

## Scottish Affairs Committee

### [Oral evidence: Scotland's space sector follow-up: launch, HC 671](#)

Wednesday 5 February 2025

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Watch the meeting

Members present: Patricia Ferguson (Chair); Maureen Burke; Harriet Cross; Stephen Flynn; Mr Angus MacDonald; Douglas McAllister; Susan Murray; Jack Rankin; Elaine Stewart.

Questions 1 - 55

#### Witnesses

I: Scott Hammond, Deputy Chief Executive Officer, SaxaVord Spaceport.

II: Nik Smith, Regional Director for UK and Europe, Lockheed Martin; Phil Chambers, Chief Executive Officer, Orbex.

III: Ruari Brooker, Business Development Manager, HyImpulse; Jörn Spurmann, Chief Commercial Officer, Rocket Factory Augsburg; Alan Thompson, Head of Government Affairs, Skyrora.

## Examination of witness

Witness: Scott Hammond.

**Q1 Chair:** I am now going to begin this meeting of the Scottish Affairs Committee, where we are looking into the role of the space sector in Scotland. I am very pleased to welcome witnesses for the three panels that we will have this morning. We are going to start by speaking to Scott Hammond about progress towards the first launch, which I am sure is very exciting for him and for the company, but is also of great interest to us. There has been a lot of talk about there being a launch at some point this year. Is that the basis on which you are planning?

**Scott Hammond:** Yes, absolutely. Talking to the team at the start of the year, when we set out our goals for this year, for us as the spaceport, you have to realise that we are not the launch provider. You have the gentlemen behind me who will be able to give you far more of an idea of their timings. We are, effectively, the Heathrow, so we need to be ready.

Our basic strategy this year is to complete the build of our integration hangars, our clean rooms, our mission management centres, our flight termination systems and our tracking telemetry—and the list goes on and on—and to commission all of that, and then to train all of our people to be ready.

In terms of the training, I really have to emphasise that this is the first time that this is being done in the UK, so we are creating brand new jobs and we need to get those people suitably qualified. That takes time. We work very closely with the CAA. We have had to put in a very detailed training manual for that, which goes through how we are going to train our people, first of all, on all of our equipment, and then how we are going to rehearse for those launches to make sure that they are safe. Our aim is to have all of that done by 1 July, after which, in the second part of the year, we are ready for launch.

**Q2 Chair:** That sounds really good. Are there any remaining steps that are giving you sleepless nights?

**Scott Hammond:** There are lots of sleepless nights. The thing that you need to understand with spaceports is that, first of all, it is vanishingly rare in the northern hemisphere for anywhere to be found that is economically viable for a spaceport. We have a huge opportunity up in Scotland, but that means that you have to look way beyond just the 5 km around the spaceport. It is very important that there is very little population nearby, but some of our customers, when they launch, will be dropping some of their stages into the Pacific ocean. That is how far away we need to think about.

If you want a global industry, this truly is global. We need to think through in terms of 5,000 nautical miles away from our launch site. That means that we have to interact with other Governments, because we are flying



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through airspace that is administered by them. I use the term “administered” because it does not belong to them; the only airspace that belongs to countries is sovereign, which is directly over or within 12 nautical miles of the territory. It is administered by them, so we do have access to it, but we still need to negotiate that. The clients will also be dropping some of their stages and fairings into other countries’ exclusive economic zones, all of which needs to be negotiated.

There is a huge amount that goes on in the background, and we have been working really closely, particularly with the DFT, and Paul Cremin and his team there, on these negotiations with countries as to how we can ensure that the launch happens safely and satisfies their needs. Those are the sorts of things that you do not see. They are not the sexy things or the blue touch paper being lit, which looks great, but without them, you are not going to launch.

**Q3 Chair:** It sounds like a logistical nightmare, frankly.

**Scott Hammond:** It is, but we have been at this for seven years up in SaxaVord, so we have gone step by step to get there. What it means is that you have to work in partnership with Government agencies, and we very much see ourselves as a partner of those agencies. The CAA are a regulator, so there has to be a particular professional relationship with them, but we still need to work with them because they are learning this for the first time as well. They are interpreting what your predecessors put into law to make sure that it is safe.

Then we need to work with the DFT, the Maritime and Coastguard Agency—or, up in Scotland, the Marine Directorate—and Ofcom for frequency licences, and it goes on and on. It is only by working in partnership with those Government agencies that we are going to achieve this.

**Chair:** Very good luck to you.

**Q4 Elaine Stewart:** Good morning, Scott. How has the site progressed in the last year?

**Scott Hammond:** It has progressed in leaps and bounds. This last year, we have been concentrating on completing the integration hangar, which will be finished before 1 July this year. Within that, there are two rocket halls with overhead cranes, as well as two clean rooms to deal with the payloads, and various offices. That building is between £12 million and £16 million, which is quite a chunky number.

We have also been working on the launch pads, particularly launch pad one, with Rocket Factory Augsburg, laying all the concrete for that and helping them with putting their stool in, which is the bit of infrastructure that the rocket sits on prior to launch. We were also doing some tests with Rocket Factory Augsburg.

That was really important, not only for Rocket Factory Augsburg in their research and development, but for us as a spaceport as we build up our



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capabilities. Whenever we do a test like that, we have to put in place what is called a safety clear zone. We calculate the explosive value of what is on the rocket and the rocket stage, and work out where pieces could fall. Then we create an area that nobody is allowed to go into. We then have to monitor that. That clearing and monitoring means that we needed to learn how to do that. We needed to work with local landowners and fishermen and so on, and the airspace. You never just think 2D; you need to think 3D.

We worked all the way through that and, as I am sure you are aware, in the summer we had an anomaly, which is what we like to call it in this industry. The proof of that was that nobody was hurt. I was up there, since I am responsible for safety, and I was very chilled because I knew that there was no danger to human life. We have been working really hard on that.

Outside of that, we got our range licence, which you can treat as air traffic for space, so that we can do tracking telemetry and flight termination. We also got our airspace, which is within the UK FIR. There are huge amounts ongoing, with lots still to do. That is only one integration hanger and one pad. We aim to finish another pad this summer, and we are looking to put another two integration hangers on to the site and a third pad soon.

**Q5 Elaine Stewart:** As well as the two sites that are in construction, is there any other development around it that needs to be done? How soon would that be completed?

**Scott Hammond:** There is. We are very lucky in that it is an old RAF base, Saxa Vord, so there is lots of accommodation up there for single people and families. Frank Strang, our CEO, bought it back in about 2003. We have been using that to accommodate people—it has about 180 beds—but it does need a lot of maintenance. We are looking to put in a new hotel for accommodation. When these companies come up, you are looking at up to 60 rocket scientists and engineers, who all need to be accommodated. They need to have hot water, decent food and a nice bed, because what they are doing is very complex and safety-minded, so we have a lot of that.

We have also made some improvements to the local roads. Fortunately, in Shetland, which I do encourage you to visit, the roads are excellent. I often say that, if you can find a pothole, I will give you £10—that's got you interested, hasn't it? We had to improve it up to the site, so we made a lot of road improvements to about the last 3 km, which cost us about £8 million. There is lots around and about, and we are also working with the local community so that they can see some benefits.

**Q6 Elaine Stewart:** Just on the back of that, will not having those capabilities affect a future launch?

**Scott Hammond:** All of those background things are essential, because a spaceport, by its nature, needs to be in an out-of-the way place, and you need to accommodate the people. When we first started, we spoke to a lot



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of people who had been to spaceports around the world, particularly over in Russia, and they had some very interesting stories to talk about.

Being able to be on site with only about a five-minute drive to the site is immense. We visited Kodiak Island in Alaska. The drive from the accommodation to the site, depending on the snow, is between an hour and an hour and a half, on pretty rough road. You cannot drive on your own because of the danger of bears, and you have to have a sat phone with you. It is really important and means that we can take care of the people, and that they can do their job safely and efficiently.

**Q7 Mr MacDonald:** Some £10 million of funding support was signed off last year. Has that got to you? How far through it are you? Is it grant, debt or equity?

