IT UP.

917

00:51:16,130 --> 00:51:19,810

>> TERRY YOU STAY CONNECTED TO
EARTH THROUGH YOUR FAVORITE

918

00:51:19,810 --> 00:51:21,920

PASTIME OF BASEBALL WHEN YOU
WERE UP THERE.

919

00:51:21,920 --> 00:51:25,850

AS I UNDERSTAND YOU SET OUT TO
PHOTOGRAPH EVERY MAJOR LEAGUE

920

00:51:25,850 --> 00:51:30,160

BALLPARK FROM ORBIT AND YOU
POSTED MANY OF THESE IMAGES ON

921

00:51:30,160 --> 00:51:31,160

SOCIAL MEDIA.

922

00:51:31,160 --> 00:51:32,160

DID YOU GET THEM ALL?

923

00:51:32,160 --> 00:51:33,160

WHERE DID THAT END UP?

924

00:51:33,160 --> 00:51:36,200

>> I GOT ALMOST ALL.

925

00:51:36,200 --> 00:51:39,760

AND THE COAST STADIUMS ARE
PRETTY EASY TO GET.

926

00:51:39,760 --> 00:51:41,190

LIKE BALTIMORE IS EASY TO GET.

927

00:51:41,190 --> 00:51:42,260

D.C. IS EASY TO GET.

928

00:51:42,260 --> 00:51:44,400

NEW YORK STADIUMS.

929

00:51:44,400 --> 00:51:45,650

BOSTON IS VERY EASY.

930

00:51:45,650 --> 00:51:46,930

SAN DIEGO.

931

00:51:46,930 --> 00:51:49,720

WHEN YOU GET TO THE MIDDLE OF
THE COUNTRY IT GETS TOUGH

932

00:51:49,720 --> 00:51:52,360

BECAUSE THERE'S NO -- THERE'S
NOTHING OBVIOUS AROUND KANSAS

933

00:51:52,360 --> 00:51:56,490

CITY, HUNDREDS OF MILES OF FLAT
OR ST.

934

00:51:56,490 --> 00:51:58,530

LOUIS OR CINCINNATI.

935

00:51:58,530 --> 00:52:03,540

SO THE ONES ON THE CORNERS WERE

VERY EASY TO GET AND THE ONES IN

936

00:52:03,540 --> 00:52:06,070

THE MIDDLE WERE TOUGHER TO GET.

937

00:52:06,070 --> 00:52:07,670

I THINK I GOT THEM ALL.

938

00:52:07,670 --> 00:52:11,810

I STILL NEED TO GO THROUGH FILES
AND DOUBLE CHECK THE ONES IN THE

939

00:52:11,810 --> 00:52:13,870

CENTER OF THE COUNTRY.

940

00:52:13,870 --> 00:52:17,400

PITTSBURGH WAS DIFFICULT TO GET
WITH THOSE HILLS IN WESTERN

941

00:52:17,400 --> 00:52:18,400

PENNSYLVANIA.

942

00:52:18,400 --> 00:52:21,030

>> MY BROTHER IS WORKING ON
TRYING TO GET ALL THE FOOTBALL

943

00:52:21,030 --> 00:52:24,220

STADIUMS NOW BECAUSE OF WHAT DID
YOU.

944

00:52:24,220 --> 00:52:26,220

MAYBE THAT'S WHERE HE GOT THAT
IDEA.

945

00:52:26,220 --> 00:52:28,990

>> BEFORE I ASK THE FINAL
QUESTION I HAVE SOME HOUSE

946

00:52:28,990 --> 00:52:29,990

KEEPING.

947

00:52:29,990 --> 00:52:33,260

I WANT TO REMIND PEOPLE IN THE
ROOM THAT OUR ASTRONAUTS WILL BE

948

00:52:33,260 --> 00:52:37,120

AVAILABLE DOWN THE HALL FOR
STAND UP INTERVIEWS IMMEDIATELY

949

00:52:37,120 --> 00:52:38,870

AFTER THIS PROGRAM CONCLUDES.

