
Berni

1
00:00:03,389 --> 00:00:08,520
[Mike Massimino] Hi Iím Mike Massimino and
this is Inside the International Space Station.

2
00:00:08,520 --> 00:00:16,340
Intro clip: ìThe ride home is a lot different.

3
00:00:16,340 --> 00:00:17,340
You donít want to have your tongue between
your teeth.

4
00:00:17,340 --> 00:00:18,340
A
complete blizzard.

5
00:00:18,340 --> 00:00:19,630
Do you like that word?î

6
00:00:19,630 --> 00:00:27,380
[[Massimino] Weíre going to talk to Joe Acaba
and Suni Williams about their upcoming space

7
00:00:27,380 --> 00:00:28,380
flight.

8
00:00:28,380 --> 00:00:31,449
[Massimino] What would you say is the difference,
would be, the launch experience between the

9
00:00:31,449 --> 00:00:32,449
Shuttle and the Soyuz?

10
00:00:32,449 --> 00:00:33,449
[Williams] It is close, youíre right.

11
00:00:33,449 --> 00:00:34,960
[Massimino] Both inside and outside the spaceship.

12

00:00:34,960 --> 00:00:40,210
[Williams] Iíd say it is closer but the rocket
is smaller so the impression for the noise

13
00:00:40,210 --> 00:00:41,210
and the sound.

14
00:00:41,210 --> 00:00:44,379
I think
itís similar from what I felt.

15
00:00:44,379 --> 00:00:45,379
That part of it.

16
00:00:45,379 --> 00:00:46,609
[Acaba] The big difference is Iíve only seen
one.

17
00:00:46,609 --> 00:00:48,071
I kinda saw one.

18
00:00:48,071 --> 00:00:52,739
I was Dan Burbankís back up so I was
out there in a blizzard.

19
00:00:52,739 --> 00:00:54,210
The Shuttle doesnít launch in a blizzard.

20
00:00:54,210 --> 00:00:55,470
[Williams] So you couldnít see anything

21
00:00:55,470 --> 00:00:57,512
[Massimino] So you kinda saw something

22
00:00:57,512 --> 00:01:02,020
[Acaba] Yeah, I kinda saw it there, I kinda
saw a little light but thatís a huge difference.

23
00:01:02,020 --> 00:01:04,672

Where the Shuttle
flight, itís a nice day at work you have

24
00:01:04,672 --> 00:01:07,659
a sea square down there, you have a little
bit of wind, youíre not

25
00:01:07,659 --> 00:01:08,659
gonna fly today.

26
00:01:08,659 --> 00:01:10,009
You have a lot of requirements.

27
00:01:10,009 --> 00:01:13,290
These guys had like 60 mph winds it was a
complete

28
00:01:13,290 --> 00:01:15,610
blizzard and they launched.

29
00:01:15,610 --> 00:01:19,240
[Williams] The funny part about it is they
didnít know probably, aside from people telling

30
00:01:19,240 --> 00:01:22,100
them it was a
blizzard because in the Soyuz thereís a protective

31
00:01:22,100 --> 00:01:24,920
cover over you so you canít see outside.

32
00:01:24,920 --> 00:01:26,829
You know
in the Shuttle thereís windows so everybody

33
00:01:26,829 --> 00:01:29,130
can see, of course, so they can fly it.

34
00:01:29,130 --> 00:01:33,090

In the Soyuz youíre
just sitting in this incased little capsule.

35
00:01:33,090 --> 00:01:35,509
People will tell you itís freezing out here,
itís blowin snow, we

36
00:01:35,509 --> 00:01:36,759
canít even see you.

37
00:01:36,759 --> 00:01:38,020
It doesnít even matter.

38
00:01:38,020 --> 00:01:44,430
[Massimino] I think they had a clue it was
even snowing, thereís a walk to the spaceship.

39
00:01:44,430 --> 00:01:47,570
[Williams] Aside from the walk.

