1
00:00:02,316 --> 00:00:07,436
[Kyle Herring] While the team here
in Houston continues to follow along

2
00:00:07,436 --> 00:00:15,786
with the Expedition 30 crew's timeline on
orbit, we'll also take a moment to talk

3
00:00:15,786 --> 00:00:21,446
with Ken Tenbusch who is also down at
the Kennedy Space Center in Florida.

4
00:00:21,446 --> 00:00:25,996
He is the Commercial Crew
Program's Partner Manager for ATK.

5
00:00:26,276 --> 00:00:29,336
And Ken we appreciate you joining us today.

6
00:00:29,746 --> 00:00:30,716
[Ken Tenbusch] Hey good morning Kyle.

7
00:00:30,716 --> 00:00:31,616
Very good to be here.

8
00:00:31,826 --> 00:00:33,196
[Kyle] Yeah, it's great to have you here.

9
00:00:33,226 --> 00:00:39,866
You know I just talked to John and Gennaro
about their role in the overall program

10
00:00:39,866 --> 00:00:46,656
as partner managers for each one of these of
seven companies that are part of the program.

11
00:00:46,976 --> 00:00:52,336
And of course your role is to be the partner
manager for ATK, but first tell us little bit

12
00:00:52,336 --> 00:00:55,536
about yourself and how you
ended up where you are today.

13
00:00:56,686 --> 00:00:57,436
[Ken] Sure.

14
00:00:57,436 --> 00:01:04,256
I grew up in small town in Michigan and probably
I think as a young boy, you know, just watching,

15
00:01:04,666 --> 00:01:09,906
you know, the Saturn Five rocket, you know,
head towards the Moon and seeing the likes

16
00:01:09,906 --> 00:01:11,916
on Neil Armstrong, Buzz Aldrin, all those.

17
00:01:11,916 --> 00:01:15,216
It just always excited me
from the very beginning.

18
00:01:15,216 --> 00:01:21,676
So I think that was kind of the impetus
to kind of keep me on a path to, you know,

19
00:01:21,676 --> 00:01:25,866
to keep me excited about science and mathematics

20
00:01:25,866 --> 00:01:29,786
and move me towards eventually
getting my college degree.

21
00:01:30,416 --> 00:01:37,646
And so, yeah, I had a, had a, some good
luck as far as finding my way on to NASA.

22
00:01:37,646 --> 00:01:43,326

I eventually, I started first after my
graduation from the Air, you know I graduated

23
00:01:43,786 --> 00:01:47,476
with my Bachelors in Aerospace
Engineering at the University of Florida

24
00:01:47,476 --> 00:01:49,566
and then worked in the Air Force.

25
00:01:49,566 --> 00:01:56,676
And while I was there after my early tour I
had an opportunity to do some interviewing

26
00:01:56,676 --> 00:01:59,816
at NASA and found my way working there.

27
00:01:59,816 --> 00:02:04,566
So that was my start as far as
getting into the space industry.

28
00:02:04,976 --> 00:02:11,606
I think, I will say this, I spent a summer
while I was in college doing cement construction

29
00:02:12,116 --> 00:02:18,456
and that also was a pretty good, you know,
it gave me the desire to stick it through,

30
00:02:18,456 --> 00:02:20,416
and make it through and get my degree.

31
00:02:20,416 --> 00:02:27,266
So again I had that good luck as far as getting
an interview and then eventually getting the job

32
00:02:27,266 --> 00:02:30,836
at Kennedy Space Center and I pretty
much stayed here my entire career.

33
00:02:31,686 --> 00:02:33,226
[Kyle] When did you join KSC?

34
00:02:33,226 --> 00:02:36,976
[Ken] It was back in 1989.

35
00:02:37,286 --> 00:02:40,566
Hard to believe it's been over 20 years now.

36
00:02:40,566 --> 00:02:46,046
But, you know, there I had a good career,
you know, as far as following my heart

37
00:02:46,046 --> 00:02:51,076
and being able to do a lot of the things
I that wanted to do here and very blessed.

38
00:02:51,906 --> 00:02:56,046
[Kyle] And so what did you work
on before Commercial Crew now?

39
00:02:56,916 --> 00:03:01,336
[Ken] I started out as an External
Tank mechanical systems engineer

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00:03:01,976 --> 00:03:10,436
and then had a chance to work with some NASA
test directors while here in operations,

41
00:03:10,856 --> 00:03:13,446
you know, working through, you
know, various issues as far

42
00:03:13,446 --> 00:03:17,106
as with tank processing,
ground processing here at KSC.