950

00:52:38,870 --> 00:52:42,530

I ALSO WANT TO REMIND YOU THAT
THE NATIONAL PRESS CLUB IS THE

951

00:52:42,530 --> 00:52:45,990

WORLD'S LEADING PROFESSIONAL
ORGANIZATION FOR JOURNALISTS.

952

00:52:45,990 --> 00:52:49,500

WE FIGHT FOR A FREE PRESS
WORLDWIDE AND FOR MORE

953

00:52:49,500 --> 00:52:54,400

INFORMATION ABOUT THE CLUB VISIT
OUR WEBSITE PRESS.ORG AND TO

954

00:52:54,400 --> 00:52:57,850

DONATE TO OUR NONPROFIT
JOURNALISM INSTITUTE VISIT

955

00:52:57,850 --> 00:52:58,850

PRESS.ORG/INSTITUTE.

956

00:52:58,850 --> 00:53:04,540

I WOULD ALSO LIKE TO REMIND YOU
ABOUT SOME UPCOMING PROGRAMS.

957

00:53:04,540 --> 00:53:07,940

THIS WEDNESDAY SEPTEMBER 16th AT
1:30 P.M.

958

00:53:07,940 --> 00:53:13,130

ARCHBISHOP THOMAS
WISKY OF MIAMI, BISHOP OSCAR OF

959

00:53:13,130 --> 00:53:14,710

MEXICO AND DR.

960

00:53:14,710 --> 00:53:20,880

CAROLINE WU WILL
DISCUSS POPE FRANCIS' UPCOMING

961

00:53:20,880 --> 00:53:22,960

VISIT TO WASHINGTON, D.C.

962

00:53:22,960 --> 00:53:27,620

ON MONDAY SEPTEMBER 21st, BIG 12
COMMISSIONER WILL DISCUSS

963

00:53:27,620 --> 00:53:31,940

COLLEGE ATHLETICS AND JANE CHU
CHAIR OF THE NATIONAL ENDOWMENT

964

00:53:31,940 --> 00:53:36,140

FOR THE ARTS WILL DISCUSS NEW
INITIATIVES ON SEPTEMBER

965

00:53:36,140 --> 00:53:37,140

28th.

966

00:53:37,140 --> 00:53:44,820

I WANT TO PRESENT OUR GUESTS
WITH A PRESS CLUB MUG, MUCH

967

00:53:44,820 --> 00:53:46,050

CHERISHED.

968

00:53:46,050 --> 00:53:49,140

YOU CAN'T EASILY FIND IT ON THE
SPACE STATION EITHER.

969

00:53:49,140 --> 00:53:50,270

VERY VALUABLE.

970

00:53:50,270 --> 00:53:54,000

WE'LL HAVE TO FIGURE OUT A WAY
TO GET TO IT YOUR BROTHER RIGHT?

971

00:53:54,000 --> 00:53:56,880

>> I CAN TAKE CARE OF THAT.

972

00:53:56,880 --> 00:54:00,750

NOT VERY USEFUL IN SPACE,
THOUGH.

973

00:54:00,750 --> 00:54:05,690

[LAUGHTER]

>> WE MENTIONED, YOU KNOW, THE

974

00:54:05,690 --> 00:54:08,490

MARS MOVIE THAT WILL BE COMING
OUT.

975

00:54:08,490 --> 00:54:13,320

SO MUCH FASCINATION IN
LITERATURE, MOVIES, TELEVISION

976

00:54:13,320 --> 00:54:14,320

WITH SPACE.

977

00:54:14,320 --> 00:54:18,870

I MYSELF, OF COURSE, "STAR TREK"
JUNKY, GREW UP THAT WAY.

978

00:54:18,870 --> 00:54:19,870

HOW ABOUT YOU GUYS?

