



# ACA Monthly News



## HMS Prince of Wales fits last gas turbine



The Aircraft Carrier Alliance has successfully completed the installation of the second MT30 Gas Turbine Alternator (GTA) into the Royal Navy's latest aircraft carrier HMS PRINCE OF WALES, at Rosyth. Generating 36 megawatts (around 50,000 horsepower), the Rolls-Royce MT30 is the world's most power-dense Marine Gas Turbine, a key feature for naval ships where high power occupying minimum space is essential. Each 120 tonne GTA package consists of a GE supplied alternator coupled to a Rolls-Royce supplied MT30 Gas Turbine contained within an enclosure.

Two MT30s, the first of which was installed in March, are installed in each ship and will provide two thirds of the 109 megawatts needed to power the 65,000 tonne ships – enough energy to power a town the size of Swindon.

"To have successfully lifted, for the second time, the most powerful engine in the Royal Navy onto the biggest ship ever built for the Royal Navy, using one of the biggest capacity gantry cranes in Europe, symbolises the scale and pace at which the programme is moving."  
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Angus Holt, Delivery Director, HMS PRINCE OF WALES, said: "It was only three weeks ago that the Aircraft Carrier Alliance achieved a UK record when 26,500t of the forward half of the ship was mechanically skidded back to the rear of the vessel. Now to have successfully lifted, for the second time, the most powerful engine in the Royal Navy onto the biggest ship ever built for the Royal Navy, using one of the biggest capacity gantry cranes in Europe, symbolises the scale and pace at which the programme is moving. Everyone involved should take huge pride in their contribution to this national endeavour."

Don Roussinos, Rolls-Royce, President – Naval, said: "The installation of the second MT30 for HMS PRINCE OF WALES marks yet another significant milestone in the Queen Elizabeth Class programme. These aircraft carriers will be the backbone of the Royal Navy's capability for decades to come and we're proud to be working alongside such a strong team in the Power & Propulsion sub Alliance, as these highly capable ships get closer to entering service.

"We are delighted to continue that long and proud history of delivering advanced marine gas turbine and propulsion technology to the Royal Navy."

The installation involved the lifting of the MT30 gas turbine and associated ancillary equipment housed in a steel package known as the gas turbine enclosure onto the ship structure. With the enclosure in place, the large alternator, which is driven by the gas turbine to produce electrical power, was then hoisted into place. Once operational, the GTAs will supply HV power to the four propulsion motors as well as the 13 ship service transformers. These transformers distribute LV power to the weapons systems, mission systems equipment and navigation systems, as well as power to the hotel services required to run the QE Class.



View more images of the operation on the [Aircraft Carrier Alliance Flickr](#) page.

## HMS Prince of Wales powers ahead



The installation of the ship's Blown Fibre Optical Cable Plant (BFOCP) commenced during October. It could be said that this is the 'veins' of the Mission System Integrated Network Electronics, the ships' nerve system, which carries and transfers data from multiple sources throughout the Platform and Mission Systems. Taking on board some important lessons which have been learnt from HMS Queen Elizabeth, particularly around preparation and scheduling, installation commenced in Damage Control Zone 2 on the 5th and was quickly followed by similar commencement in Damage Control Zone 3 on the 23rd.

Also, following successful Installation Audits on 29th October, endorsement was given to connect shore supplied Low Voltage (440v) via shore connection boxes to Damage Control Zone 3 LV Switchboards located in Compartments 5LC5 & 5LC4 for the first time since they were Factory Tested just over four years ago. This significant achievement now allows the HMS Prince of Wales Commissioning team, supported by Rolls Royce and the wider Power & Propulsion Sub Alliance, to start electrical commissioning with work now to progress from the switchboards to the Electrical Distribution Centre's, initially within Damage Control Zone 3.

The start of Low Voltage commissioning is a notable step forward in bringing HMS Prince of Wales to 'life'. Proving the 440v electrical distribution system from LV Switchboards to 'end users' is a prerequisite to having the ship generate and distribute its own power.

It is important to note that as 440v is now distributed within the ship, extra care and caution should be taken,. Mandatory safe systems and tag-out processes should be adhered to by all to safeguard themselves and their co-workers.

Thanks to all, particularly the DCZ 2 & 3 outfit teams, Networks, Balfour Beatty & Capita for their efforts in achieving these significant milestones.

## Edinburgh to London raises charity cash



A Team of sailors from HMS Queen Elizabeth were delighted to hand over a cheque for £7,451.43 to Mr Bill Thomas, Chairman of the Royal Navy and Royal Marines Charity, raised on behalf of their gruelling 500 miles bike ride from Edinburgh to London earlier this year.

Receiving the cheque, during his visit to Rosyth, the charity's Chairman said: "It has been an honour To celebrate the achievements of the HMS Queen Elizabeth charity cyclists here in Rosyth. The fundraising efforts of her Ship's Company know no bounds and we're proud to be the affiliated charity of the carrier. Thanks to their ongoing support we are able to ensure every generation of the Ship's Company are supported throughout their lives."

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Bill Thomas, Chairman of the Royal Navy and Royal Marines Charity.

As the principal charity of the Royal Navy, this charity provides extensive support to sailors, marines and their families, for life. Last year alone it gave £8 million to people most in need including serving personnel, veterans and their families.

The 20-strong cycle team which included the Senior Naval Officer of HMS Queen Elizabeth, Captain Simon Petitt, and five industry colleagues from the Aircraft Carrier Alliance covered the distance between the ship's two affiliated cities, Edinburgh and the City of London, in just five days.

