the united states military academy this
is Mission Control Houston please call
station for a voice check station this
is Lieutenant Colonel Diana Luke's how
do you hear me hi Lieutenant Colonel is
Colonel mark Vandy I hear you loud and
clear how US we hear you loud and clear
as well over hey at this time I'd like
to introduce colonel and nasons who is
the head of the department of physics
and nuclear engineering for a few
opening remarks
well crew the ISS it is really great to
see you well thank you for this I for
this great opportunity

my name is crow na since I'm the head of

the department of physics and nuclear engineering if you spell out that

acronym PA NE

I'm the head of the house of pain and

you know we have fun with that well

first of all I like to say usually

there's the lade response to that first

of all let me say we hope that you all

had a great Thanksgiving for you and

your families I saw pictures of your

Thanksgiving dinner and I believe I may

have had it better with Emory's in
Afghanistan those little cubes there's

just no way you could make those cubes

look like a turkey I think you're pretty

brave for trying out that food well in

the season of thanks we certainly thank

you for your continued inspiration of

cadets staff and faculty at West Point

and to the world mark you were an inspiration as an assistant professor in

the Department of physics and nuclear engineering and you continued to do so

from the international space station we thank you and we thank NASA what you do

every day advancing technology and
pioneering aeronautical travel into space we thank you for your bravery in accomplishing the ISS mission we also thank you for the opportunity to ask you questions knowing just how busy you are every single day so today we have cadets from our core physics program and our newly created space side major and minor which we are offering for the first time to the class of 2020 we are teaching four new courses in the major to include Aeronautics Space Science astrophysics and astronomy and integrated with science engineering and humanities will offer a great foundation
for our next generation of army space

Kadri and maybe for future astronauts

we're also fortunate to have here today

the Dean of our academic board Brigadier

now the lecture hall is packed and we

are ready and eager to engage with you

so let me say thanks again thanks again

for all you do every single day

we appreciate your great sacrifice you

certainly have the right stuff the Stila

cliche but you represent what right

looks like and we thank you for the for

this great opportunity so what I'm going
to do now is I'm going to turn it over

to Lieutenant Colonel louts who will

introduce the questioners and we'll get

on with the question and answer period

but again welcome to the House of Pain

it's great to see you thank you so

gentlemen we'll begin the question

answer session the cadets will come up

one by one and we look forward to your

responses gentlemen I'm cadet Adrianne brazo

and this question is for mark sir what

is your fondest memory of West Point my

fondest memory of West Point is actually
over the summers going to the concerts

on the on the just on the edge of the plane they're hanging out with my family

and really enjoying that beautiful place

I know as cadets you don't get to appreciate it quite the same way that assistant professors and professors do

but you really are in an amazing part of the country and you're very fortunate to be at that place right now

hey gentlemen this cadet Liam Fulton

this next question is for Andy and sir

my question is what’s the most challenging part about being an
astronaut obviously as a Marine the

00:04:46,019 --> 00:04:50,579
biggest challenge is working with army

00:04:47,339 --> 00:04:52,799
people I figured I get to say that my

00:04:50,579 --> 00:04:54,269
father was in the army so each

00:04:52,800 --> 00:04:56,579
generation tries to improve on the

00:04:54,269 --> 00:05:01,349
previous one so you know I get to they

00:04:56,579 --> 00:05:02,729
come I said that but really it's it's

00:05:01,350 --> 00:05:04,200
nothing different than what you're

00:05:02,730 --> 00:05:05,100
facing right now especially you know for

00:05:04,199 --> 00:05:06,930
those that are starting out at West

00:05:05,100 --> 00:05:09,150
Point it's time management and

00:05:06,930 --> 00:05:11,759
multitasking we have such a myriad of

00:05:09,149 --> 00:05:14,250
things that we do every day and they're

00:05:11,759 --> 00:05:16,409
don't two days are the same and the

00:05:14,250 --> 00:05:18,000
tasks are so varied from you know to
unload in a cargo vehicle we just

grappled last week to doing a medical

experiment on a machine that's measuring

how much your muscles can do to growing

plants like Joe did up here growing

lettuce it is amazing how much different

stuff we do and you may not have recency

of training but you've gotta be a lot

you know approach that tasks be very

thorough in it and if you're you know on

time great if you're ahead of the clock

even better if you're behind you still

gotta pay attention and not worry about

rushing off to your next task because
you've got to finish the one that you're working on properly so that's probably the biggest challenge we face up here on a daily basis thanks sir

cadets at penny this questions for Joe

how is living in a microgravity environment affected the physiological processes of your body and what do you do to combat these effects