979

00:54:19,870 --> 00:54:23,290

COULD EACH OF YOU TELL ME WHAT
KIND OF SCIENCE FICTION YOU

980

00:54:23,290 --> 00:54:27,880

ENJOY IF ANY AND WHAT YOU THINK
ABOUT THE MOVIES AND THE SCIENCE

981

00:54:27,880 --> 00:54:32,220

FICTION THAT YOU SEE OUT THERE
EITHER IN BOOKS OR ON TV OR IN

982

00:54:32,220 --> 00:54:33,950

THE MOVIES STARTING WITH YOU
TERRY.

983

00:54:33,950 --> 00:54:36,210

>> I ALWAYS ENJOYED IT AS A KID.

984

00:54:36,210 --> 00:54:37,850

"STAR WARS" WAS THE BIG THING.

985

00:54:37,850 --> 00:54:39,570

IN LOVED THAT.

986

00:54:39,570 --> 00:54:41,870

I REMEMBER READING ARTHUR CLARK
AS A TEENAGER.

987

00:54:41,870 --> 00:54:45,080

HE WROTE SOME GREAT STUFF.

988

00:54:45,080 --> 00:54:49,690

WATCHING "2001."

989

00:54:49,690 --> 00:54:51,921

I WATCHED THAT WHEN I WAS IN

SPACE AND I THOUGHT A LOT OF THE

990

00:54:51,921 --> 00:54:55,860

STUFF CAME TRUE 50 YEARS LATER.

991

00:54:55,860 --> 00:54:59,700

JUST WATCHED IT WHILE I WAS IN
SPACE.

992

00:54:59,700 --> 00:55:02,220

A LOT OF THAT STUFF IS NOT
WHAT'S GOING ON THE SPACE

993

00:55:02,220 --> 00:55:03,220

STATION.

994

00:55:03,220 --> 00:55:13,130

>> DID HE IN GET IT WRONG MOST
OF THE TIME?

995

00:55:13,130 --> 00:55:16,190

>> HOLLYWOOD HAS TO MAKE IT
EXCITING.

996

00:55:16,190 --> 00:55:18,090

SCOTT BROUGHT UP THIS PROJECTOR.

997

00:55:18,090 --> 00:55:19,960

WE WATCHED "GRAVITY."

998

00:55:19,960 --> 00:55:24,760

WE WATCHED THE DISASTER MOVIE
"GRAVITY."

999

00:55:24,760 --> 00:55:27,790

IT WAS FUN.

1000

00:55:27,790 --> 00:55:30,570

THE MECHANICS OF WHERE

EVERYTHING WAS AND WHAT IT

1001

00:55:30,570 --> 00:55:32,260

LOOKED LIKE WAS VERY REAL.

1002

00:55:32,260 --> 00:55:33,260

THEY GOT THAT DONE.

1003

00:55:33,260 --> 00:55:39,540

OF COURSER WITH DON'T HAVE GIANT
EXPLOSIONS AND FIRE BALLS AND

1004

00:55:39,540 --> 00:55:41,200

THEY HAVE TO MAKE THAT TO MAKE
THE MOVIE INTERESTING.

1005

00:55:41,200 --> 00:55:45,470

BUT IF WAS JUST ASTRONAUTS DOING
SCIENCE EXPERIMENTS IT WOULDN'T

1006

00:55:45,470 --> 00:55:47,770

GROSS VERY MUCH AT THE BOX
OFFICE.

1007

00:55:47,770 --> 00:55:49,051

[LAUGHTER]

>> MARK, HOW ABOUT YOU

1008

00:55:49,051 --> 00:55:58,480

>> I STARTED READING THIS BOOK
CALLED "7 ES" ABOUT USING THE

1009

00:55:58,480 --> 00:56:02,100

SPACE STATION TO SAVE HUMANITY
AFTER SOMETHING BAD HAPPENS ON

1010

00:56:02,100 --> 00:56:03,100

EARTH.

