SpaceX Founder and CEO Elon Musk: We're definitely going to stay on space. Don't even try, hah.

So we're really excited about this launch. This is going to be SpaceX's ninth launch of 2018

By this time last year we had only done five orbit class missions. So we're – if things go well today, touch every form of wood I can find – we're on track to be double our launch rate last year, which was a record launch rate for us. In fact, I believe, Falcon 9 was the most launched rocket worldwide of 2017. And, if things go well, which is a caveat, then SpaceX will launch more rockets than any other country in 2018.

To date we've done 55 missions to orbit. We've completed 55 successful missions to orbit. 52 with Falcon 9, one with [Falcon] Heavy, and two with Falcon 1.

We've been able to land 24 of the first stage boosters – 11 on land, 13 on a droneship, and we've re-flown 11. We only tried to land the first stage boosters somewhat late in the program. That's about a 50 percent success rate. Once we started landing them, the success rate turned to 90 percent and in recent times, except for the center core of Falcon Heavy, have been 100 percent.

So the goals with Block 5 – which is really quite, the way to think of it, perhaps – the word Block is a bit strange, we kind of adopted it from the Russians. This is arguably Falcon 9 Version 6, in sort of normal vernacular. Because we had Version 1, Version 1.1 – which was really like Version 2 – arguably a version in between that and then a bunch of blocks. So we should probably just go back and – I'm sure the internet's already done this – and have a more sensible description of the "Versioning". But the best way to think about it is that it's at least Version 6 of the rocket and this will be the last major version of the Falcon 9.

There will be minor improvements for, as we discover small things to improve manufacturability, make re-flight easier and improve flight reliability, of course and so there will be a handful of small changes. So expect I'd expect, like, if this is hypothetically Version 6, that would put us at sort of 6.01, or 6.02, that type of thing. But minor changes, provided they are supported by our key customers in commercial satellite launch, NASA and the Air Force.

So yeah, this will be the last major version of Falcon 9 before BFR. And we expect this to be a mainstay of SpaceX business. We think of probably winding up something on the order of 300 flights, maybe more, of Falcon 9 Block 5 before retirement.

One of the biggest goals of Block 5 / Version 6 is ease of reusability. In principle, we could re-fly Block 4 probably upwards of 10 times but with a fair amount of work between each flight. The key to Block 5 is that it's designed to do 10 or more flights with no refurbishment between each flight – or at least not scheduled refurbishment between each flight. The only thing that needs to change is you reload propellant and fly again. Now if there's something off-nominal that occurs, that may require some unscheduled maintenance but there's no scheduled maintenance for for the first, for every 10 flights. And then there'll be some moderate

scheduled maintenance at 10 but we believe that the Block 5 boosters are capable of on the order of at least 100 flights before being retired. Maybe more.

But we think it's made somewhat moot because it'll be superseded by BFR at that point.

Our goal, just to give you a sense of how reusable we think the design can be, we intend to demonstrate two orbital launches of the same Block 5 vehicle within 24 hours, no later than next year. So it's going to take some requirements, we're going to be very careful and deliberate about this, but that will be I think truly remarkable, to launch an orbit class rocket, the same orbit class rocket, twice in one day. Because there's only so much work you could even do in one day and a bunch of it consists of transporting the rocket from its landing site back to the launch site, mounting a new satellite on the rocket and loading propellant and going – and doing all of that within 24 hour period, while maintaining a very high level of mission assurance, is extraordinarily difficult. I think that will be a very exciting outcome.

The second-most important thing. Well actually, I should say, that was the second-most important thing. The first-most important thing was addressing all of NASA's human-rating requirements. So we need to exceed all of NASA's human-rating requirements for Block 5 – and they are quite extensive – as well as meet all of the Air Force requirements for extreme reliability.

So this is, this really is, I really don't want to jinx fate here, but this rocket is really designed to be, the intent, is to be the most reliable rocket ever built. That is the design intent. I hope fate does not punish me for these words but that is unequivocally the intent. And I think our customers would agree, our most conservative customers would agree that that is an accurate statement. Please fate, don't punish me for this, the intentions are good.