40
00:01:47,570 --> 00:01:50,219
[Massimino] You looked like a Snuggie ad there.

41
00:01:50,219 --> 00:01:51,909
[Acaba] Yeah, all wrapped up.

42
00:01:51,909 --> 00:01:54,590
[Massimino] Yeah, yaíll had that whatever;
you looked like a bunch of monks walking up

43
00:01:54,590 --> 00:01:55,590
there.

44
00:01:55,590 --> 00:01:57,110
[Williams] I donít think that, thatís not
to keep them warm.

45
00:01:57,110 --> 00:01:59,469
[Massimino] Itís to protect the suit.

46
00:01:59,469 --> 00:02:03,600
[Williams] Yeah the suit, the suitÖ just
for the suit.

47
00:02:03,600 --> 00:02:07,020
[Massimino] So you know itís snowin from
the walk there in the weather.

48
00:02:07,020 --> 00:02:10,240
So, itís about, so you
havenít been on the Soyuz yet even for this

49
00:02:10,240 --> 00:02:13,270
launch but what are the major differences
youíll

50
00:02:13,270 --> 00:02:16,160
experience between the Shuttle launch and
the Soyuz?

51
00:02:16,160 --> 00:02:21,130
One thing you mentioned, I guess you donít
see very well, you donít have the big thing.

52
00:02:21,130 --> 00:02:26,150
[Williams] No you donít have the big visual
outside picture from what we saw.

53
00:02:26,150 --> 00:02:31,850
We saw the vehicle; well
actually weíve both been under its cover

54
00:02:31,850 --> 00:02:35,690
because they put the rocket together only
like 3 days before

55
00:02:35,690 --> 00:02:36,690
launch.

56
00:02:36,690 --> 00:02:38,360
Itís pretty incredible, actually.

57
00:02:38,360 --> 00:02:41,950
We see the vehicle, the actual Soyuz vehicle
about 2 weeks

58
00:02:41,950 --> 00:02:46,849
before launch and then they put it in its
protective shroud and they stand it upright

59
00:02:46,849 --> 00:02:50,050
and we get to get
in it when itís like that and sit in your

60
00:02:50,050 --> 00:02:52,010
seat which is pretty squishy.

61
00:02:52,010 --> 00:02:55,810
You know Shuttle is, everybody has
their chairs and theyíre sort of lined up,

62
00:02:55,810 --> 00:02:57,240
you know, all right next to each other.

63
00:02:57,240 --> 00:03:00,550
You have a little bit of
room to move around even though it seems a

64
00:03:00,550 --> 00:03:01,550
little squooshy.

65
00:03:01,550 --> 00:03:04,780
In the Soyuz itís me and Joe, and you
know, your size would be right in the center

66
00:03:04,780 --> 00:03:07,720
of us and weíd be all close together and
snugged up

67
00:03:07,720 --> 00:03:08,720
together.

68
00:03:08,720 --> 00:03:12,019
Os there isnít much room in there at all
to move around and your knees are up a little

69
00:03:12,019 --> 00:03:13,030
bit in
your chest.

70
00:03:13,030 --> 00:03:15,540
[Acaba] Weíd be prying you out of that thing.

71
00:03:15,540 --> 00:03:16,610
Youíd have a hard time.

72
00:03:16,610 --> 00:03:17,930
[Williams] It would be hard, yeah.

73
00:03:17,930 --> 00:03:19,190
[Acaba] Like, the roll outís pretty cool.

74
00:03:19,190 --> 00:03:21,050
[Williams] Oh, yeah, talk about the roll out.

75
00:03:21,050 --> 00:03:22,050
[Massimino] The what?

76
00:03:22,050 --> 00:03:23,050
[Acaba] The roll out.

77
00:03:23,050 --> 00:03:24,050
You know, your vehicle.

78
00:03:24,050 --> 00:03:27,730
Itís like launch day, minus 2 days and it

was neat.