**Scott Hammond:** It is a convertible loan. It has landed in our bank account, which our financial officer is clearly very happy about. Of the £10 million, we have spent about £7 million up until now on capital projects, such as the integration hangar, the clean room, the mission management centre and our flight termination equipment. We have about another £3 million to spend, which is probably going to be spent on things such as the flight termination, which is going to be installed probably in April. In terms of how the contract works, we pay that last part when we are happy with it.

**Q8 Harriet Cross:** Good morning, Scott. Following on from Angus's question and looking more at what is happening now with a change in Government and the relationship between the UK and Scottish Governments, what more, if anything, could the Governments be doing to help you push forward with current or future plans? Is there anything that you would like to point to?

**Scott Hammond:** Thank you. Yes, absolutely. When I was last with your previous Committee, I said that one of the biggest things that we would like to see is a senior politician take control of space. Space covers so much throughout our country and our way of life. At the moment, there is a whole variety of Government Departments that each have a bit of a finger in the pie, such as the MOD, the DFT and the Environment Agency. We would really like to see someone at senior Cabinet level grip it and say, "This is what the UK wants to do with space."

I am very aware that the new Government are looking for growth, and the Chancellor laid out her plans. We were disappointed to notice that there was no mention of space within that, mainly because space underpins everything that we do in our society today—if we lost space, your mobile phones would stop working—so we need that.

The other thing is that space globally is growing at 9% per annum. If you want to get on board with a growing industry, space is the one to get on board with. We would really like to see that.



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Outside of that, we would like to see contracts for our launchers to launch and put satellites up into space. We are commercially driven here. If we have a contract from Government, you are, bizarrely, more trusted because you have lots of money that you are going to pay up. We can borrow against that and show that to investors, so contracts are really important for us.

Those are the biggest things for us. The name that the media use is “space tsar”, but we need somebody senior with the political oversight that there is more to space than just the politics of it. There is the sovereign access to space. In this day and age, where the international environment is a little changeable—I am sure that we all looked this morning to see what the President said last night—the UK needs that. It also will allow us to operate with our European friends and allies. Two of our clients are from Germany, so we can work more closely with Germany.

I would also suggest that there is national pride. To become a true spacefaring nation would be a great thing. We are the only nation in the world that did it in the 1970s, when we launched and put satellites into orbit from Australia, and then thought, “We’ve done that. We don’t need to do it anymore.” We are now back, and we need to show that we are back.

**Q9 Harriet Cross:** You mentioned that the licensing process is taking time. I know that there were issues with the speed of marine licensing last year. Has that been resolved? Is there anything else in terms of regulation or taxation that you would like to see that would help you rocket boost the industry, or whatever else you want to say?

**Scott Hammond:** Yes, absolutely. Without doubt, the regulatory authorities are getting better and faster as they understand it. We fully appreciate that the Marine Directorate was never set up with this in mind. It was set up for oil and gas, and cables at the bottom of the sea, not space objects coming down in oceans far away. It is going to take time for them to build up that knowledge and the skillset, but we have a really good relationship with them. We meet them face-to-face about twice a year to discuss and work our way through what we are doing.

One of the things that we would really like to see is a freeport. Airports are quite often freeports. We see no reason why spaceports should not be, so we would really like the Government to look into that.

**Q10 Douglas McAllister:** Good morning, Mr Hammond. If you are successful and achieve that first launch from your site—and effectively, the way that you are describing it is that the UK and Scotland would win the modern-day European space race—what, beyond just national pride, is your aim after that? Is it to establish a commercially viable pipeline and pursue commercial payloads, rocket delivery and the delivery of satellites into low-Earth orbit? If so, what is the timeframe to become commercially viable?



**Scott Hammond:** It is absolutely the aim. We are a private company, so we need to make sure that we get a return on all of the investment of our private investors. It is very important. We are giving cost-effective access to space. We have a spaceport licence for up to 30 launches a year. We are not going to get to that straightaway. We need to build to that. We need to learn how to do everything efficiently and safely. We will see, hopefully, two or three launch attempts this year. We like to use the term “test flight” at this stage, because we are still in the early days. I am sure that my friends behind will talk you through all of that. We will then build up to eight, and then 12 and onwards.

I would also stress that we are already generating revenues. We have money coming in from our clients for them using our site, and we get revenues from launch and so on. We will become profitable. It is very hard to say when, since each of the models is different, but I would expect us to be profitable in the next couple of years.

**Q11 Douglas McAllister:** While you build up to the potential of 30 launches a year—I hear that you are already generating revenue—do you require any further Government support in the interim, be it UK Government support, Scottish Government support, or both?

**Scott Hammond:** We would always be delighted to take Government support.

**Q12 Douglas McAllister:** Do you need it?

**Scott Hammond:** Yes and no. We would quite happily take it. If we do not get it, we will have to go out and find the extra money and work very hard. Without doubt, Government support helps us.

I come back to launch contracts. In the early days for these companies, that is gold dust, because that allows them to get to the next launch, the next launch and the next launch, so we need to get through that. In America, SpaceX has had a lot of Government launch contracts, particularly from their DOD, which allows them to underpin their whole business model. We would very much like to see that sort of support.

**Q13 Douglas McAllister:** Do you see yourself as the UK’s answer to SpaceX?

**Scott Hammond:** We are not, because we are not a launch provider; I wonder what my friends behind might be able to say about that. We see ourselves rather as the Cape Canaveral for the UK, Scotland and Europe. As I said, I cannot stress how vanishingly rare these locations are. As an example, America has 40 spaceports. Of those, 14 have a licence. Of those 14, only four launch, because they are the only commercially viable places to launch from.

I am afraid—I say this looking at all the politicians here—that each one of you would love to have a spaceport in your constituency, because it sounds great and sexy, and is something that you can talk about, but to find a



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commercially viable location is very rare. If you are looking at competition on mainland Europe, it is us and Andøya in north Norway.

- Q14 **Douglas McAllister:** Beyond national pride, what do we get for our investment? The overriding aim is economic growth and high-value jobs, but what do we get for our investment? Do you anticipate Government having launch contracts with you? Do you anticipate Government use of it beyond commercial use?

**Scott Hammond:** Yes, absolutely. I would see Government launch contracts for putting satellites into orbit and environmental monitoring, and the Ministry of Defence having that ability. There is a lot of talk of reactive or responsive launch, which is about putting satellites back up into space for the MOD, should they be taken down by an adversary, which can be done only from a sovereign launch site, so I do see it as being about that.

In terms of jobs, we are already building up and have taken on a 17-year-old lad who lives up in Unst, and are teaching him how to become a spaceport operator. We are already working on that. We have a big STEM programme that is trying to encourage people into this whole industry. That will build only as the capacity and the number of flights from us increase.

- Q15 **Jack Rankin:** I have a few avenues that I would like to explore with you, Mr Hammond. We talk about national pride. I think about it as a space race; I do not know whether you think about it in the same way. You just mentioned Andøya in Norway in your previous remarks. It would be nice if you could comment on how you stand in terms of progress versus them. How confident are you of hosting that first orbital launch from western Europe?

**Scott Hammond:** It is very difficult, because the Norwegians keep their cards very close to their chest. What I would say is that Andøya has 20 or 30 years' experience of doing suborbital launches, which are launches that enter space but do not achieve orbit. They have that sort of experience ahead of us. They received a spaceport licence at the back end of last year, which will allow them to launch, but their launcher, Isar Aerospace, is yet to receive its launcher licence, so it is very difficult to say quite where they are on that whole process.

We talk about this sort of thing quite often, but it is the analogy of football managers saying, "Concentrate on your own game." All we do is just concentrate on what we can do and be ready for that first test flight.

- Q16 **Jack Rankin:** In terms of expanding that analogy from Europe to globally, some of the information in our packs talks about western Europe not doing this so much, and you mentioned the northern hemisphere in your introductory remarks. Is that about commercial realities or geographical realities? Why is western Europe not in the global picture?