In terms of performance upgrades, it also has a number of those.

The Merlin engines, engine thrust has been increased by approximately 8 percent to 190,000 pounds of thrust at sea level. We think there's probably a little more room there, maybe going up to 10 percent or so. As well as some small increases in specific impulse of a few seconds. So both the efficiency of the engine and the thrust of the engine have increased, while not increasing – making any material change to the mass of the engine. So the thrust weight of the engine is getting truly incredible at this point. It was already the highest thrust-to-weight engine in the world and it has gotten even more so. The vacuum version of Merlin increased in thrust by about 5 percent, to 210,000 pounds of force. Sorry, to 220,000 pounds force. But we will be de-throttling this engine on the first flight to assess the vibration increase in the environment, so it will currently be operating at its old thrust level – just throttling down, essentially. It's a new engine operating at 5 percent below its rated thrust. So we'll be operating it at 210,000 pounds of thrust. But again that's something we expect to increase by 5 percent, maybe 10 percent down the road. We are, again, very careful about the level of expansion of the thrust of the engines.

I will say, we have a new thermal protection technology. You'll note, aesthetically, the black interstage – that is the structure that joins the upper and lower stage – as well as the raceways and landing legs. They all use a new thermal protection material we developed at SpaceX, which is intended to be highly reusable, and does not require paint. It's basically hydrophobic and does not trap water. So it's basically waterproof. It's really quite a challenging thing to do, to make something that is essentially environmental proof that does not require paint. And, I actually kind of like the aesthetics of it more. In fact, if you look back at the old Falcon 1 rocket, I really liked having the black interstage, because of the interstage is made of carbon fiber. And I think it added a different aesthetic to the rocket. Obviously, aesthetics are a minor factor in rocket design but I still like the fact that we've returned, almost nostalgically, to having a black interstage.

And we have the "octaweb," which is the primary load-bearing structure at the bottom of the rocket that is the, essentially, the engine bay. That is what carries the load of the nine engines in the base, as well as what protects each of the nine engines from the other. So if one of the engines were to go awry, in principle each one is in a protective bay and a failure of an engine on the boost stage would not affect the success of the mission. In theory. Again, I don't want to tempt fate. But this is a much stronger octaweb structure. It's made of a much higher strength, bolted aluminum. A 7000 series instead of a 2000 series. So the strength of the octaweb is dramatically greater. It also has a quite a bit of thermal protection on the inside in case there's say, an engine fire, or something like that. So that it does not melt the octaweb.

The landing legs, you'll notice, if you look carefully that there are no sort of outward scallops on the perimeter of the landing leg, which were used to clamp down the leg during ascent. We have now brought those features inside the leg itself. So you'll see sort of a cleaner outer contour. And it has an internal latch mechanism that can be opened and closed, repeatedly, with ease. So essentially deploying the landing gear and stowing the landing gear is now a very easy thing to do, whereas previously it required several hours to re-stow the landing gear. Can now be done with an actuator, very easily.

We are now going consistently with the titanium grid fins and have now moved away completely from the aluminum grid fins that were non-reusable because they got cooked pretty hard during re-entry, particularly during geostationary re-entry. So we have, we think it's the largest titanium forging in the world. Looks like a giant bear claw, the new grid fins. It looks really cool, I think. And they're capable of withstanding on the order of 1000 degrees Celsius, 2000 degrees Fahrenheit, thereabouts. And requires no work between flights, which is also great.

The base heat shield on the rocket – I'm giving a lot of technical information so I hope this is interesting but I'm happy to answer any detailed technical questions you may have as well, following this, within the bounds of ITAR constraints. But the reason I say the heat shield, it's also a big improvement. So we replaced the old composite structure with a high-temperature titanium structure to support rapid reuse. The base heat shield will also be in some parts

actively cooled with water. So we're finding that some things, we're really just, during the very high-energy phases of re-entry – ascent is not a problem – but during the high-energy phases of re-entry, where you have a hypersonic sharp-shock impingement, it generates a very hot spot and you kind of have to use a high-melting point material, a high-temperature material, plus active water cooling in certain places on the base of the heat shield.

