
CASSINI-HUYGENS

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00:00:00,000 --> 00:00:02,569
>>KATRINA: All of the people
involved with NASA’s Cassini

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00:00:02,569 --> 00:00:05,706
spacecraft are preparing for
Cassini’s final plunge into the

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00:00:05,706 --> 00:00:09,977
planet Saturn on September 15th.
One small portion of the people

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00:00:09,977 --> 00:00:13,614
who have spent years working on
Cassini includes the team behind

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00:00:13,614 --> 00:00:16,884
the CIRS instrument, the
Composite Infrared Spectrometer.

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00:00:16,884 --> 00:00:21,088
CIRS was built right here at NASA's
Goddard Space Flight Center, and

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00:00:21,088 --> 00:00:24,057
has been massively successful in
operating without a single

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00:00:24,057 --> 00:00:27,828
command error in 13 years, and
delivering groundbreaking

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00:00:27,828 --> 00:00:30,731
thermal and compositional data
of Saturn and its moons.

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00:00:30,731 --> 00:00:34,067
Personally I think that the
people behind the scenes in the

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00:00:34,067 --> 00:00:36,737
trenches operating the
instrument are just as

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00:00:36,737 --> 00:00:40,207
interesting as the scientific
discoveries they've enabled. The

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00:00:40,207 --> 00:00:43,210
CIRS team includes software
engineers, project scientists,

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00:00:43,210 --> 00:00:46,246
people who calibrate the data,
people who write commands for

15
00:00:46,246 --> 00:00:49,549
the instrument, and more. Some
have been on the team for just a

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00:00:49,549 --> 00:00:52,753
couple years, while some have
been working with CIRS for over

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00:00:52,753 --> 00:00:57,057
two decades. How do you describe
the CIRS team and your group of

18
00:00:57,057 --> 00:01:02,996
people? --Ahem. [laughter] --In
what terms? --Can we cut?

19
00:01:02,996 --> 00:01:06,400
--Glowing! Glowing terms!
>>MARCIA: We're more like a

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00:01:06,400 --> 00:01:09,536
family than a group of
colleagues at this point. We've

21
00:01:09,536 --> 00:01:16,009
had, no one has left the team in
a decade, so. >>EVER: Oh yes

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00:01:16,009 --> 00:01:19,613
every time I go into a meeting
no matter my mood, I always,

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00:01:19,613 --> 00:01:21,748
these people always make me
laugh, because they're always,

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00:01:21,748 --> 00:01:25,552
it's always funny, yes.
>>KIMBERLY: I've found that too,

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00:01:25,552 --> 00:01:27,554
because before you walk in the
door, you hear all this laughter

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00:01:27,554 --> 00:01:29,890
coming from the room, like
before the meeting starts,

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00:01:29,890 --> 00:01:32,025
during the meeting, and as we're
on our way out the door, so.

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00:01:32,025 --> 00:01:34,962
>>MONTE: Yeah it's critical to
be able to get along because it

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00:01:34,962 --> 00:01:38,398
takes so much to get these
commands up to the instrument.

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00:01:38,398 --> 00:01:41,101
There's a lot of planning that
goes on in the background,

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00:01:41,101 --> 00:01:44,237
months in advance before they're
ever set up. >>MARCIA: We have,

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00:01:44,237 --> 00:01:48,375
there are members who are very
close outside of the office.

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00:01:48,375 --> 00:01:53,914
We've had a sort of a
relationship start as friendship

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00:01:53,914 --> 00:01:59,152
bloom into something. >>VALERIA:
Well for example we met when I

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00:01:59,152 --> 00:02:04,858
came here, and we were just
friends for many many years.

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00:02:04,858 --> 00:02:08,795
Right? >>SHANE: That's the story
we're told and we're going with

37
00:02:08,795 --> 00:02:11,164
it. >>VALERIA: But then one day
she posted it on Facebook a

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00:02:11,164 --> 00:02:14,134
picture of us getting married.
>> SHANE: We're all very happy

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00:02:14,134 --> 00:02:19,740
for you. >>NICO: Thank you. And
now we have a boy. >>VALERIA:

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00:02:19,740 --> 00:02:22,242
Three years old. >>NICO: A
Cassini baby. >>VALERIA: A

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00:02:22,242 --> 00:02:25,812
Cassini baby, yes. >>NICO: Super
smart. [babbling in French,

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00:02:25,812 --> 00:02:28,181
pretending to call JPL] >>SHANE:
We have a lot of Cassini babies

43
00:02:28,181 --> 00:02:31,651
though. All your kids, my kids.
Terry's got a bunch yeah,

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00:02:31,651 --> 00:02:35,389
Carrie's got a bunch, Carly's
got a bunch. You don't have any.

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00:02:35,389 --> 00:02:37,724
>>NICK: I was born before
Cassini though, I'm not that

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00:02:37,724 --> 00:02:40,360
young. >>SHANE: That's true, at
least there's that. [laughter]

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00:02:40,360 --> 00:02:44,064
>>KATRINA: What was one really
dramatic or exciting or

48
00:02:44,064 --> 00:02:47,501
memorable time from your time
operating the CIRS instrument?

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00:02:47,501 --> 00:02:50,704
>>DON: The most exciting times
are the ones at 2 in the

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00:02:50,704 --> 00:02:54,274
morning. I fortunately haven't
had to be up at 2 in the morning

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00:02:54,274 --> 00:02:57,778
myself, but some of these people
have, where some emergency

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00:02:57,778 --> 00:03:00,847
occurs on the spacecraft and it
has to be solved immediately.