**Scott Hammond:** We talk about space-locked countries, much like you have landlocked countries. It comes back to that point that I mentioned



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about 5,000 nautical miles. When you launch a rocket, it is a hazardous undertaking, so you do not want to overfly population centres or land masses. It all comes back to safety, and finding somewhere in the northern hemisphere that does not have a population is quite difficult.

The next thing is that you are going through airspace, which means that it has an impact on other air users. You want to be in a very quiet piece of airspace, which again, where we are, nicely up north, is good.

The next thing is those drop zones in terms of coming down on the marine environment. You do not want to be doing that in really busy shipping lanes and so on.

**Jack Rankin:** There is a bit going on.

**Scott Hammond:** Yes, absolutely. You end up with all of that. America is isolationist. Their own continent is a long way away; they do not have other people. If you look at Unst, the flight information region changes from the UK one to the Icelandic one 12 nautical miles north of Unst, which shows you straightaway the complexity.

The exclusive economic zones do not match up with airspace, so you have that. There are areas that do not belong to anybody. We will also pass through Norwegian airspace, potentially, as well as Greenlandic, Canadian and American airspace. It is really a function of geography that the northern hemisphere is just far more populated and, therefore, far busier.

Q17 **Jack Rankin:** That is clear, thank you. The other point that I just wanted to ask about was contracts. You have referred to this a couple of times, and it is clear that Government contracts can underpin your leverage and help you build the business. You said that the Department of Defence in the US underpins some of your equivalents in the US. What does the MOD do at the moment? I am assuming that we still require space, so are they piggybacking on American technology, or are they placing these contracts in a non-sovereign place somewhere else? How does that work? What would need to change?

**Scott Hammond:** At the moment, the UK MOD has probably only two satellites, so we very much rely on Uncle Sam for all of that. I believe that their thinking at the moment is to piggyback on a SpaceX launch, because they see it as a cheaper option.

We would encourage against that, for a whole variety of reasons outside of sovereignty. I was at a Global Spaceport Alliance meeting where we had somebody from the US Space Force talking about what their requirements are up to 2030. They have, effectively, booked all of the launches from the States until 2030, so if we want to get UK satellites up there, we are going to have to find another way of doing it.

**Jack Rankin:** I know that we are not coming to conclusions yet, Chair, but I would say that, in the increasingly less globalised world and with what is happening in the US, sovereign capability is something that we should be



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looking at.

**Chair:** Thank you very much, Mr Hammond. That concludes our questions for you.

**Scott Hammond:** Thank very much.

### Examination of witnesses

Witnesses: Nik Smith and Phil Chambers.

Q18 **Chair:** We will now resume our meeting. Good morning, Mr Smith and Mr Chambers. Thank you very much for coming along this morning to what is proving to be a very interesting session already. My first question would be to Mr Chambers. I am conscious that you paused construction of your own facility in Sutherland last year and switched your operations to SaxaVord. What prompted that decision?

**Phil Chambers:** It was a purely commercially driven decision, based on the amount of capital that would be required to finish the spaceport versus how much capital we would require to finish the rocket. Orbex is a pre-revenue business. We get paid only when we start launching satellites on a commercial basis, and there would have to be some test flights first.

We set out to raise a £55 million series D financing round after last summer. By the time we approached autumn, we had not been successful in raising the complete amount. You are aware of the subsequent developments there. It became apparent that we would have to find a way to optimise our cash flow.

The biggest single expense that we had was the approximately £15 million required to finish the Sutherland spaceport, so we started negotiations with Scott and the SaxaVord team to discuss what kinds of options there would be to move there, given that that spaceport already had a licence and much of the infrastructure that is required, which we heard about in the previous session, had already been constructed.

Therefore, I made the decision that it made the most financial sense to pause construction at Sutherland for now and to develop the capacity. So far, we have permission for 10 launches a year from SaxaVord. As and when more capacity is required, we can finish the construction at Sutherland and carry on there, or develop capacity in other places.

That seemed to be the most prudent way to get the launcher finished and, therefore, the best way to secure the jobs and the economic development that we are trying to create in Scotland.

Q19 **Chair:** I presume, though, that there is still some long-term plan for Sutherland and that it is something that you would still like to pursue.

**Phil Chambers:** Yes, absolutely. Orbex's business plan has us ramping the Prime microlauncher, which is the first vehicle that we are building, up to 24 launches per year. As I mentioned, we have permission for 10 from



SaxaVord, so we need to find the capacity for the other 14. The most logical place to find that is in the partially developed site. We would need that capacity by 2028 and, therefore, construction would have to start prior to that.

**Chair:** That is very interesting.

Q20 **Susan Murray:** Thank you, Phil. You are retaining the lease on Sutherland, but you are not developing it. Are you doing anything in the background? Are you working on licences?

**Phil Chambers:** We are doing a couple of things. The first is to fulfil the planning consents to do with drainage and the various bits of peat restoration, and security to prevent unauthorised access. We are continuing with the licence application as well. That was something that was in process with the Civil Aviation Authority. We are getting the spaceport and range licences there while we continue applying for the launcher licence now from SaxaVord, so we have modified that application. That would leave the site in a good place, ready to restart construction when the time is right and when we have sufficient funds to do so.

Q21 **Susan Murray:** Would you think it appropriate, given the amount of public funding that has gone into the site, to perhaps speak to the Highlands and Islands Development Board and see if there was another organisation that wanted to use it, or are you confident that your activities are progressing towards using the site? You mentioned 2028, which is not very far away.

**Phil Chambers:** It is not that far away, and we are reasonably confident that we need the capacity. Our business plan requires us to have more capacity in order to hit break-even and become a commercially viable business. We are in discussions with Highlands and Islands about different options, so there is certainly an open dialogue there. I met them yesterday. We tend to meet them on a weekly basis, so we are certainly looking at ways that that could potentially be accelerated.

It is expensive to change the decision in terms of how you get the licence. Operationally, there is lots of equipment that needs to be installed. Once SaxaVord has finished completing the pad, there is a bunch of technical equipment that we need to install. It is not a decision that we took lightly and not one that is easy to chop and change. We really have a new plan now, which is to do the first 10 launches a year from SaxaVord and then look for the additional capacity in Sutherland.

Q22 **Mr MacDonald:** Can you explain the impact of Anders Povlsen's involvement in your plan in Sutherland and the move to Shetland?

**Phil Chambers:** There were a number of objections to the planning permission before my time at Orbex, and there was a judicial review in the High Court, which we won. We then had to modify the planning permission because it became apparent that situating the radar station at the spaceport itself would not have enough line of sight over the horizon. We submitted a new plan, which had some minor changes, but the main



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difference was to move the radar site from the spaceport to the top of the Ben Tongue mountain. That required planning permission modification, so we had to submit it again, and there were a number of objections to that scheme.

I will stress that there is already communications infrastructure on the top of that mountain, so it has a mobile phone mast up there. However, the planning permission was granted late last year, and so, in terms of Mr Povlsen's influence, it has not prevented us getting our planning permission, either the first time or subsequently.

**Q23 Elaine Stewart:** Mr Smith, where are you with the current status of the pathfinder launch that you are involved in, following ABL's withdrawal of its commercial launch services?

**Nik Smith:** When we set out on the pathfinder launch programme, as you described, our intent from the outset was always to think about how we stimulate the broader business. It was far more about stimulating the ecosystem, so we ended up having two parts of the launch programme. One was working with a spaceport and also bringing a launch provider across to be able to create the launching capability.

As we have heard very well from Scott, how do you then drive the demand that will lead to the continued viability of those spaceports as well as delivering the economic benefit to the region that really comes from space? It makes sense only if you put something in space that generates some benefit from that capability.

We have two parts to the programme. As I said, one of those was with ABL as our launch provider. We are now looking for another launch provider. We are in conversations with a number of them, and there are an increasing number of those coming out. You will hear from some of them this morning, which is great.