43
00:03:17,646 --> 00:03:23,176
And that always excited me so I did that

for quite a long time and eventually got

44
00:03:23,176 --> 00:03:29,216
into landing operations and then since I was
working closely with the orbiter at that point,

45
00:03:29,216 --> 00:03:32,476
I started, I was asked to be a vehicle manager

46
00:03:32,816 --> 00:03:38,116
for two different orbiters
on both OV 104 and OV 103.

47
00:03:38,356 --> 00:03:40,526
[Kyle] And that's Atlantis and Discovery.

48
00:03:40,526 --> 00:03:46,726
[Ken] Exactly, and, and then eventually
that led to a flow director position

49
00:03:47,096 --> 00:03:53,786
which gave me a chance to see shuttle, the
shuttle program from a lot of various, you know,

50
00:03:53,786 --> 00:03:59,826
areas, you know, as far as seeing, you know, the
interconnections, you know, and all the effort

51
00:03:59,826 --> 00:04:03,856
that goes along with putting a vehicle
together and getting it ready for flight.

52
00:04:04,406 --> 00:04:10,206
And then from there, and then given some
background that I had as far as with Marshall

53
00:04:10,206 --> 00:04:15,316
and working with ETSRB operations, had
a small stint as far as with working

54
00:04:15,316 --> 00:04:20,106
with Marshall design engineering
and primarily, you know,

55
00:04:20,646 --> 00:04:24,306
as far as with the Solid
Rocket Booster specifically.

56
00:04:24,576 --> 00:04:27,116
And then I did work closely
with ATK at that point.

57
00:04:27,686 --> 00:04:31,616
And then, you know, given I think
a lot of the various experiences

58
00:04:31,616 --> 00:04:34,146
that I've had it just made sense

59
00:04:34,276 --> 00:04:38,006
to start working Constellation just
before the end of the shuttle program.

60
00:04:38,006 --> 00:04:44,526
So I was working upper stage on design
and development and, and I was, you know,

61
00:04:44,526 --> 00:04:49,216
that was very exciting work that I was
able to do there and then so given that,

62
00:04:49,326 --> 00:04:52,766
it was a nice easy transition
to work Commercial Crew.

63
00:04:52,766 --> 00:04:56,006
[Kyle] Yeah, I was going to say that's a
perfect transition to the role you're in now...

64

00:04:56,006 --> 00:04:56,536
[Ken] Exactly.

65
00:04:56,596 --> 00:04:57,726
[Kyle] ...with ATK right?

66
00:04:57,726 --> 00:04:59,986
[Ken] Specifically, with ATK exactly.

67
00:05:00,326 --> 00:05:05,876
Because I've been working so closely with, with
Aries-1 on design and development and then here

68
00:05:05,876 --> 00:05:12,256
at ATK, you know, as leveraging off of that, all
that work and effort that had been done during

69
00:05:12,256 --> 00:05:17,466
that program, the Constellation program, it was,
you know, it was, was perfect as far as working

70
00:05:17,466 --> 00:05:22,656
with them and trying to continue to help them
work through their development of that rocket.

71
00:05:23,226 --> 00:05:25,256
Their rocket being the Liberty rocket.

72
00:05:25,256 --> 00:05:25,646
[Kyle] Right.

73
00:05:25,676 --> 00:05:29,206
Right. I don't need to ask you about being
integrated with them then because you,

74
00:05:29,386 --> 00:05:31,836
you've obviously worked pretty
closely with them.

75

00:05:31,836 --> 00:05:35,216
And then, so the transition
into a Partner Manager role

76
00:05:35,276 --> 00:05:41,406
under Commercial Crew was pretty simple I would
think because you already knew all those people.

77
00:05:41,776 --> 00:05:43,366
[Ken] Exactly Kyle.

78
00:05:43,366 --> 00:05:46,316
So it was I knew a lot of the folks.

79
00:05:46,316 --> 00:05:49,076
I knew it was a very good hard working team.

80
00:05:49,446 --> 00:05:54,936
And I knew how they were, you know, using what
had already been done as far as, you know,

81
00:05:54,936 --> 00:05:58,646
through their NASA experiences, because,
you know, we have had contracts with them

82
00:05:58,646 --> 00:06:02,756
in the past and a good working
relationship always with ATK that, you know,

83
00:06:02,756 --> 00:06:09,076
again it was just such an easy transition to
continue that effort and help them to continue

84
00:06:09,076 --> 00:06:15,526
to build what I would say a good rocket
that could carry crew very easily.