I think this is gonna be one of the toughest interviews that we've had with these questions you guys are sending us

but of course some of the big things we're looking at is a muscle atrophy and
the loss of our bone density so we
workout for a couple of hours every day
which is kind of nice to have that on
your schedule
we have resistive exercise and it feels
just like you're lifting weights back at
home we also have a treadmill and a
stationary bike so we use those on a
daily basis we're learning a lot still
about the body we're having some issues
with our eyes so we're we're studying
that as well the digestive system seems
to work pretty well for for most of us
so the body adapts pretty well thank you
sir gentlemen

00:07:01,509 --> 00:07:05,919
cadet Steven Scott this question is for

00:07:03,579 --> 00:07:08,228
mark how did your experiences in the

00:07:05,918 --> 00:07:09,668
Army especially overseas affect your

00:07:08,228 --> 00:07:15,818
leadership style and the decision to

00:07:09,668 --> 00:07:16,658
become an astronaut that's a great

00:07:15,819 --> 00:07:18,218
question

00:07:16,658 --> 00:07:21,699
the first thing I would say is

00:07:18,218 --> 00:07:23,889
leadership wise my experience taught me

00:07:18,218 --> 00:07:23,889
leadership wise my experience taught me

00:07:21,699 --> 00:07:26,249
that there are lots of acceptable

00:07:23,889 --> 00:07:29,499
solutions to any problem typically and

00:07:26,249 --> 00:07:33,219
by empowering your sub your your

00:07:29,499 --> 00:07:35,079
soldiers to pick the solution that's a

00:07:33,218 --> 00:07:36,908
feasible one that they're invested in

00:07:35,079 --> 00:07:39,939
and they chose you can really get a lot
accomplished and people enjoy executing the plans that they have worked so hard to make up it's also taught me that our we have a lot more potential than we sometimes believe and especially at your age there's a limitless possibilities out there for you and most people I think don't maximize that potential but recognize that don't ever self limit yourself go ahead and and keep pushing forward and say yes a lot when those opportunities arise thank you sir hello gentlemen cadet William Morningstar and this
question is for Randy what does it feel like to go outside the space station and fix something so like what does the Sun feel like it's a pretty neat rewarding opportunity to go outside and you're in your own personal spacecraft and the only thing you know that is visually different is that instead of looking out a window like you're in an airplane you know imagine now you know instead of looking out that why don't you jump out of the airplane you're skydiving and now the whole peripheral vision and your whole sensor suite visually is now what
is has the view of the earth instead of looking through a window so you get that from the spacesuit you're hanging underneath the space station and the only thing between you know you and the earth is your boots and so you have these physical sensations of you know overcoming that physical fear of falling as you go ahead and go do the work you don't necessarily feel the Sun the suit does a really good job of keeping it a constant temperature and you can adjust it if you're getting a little colder in the night passes or I'll put increase
the cooling during the day passes but to

00:09:29,110 --> 00:09:34,029
fix a piece of equipment outside is is a

00:09:31,629 --> 00:09:35,500
you know very rewarding situation you

00:09:34,029 --> 00:09:37,480
know Sabol and I were out there on our

00:09:35,500 --> 00:09:40,269
first TVA here a little over a month ago

00:09:37,480 --> 00:09:42,039
and we took the grappling part the

00:09:40,269 --> 00:09:44,439
latching end effector or the robotic arm

00:09:42,039 --> 00:09:45,909
and had to replace one of those pretty

00:09:44,440 --> 00:09:47,500
important because that latching end

00:09:45,909 --> 00:09:49,870
effector will allows us to grab visiting

00:09:47,500 --> 00:09:51,159
vehicles to berth them to the station to

00:09:49,870 --> 00:09:52,629
get the cargo and supplies that we need

00:09:51,159 --> 00:09:55,179
to be able to sustain that the mission

00:09:52,629 --> 00:09:56,740
of the space station so when we finished

00:09:55,179 --> 00:09:59,109
that part way through the EBA and they
were doing the checkout it was you know

one of those things where you want to be

able to spike the ball and do the touch
to you know the dance down in the end
zone but you've still got other tasks of

doing need to maintain your composure

and and maintain focused on the job but

that's certainly that's the way it felt

once we got that done that we had done

something really helpful to make Space

Station be able to have a better

capability in the future thank you sir

good morning gentlemen cookie van Moreau

my questions for Joe I wanted to know
what are some of the effects that you experience after spacewalking after