1011

00:56:03,100 --> 00:56:06,850
PRETTY INTERESTING TO SEE HOW,
YOU KNOW, EITHER AN AUTHOR OR

1012
00:56:06,850 --> 00:56:13,960
HOLLYWOOD USES EXISTING SPACE
TECHNOLOGY IN THEIR MOVIES AND

1013
00:56:13,960 --> 00:56:22,420
AS, WHEN I WAS YOUNGER, LIKE
THESE GUYS AGE DOWN HERE,

1014
00:56:22,420 --> 00:56:25,490
BROTHERS AND SISTERS DOWN HERE I
USED TO READ A LOT OF ROBERT

1015
00:56:25,490 --> 00:56:29,430
HEIDLUM AND THOSE KIND OF BOOKS.

1016
00:56:29,430 --> 00:56:36,310
MADE ME THINK WHAT IT WOULD BE
LIKE TO BE IN SPACE ONE DAY AND

1017
00:56:36,310 --> 00:56:38,920
I THINK THAT'S IMPORTANT.

1018
00:56:38,920 --> 00:56:43,580
GIVES PEOPLE, YOU KNOW, AMBITION
AND THEY CAN PICTURE THEMSELVES

1019
00:56:43,580 --> 00:56:46,369
IN A DIFFERENT PLACE AND A
DIFFERENT TIME.

1020
00:56:46,369 --> 00:56:49,260
>> THE GOOD THING, MARK W-ALL
THE GENETIC DATA THEY HAVE ON

1021
00:56:49,260 --> 00:56:53,100
YOU AND YOUR BROTHER IF

APOCALYPSE COMES WE CAN CLONE

1022

00:56:53,100 --> 00:56:57,170

YOU GUYS, MILLIONS OF KELLY
BROTHERS.

1023

00:56:57,170 --> 00:57:01,810

WHAT ABOUT YOUNG PEOPLE, I
MENTIONED AS A YOUNGSTER AND YOU

1024

00:57:01,810 --> 00:57:04,131

AS A YOUNGSTER WE WERE SO
FASCINATED WITH THE SPACE

1025

00:57:04,131 --> 00:57:06,460

PROGRAM AND I'M SURE THAT
CONTINUES.

1026

00:57:06,460 --> 00:57:10,350

YOUNG PEOPLE WHO WANT TO GO TO
SPACE SOME DAY, GET ON THAT

1027

00:57:10,350 --> 00:57:15,150

CAREER TRACK, WHAT WOULD YOU TWO
SUGGEST THAT THEY DO?

1028

00:57:15,150 --> 00:57:18,970

>> I KNOW WE GET ASKED THIS
QUESTION ALL THE TIME.

1029

00:57:18,970 --> 00:57:21,400

WHAT DO I NEED TO DO TO BE AN
ASTRONAUT.

1030

00:57:21,400 --> 00:57:22,890

DO WHAT YOU'RE PASSIONATE ABOUT.

1031

00:57:22,890 --> 00:57:28,050

EVERYBODY HAS BEEN BLESSED WITH
DIFFERENT ABILITIES AND SKILLS.

1032

00:57:28,050 --> 00:57:32,790

WHAT YOU ARE CREATED TO DO, GO
DO THAT DEAN IT WELL.

1033

00:57:32,790 --> 00:57:34,730

THERE'S NOT ONE PATH TO BEING AN
ASTRONAUT.

1034

00:57:34,730 --> 00:57:37,160

THERE'S A LOT OF DIFFERENT
ENGINEERS AND SCIENTISTS AND

1035

00:57:37,160 --> 00:57:41,940

MARK AND IN ARE PREVIOUS PILOTS
IN OUR FORMER LIVES.

1036

00:57:41,940 --> 00:57:46,030

THERE'S MEDICAL DOCTORS, SCOTT
IS A MEDICAL DOCTOR.

1037

00:57:46,030 --> 00:57:54,480

THE KEY IS TO DO WHAT YOU'RE
PASSIONATE ABOUT AND WHERE YOUR

1038

00:57:54,480 --> 00:57:55,480

GIFTS ARE.