85
00:06:15,526 --> 00:06:20,046
And let me, I'll take it maybe a little bit more
further into the Liberty rocket itself, know,

86
00:06:20,046 --> 00:06:24,566
because you've got now first a stage
that has got what I would call a very,

87
00:06:26,066 --> 00:06:31,356
a very good robust design, you know,
that has evolved through the years.

88
00:06:31,766 --> 00:06:37,536
And now you take that motor, add an extra
segment, five segment motor as a first stage.

89
00:06:37,536 --> 00:06:39,766
You've got a very dependable first stage there.

90
00:06:40,276 --> 00:06:46,746
And then, you know, then what they did
was they worked closely with Astrium,

91
00:06:46,746 --> 00:06:53,886
and that's one of the partners, that builds the
Ariane-V rocket and so they took the core stage

92
00:06:54,206 --> 00:06:57,936
of that particular rocket
and then looked to integrate

93
00:06:57,936 --> 00:07:00,736
that as an upper stage for the Liberty rocket.

94
00:07:01,086 --> 00:07:07,156
So now you've got basically two
systems that are very good designs

95
00:07:07,526 --> 00:07:09,576
with a great safety record behind them.

96
00:07:09,616 --> 00:07:13,796

And then it was just a matter
of now ATK continuing to develop

97
00:07:13,796 --> 00:07:19,126
and integrate those two systems together
into one solid dependable rocket.

98
00:07:19,336 --> 00:07:24,836
[Kyle] Well now your, ATK is a tiny bit
different than the, what John's working

99
00:07:24,836 --> 00:07:27,506
with SpaceX and Gennaro with Boeing.

100
00:07:27,506 --> 00:07:33,146
But, cause ATK is one of the
unfunded Space Act Agreement partners.

101
00:07:33,516 --> 00:07:37,816
But it doesn't change the fact that
you guys have developed milestones

102
00:07:37,816 --> 00:07:39,226
and you're working toward those.

103
00:07:39,226 --> 00:07:43,316
Can you talk about some of their milestones
that are behind them and ahead of them?

104
00:07:43,726 --> 00:07:44,856
[Ken] Sure, absolutely.

105
00:07:45,186 --> 00:07:50,446
You know, it's the unfunded SAA is
just like the funded SAAs, as you said,

106
00:07:50,776 --> 00:07:57,106
except that ATK basically doing their
development all on their own funding.

107
00:07:57,106 --> 00:08:00,726
Yet, they still wanted to work closely
with us, you know, they still wanted to try

108
00:08:00,726 --> 00:08:02,996
to pull on a lot of the expertise.

109
00:08:03,216 --> 00:08:07,366
Especially if you consider, you know, the team
that we could pull together and help them,

110
00:08:07,646 --> 00:08:10,266
a team that has already been
working a lot of that design,

111
00:08:10,596 --> 00:08:12,546
you know, over the last five, six years.

112
00:08:13,296 --> 00:08:16,656
So, they said, you know, look,
you know, we don't want any money,

113
00:08:16,656 --> 00:08:21,286
but we would like to have some advice every,
you know, so, you know, on some of our designs

114
00:08:21,286 --> 00:08:27,126
and some of our planning, and how we plan
on working through our certification effort.

115
00:08:27,666 --> 00:08:33,636
And so again it's a matter of now
taking, you know, these components

116
00:08:34,006 --> 00:08:37,046
and then eventually integrating
that into one overall rocket.

117
00:08:37,046 --> 00:08:39,756

So that's kind of where they're heading.

118
00:08:39,756 --> 00:08:46,196
The final heading right now, as far as at
least within our initial, I'll call agreement,

119
00:08:46,586 --> 00:08:51,296
is to get them through a state where they're
very close to what I would call an integral,

120
00:08:51,426 --> 00:08:58,356
an integrated preliminary design review, since
they still have quite a ways to go as far as,

121
00:08:58,356 --> 00:09:01,576
you know, integrating into one overall vehicle.

122
00:09:01,636 --> 00:09:03,126
You know, you've got the good components.

123
00:09:03,126 --> 00:09:06,746
You've got all the piece parts in place
but now you need to be able to take it

124
00:09:06,746 --> 00:09:11,326
to that next level when you can actually
certify a complete launch vehicle.