And we have upgraded all the avionics as well. So we have an upgraded flight computer, engine controllers, a new, more advanced inertial measurement system, and we've eliminated the whole avionics tower, so we've managed to ... actually gotten lighter, better and more advanced. Better in every way. And also more fault-tolerant. So it can withstand a much greater array of faults than the old avionics system.

This will also be carrying Fairing 2.0. And although we've flown Fairing 2 before, the thing that's cute about Fairing 2 is that it's designed for full recoverability. Ironically, we will not attempt full recoverability with, on this flight, but we are confident about doing that on future flights and confident that the fairing reuse will be effective, which is a big deal because each one of those fairings costs about $6 million to build and represents a significant percentage of the airframe of the rocket.

And then I suspect you're going to ask me about a reusable upper stage. The only thing we're doing in the upcoming flight is gathering data about the re-entry experience of the upper stage. Previously we've not been, not put a lot of effort into gathering data on the upper stage after it does its disposal burn. So we're required to do a disposal burn and kind of the stage re-enter and break up in an unpopulated area in the Pacific. And we've not really monitored in detail at what altitude and speed the stage breaks up and under what conditions. So we're going to learn more and more about that in the upcoming flights. Because we're going to put effort into learning that. Which is tricky, because when it's coming in, it's coming like a meteor. So it's got this sort of like, ball of plasma, and you can actually only broadcast sort of like, diagonally backwards. So we'll be looking to communicate with, probably the Iridium constellation, and try to transmit basic data about temperature, state and health of the stage, loss in altitude. And then gradually, over the course of this year, we'll be adding more and more thermal protection to the upper stage, and try to see what's the least amount of mass necessary to return the upper stage in a condition that is reusable.

I'm actually quite confident that we'll be able to achieve full reusability of the upper stage. In fact, I'm certain we can achieve full reusability of the upper stage, the question is simply what the mass penalty is and we don't want to put too much engineering effort into that relative to BFR. And we obviously will not any action that creates risk for the ascent phase of the rocket, and that puts any of our customer spacecraft in jeopardy. So it should be sort of an add-on that is effectively just going to be like cargo on the ascent phase, and essentially be inert on the ascent phase, and then take action on the entry phase.

But that'll be very exciting because if we can – geeze, the primary boost stage, that's about half the cost of the rocket. Then, the, on the order of that. It can be proved technically safe, the marginal cost of launch: You've got the boost stage is probably close to 60 percent of the cost, the upper stage is about 20 percent of the cost, fairing is about 10 percent and then about 10 percent which is associated with the launch itself.

So if we're able to reuse all elements of the rocket, first of all, it'd be the first ever fully-reused orbital vehicle of any kind. And then we'd be able to reduce the cost for launch by an order of magnitude. And as our launch rate increases, we can further optimize the per launch costs. Because the propellant only costs about $300,000 or so per launch. So that's really a tiny, tiny number. Maybe $400,000 depending on how you count it. So if we're able to reduce the cost of operations, the fixed costs and whatnot, then we could really, even with the Falcon 9, get down to – we'd still have to do ocean recovery which adds a few million dollars – but we may be able to get down to a marginal cost for a Falcon 9 launch down, fully considered, down under $5 million or $6 million. That would be quite exciting.

With that, I'd be happy to jump to questions.

Aviation Week (Irene Klotz): Thanks very much, Elon, and I appreciate the briefing. I wanted to know if the Block 5 scheduled to launch today is the same configuration you plan to use for Commercial Crew. In other words, if successful, will this flight count towards the one of seven that NASA's requiring before astronauts fly?

Musk: I believe it will. That's my understanding, but I could be mistaken.

CBS News (Bill Harwood): Thank you very much. Elon, when you say 'minimal refurb between flights,' does that mean you just haul it back, put it on the pad, gas it up, and fly it, and you don't need to check turbines or anything like that? And I'm wondering what all those upgrades might be doing to the cost of the rocket, if anything. Thanks.

Musk: Sorry, it was a little hard to hear you. Could you repeat the question?