79
00:03:27,730 --> 00:03:29,780
As a
backup you get a chance to go out there and

80
00:03:29,780 --> 00:03:33,689
see and itís early in the morning, this things
coming on a

81
00:03:33,689 --> 00:03:37,430
little train, the rails right there.

82
00:03:37,430 --> 00:03:42,959
They roll it right up to the pad and hoist
it up and boom, itís ready to

83
00:03:42,959 --> 00:03:43,959
go.

84
00:03:43,959 --> 00:03:48,269
The Shuttleís out there for months, you know
30 days in advance itís sitting out there

85
00:03:48,269 --> 00:03:51,239
and this
thing is, you go out there 3 days before launch

86
00:03:51,239 --> 00:03:52,770
and whereís the launch pad, you know.

87
00:03:52,770 --> 00:03:53,770
You donít see
it.

88
00:03:53,770 --> 00:03:54,940
So thatís pretty cool to see that.

89
00:03:54,940 --> 00:03:59,180

[Massimino] So the railroad car is the launch pad so to speak?

90
00:03:59,180 --> 00:04:00,180
[Acaba] Pretty much.

91
00:04:00,180 --> 00:04:03,739
It rolls out there and then they just have this mechanism where they just hoist it up

92
00:04:03,739 --> 00:04:06,060
and then put it on their launchpad.

93
00:04:06,060 --> 00:04:10,550
[Massimino] So it doesnít have all the support structure from what Iíve seen like the Shuttle

94
00:04:10,550 --> 00:04:11,550
has?

95
00:04:11,550 --> 00:04:13,510
The
Shuttle has like where we go up the different

96
00:04:13,510 --> 00:04:15,670
levels and everything else you had over there.

97
00:04:15,670 --> 00:04:16,670
[Acaba] Right.

98
00:04:16,670 --> 00:04:17,670
[Massimino] You donít have all of that support structure.

99
00:04:17,670 --> 00:04:18,930
[Acaba] Itís not quite as elaborate.

100
00:04:18,930 --> 00:04:20,030
[Williams] Not as elaborate.

101
00:04:20,030 --> 00:04:21,320
Itís pretty elegant though.

102
00:04:21,320 --> 00:04:22,320
[Acaba] It is.

103
00:04:22,320 --> 00:04:23,550
[Massimino] Meaning?

104
00:04:23,550 --> 00:04:26,310
[Williams] Meaning itís just sitting on 3
pegs.

105
00:04:26,310 --> 00:04:31,590
Itís just hangin out there, and then it launches.

106
00:04:31,590 --> 00:04:35,130
Thereís some
support structures, just pretty much for like

107
00:04:35,130 --> 00:04:37,040
wind and stuff like that.

108
00:04:37,040 --> 00:04:41,510
The vehicleís pretty tall, ya know,
we could talk about what it looks like.

109
00:04:41,510 --> 00:04:44,050
[Acaba] For blizzards, something to hold it
up.

110
00:04:44,050 --> 00:04:48,570
[Williams] Sorta, to support it just a little
bit but when the vehicle launches and those

111
00:04:48,570 --> 00:04:51,820
are on weights, and
when the vehicle launches and its thrust is

112
00:04:51,820 --> 00:04:54,940
greater than those weights all the support structure just

113
00:04:54,940 --> 00:04:58,570
falls away because the thrust is bigger than the weight and it just launches off those

114
00:04:58,570 --> 00:05:00,940
three pegs that
hold it there.

115
00:05:00,940 --> 00:05:03,280
So thereís no pyrobolts that hold it.

116
00:05:03,280 --> 00:05:06,310
No mechanism that you have to worry about thatís

117
00:05:06,310 --> 00:05:07,330
going to fail.

118
00:05:07,330 --> 00:05:12,390
If the main engine of the Soyuz works, itís going.

119
00:05:12,390 --> 00:05:14,170
So thatís sort of nice to know.