The second part of that was the development of an orbital manoeuvring vehicle and also bringing some commercial customers. That continues, and that part of the work is progressing as expected. We still have to find a launch provider, but we have seen that there is a spaceport, and a number of launch service providers coming on to the market as the market changes, which is fantastic. We will continue developing the orbital manoeuvring vehicle and the commercial satellites that will go on that to then generate the jobs and the benefit that come from that.

**Q24 Elaine Stewart:** I think that you answered my second question, which was about your objectives. Are you quite confident that you are going to deliver on them?

**Nik Smith:** We are slightly different from some of the others here, and it is probably worth just explaining that we are not a launch provider or a spaceport provider. We are more on the consumer side. We have heard already about how important it is, for the viability of the launch providers and the spaceports, to have that demand. A really important element of



this is that you can become quite focused on spaceports and launch, but it is worth it only if you are going to do something with what you put into space and what you do with space itself. That is where we are really focused as a space company.

There is no doubt that there is huge demand for launch. There is no doubt that there is huge demand for space-based systems right across the different mission areas. We touched on things such as how we tackle the climate crisis, which someone has mentioned already. Fundamentally, we need space-based assets, so I am in no doubt that there is a strong, vibrant space market that we can be part of.

What we are doing at the moment is stimulating some of that demand, bringing in some of those space companies, and allowing them to look to the UK as a place to launch from. We are doing that already, so that is part of it. I am in no doubt that we can absolutely achieve the objectives of putting the UK and Scotland at the forefront of the space market, as long as we continue with the same level of impetus and focus, and with some of the elements of support that Scott has already mentioned. With those things in place, there is no reason why we cannot achieve it.

**Q25 Elaine Stewart:** Do Government still need to back this programme?

**Nik Smith:** Space is a globally competitive market, and I would argue that there are no space sectors globally that operate in purely commercial conditions. We need to be alive to that as we consider all the policy decisions that we make in the future.

We have heard about US models, where many of the spaceports there exist on military bases with an element of support that comes from that, as well as the driver demand from things such as the DOD and other Government consumers. You can look across the world, and you can look across Europe, where they have strong European Space Agency backing through their Arianespace launch, which, again, is very much driven by institutional demand, and that is how they pull it through.

We have to recognise that the global space market generally is supported by Governments, because they see it as a strategic sector, for economic reasons but also for prosperity and security. Scott mentioned—and I just want to take the time to echo it—that you launch nationally because you want to have secure and assured access to space. Most nations recognise that, which is why they support their spaceports.

That was a long answer. My response is that, yes, we need continued Government support. It can take many forms, but it definitely needs to be there.

**Q26 Douglas McAllister:** On that point, did the UK Government not give Orbex additional investment last week of £20 million?

**Nik Smith:** That was not to us, but to Orbex. That is a really positive sign. In fact, I would commend what I see to be a relatively progressive and



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ambitious way of doing this. It was a different investment model than we have seen previously, and it is exactly those kinds of models that we need to see. It is exactly that kind of thing that will make a difference, but let us be clear. When we compare that with the level of investment that comes from other Governments around the world, it is only starting to scratch the surface of what it takes to do this. Even when you consider the economic and security benefits that come from being a spacefaring nation, it is not a huge investment.

**Q27 Douglas McAllister:** What is the investment model? Has the UK effectively become a shareholder in Orbex with that £20 million?

**Phil Chambers:** The £20 million is a convertible loan note, so it is money that is loaned to the company where the Government have an option to become a shareholder at a future equity raise, or, indeed, the option not to. That is the model. Generally speaking, it is the same model as the SaxaVord investment in March last year. It is fairly standard in the investment world that those turn into equity and are not repaid.

**Q28 Douglas McAllister:** What has that £20 million enabled you to do? Has it allowed you to accelerate your current development?

**Phil Chambers:** Yes, absolutely. That £20 million has secured over 150 high-tech jobs in northern Scotland. It has put us on a very good path to our first launch this year. More than anything, it has sent a signal to Europe and the world that the UK is now backing a sovereign launch capability that is being built in the UK, in Scotland. That, I hope, will make it much easier to unlock private investment for the company.

**Q29 Stephen Flynn:** Gents, all of us want to hear some positivity here, so could you talk to me a bit more about what Scotland's USP is? What is it that distinguishes us from elsewhere that is going to allow you to attract that commercial investment that is required to make sure that this is a success, not just for yourselves but for Scotland and the wider UK economy?

**Phil Chambers:** Yes, absolutely. The first obvious one, and the point that Scott made in his session, is the geographical gift, if you will, of having open sea in a northerly direction with not much population. That means that it is an ideal place to situate spaceports.

We also have, in Orbex, some great facilities just down the road. We do our integrated stage tests, and some of our engine, environmental and structural tests, at the Kinloss Barracks. The MOD has been kind enough to rent us a fairly significant site with great security, which is eight minutes from our rocket factory on the Forres Enterprise Park.

We have been supported by the local regional development agencies. Highlands and Islands Enterprise has supported us with the spaceport build, as well as with some of the equipment. We are able to draw on a pool of engineering talent that is coming out of the oil and gas sector, as well as some of that supply chain. For instance, we have just built a large



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vertical test stand at Kinloss Barracks, which was built by Motive, from Aberdeen, using the same types of skills that you would use in offshore.

There are many advantages. It is also a great place to live, and we have relocated many people from around Europe to live in northern Scotland.

**Q30 Stephen Flynn:** Does the strength of the US market, and SpaceX in particular, have an impact on the viability of what you are seeking to achieve? In terms of being able to attract that commercial side of things, are you looking at low, mid or high-Earth orbit? In relation to GPS, are you looking at navigation, at satellite or at comms? Is there a specific thing that is going to distinguish yourselves from SpaceX in order to be able to compete with the scale that they have, as well as the open access that they now have to the US Government?

**Phil Chambers:** It is a great question with perhaps a long, complex answer. What you have to understand about Orbex is that the first vehicle that we are building is a microlauncher called Prime. It can put 150 kg into low-Earth orbit in its initial operating capability, and we intend to develop the payload capacity to be able to grow that through technical upgrades, which is a quite common path.

You can think of this as roughly the equivalent of Falcon 1, which was Elon's first rocket. The unique differentiator is that it is made entirely from carbon fibre, so it is super lightweight. We have built the world's first carbon fibre cryogenic coaxial tank, in Scotland, with a global patent, and we are using biopropane as a fuel. We have built an engine system architected around a fuel that delivers up to 96% fewer emissions than a standard kerosene rocket.

In terms of pure competitiveness, the smaller your launcher is, just due to the laws of physics, the less able you will be to get the same type of cost per kilogram as a Starship. However, for missions that require specific orbits with payloads that are around the right size, and for people who care about the environment, it is a great solution.

To get cost competitive with SpaceX, you need to build bigger rockets, which is where our product road map comes in. Through the European Launcher Challenge, we intend to put forward a design for a medium-lift vehicle of around 8 tonnes to low-Earth orbit. As you mentioned, that vehicle would then be capable of medium-Earth orbit, of geostationary, of lunar missions and of interplanetary probe science, so you can think of it a bit like a Soyuz replacement. That vehicle would also be capable of delivering much lower costs per kilogram, due to the economies of scale, and make it easier to compete with SpaceX.

In terms of that global market, I would echo what Nik said. There is a significant European institutional market, which, until quite recently, was closed and was open only to ArianeGroup and Arianespace. However, the flight ticket initiative was launched last year. Orbex was one of only five launch companies in Europe to win a ticket to launch EU institutional



payloads, and we have a subsidiary in Denmark, so we do think that that is a very significant market with which to be able to boot-strap commercial payloads to then tackle the global market in the longer term.

This is a stepwise thing. SpaceX went from Falcon 1 to Falcon 9, to Falcon Heavy and to Starship. There were four vehicles in that transition.

**Q31 Stephen Flynn:** You are telling us about Scotland's way to take on SpaceX and the States, and to succeed. We will take that.

I have a quick follow-up for Nik. On a slight tangent, 2,500 places are linked to Northumbria University, in north-east England. Why did Lockheed Martin choose to put its efforts there and not in Scotland, where, of course, the spaceport is going to be?