CBS: Yes, thank you. I was just wondering, when you say minimal refurb between flights, I'm trying to get a grip on what that actually means. You don't need to inspect turbines or anything like that? And what does the, do all these upgrades do anything to the cost of your rocket? Thanks.

Musk: Sorry, yeah, correct. Sorry, you line is not coming through so I couldn't quite hear. But we expect there to be literally no action taken – no unnecessary action taken between flights. So just like an aircraft. It's just the case of, you know, we do need to basically take the rocket

from its landing pad, rotate it horizontal, stow the legs, take it to launch pad, attach an upper stage, attach a fairing with a payload, then transport it out the launch pad, rotate vertically, load propellant and fly. And in principle, that is literally the – all that's necessary.

CBS: Wow.

Musk: And for those who know rockets, this is a ridiculously hard thing. And it's taken us, man, from 2002, 16 years of extreme effort, and many, many iterations, and thousands of small but important development changes to get to where we think this is even possible. Crazy hard. And, of course, we still need to demonstrate it. So it's not like we've done it. But it can be done.

Ars Technica (Eric Berger): Hi Elon. Thanks very much for doing this. I'm wondering what your plans are for this particular booster in terms of getting to a second and a third flight, is that something that you guys have put a timeline on?

Musk: Sorry, again, the call quality is not that great. Can you say that again?

Ars: What is your plan for the second and third use of this rocket? How soon are we going to get to a third flight of a Block 5?

Musk: Oh. First re-flight. So we are going to be very rigorous in taking this rocket apart and confirming our design assumptions to be confident that it is indeed able to be reused without being taken apart. Ironically, we need to take it apart to confirm that it does not need to be taken apart (laughs).. So this rocket probably won't re-fly for probably a couple of months. Essentially, by late this year, we should be seeing substantial re-flights of Block 5 vehicles, probably with some Block 5 boosters it being their third, maybe their fourth re-flight. And once we get to next year, toward the end of next year we'll see the first Block 5 seeing their 10th flight. And like I said, next year is when we intend to demonstrate re-flight of the same primary rocket booster within, basically same day re-flight of the same rocket. I think that's really a key milestone.

The Verge (Loren Grush): Hi Elon. Hi, nice to talk to you. I was wondering if you can outline what specifications are needed to make this rocket human-rated for Commercial Crew? And also when can we see Block 5 fly a Crew Dragon for the first time?

Musk: Man. There are thousands and thousands and thousands of requirements … [unintelligible] … for even advanced rocket people to know what I'm talking about. So think of, so a human-rated rocket has to have high-end margins of safety in the structural …

[unintelligible] … vehicle like a typical rule of thumb would be, for a launching a satellite, you need to design the rocket to 25 percent margins, like essentially, if you take your worst-case flight load, worst possible scenario that the rocket would encounter, and then add 25 percent to that, the rocket has to be designed 25 percent above the worst-case expected load, for the case of a satellite launcher. For a human-rated launcher, it has to be designed to 40 percent above the worst-case load. So that's like 40 versus 25 and those 15 points are really difficult to do while not making your rocket really heavy. Really difficult. That is hardcore stuff … [unintelligible] … And then also fault tolerance. The avionics of the rocket have to be capable of multiple faults occurring and still completing orbit. Obviously the Falcon 9 boost stage has an advantage with the redundant engines. You could lose any one of the engines at any time and still complete the mission. And actually, depending on where you are in flight, you could even lose two or three engines and still complete the mission. That's actually quite helpful. Just like having a multi-engine aircraft. And then you have things like stage separation. Confirming that we have full redundancy on all the latches and all the control mechanisms, all the way down to the control valves, the electronics, the wiring. It's really designed like a commercial airliner, relative to say, a general aviation aircraft. Getting all those details right is massively difficult. And for example, for the composite overwrapped pressure vessels, they're actually rated to twice, the burst pressure of the composite overwrapped pressure vessels must be more than twice what they're actually loaded to on the pads. So these are actually substantially improved, what we call COPVs – composite overwrapped pressure vessels containing high-pressure helium and nitrogen immersed in the fuel and oxygen tanks. And those, man, we have tested the daylights out of those things, seventeen ways to Sunday. Because obviously we had that failure a few years ago and want to make sure that it's extremely robust. The list goes on. Like I said, we feel really confident and our customers, our most conservative customers and partners, the Air Force and NASA, who also feel good about the design intent of this rocket. But I really don't want to tempt fate, because there's a lot of new things in this rocket that could potentially go wrong. It could be just one small line error. You know, there's like, it could be a thousand things that go right on this rocket, and one that goes wrong, and a passing grade for rockets, the reason it's so hard to make an orbital rocket work, is that your passing grade is 100 percent. And you can't fully and properly test an orbital rocket until it launches. Because you can't recreate those conditions, those exact conditions on Earth. Everything's sort of a proxy for traveling hypersonically through a vacuum. Yeah, man. Any way, home stretch. I hope you guys – any good wishes would be appreciated.

