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Introduction

Thank you Jane, and thank you to the Aviation Club for hosting us today.

It's a privilege to be in my role at Boeing as we approach the milestone of our centenary next week and, when the position I'm in permits me to speak to such a distinguished audience as you all about it, then the honour extends still further. Thank you for being here today.

Now I don't know about you but I'm a bit tired of Brexit talk. For us it remains business as usual. We have an ongoing job to do in the UK, delivering for our customers. That does not change. So with your forgiveness I'm going to steer clear of it today so your lunch goes down more smoothly. I don't feel like I have anything I wish to add to the debate right now that someone else hasn't already said, so let's talk about some other things instead.

Centenary

I wonder, did Bill Boeing really imagine on the 15th of July, 1916 when he founded our company, what he was starting off? In a century we've gone from wood and canvas seaplanes to composite passenger

jets and space planes. Think about that for a minute. This industry, our industry, has accelerated human progress so much over the last hundred years. We have worked in partnership and in competition to deliver for humanity. An idea that would have been laughed at 150 years ago when the Royal Aeronautical Society was founded is now commonplace, whether that's flying across the globe in a few hours or communicating via satellites in a split second. We're proud to have played a significant role in that progress and honoured to carry on the legacy of our legendary colleagues into the future.

Bill Boeing was inspired by the skills of French aviator Louis Paulhan at the 1910 Los Angeles air show. Looking for every opportunity to fly, his quest was realized on July 4, 1914, when he went for a flight with Terah Maroney, who had brought his Curtiss floatplane to Seattle's Lake Washington. After that flight, Boeing famously declared: "There isn't much to that machine of Maroney's. I think we could build a better one." With business partner Conrad Westervelt, he did build a better one, a plane named with their initials, the B&W.

Boeing established his company in 1916 to manufacture aeroplanes, instruct on their use and develop aircraft for the future. But we've gone far beyond that early vision.

Into space.

Under water.

Here in the UK, we even support Staffordshire police with their IT transformation.

I bet even Bill Boeing didn't see that last one coming...

But we won't pretend that we did that alone. Today's modern supply chain boggles the mind. Juggling the complexities of it in today's industrial world must rank alongside any of the other phenomenal achievements of the company, the B-47, Apollo, the 747, no matter what.

Without our employees, research partners and suppliers, more than 250 of which are in the UK and with which we spent £1.8 billion in 2015 – more than twice as much as five years ago – we'd not tell the full story.

Now, when you've been around for a hundred years there are an awful lot of things that we could talk about. But a week ahead of Farnborough and during the quiet period ahead of our second quarter results on the 27th July there are a few things that I can't talk about just now, but I will do my best to answer your questions shortly...

Before that, as we look ahead both to next week and to the future of our industry, I'd like to explore three questions with you - three challenges that face our industry as we look ahead.

Firstly, **globalisation**, how do we meet its challenges and seize its opportunities?

Check against delivery

Secondly, with **rising demand** alongside globalisation of markets and supply chains, how do we meet it?

How do we deliver for our customers? How does new technology affect what we make and how we make it?

Thirdly, and finally, with a diverse portfolio of products to meet customer requirements, **what should we do differently?**

Globalisation

Boeing has set the goal to be an enduring global industrial champion. But to try and do that, and be successful, without a strong local presence in key markets would not be possible.

For many decades there was more of a 'travelling salesman' approach to non-domestic markets. Come in, do the deal, go home. Not anymore.

We are localised in the UK and elsewhere. Boeing in the UK is run by Brits, we employ Brits and we serve our British customers. Similarly in other key parts of the world. Furthermore, if we do set up a new capability and need expertise from the US to do so, we also train people from the UK to do the job so that when our colleagues from the US head home, they leave behind a new capability for the customer, the company and this country.

That, I think, is the way to succeed globally. Have a global mindset. Be able to capitalise on opportunities where they may arise with world-leading products. Develop those products with a worldwide supply chain to leverage additional expertise and local customer engagement. Have your own local presence, networked in to the rest of the company, with the ability to call on expertise from inside the company from another part of the world to give that extra, winning edge. But above all, be close to your customers. And you can't do that without a strong local presence alongside a global reach to support them wherever they are.

Meeting rising demand

To meet demand from our customers worldwide – we estimate around 38,000 aircraft at a value of \$5.6 trillion and our competitor has similar figures - we are moving ever more into advanced manufacturing. Innovation isn't just for our products, it's for our processes too. When you have an order book of more than 5,700 aircraft and well-publicised rate increases planned, there is an imperative to innovate in production as well as products.