**Nik Smith:** I will start by saying that the relationship with Northumbria is not exclusive. Let us start there. We already have a footprint across the UK. We already have some other footprints in Scotland. Clearly, we are also looking for opportunities to build our relationship with SaxaVord. We are a UK company going right the way through the nation.

In terms of Northumbria, there is a bit of serendipity at times. We ran a supply chain event there and built a relationship with Northumbria, and they leaned in as a university and helped us out. Even recently, we have had a team up in Scotland, at Strathclyde, having a conversation about how we can extend that ecosystem.

From the outset, for those who do not know, in terms of the relationship with Northumbria University, we created a North East Space Skills and Technology Centre. The idea behind that is to create an ecosystem and a one-stop shop to be able to bring through talent, do the development of ideas and ideation, and then bring that into production, while recognising that the power of that will be in how you can build a broader network around it.

We have already started having conversations with some institutions in Scotland to see how we can do that. We ran a supply chain event late last year in Glasgow, looking for where we can start finding the nuggets of these ideas. Maybe we will use the NESST as the way of doing the incubation of those; maybe we will find another way of doing it.

It is not exclusive. It was a great opportunity for us to start building something at the centre of this. That is very much the point of this. It is the kernel and the hub, but where do we reach out to from there? We have already started doing the links into Scotland. Hopefully, that allays any concerns that we are being exclusive. We are not. We are looking for opportunities to partner wherever we can across the nation.

**Q32 Chair:** It is certainly fair to say that Strathclyde University has great ambition in that particular area, as I have found to my interest.

**Nik Smith:** They let us know very clearly, as they always do.



**Q33 Harriet Cross:** I have a really quick follow-up on launch licences. Phil is probably best to answer but, Nik, do jump in if needed. How does the process of obtaining them here compare with internationally? Are we at the stage where they are overly constrained or overly regulated, such that we are losing pace with what is happening abroad, or is the process here right? You said that you still have not received yours. July is when the spaceport will be ready for launch. Is there an overlap there that is not going to match up?

**Phil Chambers:** I think they were referring to the RFA first launch for July. We are targeting Q4, so we think that the licence is on track. In terms of the process, I could not really comment on getting a licence abroad, because we have never tried it. However, I would say that the CAA has been absolutely great to work with. It is fairly new for them, as it is for us, and it is a fairly complex task to license a spaceport and arrange a launcher, but there is a great team there. We honestly do not really have any complaints and are working together effectively so, from my point of view, no big change is required.

**Nik Smith:** I would agree. Those of us who have been working with the CAA for some time have seen a real change in their approach. Scott mentioned that as well, because, of course, it is not just the launcher, but the satellites that will go on there. They have to be licensed as well, so it is everything in the spaceport. We have seen a real change in the way that they are approaching it. They are very collaborative, which is very important.

Globally, I look to possibly the more mature ones, which would be France or the US. Because they have had long-standing ways of doing licensing, they can sometimes be a bit more formulaic and take a bit longer.

The approach that the CAA is taking is very positive. However—and this comes back to the question that was asked around Scotland's USP—there are some elements where this does become a discriminator. As you think about the refinements of things such as any regulation or any of these licensing processes, you should understand that that will be, potentially, one of the discriminators for launching from the UK and from Scotland.

It is always good to continue to review and refine, because these are the things that companies will look for when making a decision about where they can launch from. As I said before, this is a globally competitive market, and we have to make sure that we do not give any reasons for people to look elsewhere.

**Q34 Susan Murray:** Have either of you seen any change in the UK Government's approach to the space sector and to launch since the new Administration came in? I know that we have spoken about contracts, but I would just be interested to hear what your general opinion on that is.



**Phil Chambers:** We have. First, I would say that space is a refreshingly non-partisan thing. Most or all flavours of politician seem to be fairly behind the space sector and supportive of what we are trying to do for the UK.

However, I would say that the UK Government giving a convertible loan directly to Orbex and taking a position in us to develop this sovereign launch capability, with a British-made rocket launching from British soil, built in Scotland, does seem like a change to me and certainly a welcome one.

Q35 **Susan Murray:** So although it is not specifically mentioned, they are actively doing it in terms of growth and recognising it is there.

**Nik Smith:** I would just echo some comments that Scott made earlier as well. We quite often hear the conversation around space and its importance for the UK in a number of ways. From both a prosperity and a security perspective, it is very important. We also need to make sure that we have the right advocacy in Government.

To some extent, there has been a splitting of the responsibilities across different ministerial positions as well. When we had things such as a National Space Council, it felt like we were getting some broader cross-Government interfaces. That may have dissipated slightly with the change of Administration. It is coming back together again as people start to focus on it and get some time in Government to come back to it.

I would just echo the point that Scott made, which is that we need some kind of national champion, because space is a cross-Department, cross-Government interest, to make sure that someone is co-ordinating that. I would really like to see some emphasis on that.

The other thing that we have, which is going to be very telling for us as a sector, of course, is the industrial strategy. I really want to see space factoring quite significantly in that, because it will be very important, not only for those of us operating in the UK space sector. It is a real declaration globally about how this Government are getting behind the UK space sector and why the UK is the right place to come and do space or space-related activities. We need to make sure that the industrial strategy really reflects that.

**Phil Chambers:** I would absolutely second that. It is crucially important that space is written clearly into the industrial strategy, maybe as part of advanced manufacturing or on its own. That will help join some of the dots that we talked about.

If I could just highlight one area, we have been talking to the National Wealth Fund, formerly the UK Infrastructure Bank, around support for building a large-scale manufacturing facility in northern Scotland. After looking at it for some time, the answer that we got was, "Space is not in our mandate." Then the questions are, "Why? What does it take to get space in there to support this job creation?" That would be critical, because



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it is a fund with extremely large financial firepower that could support the large-scale infrastructure projects that we require to scale up the production of rockets.

**Nik Smith:** Without wishing to go too far into this line of questioning, we talked about how it is very important to have Government support in some form for the space sector. In that way, you deliver the benefits on the back end.

Scott talked about where we have seen things like defence interests in it. One of the things that we have had previously is that the only real, fully funded programmes that could operate nationally at scale were defence programmes, because most of the UK Space Agency funding was provided through a DSIT mechanism, which meant that they were often grants as opposed to real national programmes.

Things such as the industrial strategy would provide the levers for us to pursue really ambitious national space programmes. That is why it is so important for us, because we think it will support and grow the industrial base, but also make a clear statement about why the UK is a place to come and do space. Having those kinds of large and ambitious national programmes, which would be allowed through the right levers in the industrial strategy, is really important.

Q36 **Susan Murray:** Just looking further into the future, given that this is about long-term planning, development and investment, with regard to all the payload that is being put up into space, this is clearly an international issue, with a lot of owners of different bits of equipment up there. Have there been any discussions or are there any plans around bringing things back down to Earth after they have finished their usefulness?

**Phil Chambers:** There are two aspects to this. First, it is really important that we adhere to a zero-debris policy, and there is a plan to de-orbit rocket stages and bring them back down to Earth. The same is true for satellites.

The second part is that there are now a number of commercial companies that are looking at how to tackle the problem of space junk, which is an increasing issue. The big question is who is going to pay for it, because it is really expensive to clear it up. The single biggest thing that we can do is to make sure that nothing is launched into space without a plan for it not to leave any debris whatsoever.

**Chair:** Thank you both very much. That brings us to the end of our second session, which was very interesting indeed.

### Examination of witnesses

Witnesses: Ruari Brooker, Jörn Spurmann and Alan Thompson.

Q37 **Chair:** Thank you for coming along and being willing to give us evidence. It is very helpful. This is really a question to all of you. We heard from Mr Hammond earlier about the conditions that are required for a space launch



area, and about why SaxaVord works in that context. Are there any other reasons why your companies have been attracted to that particular location?