Florida Today (James Dean): Thanks again. You know your approach of tinkering with a rocket design over an eight year period was not really the norm in the industry, I just wondering if you could talk about that: Is that evidence of your Silicon Valley roots, and how do you think that's influenced your success to date in the industry at large, that willingness to keep trying different things and changing designs?

Musk: Well, I think it's important to appreciate the fundamental motivations that I have, and I think that the team at SpaceX has, which is that we really want SpaceX to be a forcing function for improving, dramatically improving space technology to the point that it enables humanity to become a multi-planet species. Get out there and have a base on the moon and Mars, and ultimately even on the outer planets. To really expand the scope and scale of consciousness, and make sure that in the hopefully unlikely event of something happening here on Earth that the light of consciousness is not extinguished. Which is I think an extremely important thing to secure. I mean it's not going to matter to me, I'll be long dead, nor is it any kind of picnic to go out there and establish self-sustaining bases on places not on Earth. It's dangerous. People are going to die. It's going to be difficult. Very few people will want to take on the danger and discomfort. But I think it's important for the future of humanity, and for also preserving life as we know it on Earth. Because we are life's agency, and have some responsibility, as life's agency. That's just my opinion. So, from our standpoint it was really critical to keep advancing rocket technology and achieve full and rapid reusability, in the absence of which spaceflight would always be far too expensive. As you've probably heard me say, if aircraft were not reusable and you needed a new one for every flight, then each ticket would cost millions of dollars, at least. One way. And you'd need two for a two-way trip. And almost no one would be able to afford to fly. And that's the situation with expendable rockets today. And what happens once you achieve reusability, then tickets can go from a million dollars, to a few thousand dollars, or a few hundred dollars for short trips. And then fundamentally spaceflight will be open to almost anyone, just as air flight is. And so that's why we did all this. We could have stopped innovating a long time ago and still had basically a very high market share, a majority share of the world commercial launch market. But that wouldn't have been complicity with our philosophical.

WMFE (Brendan Byrne): Hey Elon. How many of these Block 5 boosters do you expect you'll have in rotation around the Florida launch facilities? And is that where the "every ten flights" maintenance will occur?

Musk: Yeah. So we've decided we're going to have a lot of rockets at the Cape … [unintelligible] … and a smaller number at Vandenberg because … [unintelligible] …80 percent of our launches will be likely out at the Cape and maybe 25 percent out of the vehicles at Vandenberg. Our South Texas launch site will be dedicated to BFR, because we can get enough capacity with two launch complexes at Cape Canaveral and one at Vandenberg to handle all of the Falcon 9, Falcon Heavy missions. But yeah, if it's going to build up, we'll have a space fleet, which is pretty exciting, having a space fleet of rockets.

WMFE: I'm sorry, you broke up just at the start there. How many do you expect to have in the rotation?