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00:03:00,847 --> 00:03:07,187
>>EVER: My son Wesley was born
November 2010. And just two

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00:03:07,187 --> 00:03:10,157
hours after he was born, there
was an anomaly on the

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00:03:10,157 --> 00:03:15,762
spacecraft. And it basically
took about 15 days to recover

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00:03:15,762 --> 00:03:20,000
from that anomaly. So everybody
every time people ask me “what

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00:03:20,000 --> 00:03:22,803
happened on that day?” I know
exactly what happened because

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00:03:22,803 --> 00:03:26,640
that’s when my son was born. I
call it the Wesley Anomaly.

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00:03:26,640 --> 00:03:30,844
[laughter] >>DON: But there’s a
much larger picture. We’re

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00:03:30,844 --> 00:03:34,514
operating the instrument, and
we’ve been doing that for 20

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00:03:34,514 --> 00:03:37,717
years, but before that the
instrument had to be built, and

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00:03:37,717 --> 00:03:39,853
it was built by an army of
people here at Goddard and they

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00:03:39,853 --> 00:03:43,390
were all very dedicated just
like we are, and those people

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00:03:43,390 --> 00:03:45,225
all had a very good time
building the instrument. >>PAUL:

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00:03:45,225 --> 00:03:49,596
We have a little mirror that
scans back and forth inside the

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00:03:49,596 --> 00:03:53,867
instrument. This little mirror
moving one centimeter since

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00:03:53,867 --> 00:03:58,905
2004, we've calculated that by
the end of mission it will have

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00:03:58,905 --> 00:04:05,312
run four marathons. And it has
not failed. And the engineers at

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00:04:05,312 --> 00:04:10,884
Goddard, they said it has an
infinite lifetime. I kind of

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00:04:10,884 --> 00:04:13,787
laughed, because you know what
moving part has an infinite

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00:04:13,787 --> 00:04:17,057
lifetime? Well, I guess we'll
never prove it because after

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00:04:17,057 --> 00:04:20,894
twenty years it's still working
fine. But that just really

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00:04:20,894 --> 00:04:23,897
amazes me the quality of Goddard
engineering. >>KATRINA: What are

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00:04:23,897 --> 00:04:27,534
you most proud of, with the CIRS
instrument and how the team has

75
00:04:27,534 --> 00:04:31,771
operated over the years? >>NICO:
It's the best team. No it's

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00:04:31,771 --> 00:04:36,710
true. We have the most
publications, the most data

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00:04:36,710 --> 00:04:42,415
acquired, we have the highest
quality of archived data, we

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00:04:42,415 --> 00:04:46,353
have a flawless operation.
>>SHANE: Cutest children.

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00:04:46,353 --> 00:04:49,022
>>NICO: Cutest children.
[laughter] >>KATRINA: What will

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00:04:49,022 --> 00:04:52,759
that final moment be like when
Cassini stops sending back data?

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00:04:52,759 --> 00:04:57,297
>>DON: We'll be waiting for that final signal, but Cassini will

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00:04:57,297 --> 00:05:00,233
have already burned up an hour and a half earlier because it

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00:05:00,233 --> 00:05:03,270
takes that long for light to get here from Saturn. It takes that

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00:05:03,270 --> 00:05:06,873
long for the signal that was re-, the final signal to get

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00:05:06,873 --> 00:05:10,443
back here to Earth. So Saturn will already have swallowed up

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00:05:10,443 --> 00:05:14,681
Cassini a long time before we actually see that last signal. I

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00:05:14,681 --> 00:05:16,917
think we'll know that when we're sitting there. >>CARRIE: We

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00:05:16,917 --> 00:05:20,554
will, it's sad. >>JOHN: I think it's a little hard to anticipate

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00:05:20,554 --> 00:05:24,491
people's reactions. I mean it's like a death in the family at a

90
00:05:24,491 --> 00:05:30,730
certain level. You know it's coming and so on, but just how

91
00:05:30,730 --> 00:05:35,335
you react to the gut level, some
people will be surprised.

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00:05:35,335 --> 00:05:40,907
>>KATRINA: For you what will
that moment be like when Cassini

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00:05:40,907 --> 00:05:48,515
ends? >>MARCIA: Um, sad.
>>TERRY: I worked on the Galileo

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00:05:48,515 --> 00:05:55,622
mission just tangentially as a
grad student, and this mission

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00:05:55,622 --> 00:06:00,827
discovered just as much as
Galileo did around Jupiter. And

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00:06:00,827 --> 00:06:03,163
at the end, you're left with
more questions than you are

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00:06:03,163 --> 00:06:07,267
answers. >>DON: There's life
after Cassini. >>KIMBERLY: I'm

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00:06:07,267 --> 00:06:10,403
thinking even after this mission
ends though, this group will be

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00:06:10,403 --> 00:06:13,273
providing data to the research
community for many years to

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00:06:13,273 --> 00:06:16,676
come. So I'm sure folks will go
back and analyze and re-analyze

101
00:06:16,676 --> 00:06:19,279
the data over and over again and
new discoveries will probably

102
00:06:19,279 --> 00:06:22,182
continue to be found for a long
time. >>KATRINA: Are there any

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00:06:22,182 --> 00:06:25,919
other thoughts about Cassini and
the CIRS instrument that you

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00:06:25,919 --> 00:06:28,255
want to share on camera before
we wrap up here? >>CARRIE: This

105
00:06:28,255 --> 00:06:31,791
is the group you can depend on.
We all can depend on each other,

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00:06:31,791 --> 00:06:33,760
no matter what. No matter how
much time passed, three months

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00:06:33,760 --> 00:06:36,696
go by and you could walk into
someone’s office and they’re

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00:06:36,696 --> 00:06:41,701
there for you. And that’s,
that’s what I’ll remember, you
know.