**Ruari Brooker:** One of the most significant ones is, of course, the geography. It is the airspace. The marine space is also relatively uncrowded. In Scotland and the UK, there is also a good manufacturing base of aerospace businesses, which can form part of the supply chain of the companies we are building. The skills base is also there. Those two things are perhaps the most significant ones, as well as the UK being relatively advanced compared with other European nations in terms of the regulation for space launch and having a process for getting a licence to do it in the first place.

Q38 **Chair:** Mr Spurmann, are there other reasons why your company was interested?

**Jörn Spurmann:** I second what was said before. These are definitely all good arguments that also resonate with us. For us specifically, we met like-minded people in Scotland, specifically in Unst near the SaxaVord base. They are people who see space as the future of humanity, the same as we do, and as great for overall society and the benefits we will have locally from that.

Specifically, with SaxaVord being a private company and a private operator, it is much simpler to act and work with it than the other spaceport locations we have around the world close to where we are at the moment. We can have a call with Scott and us, and take a decision and move forward; there are no state entities or agencies involved that we need to relay decisions through to move forward. This is one of the most important factors that we need.

We are very far behind the other spacefaring, dominating nations around the world. If we want to catch up and do something that actually makes sense in space, we need speed. Speed to catch up means speed in taking decisions and in the overall environment. This was a major part of why we made the decision and chose the spaceport.

Q39 **Chair:** Mr Thompson, is there anything extra from you?

**Alan Thompson:** In general, the ability to launch from the north of Scotland, whether it be SaxaVord or any other location, is the UK's offering to the space industry in general and the launch industry. As mentioned by Scott, there is no one else doing responsive launches and getting into orbits over the Arctic at the moment. There is space to do it. As mentioned already, the geographic aspects mean there is not significant human activity north of SaxaVord. Yes, it is the unique location and the ability to launch at a given time.

The one thing I would say in particular is that there is a lot of wind at that displacement north. In our experience, having tried to launch in Iceland, the one factor that supersedes any regulatory challenges and everything



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else is the wind, because if you cannot manage the wind—well, you can't—you cannot launch when you want to. From the point of view of the United Kingdom, SaxaVord is probably the best location to be able to do that and to access the Arctic inclinations—the sun-synchronous and polar orbits that we are looking to.

It was not mentioned earlier on, but the majority of the satellite manufacturers in Scotland are actually still looking at Earth observation data capture. The satellites that are being manufactured in and around Glasgow are looking to do sun-synchronous or polar orbits, which is orbiting from pole to pole. For that very reason—for the launch service offering to be able to support these satellites, the growth of that capability, and the growth of Scotland's capability in terms of data capture and Earth observation data, manipulation and interpretation—we need to be looking at polar orbits. That is the end-to-end, joined-up piece of, "Why SaxaVord? Why launch? Why Scotland? What are we actually looking forward to?"

**Q40 Chair:** That is very interesting. In a sense, one of Scotland's USPs is that capability.

**Alan Thompson:** Yes, absolutely. When we set up Skyrora in 2017, we were very much looking to fill that logistics gap, and to be able to inspire and allow more satellite companies more regular, frequent access to space.

One of the first conversations we actually had was with the Scottish Environment Protection Agency, because at that stage we already knew that it was a major stakeholder—or consumer, rather—of space data. At that point we saw ourselves as an enabler to capture better space data and to support the constellations for Scotland's manufacturing to be able to do that. That is how we fit ourselves into that value chain.

Again, that is a very valuable point, and the future of why we are doing this. It is not just endlessly putting new satellites up there; it is actually supporting what is there, doing it responsibly, in a sustainable manner, and looking to support and potentially remove these satellites from orbit at the end of life.

**Q41 Chair:** That is very good. I have a question to all three of you. I think I am right in saying that your companies have had an interest, or expressed an interest, perhaps, in other launch sites across Europe. Would it be your intention to continue interest in those? Are you spreading your bets, or are you thinking that you will focus on one particular launch site in the future?

**Ruari Brooker:** We are not currently looking at any other launch sites in Europe. We definitely see SaxaVord as our primary launch site, for the same reasons that Alan said. It is access to polar and sun-synchronous orbits, which is where most of the small satellite market is. As we grow and expand, there will be orbits that are harder to access from our northern hemisphere, and there are a couple that you can access from a more equatorial location. We do see a route to grow our offering of destinations, which could be offered from other launch sites at an equatorial range. That



does not mean to say it is not possible to get a satellite from SaxaVord into a low-inclination orbit, but it is not as easy as it would be from another site.

**Jörn Spurmann:** I will start by being a bit broader. Scott mentioned Heathrow Airport when we started this overall session. What we will ultimately have to get to are rocket launches happening next door or on the other side of the river. In the future, maybe we will see rocket launches at the airport, which is very close to the city. In the origins of air travel, airports were also very remote—the same as spaceports are today, for safety reasons—but at some point they will not have to be. This will all depend on how often you fly, how reliably you can do that and how you can ensure public safety by doing so.

In the long run, I hope there will be more and more spaceports around the world, but we are all under the understanding that there will probably be decades to go until we see that. For now, our baseline spaceport is definitely SaxaVord. That is a very good partnership for us so far, but we are also under the same understanding that we cannot launch all satellites to all orbits from that location.

There are certain inclinations we cannot get to due to safety, and other countries we fly over that, as of today, are maybe not our closest friends. That overall evolution might change over decades, but as of today it has not. With that, we need other locations closer to the equator, or lower-inclination sites around the world, that we can access to make all our customers happy, essentially, who want to fly with us. For that, yes, we obviously need another spaceport.

Ultimately, our plan is to advance and to build more spaceports. We have a very modular concept to build everywhere. It must be that we are providing a service level with our launch service that is in favour of the customer. That means that we operate in the proximity of customers. It means that we take the concept that we have, and that we can ideally build it anywhere around the world to make operations simple and cheap for customers.

Q42 **Chair:** Mr Thompson, do you have a view on that one?

**Alan Thompson:** Yes, just to basically support what Jörn just said there. The concept of responsive launch is where we think we have an opportunity to compete with the United States or, rather, provide a valid offering that they will recognise and tolerate—let us put it that way. From that point of view, responsive launch in our concept means not being limited by infrastructure of any specific place on Earth.

In our planned launch for later this summer we are planning to look at the possibility of telemetry coming from space to our launch vehicle. Rather than having a ground control station to track and to talk to our launch vehicle, we are looking to undertake a proof of concept to actually replace that, or demonstrate that it can be done from space. What does this mean?



This means that we do not think that we need to be limited by heavy, cumbersome infrastructure going forward, particularly from the environmental point of view.

From that point of view, yes, at the moment we are intending to develop our relationship with SaxaVord—we are looking forward to it—so that we can start that process. As I mentioned already, we undertook a test launch from Iceland, because we have the entire infrastructure that we think we need, which is mobile, to allow us to undertake this concept of responsive launch.

As Jörn just said, we remain open to customers' requirements and how we are able to respond to them. From that point of view, we have had a dialogue with a number of the spaceports in the northern hemisphere, including, as we mentioned already, SaxaVord, Andøya and Esrange. It was us who created the Icelandic regulations to allow the launch to happen in Iceland.

We also have a dialogue with Canada in particular, and we are interested to learn more about Oman's spaceport, which I believe also has a connection into SaxaVord. We are staying open because we want to be responsive. We want to do it better. We believe that, by doing it better, we can actually get a better price or have a better effect for our customers.

**Q43 Harriet Cross:** Mr Spurmann, you have received your operator licence. What are the steps before you are able to launch, and are there any particular barriers in the way that are going to change that timeline?

**Jörn Spurmann:** First of all, we are obviously very proud and very happy to have received it. It was a good process. It was quite a long process but finally we arrived here, together with the CAA, which we are very happy to work with. It has obviously been a very complex and long process overall. We started three years ago, and to get here is quite a time-consuming process. Thousands of pages of documentation were created. Our internal calculus was that it cost us roughly £2 million to get there, so it is quite an investment from our side into the regulative aspect.