1039

00:57:55,480 --> 00:57:58,470

>> WE'RE ALSO ON THE CUSP OF
THIS BIG SEA CHANGE WITH ACCESS

1040

00:57:58,470 --> 00:58:00,170

TO SPACE FOR PEOPLE.

1041

00:58:00,170 --> 00:58:04,600

THERE'S A VERY HIGH PROBABILITY
THAT, YOU KNOW, THE YOUNG PEOPLE

1042

00:58:04,600 --> 00:58:07,820
IN HERE TODAY, SOMETIME IN THEIR
LIVES EVEN IF THEY ARE NOT A

1043
00:58:07,820 --> 00:58:10,970
PROFESSIONAL ASTRONAUT WILL HAVE
THE OPPORTUNITY TO GO INTO

1044
00:58:10,970 --> 00:58:12,400
SPACE.

1045
00:58:12,400 --> 00:58:16,540
YOU KNOW YOU SEE COMPANIES LIKE
VIRGIN GALACTIC AND OTHERS THAT

1046
00:58:16,540 --> 00:58:21,980
ARE STARTING ON THIS ROAD TO
SPACE TOURISM.

1047
00:58:21,980 --> 00:58:27,890
AND IT'S EXCITING, AND WE'RE
GOING TO SEE A LOT MORE -- RIGHT

1048
00:58:27,890 --> 00:58:32,350
NOW THERE'S PROBABLY ABOUT 550
PEOPLE THAT HAVE EVER BEEN IN

1049
00:58:32,350 --> 00:58:42,970
SPACE AND I THINK THAT NUMBER IS
GOING TO GROW SUBSTANTIALLY.

1050
00:58:42,970 --> 00:58:50,380
>> PEOPLE ARE STARTING TO THINK
THIS CAN DIRECTLY AFFECT THEM.

1051
00:58:50,380 --> 00:58:51,990
MAYBE THEY WILL BE THE PERSON IN
SPACE.

1052
00:58:51,990 --> 00:58:53,660

I THINK THAT'S TRUE.

1053

00:58:53,660 --> 00:58:58,510

MAYBE IN SOME OF OUR LIFE TIMES
INSTEAD OF TAKING A FLIGHT FROM,

1054

00:58:58,510 --> 00:59:03,250

YOU KNOW, NEW YORK TO LONDON,
THAT TYPICALLY TAKES SIX, SEVEN

1055

00:59:03,250 --> 00:59:07,600

HOURS MAYBE SOME OF US SOME DAY
WILL BE TAKING THAT FLIGHT IN

1056

00:59:07,600 --> 00:59:11,600

HOW FAST WE CAN DO IT IN THE
SPACE SHUTTLE WHICH IS ABOUT 40

1057

00:59:11,600 --> 00:59:12,600

MINUTES.

1058

00:59:12,600 --> 00:59:16,220

YOU KNOW THAT IS -- THERE'S NO
REASON WHY THAT IS NOT POSSIBLE

1059

00:59:16,220 --> 00:59:18,630

IN THE NEXT, IN THE COMING
DECADE.

1060

00:59:18,630 --> 00:59:21,460

I THINK PEOPLE ARE STARTING TO
THINK ABOUT THIS DIFFERENTLY.

1061

00:59:21,460 --> 00:59:28,270

>> HOW ABOUT AROUND MUCH
APPLAUSE FOR OUR GUESTS?

1062

00:59:28,270 --> 00:59:34,430

[APPLAUSE]

>> I WANT TO THANK OUR NATIONAL PRESS

1063

00:59:34,430 --> 00:59:39,210

CLUB STAFF FOR THEIR WORK ON
TODAY'S PROGRAM.

1064

00:59:39,210 --> 00:59:42,390

IF YOU WANT 0 A COPY OF THIS
PROGRAM GO TO OUR WEBSITE

1065

00:59:42,390 --> 00:59:46,520

PRESS.ORG AND THAT'S WHERE YOU
CAN LEARN MORE ABOUT THE

1066

00:59:46,520 --> 00:59:48,230

NATIONAL PRESS CLUB.