Musk: I think probably, just to be safe, we'll probably have about 30. Call it 30 to 50. It totally depends on what number of customers insist on launching a new rocket. But I think the general sentiment will change from being, from feeling like a flown rocket is scary to feeling like an un-flown rocket is scary. Just like, would you rather fly in an aircraft that's never had a test flight before? Or would you rather fly in an aircraft that's flown many times successfully? I think that's, certainly for – I'm a pilot, and I've flown a lot of aircraft, and I've read about aircraft design – I definitely would far prefer to fly in an aircraft that's flown many times successfully than one that has never flown. But really we completely have the opposite sentiment in rocket land. But I think that sentiment over time will change to the point that people will actually prefer to fly on a flight-proven rocket than one that has never flown.

SpaceNews (Caleb Henry): Hey Elon. Question about the price range that you talked about long term for the Falcon 9. You mentioned $5 million to $6 million. When do you project being able to provide those prices?

Musk: Yeah, I do want to emphasize that those are long term marginal cost of flight. So those are not prices, they're marginal cost of flight, long term. Meaning it would take, I don't know, three years or so to get there. And then we are going to need to, we still have a bunch of fixed costs to cover, that need to be divided over that number of flights. And we need to try to recover the development costs of recovery, and pay for BFR, and pay for the Starlink constellation. So we do expect to see a steady reduction in prices, and we already have reduced prices from where they were from about $60 million to about $50 million for a re-flown booster. That's by far the most competitive price in the world for a Falcon 9 class vehicle. And it's kind of cool, we're seeing a response from other organizations, Russia, Europe, and China, that are responding and being more competitive, which is good. So we're setting the forcing function for other launch organizations to improve their pricing. We're seeing announcements about reusability. China just announced that they are going to develop a reusable rocket similar to Falcon 9, which we think is a good thing. And Europe is going to do something similar. And I assume Russia will also do something similar. So hopefully SpaceX, like Tesla, is a good forcing function for improving the technology and the industry, and then helping open access to space to as many people as possible.

Quartz (Tim Fernholz): Hi Elon. Thanks for doing this. I just wanted to ask a quick question about the refurbishment process as it happened priorly. Can you give us a sense of the previously flown boosters, how much of the avionics that had to be replaced, beyond some of the structural reusability features you just mentioned?

Musk: Sorry. The line's not that strong, I missed the question.

Quartz: I was just asking about, if you had some tangible examples about the previous boosters, what doesn't need to be fixed or refurbished now? Were you're taking out all the avionics before the Block 4 boosters had to re-fly? Just to get a sense.

Musk: It wasn't that bad actually. With Block 4, we were most of the way towards Block 5, and in fact we had tests of portions of what's on Block 5 like the titanium grid fins on Block 4. So with Block 4, with optimized, is probably about a week's worth of refurbishments if pushed. Maybe, call it 10 days of work between flights. Really not that much. But Block 5 is designed to be 10 times better than that and be capable of same day flights, two flights in 24 hours. And it consists of hundreds of little things that need to be made more robust and bring lots of little sensors to be able to assess the vehicle health without taking things apart. It's amazing how many hundreds of little things make a difference. And then as mentioned, Block 5 is also has improved payload to orbit. Improved redundancy. Improved reliability. It's really better in every way than Block 4. I'm really proud of the SpaceX team for this design. We spent a tremendous amount of time on it. I've gone over every detail that I could fit in my brain, and I'm just really impressed with the quality of work that the SpaceX team has brung here. Come what may in this launch, I know that we have a really great team. I couldn't be more proud of them. And I know that they've done everything they can to make this go well.

Quartz: One follow-up, if I can? If you can you talk about what role NASA may have had in helping SpaceX reach the requirements, particularly around human spaceflight?

Musk: Yeah, thanks for bringing that up, actually. NASA's been an amazing partner for us. As I think I may have mentioned on prior calls, I love NASA so much that literally my password was iloveNASA, at one point. But it’s not any more, don't try it! [laughs] But I still love NASA. But you know, we wouldn't be where we are today without not just the support of NASA in recent years, but all the incredible that NASA did through the Apollo program, and beyond. They've been a wonderful partner, and a great help. And you know, sometimes it's, you know, to be totally frank, just like a friend that really cares, they can be a pain in the ass but I love NASA so much. And I should say, I'll also credit the Air Force and the intel community with helping us improve the robustness of the rockets in many small ways, as well as the FAA for their support.