Yes, from here to launch there is obviously a monitoring plan around the licence. What we need to do by when is public. There are certain steps that we need to fulfil until 60 days prior to launch, when we have to officially place certain announcements surrounding protective zones for maritime and airspace areas. We are in a constant monitoring phase with the CAA about these steps to get to launch.

**Q44 Harriet Cross:** You spoke about the licence process. You said it was three years and £2 million, which is a fair investment, and you said it was long and drawn out. From someone who has been through it with the CAA, is there anything that could be improved? Could the cost or the time be brought down? How does that compare with elsewhere?

**Jörn Spurmann:** We have our licence, so I hope you make it more complicated for everyone who comes after. In that sense I will leave it to



the other people to comment. I would say there is a fairly clear scheme in the UK for the regulation. That was one of the reasons why we came to the UK for launch, because it was very clear and very plannable in terms of what we would have to do. We may not have known that it would take three years.

There is a clear scheme that the spaceport operator gets a licence. They get another licence for the range operations. The launch service provider gets one and the satellite operator gets one. The distribution of responsibilities is quite clear around who has to do what.

There is clear accountability, though it is very uncommon for our customers to apply for a licence themselves. That is definitely something that is additional effort for us and for them, because obviously you can see that when they go somewhere else to launch, they do not have to do the regulative effort. It is a downside to our business case and the attractiveness of the overall service offer. If you want to change something at that end, always look from the customer perspective and look at that regulation element to make it simpler—remove it or do it in another way. That would be our biggest wish.

**Q45 Harriet Cross:** Finally, how are the preparations for your first launch going? We have seen in the news that there were issues with your engine tests last year. Has that hampered preparations? Tests are tests, so I can understand that they are not always meant to be 100% perfect, but has that impacted your preparations and timescales?

**Jörn Spurmann:** I did not see any issues last year, but maybe you have. We see a lot of learning, obviously, in what we did there in the test campaign. It was a very big and wonderful image learning, from which we advanced. Every company has to face that and will ultimately face that.

If we look at the US, which is a few years in the future with their small launch and launch efforts overall, they went through the same period in the last three or four years. There were lots of small launch companies. There were huge failures on some test and launch activities, and they are through that phase. After two or three years now, since they had all these launch attempts and tests, almost none of these companies exist anymore. We mentioned earlier today ABL ceasing their commercial launch plans and completely moving to military.

There are five to 10 small launch companies in the broader context in Europe, or five in the room. That does not necessarily mean that, first, it will all go flawlessly for them. We are just the furthest advanced to see where the hard things actually are in launch operations. Secondly, it does not mean that they are all going to survive this very hard phase in front of us, which is about getting actual hardware to test into actual operations and trying to demonstrate things. It is hard. It is still rocket science, right? Lots of people say rocket science is not hard anymore—be my guest. I would like to extend the invitation that Scott offered earlier: come around



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to Augsburg, come around the site, see what operations we really do and build your own impression.

- Q46 **Jack Rankin:** I want to ask Mr Brooker about HyImpulse. I read that in 2023 you said that you were aiming for a suborbital launch from SaxaVord last year, and then this year for an orbital launch. You did not launch last year, so I was wondering if you could update us on your plans.

**Ruari Brooker:** We made our suborbital launch last year, which was from the Koonibba test range in Australia. We are one of the few European space companies that has launched a rocket, albeit a suborbital rocket, which is not as complex as the orbital vehicle that we are currently working on now that we intend to operate out of SaxaVord. The suborbital vehicle is a test case vehicle, so we found ourselves in the position where we needed to launch that as soon as we could, and the infrastructure in the Koonibba test range became available. It is also located next to the Woomera test range, where the UK has historically sent most of its test rockets in the past.

- Q47 **Jack Rankin:** Did you go from Australia because SaxaVord was not quite ready yet?

**Ruari Brooker:** We had SaxaVord and Southern Launch, which is the name of the company in Australia, as two plans that we worked on at the same time. We worked on the regulatory process at the same time. It was a good exchange for the CAA and the Australian agency, I believe, working on something that both of them were relatively new to. Eventually the timeline of plan A, which was to launch from SaxaVord, was overtaken by the infrastructure availability in Australia. Speed is the aim of the game, unfortunately. The longer-term picture is that our intention is to operate orbital services from SaxaVord. We need to get to that point as soon as we can.

- Q48 **Jack Rankin:** Might that be this year?

**Ruari Brooker:** No, it will not be this year.

- Q49 **Jack Rankin:** The UK Space Agency gave you £5 million last year, did it? Well, it was not given, but invested.

**Ruari Brooker:** Yes, awarded.

- Q50 **Jack Rankin:** Is that helping you get towards that first launch at SaxaVord?

**Ruari Brooker:** Yes, absolutely. From the point of that suborbital launch, we are now continuing the programme of the orbital vehicle. There is a lot of work to do there. I am not going to pretend that we are going to launch this year or necessarily next year, but we have a fast-paced programme that we are working on, which is supported by the UK Space Agency as well as the DLR and the European Space Agency.

- Q51 **Elaine Stewart:** Mr Thompson, Skyrora has previously said it is planning



a suborbital launch this spring. Are you on track for that, and when might it be?

**Alan Thompson:** Yes, we are. We were hoping to have that suborbital launch in the spring of last year, because this was going to be a UK rerun of what we did in Iceland in October 2022. The current status is we are in the final throes of finalising our licence, we hope, and that should be confirmed very soon. Hopefully the stars will align and the queues might fall away—I do not know—and we might be able to find ourselves with a space at SaxaVord Spaceport in the summer. We are obviously negotiating the bird nesting season and the windy seasons, but we still have an aspiration to be able to make that happen.

As I mentioned, it will be a proof-of-concept flight for a space-based telemetry solution. As Ruari mentioned, Skyrora had a programme of small launch to demonstrate its capability and to introduce the concept to society, including to the regulator. The idea was to go through iterations of small launch to prove what the launch meant to ourselves and that we had the processes in place. This suborbital launch is the final launch in that programme before we attempt or broach the orbital launch vehicle, which we are finalising the manufacturing of this year. As I said, that is what we have planned.

Q52 **Elaine Stewart:** Does the frustration still lie with the CAA's licensing? Can you expand a wee bit on that, if that is the case?

**Alan Thompson:** I started engaging with the CAA in 2019. You may remember that Brexit day was in March. As a new company at that point, we wanted to launch a vehicle at the end of March on Brexit day. We started talking to the CAA at the end of February 2019, for a small 4-metre vehicle, two stage, just to do a small test launch—again, as I just mentioned, as part of the proof of concept. That engagement lasted 23 months.

We eventually came up with what we felt was a robust safety case. At that point the CAA recognised that we had engaged with a range service provider and a spaceport provider. We had sat down and said, "Yes, we think we can do this," to make them more comfortable.

At that point the CAA was officially recognised and stood up as the regulator for spaceflight. When the new team was appointed, it basically said, "You have to put the work that you have just done on hold. You cannot launch until you have a licence under the new regime." The Space Industry Act 2018 and the Space Industry Regulations 2021 were approved and came into force at the end of the summer.

We then started engaging with the CAA in September 2021, because, as Scott mentioned a little earlier on, this is all a learning game. We need to share information. We need to be able to sit down collaboratively with our partners—by this I also mean the regulator—to allow them to learn the activity that we are proposing to undertake. From our point of view, it is all about trying to achieve that golden medium, not getting too close to the



regulator but at the same time making sure that they have complete, full understanding of all the processes that we are undertaking.

We have sought different ways to do that, including learning the lessons of our Iceland launch and so on. Yes, we have been around the block a few times with regard to this. As I said, we went to Iceland to launch because we got tired of waiting. We ended up creating the regulations, allowing the Icelandic to adopt an Act of Parliament, and they gave us a certificate to allow us to launch in Iceland in October 2022.

On 1 March 2023 the Science, Innovation and Technology Committee deliberated over the Virgin Orbit launch and the challenges of that, and the CAA was not coming out of that terribly well. On 16 May 2023 we had a visit from the board of the CAA, and they made an announcement about moving forward. They asked us what it is that we wanted. The one thing I asked of the CAA was engagement. We have only just achieved the level of engagement necessary for us to be able to process and finalise that licence.