Advanced manufacturing is a journey and we are in a transition phase. Initially, automation is being introduced to produce existing aircraft more efficiently. Ultimately the goal is to design and develop 'planes and other products for advanced manufacturing. But this is a challenge as we meet our customers' expectations today while transforming our production systems for tomorrow. Modernising a ship while at sea.

It will influence all four of our production pillars, **people** through training and development; **materials and components**, through kitting, consumption-based replenishment of parts and supplies as well as updating the supply chain; **methods**, through creating standard work as well as work standards on how work is performed; and **machines**, through implementing problem-solving for a purpose.

We are the first industry to utilize this level of process equipment and robotic/automation. We need to meet customer expectations now and in the future. At the same time we constantly developing technology and translating knowledge from vendors, applying their automotive experience into aerospace.

These new processes will reduce workplace injuries still further, improve quality and enhance productivity. Of course, our highly-trained workforce will always be needed to design, develop and build our products.

Doing things differently

To give you a couple of examples, on the 737 we have developed what we are calling the Panel Assembly Line (PAL), which is a highly automated wing skin panel production system that consolidates assembly into an in-line flow using a pulsing line. The first wing panel was loaded in February 2015 and more than 90 wing sets have been produced. We've seen a 60 percent reduction in defects and a 50 percent reduction in injuries.

On the 787 we are using quadbots in Boeing South Carolina where four robots drill, inspect and install fasteners on the aft of the aircraft. Full utilisation is expected in Q3 of this year.

Now this does not do people out of a job – it eliminates certain potential repetitive strain tasks and allows for us to meet increases in rate. It creates new roles for our colleagues who now manage the systems and processes. As we increase rates on some programmes this type of automation is crucial. As is the link with our suppliers.

Taking parts made all over the world and combining them into some of the most complex machines imaginable is a real feat and one that we should not take for granted. If a 787 has 2.3 million parts, and we are producing 12 per month, 65% or 18m parts per month are coming from suppliers. Think of how many parts per month are coming from our suppliers to be combined into all the aircraft we produce.

We do that in partnership with many of you in this room and your companies. We do it for many of the rest of you and your organisations. So as we tell our centenary story, we tell it with the stories of our people, our heritage companies like McDonnell-Douglas, North American, Rockwell International, Stearman, Piasecki Helicopter and Hughes, but also the stories of our partners and our customers.

UK-Boeing supply chain partnership

As an example of the UK-Boeing partnership, take the Boeing 787 Dreamliner. When fitted with engines made by Rolls-Royce in Derby, alongside significant contributions from other British businesses, 25% by value of that aircraft is made by UK companies.

There are now more than 420 Dreamliners in service. We're producing them at 12 per month. That is the fastest rate we've had for a widebody aeroplane. That has already contributed billions to the UK economy through the innovative supply chain we have here. Together we meet the demand for the highest rate for a widebody aircraft. Modern technology in the 787 delivers a 20% reduction in fuel consumption for our customers, which equates to a reduction in CO2 emissions of the same amount. And a noise footprint 60% smaller than a similar sized aircraft today.

But that's not where our growth in the UK ends.

We're proud to support our UK airline customers and the Armed Forces. This leads to growth for ourselves and for our UK suppliers.

When Boeing wins a contract from a UK customer, the UK economy benefits. The 787 proves that. So do our other commercial programmes as well as world-leading innovative arrangements like Chinook Through Life Customer Support or the partnership we have with the Ministry of Defence for logistics support.

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As you all know, buying an aircraft is around 30% of the full life cycle cost, with the rest in training, servicing and support. So when we sell an aircraft to a UK customer the value doesn't stop there. It generates on-shore economic benefits much larger here in the UK. Our teams provide that strong local presence I mentioned earlier. Whether that's Boeing Commercial Aviation Services Europe Limited in Frimley, Surrey, or at Gosport on the Chinook Through Life Customer Support programme, we deliver for airlines and the Ministry of Defence. This support work is done here, creating long-term value and skilled jobs. In just five years we have more than doubled the size of our UK workforce to more than 2,000 employees.

When Boeing wins, the UK wins.

Don't let anyone tell you otherwise.

Boeing in the UK

In addition to our rapidly-growing employee base, our partnership with the UK supply chain has grown too, to the tune of £1.8 billion in 2015, which supports some 12,700 UK jobs in the tier one supply chain alone here in the UK. And as commercial aircraft production continues to ramp up, and we develop the UK as a hub for supporting customers in Europe and beyond, those numbers are set to increase further.