SpaceflightNow (Stephen Clark): Hi Elon, thanks for chatting with us before the launch. We know astronauts will one day be launching on the Block 5, and I understand NASA is still studying whether they're going to be comfortable with the “load-and-go” fueling process. And I know you and SpaceX have a different view of the risk in that operation. So do you think you can convince NASA of the safety of the load-and-go fueling process? And would you be willing to change or adjust that procedure for Commercial Crew if NASA requests it. Thanks.

Musk: Yeah, yeah, absolutely, yeah. I think that issue has been somewhat overblown. We certainly could load the propellants and then have the astronauts board Dragon. That's certainly something we could do. But I don't think it's going to be necessary, any more than passengers on an aircraft need to wait until the aircraft is full of fuel before boarding. I mean, that would be pretty silly if people were like, “well the aircraft’s filling with fuel now, you can’t board.” But no, it's normal to load propellant, to load fuel on an aircraft while boarding or have the fuel fully loaded before boarding. It's not a fundamental risk. You know, we need to make sure about things like the COPVs. I'd say like, the only material risk I'm aware of is the COPV and the amounts of testing and research and science that's gone into COPV safety is gigantic. This is by far the most advanced pressure vessel ever developed by humanity. It's nuts. And I've personally gone over the test design – I've lost count how many times. But the top engineering minds at SpaceX have agonized over this. We've tested the living daylights out of it. We've been in deep, deep discussions with NASA about this. And I think we're in a good situation. We do have a contingency plan for the COPV, which I'd say would like to say would really be the only thing that represents a risk of any materiality, which would be a switch from high-strength carbon fiber with aluminum liner to a, sort of like, an Inconel sphere. We have a contingency plan for that, if need be, but I think that is unlikely to be necessary. But that's really the only thing that I'd sort of consider to be the the risk. But yeah, this is really not something that should be needed. I mean, we obviously our competitors are willing to make hay out of it, but I really do not see this as a risk representing any materiality. And worst case scenario, we've already demonstrated that Dragon is fully capable of a safe abort from zero velocity, zero altitude and escaping whatever fireball may occur on the pad, even in worst case situations. So I really do not think this represents a safety issue for astronauts. But if, for any reason, that NASA felt different, we can adjust our operational procedures to load propellant before the astronauts board. But I really think this is an overblown issue.

Business Insider (Dave Mosher): Thanks for doing this call, Elon, we really appreciate it. So you mentioned Block 5 has about 300 flights left before you retire it and you transition to BFR. I just would love any kind of update you can provide on that program. How's the construction going on the first spaceship? Any notable manufacturing challenges? Or successes?

Musk: Alright, do you have questions that relate? I would love to go on and on about BFR, but today is about Block 5. And so if you have a Block 5 question, that's cool. Otherwise you'll have to hold it for a BFR call, later.

Business Insider: Sure. Yeah, I would love a BFR call later. But about Block 5, so the 300 flights that are left, you said this was Version 6. I guess how many versions do you have left? You know you mentioned the party balloon, Fairing 2.0, and so on? When do you plan to sort of fully lock this design for the Falcon 9?

Musk: Well, like I said, there'll be no further major versions of the Falcon 9 after Block 5. There'll be minor improvements as we discover them from flight history for improving reliability, robustness, reusability, maybe some place where we think performance can be increased without affecting reliability. So these are really sort of minor refinements. But there will not be a Block 6. We intend to stabilize on the Block 5 platform and have no further major upgrade. Yeah.

SpaceX Public Relations (James Gleeson): Okay, Elon. This is James again, I just wanted to thank everybody for joining today's call, and Elon, if you want close with any remarks, that'd be great.

Musk: Thanks to you all for joining. Those were really great questions. And, whatever happens today, I know that the SpaceX team has really worked incredibly hard, sacrificed many nights and weekends, it’s a very talented group to make this launch successful. And I just couldn't be prouder and more willing to work with such a great team. So hopefully it all goes as planned and we do a good job for the people of Bangladesh today. Thank you.