120
00:05:14,170 --> 00:05:16,940
[Massimino] Elegant, I think is a good way to describe it.

121
00:05:16,940 --> 00:05:18,200
[Williams] You like that word?

122
00:05:18,200 --> 00:05:21,330
[Massimino] I like it.

123
00:05:21,330 --> 00:05:22,330
Elegant.

124
00:05:22,330 --> 00:05:23,360
A lot of times, ok elegant to people who are
watching the Kardashians

125
00:05:23,360 --> 00:05:25,340
right now probably has one meaning.

126
00:05:25,340 --> 00:05:26,980
Elegant to engineers has a different meaning.

127
00:05:26,980 --> 00:05:29,920
Thatís why I
asked how you used it.

128
00:05:29,920 --> 00:05:30,920
[Williams] Simplistic.

129
00:05:30,920 --> 00:05:31,920
Simplistic, perfect.

130
00:05:31,920 --> 00:05:35,080
[Massimino] A very, very, clever, nice way
to do things.

131
00:05:35,080 --> 00:05:41,150
The launch acceleration and so on, is that
what, is that, do you think that that is similar

132
00:05:41,150 --> 00:05:46,130
to what you experienced on Shuttle or is it
smoother, orÖ

133
00:05:46,130 --> 00:05:48,050
[Acaba] I donít know

134
00:05:48,050 --> 00:05:50,430
[Massimino] How would you describe it?

135
00:05:50,430 --> 00:05:55,420
[Williams] From video, from inside the Soyuz,
cause we also as backups we, you were in the

136
00:05:55,420 --> 00:05:56,420
SAR?

137
00:05:56,420 --> 00:05:57,420
[Acaba] yes

138
00:05:57,420 --> 00:05:59,990
[Williams] We were in the SAR room where the
search and rescue folks are, cause theyíre

139
00:05:59,990 --> 00:06:02,840
all lined up and
ready in case anything happens and they have

140
00:06:02,840 --> 00:06:06,210
communications to all of the assets down range
and

141
00:06:06,210 --> 00:06:10,880
inside there they had TVís so you can see
whatís going on in the capsule and thatís

142
00:06:10,880 --> 00:06:14,160
been like forever
cause they always want to know how the crew

143
00:06:14,160 --> 00:06:15,160
feels.

144
00:06:15,160 --> 00:06:16,160
ìHowís the crew feeling?í This is a question
that

145
00:06:16,160 --> 00:06:17,160
happens all the time.

146
00:06:17,160 --> 00:06:18,160
The crewís feeling fine.

147
00:06:18,160 --> 00:06:19,800
And theyíre watching you on video just to
make sure

148
00:06:19,800 --> 00:06:20,820
everybodyís okay.

149
00:06:20,820 --> 00:06:26,430
So as youíre watching them itís really pretty
smooth cause itís a liquid rocket so itís

150
00:06:26,430 --> 00:06:32,800
not a lot of vibration until the staging happens
and then you can really see people bounce

151
00:06:32,800 --> 00:06:34,470
around
when the staging happens.

152
00:06:34,470 --> 00:06:36,530
[Acaba] The profile is pretty similar.

153
00:06:36,530 --> 00:06:39,020
You do the centrifuge training out there like
you do for a Shuttle

154
00:06:39,020 --> 00:06:44,060
flight and you know so going up it seemed
pretty much the same.

155
00:06:44,060 --> 00:06:45,860
G-force and all that.

156
00:06:45,860 --> 00:06:48,810
But the ride
coming home I hear is a lot different on the

157
00:06:48,810 --> 00:06:50,250
Soyuz as compared to the Shuttle.

158
00:06:50,250 --> 00:06:53,380
Thatís like coming
home on a nice jet liner.

159
00:06:53,380 --> 00:06:56,560
Smooth and everythingís good and youíre
happy to be home.