More than 140 Boeing aircraft are in service with the UK's Armed Forces.

Check against delivery

More than 250 commercial aircraft are in service with 13 UK airlines.

We have strategic partnerships with six UK Universities. These work on many areas, from advanced manufacturing to integrated vehicle health management and from people development to hybrid aircraft.

As you know in modern aviation we have aircraft in the air that send reports back to ground stations, telling them that a part will need replacing. We can then have the part at the airport ready so the airline doesn't need to take the plane out of service, replacing the part in the usual turnaround of the plane. This is integrated vehicle health management in action, developed in partnership with Cranfield University here.

Soon, the aircraft will send the signal to the ground and we'll automatically 3D print the part at the airport. Think about that.

Invest in UK research and skills to ensure ongoing success of British aerospace sector

To develop such innovative technology we have to invest in research and skills now, for benefits that may not accrue for decades.

It's certain that in recent years the UK Government, of all colours, has understood that. The Department of Business, Innovation and Skills certainly has and the Aerospace Technology Institute is a great example of how. Industry is working well with the Government precisely because there is a mutual understanding of the vital importance of developing new technologies, bridging the 'valley of death' into commercial applications, including with SMEs and the wider supply chain, and investing in our young people to be ready to maintain the momentum.

Our industry cannot succeed without skilled people. It has no future if our young people do not see our sector as exciting and somewhere they can make their way.

We do that through our community programmes. We invest in the local areas where we live and work. A key aim for our centenary is to engage and inspire young people too.

More than 5,000 young people a year participate in our community programmes, from the Schools Build a Plane Challenge with the Royal Aeronautical Society, education programmes with the Prince's Trust and flying scholarships for young people and wounded ex-service personnel with the Air League. Who knows? We might even announce a new project at Farnborough.

Farnborough

As you can imagine, I'm not going to announce any new business here today. Our customers announce orders, not us, and no doubt one or two may choose to do so next week.

But I can tell you that we will showcase the new 737 MAX, with innovative, beautiful new Advanced Technology winglets designed by Boeing and made by GKN on the Isle of Wight. Those winglets alone save 1.5% fuel consumption compared to previous winglets, cutting costs for our airline customers and CO2 emissions for our environment.

A US Navy P-8A Poseidon will be on show, with more than £3 million worth of UK-made equipment on board – be it fuel tanks from Cambridge or avionics from Cheltenham as well as flight deck seats from Southend-on-Sea.

As for engaging and inspiring we will have a centennial pavilion at the show for both trade and public days. Our team will be walking people through the past 100 years and looking ahead to the next 100. From wood and fabric aircraft to carbon composite planes or from kerosene to biofuels we'll be challenging people to think of what the next step will be in this evolution, and what role young people will play in it.

Future

So as we look to that future, we seek the next great thing, together, as Boeing has always done.

Our environment, as well as our customers, depends on finding ways to use ever-less fuel before transitioning to even cleaner ways of powering flight.

We need new minds to solve these new problems. So in addition to bringing these young people to our community programmes and to our centennial pavilion at Farnborough, I encourage you to take your children or grandchildren to visit Above and Beyond at the National Maritime Museum in Greenwich.

The exhibition runs until the 29th of August and is aimed at 7-14 year-olds, but don't let that put you off, I enjoyed it too. It's fully interactive, as you would imagine the iPad generation would demand, and it covers everything from the principles of flight, through to designing and flying your own plane as well as new aircraft materials and what space flight does to an astronaut's body.

It even has a space elevator.

It can't help but generate enthusiasm for our sector in this crucial next generation. Sparking a desire to join us in the industry is something we should all aim to achieve.

Conclusion

In closing, I would pay tribute to those who have gone before us, those who work with us now and particularly those who are striving to inspire the next generation. If we stop and rest on our laurels for even a moment, we go backwards. We will be overtaken.

Check against delivery

We must constantly ask ourselves 'What's next?' and challenge our young people to come up with the answers. Our industry takes on the most challenging and complex problems and beats them. Bill Boeing believed that no problem was unsolvable if hard work and science were applied to it. All of us today, who love this industry and love this country, should instill that in the next generation.

If we do, there is no limit as to what the partnership between the British aerospace industry and Boeing can achieve for humanity in the next 100 years. And Boeing will continue to lead the way with you, both here and around the world.

I would now be delighted to answer your questions, thank you for your time today. Thank you.

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