Annie VA on your body

yeah like randy said hunger so we get into the suit a few hours before we even go outside and then you're outside for anywhere from six to maybe eight hours

so it's a long period of time we do have some drinking water but no food so you're definitely hungry when you get back but you're also physically tired I know even the next day when it was time to work out I mean I was worn out I mean I felt tired you're inside of a
pressurized suit so you're having to

fight that pressure but apart from that

there's also a pretty severe mental

fatigue because you're out there for

this long period of time and every

action that you take is important

whether you're just moving from one

location to another or you're installing

something you've got to focus on all of

that so imagine everything you do for

over six hours you have to be very very

deliberate when you get back your brain

is tired so as tired as my body was I

might have been more mentally fatigued
as well various interesting thank you

00:11:48,389 --> 00:11:50,539
sir

00:11:55,159 --> 00:11:58,919
gentlemen

00:11:56,308 --> 00:12:01,259
cadet West Pulis this question is for

00:11:58,919 --> 00:12:11,159
mark what was it like your first day on

00:12:01,259 --> 00:12:13,139
the space station so Conrad was alluding

00:12:11,159 --> 00:12:14,958
to the fact that we started off very

00:12:13,139 --> 00:12:17,159
very busy when we got up here however

00:12:14,958 --> 00:12:19,258
what I think he might not remember is

00:12:17,159 --> 00:12:22,350
the first 24 hours after we got here I

00:12:19,259 --> 00:12:24,808
was supposed to rest and I was so

00:12:22,350 --> 00:12:26,720
excited to be up here that I didn't rest

00:12:24,808 --> 00:12:29,789
at all you can imagine I was spending

00:12:26,720 --> 00:12:31,528
about a decade really trained for this

00:12:29,789 --> 00:12:33,870
moment I'm finally on the space station
I could not possibly get myself to close my eyes comrade took me over to the window got me to look out and see horizon of the earth and that beautiful jewel in this complete blackness of space shining in the Sun it was really hard to take it all in and then the next day I was chasing the timeline and working my butt off feeling like I was trying to learn how to walk again and trying to keep track of my stuff which is hard enough to keep track of when you can put it on the ground but when you put it on the ground it floats away
someplace when you turn your back it makes it a lot harder thank you sir

good morning gentlemen cadet Matthew

Volpe my question is for Randy of all experiments you've conducted which is your favorite and why up here we're not you know scientists in where we're trying to discover things and we're not looking a lab with a Bunsen burner mixing chemicals to come up with the new unobtainium or a cost overrun ium substance we're up you're executing what you know experts on the ground their experiments have been designed to do and
we execute the procedures up here and so

one of the ones that get to work on a

couple months ago was one where we are

have growing lung tissue and up here in

zero gravity it grows differently and we

were you're using a different substance

to go ahead and clean it out as it grows

and grows here microgravity and then

fixing it so to go down to earth and be

studied well that particular lung tissue

was being grown because it is being

developed to have cancer fighting

abilities and we you know a previous

crew member dubbed it to cancer seeking

was called cancer seeking
missiles and so that was something that was a real-world application of something we're doing up here that hopefully will make life a lot better back on earth yes sir thank you morning gentlemen um could I iris you my question is for Joe how did you adapt to live in space and vice versa how did you adapt back to life on earth is there a great difficulty in doing one or the other I think they both have their challenges and what's neat about coming out and coming up here is noticing how quickly the body adapts to being in space of
course you have kind of the normal what

you can call space space sickness where

you know you're in arrears not feeling

right the hairs don't know what to do up

here in a microgravity environment so

you don't feel so great usually my first

24 hours I'm on the the edge of getting

sick not quite getting sick so I'm not

feeling a hundred percent but once that

goes away and the fluid shifting goes

back to a more kind of neutral state

it's almost like we were born to be in

space you know we talked about it often

how I you know we can just we want to
get over there and we know how to push

off we know how to use our feet to to

hang onto things and it's just a

supernatural feeling and then going home

when you land you wonder how do you

misplace

you know that gravity I don't know you

learn about gravity and physics but it's

strong after you've been up here for a

few months so even just moving your head

and walking is it's pretty difficult but

again the human body is pretty amazing

and within you know a few days you're

feeling really really good you're
driving a car within a week and in about the same time you're out running outside so they have their challenges but the body is amazing how it adapts going in both directions

hello gentlemen I could have Michael Howard my question is for mark can you describe the Kestrel I mission in the role you played in it sure the Kestrel I'm mission was to see if there was an inexpensive way to provide imagery at as low a possible level two tactical commanders my role in it was to in fact right behind us we're
in the Japanese module of space station

right now

and right behind us we have an airlock

there's a slide table that comes out my

role in it was to mount that satellite

to that slide table and then transport

transferred the satellite into the

airlock and then the ground control

teams brought it outside grabbed it with

a robotic arm and then the next day or

two I can't remember exactly my job was

to photo document and videotape the

launching of that satellite from that

robotic arm thank you sir

well I guess a our time is up but I got
to tell you something that was very informative we really appreciate the time that you spent with us and Randy mentioned the idea about you know making a touchdown and spiking the football right I just want you to know you're gonna see that a lot when army beats Navy here on December 13th who are del army beat Navy so I just want to leave you one parting message and you know from all of us to you especially to you Randy go army beat Navy in sir thank you sir is wonderful to hear your voice
privilege to be able to talk to you all

today

station this is Houston ACR that

concludes Steven thank you all

participants with the US Military

Academy station please stand by where we

configure video and audio comm for your

defered release message

[Music]