160
00:06:56,560 --> 00:06:57,560
SoyuzÖ.

161
00:06:57,560 --> 00:06:58,560
[Williams] Soyuz is a little differentÖ

162
00:06:58,560 --> 00:07:02,240
[Acaba] Yeah, if you ever hear any of the
audio from inside the Soyuz capsule, not pretty.

163
00:07:02,240 --> 00:07:10,110
[Massimino] So itís gonna be pretty rough,
is what youíreÖ the big boom at the end?

164
00:07:10,110 --> 00:07:11,110
[Williams] Itís a couple of things.

165
00:07:11,110 --> 00:07:13,430
I think, like when the parachute comes out
you know the vehicleís

166
00:07:13,430 --> 00:07:18,130
coming in and the parachute rips out from

one side and itís gonna jerk the vehicle

167
00:07:18,130 --> 00:07:21,270
around and the
second part of the parachute actually realigns

168
00:07:21,270 --> 00:07:23,220
itself cause you come in under, like, under
the vehicle,

169
00:07:23,220 --> 00:07:27,080
only one side of the parachute, the vehicle
is connected to the parachute and then it

170
00:07:27,080 --> 00:07:30,110
has an automatic
system that realigns it so that itís connected

171
00:07:30,110 --> 00:07:31,580
on 2 sides.

172
00:07:31,580 --> 00:07:34,370
All of that is really jerky from what folks
have

173
00:07:34,370 --> 00:07:35,370
said.

174
00:07:35,370 --> 00:07:36,370
[Massimino] So youíre going to be floating
all over the place like ahhhÖ.

175
00:07:36,370 --> 00:07:40,290
[Williams] Thatís what weíve heard and youíre
in straps like that and of course the ìsoft

176
00:07:40,290 --> 00:07:41,290
landingî

177

00:07:41,290 --> 00:07:42,290
[Acaba] Yes, very softÖ

178
00:07:42,290 --> 00:07:43,340
[Williams] Very soft.

179
00:07:43,340 --> 00:07:47,740
[Massimino] Youíre gonna have to brace, like,
brace yourself for the landing.

180
00:07:47,740 --> 00:07:50,640
Is there a warning or
something?

181
00:07:50,640 --> 00:07:55,300
[Williams] It actually says pasatka, which
is landing a couple of seconds before landing.

182
00:07:55,300 --> 00:07:59,430
So the computer
sort of knows but itís not at landing.

183
00:07:59,430 --> 00:08:07,320
It has a height sensor that sends a light
off so you know and you

184
00:08:07,320 --> 00:08:11,340
donít want to have your tongue between your
teeth at that point in time for example.

185
00:08:11,340 --> 00:08:12,500
That would be
bad.

186
00:08:12,500 --> 00:08:14,450
And you also just want to sort be ready.

187
00:08:14,450 --> 00:08:18,430
We have a, this is sort of funny, we have
a little stick in

188
00:08:18,430 --> 00:08:23,540
the Soyuz kind of like in an airplane sort
of and it has a transmit button so the main

189
00:08:23,540 --> 00:08:26,520
purpose is so you
can communicate and make calls.

190
00:08:26,520 --> 00:08:27,710
Stuff like that.

191
00:08:27,710 --> 00:08:31,080
But the second purpose is the Oh God stick.

192
00:08:31,080 --> 00:08:33,310
So when
youíre landing you hold onto it just so you

193
00:08:33,310 --> 00:08:34,960
have something to do with your hands.

194
00:08:34,960 --> 00:08:36,349
[Massimino] Thatís good.

195
00:08:36,349 --> 00:08:37,419
[Williams] Youíre like ahhhhÖ.

196
00:08:37,419 --> 00:08:39,280
[Acaba] You donít wanna grab your commander
and squeeze him.

197
00:08:39,280 --> 00:08:42,030
[Williams] So youíve got that little thing.