That was the second attempt to have a licence. We actually submitted our orbital licence application back in March 2022. For the specific launch that you asked me about in your previous question, we were encouraged to submit a licence application by the Minister for Transport in July 2023, which is why I mentioned we were hoping to launch in the spring of 2024, then in the autumn of 2024, and it has been pushed back again because the licence process has been extended.

To be perfectly honest with you, it has been extended because they are doing it for the first time. We appreciate that, but in every attempt for us to sit down and engage with them, to allow them to share information and to understand us better, up until this point we have not really managed to get there.

The achievement of us getting a licence, hopefully very soon, will be enormous. We have been working on this case since 2019.

**Q53 Elaine Stewart:** I hear your frustration loud and clear, and I hope that happens soon for you. Just moving on, to what extent do your future plans for manufacturing in Cumbernauld depend on the outcome of your first launch?

**Alan Thompson:** We are highly committed to Cumbernauld. I am delighted to say that in our perhaps slowed attempts to get our licence, we have actually been successful in developing our commercial capabilities—the capabilities we represent in-house, particularly around propulsion engineering.

As part of our funding programme and as part of our financial make-up going forward, we have been successful at securing a couple of commercial deliverables. We are looking to do more, particularly in the area of propulsion engineering. As mentioned by Nik Smith, we have started



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engaging in particular with MOD framework programmes, where we believe we will be able to deploy some of that capability going forward.

We are highly committed to our Cumbernauld site. We are already bursting out of it. We employed 40 people over the last three months. We need more space. We are looking to grow. We still require investment to achieve the total commercial value offering for space as we envisage it, but with the appearance of these commercial deliverables and these contracts, we are in a much better place than we were even a year ago, because it has given us confidence. It has given us the opportunity to live off our own revenues and actually build that going forward.

From the point of view of our launch in the summer, had we launched a year ago in spring, the suborbital launch would have been a massive demonstrator and a proof of concept to a large number of potential investors. It would hopefully have been successful—as we all hope. Now, the pressure is not so much on that. There is still pressure there, because obviously we want to be successful and we want to be able to move forward faster, but I am delighted to be able to say that the company is in much better shape right now. We are highly committed to our location in Cumbernauld and, as I said, to growing that.

**Q54 Maureen Burke:** Can I ask each of you what engagement you have had with the UK and Scottish Governments as you have developed your launch plans?

**Ruari Brooker:** We have a long-standing engagement with both Governments, with Scottish Enterprise and Scottish Development International on the Scottish Government side, and primarily with the UK Space Agency, but also the Department for Transport, the CAA and the Department for Business and Trade. Engagement on all sides is very good there. Everyone is very keen to see this happen. There is a lot of enthusiasm from all of those agencies to make space, and particularly launch, a growth area for the United Kingdom and Scotland going forward.

**Jörn Spurmann:** The overall engagement on all sides has been very good with Highlands and Islands, or the Scottish Government overall, but also with UK's DSIT and the UK Government. They have been very supportive. The strategy for national launch, which is essentially the No. 1 item on the agenda of UK space strategy, obviously helped a lot to get these interactions going, as did the pathfinder programmes that they did initially to spur these ecosystems.

The UK was really early with all of these initiatives. It was one of the first countries around here to have a space Act in place, and the support programmes for the pathfinder missions. It then somewhat stopped. I would ask, "Why don't you continue?" You were the first; you attracted all the people who are now in the room to that UK location in Scotland to actually do a launch. I would not stop it. It is all about attracting companies to come and stay. The "come" has worked, but the "stay" is what needs to



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be worked on, and what we are trying to do and build in these engagements.

It has been mentioned several times before that we are service providers for transportation to space, and ideally the best support we can get is contracts for these transport demonstrations in whatever context you deem feasible. It could be R&D launches for university satellite projects, or, at the other end, part of a NATO-style programme to make it so that multinational corporations can deliver under that framework. There is a wide variety of what we can think of, and what we are trying to actively push in these discussions to get support for.

**Alan Thompson:** As I mentioned, we did early-doors engagement with SEPA in 2020 around the data angle, because the Scottish Government, with the adoption of the Scottish space strategy and the environmental taskforce, were taking an environmental angle to the development of space. Yes, we have been supporting that and heavily involved in informing that work.

Obviously we were engaging with SEPA on two levels, not just to understand their demand for data going forward, but to understand how they were going to regulate our engine test activity from the point of view of emissions and so on. We have been heavily active in the cross-party group in Holyrood more recently; we helped to get that set up. We also field some of the questions and have useful engagement with MSPs and the Minister. In fact, we had a great engagement with Ivan McKee when he was Minister, and we have a good relationship with Richard Lochhead.

We had great representation at Westminster. In fact, in collaboration with our MP we had a space debate on 5 February 2021. You may remember it. That then led into the Science, Innovation and Technology Committee inquiry into space, the new space regulations and the Space Industry Act. We obviously presented evidence at that Committee on the success, the development and the implementation of the strategy.

We have been seeking every opportunity to engage, to try to share information about where we are at, and to understand how we can achieve better accountability and better support for the civil servants who need to be working with us through collaborations and partnership to allow us to do what we need to do, which is to deliver the economic benefits, the jobs and the prosperity that we all so want to do.

**Q55 Maureen Burke:** You have alluded to my second part of the question, which is about what further support you could expect from the Scottish Government and the UK Government. Is there anything else you think they could provide that would support what you are doing?

**Alan Thompson:** From my point of view it is continued engagement and better understanding of what we want to put forward in the era of responsive launch. We believe there is a big opportunity now that the United Kingdom has in NATO, in a programme called STARLIFT. We are



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championing this concept of responsive launch, as I mentioned already. We believe this is something incredibly valuable that we can demonstrate here, and, as I said, represent that with the entire country capability in a NATO engagement.

We anticipate another five to 10-year programme where we can again represent, develop and use this as an economic driver to develop the academic opportunities with the University of Strathclyde at the Aerospace Centre of Excellence, and at Heriot-Watt University on propulsion.

The simple answer to the question is for greater alignment and greater engagement, so that we can actually broach these opportunities together. At this precise moment in time, yes, we are still looking for a bit of investment, as I mentioned, but, from our point of view, we are in a confident place to be able to achieve that. We are now, hopefully, able to deliver against the economic promises we are making to the country and to Scotland in the first place.

**Jörn Spurmann:** I have a fun fact. I do not know if you have all seen the green logo that is everywhere, both on the chairs and on the television screens. If you look at the green part, at the bottom of it are spears. If I look at it, I look at the black part on the bottom, because you see the perfect shape of the nozzle of an engine. There are four engines next to each other, perfectly aligned, so you are actually accelerated by rocket engines here already.

**Chair:** That is good to know. We will take that to heart.

**Ruari Brooker:** Your question is about what more Governments can do to support us. There has been great support. We are well supported by the UK Space Agency and others. Going back to one of the things that Nik mentioned, while we are going for a situation where we can be commercially successful without Government intervention, there are no launch companies in the world that have become successful without some kind of Government intervention.

The question is what the best kind of intervention is. To date, most of that has been through R&D support but I would echo what Jörn said about contracts for launch. That is one way that we can go to investors and say, "Look, we do not just receive some money. We receive a customer as well, or options for customers." That is a very powerful thing that the state can leverage, because the state is a customer of space products, space data, and satellite capabilities in space. There are many ways that could be leveraged in order to support the launch industry from the UK.

One of the other things that we have not mentioned yet but is also there is that there is a big push from European Space Agency members at the moment to try to build up a commercially successful European sovereign capability. One of these programmes at the moment is called the European Launcher Challenge. The UK's participation in that challenge will be key to



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securing the future of the UK launch industry, as well as the European launch industry.

**Chair:** Thank you very much. That was our last question of the morning. On behalf of the Committee, I would like to thank all of the panellists for a fascinating session. We have all learned a huge amount this morning, and we are very grateful to you for giving us your time. Thank you.