125
00:09:11,326 --> 00:09:15,416
And this particular launch vehicle, because
of the power that you get from that first

126
00:09:15,416 --> 00:09:20,476
and now upper stage and they're looking
at carrying on the order of 45,000 pounds

127
00:09:20,476 --> 00:09:27,606
to low Earth orbit fully capable of taking,
you know, spacecraft, satellites or, you know,

128
00:09:27,606 --> 00:09:32,316
if they wanted to even like quite
a bit of cargo onto a station.

129
00:09:33,066 --> 00:09:35,836
So, you know, they've got different
configurations that they're looking at

130
00:09:36,396 --> 00:09:44,616
and it also builds a solid business case for not
only supporting maybe our future needs with NASA

131
00:09:45,026 --> 00:09:52,776
but then also with, with the DOD, the Air
Force, and also with maybe the launch, LSP,

132
00:09:52,776 --> 00:09:58,146
Launch Support Program and some of
their satellites, heavy, you know,

133
00:09:58,686 --> 00:10:02,406
payloads that they need to have
a very large rocket to be able

134
00:10:02,406 --> 00:10:04,626
to carry in to that low Earth orbit area.

135
00:10:04,626 --> 00:10:11,326
So I mean they've got a very good vehicle
and a solid business case for continuing

136
00:10:11,726 --> 00:10:13,336
to develop this particular vehicle.

137
00:10:13,336 --> 00:10:18,806
So they were just looking for our help and
getting them through all the different,

138
00:10:18,916 --> 00:10:22,686

various testing that they need to do to be
able to get this vehicle off the ground.

139
00:10:23,026 --> 00:10:26,076
[Kyle] I know it's old hat to ATK.

140
00:10:26,076 --> 00:10:28,196
They've been around a long time.

141
00:10:28,406 --> 00:10:35,206
But it still sounds like it's very exciting,
because it's a new program for them, you know,

142
00:10:35,206 --> 00:10:36,756
as well as you working with them right?

143
00:10:37,206 --> 00:10:44,326
[Ken] Right, I mean they were very excited,
even getting the unfunded SAA and, you know,

144
00:10:44,326 --> 00:10:51,326
you can see that their team is, you know,
poised to try to take it to that next level.

145
00:10:51,326 --> 00:10:55,856
You know so they're going to be, you know
they're working quite, quite hard on to try

146
00:10:55,856 --> 00:11:03,686
to get into that next, what I'll call that next
phase of our development effort and working

147
00:11:03,686 --> 00:11:08,466
with all these various industry partners and
if they're able to get that then, you know,

148
00:11:08,466 --> 00:11:10,316
they're going to be looking at, you know,

149

00:11:10,316 --> 00:11:14,196
some test flights as early as,
you know, maybe the end of 2014.

150
00:11:14,196 --> 00:11:17,426
So I mean its close and you
can see it in their faces.

151
00:11:17,426 --> 00:11:21,916
I mean they want to clearly
build this rocket [Kyle] Well,

152
00:11:21,916 --> 00:11:26,246
it sounds real exciting all the work you
guys are doing in support of Commercial Crew

153
00:11:26,246 --> 00:11:32,586
and I really appreciate you stopping by
also and talking to us for a few minutes

154
00:11:32,586 --> 00:11:36,086
about what you're doing and how you're
supporting Commercial Crew with the ATK.

155
00:11:36,226 --> 00:11:38,346
So, Ken, appreciate it a lot.

156
00:11:38,346 --> 00:11:40,046
Thanks. [Ken] Well, thank you Kyle.

157
00:11:40,046 --> 00:11:43,626
Appreciate you having us
here and getting a chance

158
00:11:43,626 --> 00:11:46,146
to talk all this very exciting stuff for sure.

159
00:11:46,516 --> 00:11:46,976
[Kyle] Okay.

160
00:11:47,106 --> 00:11:50,276
Take care and we'll hopefully
talk to you again in the future.

161
00:11:50,616 --> 00:11:51,306
[Ken] You do the same.

162
00:11:51,596 --> 00:11:53,386
Bye. [Kyle] That's Ken Tenbusch.

163
00:11:53,386 --> 00:11:58,536
He is the Partner Manager
for ATK, one of the partners

164
00:11:58,536 --> 00:12:02,536
in the Commercial Crew Program for NASA.

165
00:12:03,276 --> 00:12:09,916
All seven of them supporting in
various aspects with a partner manager

166
00:12:09,916 --> 00:12:12,566
that focuses on the entire program.

167
00:12:12,656 --> 00:12:19,456
Tomorrow on Friday we'll have the final
three partner managers join us to talk