198
00:08:42,030 --> 00:08:44,640
[Massimino] So youíre flying on a Russian
ship.

199
00:08:44,640 --> 00:08:48,220
I mean do you notice that difference or are
you like ah,

200
00:08:48,220 --> 00:08:50,860
weíre all one big team?

201
00:08:50,860 --> 00:08:55,850
Whatís the, Iím curious, whatís the feeling
that you have about that?

202
00:08:55,850 --> 00:09:01,390
[Acaba] Weíre speaking Russian so thatís
a big difference so you definitely know youíre

203
00:09:01,390 --> 00:09:02,390
on a Russian
vehicle.

204
00:09:02,390 --> 00:09:04,550
Just the way the Russians do things.

205
00:09:04,550 --> 00:09:08,350
Itís fairly simplistic but itís very reliable.

206
00:09:08,350 --> 00:09:13,100
Itís a little bit
different, you know, Shuttle is complex, but

207
00:09:13,100 --> 00:09:14,100
itís weird.

208
00:09:14,100 --> 00:09:20,210
You know, having to go train in Russia, you
know, go out there and then launch from Kazakhstan.

209
00:09:20,210 --> 00:09:22,670
Itís different than launching from Florida.

210
00:09:22,670 --> 00:09:25,630
I
mean, jus the whole mentality of it.

211
00:09:25,630 --> 00:09:30,280
You know, we donít have that capability to
do it now but itís an

212
00:09:30,280 --> 00:09:37,700
International program so I think itís great
that weíre working together so I think this

213
00:09:37,700 --> 00:09:41,740
is a pretty neat
transition going to where you have these 2

214
00:09:41,740 --> 00:09:46,200
separate entities that have been working together
to

215
00:09:46,200 --> 00:09:47,800
actually get into space.

216
00:09:47,800 --> 00:09:50,170
I think itís good for what we might do in
the future.

217
00:09:50,170 --> 00:09:53,710
[Williams] and I think the Russians are pretty
respectful for all of the countries and the

218
00:09:53,710 --> 00:09:57,030
partners that are
there we do a flag raising ceremony while

219
00:09:57,030 --> 00:10:00,520
we are in Kazakhstan and actually we raise
a Kazak flag as

220

00:10:00,520 --> 00:10:05,520
well because we are actually in Kazakhstan
but we raised an American flag right before

221
00:10:05,520 --> 00:10:09,990
launch, Aki
raised a Japanese flag and so theyíre absolutely

222
00:10:09,990 --> 00:10:12,400
respectful for other countries that are there
and

223
00:10:12,400 --> 00:10:13,400
participating.

224
00:10:13,400 --> 00:10:18,340
So thatís good and like Joe said we are,
we are launching on a Russian rocket and a

225
00:10:18,340 --> 00:10:22,140
Russian spacecraft thatís gonna be our life
raft while were up there.

226
00:10:22,140 --> 00:10:24,650
Thereís a lot to be learned from
that.

227
00:10:24,650 --> 00:10:28,850
When I was thinking about doing this one of
the reasons I wanted to fly in the Soyuz is

228
00:10:28,850 --> 00:10:30,600
because
we are probably going to go back to some kind

229
00:10:30,600 --> 00:10:31,790
of capsule vehicle.

230
00:10:31,790 --> 00:10:35,461
Weíve only flown in the Shuttle, our

generation of folks and I thought, wow, that

231
00:10:35,461 --> 00:10:40,710
would be a good experience to see what a capsule
vehicle is like, landing under a parachute

232
00:10:40,710 --> 00:10:42,800
and take some of that stuff you know some
of the historic

233
00:10:42,800 --> 00:10:46,950
stuff and the knowledge you get from the Russian
program and hopefully carry that over into

234
00:10:46,950 --> 00:10:49,300
our next
vehicle in the U.S.

235
00:10:49,300 --> 00:10:54,300
I hope weíll build another vehicle that will
be a capsule, maybe a lot different from