Team captain, Petty Officer Michael 'Mini' Cooper said: "This is by far the cycle team's biggest achievement to date. We are extremely proud to have raised such a large sum of money for a very worthy charity and one that is close to our heart."

# HMS Queen Elizabeth – powering through the delivery programme

The tenting area around the flight deck of HMS Queen Elizabeth belies the impressive progress being made in the completion of systems and achievements in Commissioning.

There is a constant flurry of activity over at J/K berth, recently culminating in some impressive achievements.

Power & Propulsion (P&P) is one area where considerable progress has been made. On the 23rd of October the aft Gas Turbine Alternator (GTA) started up for the first time with the forward GTA following soon after on the 4th November.

The teams lead by Stuart Smith, ACA P&P Commissioning Manager, alongside Mark Williams, Head of P&P Sub Alliance Commissioning, worked through a number of challenges to achieve this significant milestone while not taking their collective eyes off the ball as they prepare to load test the four diesel generators (DGs).

Load testing has been a big challenge for the Commissioning teams as they sought resolutions to the cooling requirements to run all the diesels at full power. Having tested the modified fresh water cooling system on DG1 (forward), the team progressed to successfully trial that DG at 110% load for the first time. The commissioning team now look forward to load testing all four DGs before the end of November and gaining certification approval from Lloyds.

Elsewhere in the P&P programme, on the 29th October the first propulsion motor was turned (motor four on the port-side) for the first time using the ship's own HV power. While this was uncoupled from the shaftline, it clears the way for the next big milestone which is to turn the first shaft line by the end of the year.

Slightly more visible for anyone walking around the starboard side of HMS Queen Elizabeth is that the forward aircraft lift has been moved half-way to the 'maintenance position' (photo bottom right).



And last but certainly not least, HVAC and the cooling systems across the ship are rapidly becoming operational with the first set to work of a chilled water plant in Damage Control Zone 3 (DCZ), which will mean we can cool the various areas of the ship where Mission Systems equipment is being installed

and set to work. Congratulations to Jim Brodie, ACA Senior Commissioning Manager and his team. James Tarr of Imtech Marine commented that it was a true team effort (see photo

bottom left): "With great help from the Royal Navy, Halls and the ACA, we have successfully set the first chiller to work on HMS Queen Elizabeth. Running at 50%, we had an inlet temperature of 20 degrees and an outlet temperature of 14 degrees and falling. Big thanks to everyone involved!"

"With great help from the Royal Navy, Halls and the ACA, we have successfully set the first chiller to work on HMS Queen Elizabeth." James Tarr, Imtech Marine.

All of the above achievements are only made possible by the continued efforts of the Queen Elizabeth System Delivery Teams; the production, commissioning, supply chain, engineering and planning teams all working to a common goal and supported by the wider ACA organisation.



## Spotlight on...

### Neil Bell

## HMS Queen Elizabeth Assistant Project Manager



#### What was your first ever job?

My first job was with Wolfson Microelectronics, a company that designed and manufactured microchips for products like smart phones, mp3 players and games consoles. I was an Engineer in the manufacturing side of the business and was involved with trying to improve test yields and product reliability. I also investigated product failures, which allowed me to work with some really interesting customers including Apple and Microsoft and to also travel to some interesting places like South Korea.

#### How did you get from there to where you are now?

After working in a variety of Engineering roles within the Electronics and Optoelectronics industries, I decided it was time for a change and I moved into Project Management. I began my Project Management career with a company that manufactured laser equipment for medical applications and then joined MacTaggart Scott, the company that designed and manufactured the aircraft lifts for HMS Queen Elizabeth and HMS Prince of Wales. It was while working there that I first became aware of the Carrier programme and ultimately decided to become a part of it last September.

#### What does your job entail?

I work in the Analysis and Integration team on Ship 1 and I'm involved with developing various wholship metrics and providing data analysis support to the Senior Management team. I also develop reports and tools to help managers and supervisors on the ship manage their work more effectively.

#### What is the best part of your job?

I enjoy the challenge of turning complex data from various different sources into usable information that makes it easier for people to complete their day-to-day tasks and helps them make better decisions. I also really enjoy the buzz of working on such a fast-paced and challenging programme.

"I enjoy the challenge of turning complex data from various different sources into usable information that makes it easier for people to complete their day-to-day tasks and helps them make better decisions." Neil Bell, HMS Queen Elizabeth Assistant Project Manager.

#### What your proudest moment working on the programme?

Being featured in the ACA Weekly Newsletter is surely the proudest moment of anyone's career.

#### What is your biggest challenge to date?

Having spent most of my career working in hi-tech industries on mass-produced products, the transition to working on the delivery of a single product on such a huge scale has certainly been challenging, although I've really enjoyed adapting to the new demands and working environment.

#### What do you do in your spare time?

I'm quite an active guy and like being outdoors as much as I can. I really enjoy golf, although there are times when I consider hanging up my golf shoes for good! My wife and I have also recently taken up rock climbing and I've definitely got the bug. I've only been climbing indoor walls so far but I'm hoping to get out on the hills this winter.

# HMS Prince of Wales build update

## Rosyth

QEC manufacturing has completed block weighing of SP07 and handed the sponson over to the assembly team, with another impressive increase of 30 tonne of outfitting heavier than ship 01. A great deal of lessons learnt was incorporated into this block and a vast volume of intricate operations and installations associated with the GT and exhaust systems were completed at the build stage. Several stainless steel trunking vents were also installed mitigating costly installation procedures that would have had to occur by the assembly teams.

2 centre blocks from the remaining 3 still to be handed over to assembly are being prepped in readiness for upcoming CHOIs with 11 compartments identified and planned for week 33 on CB06 & CB05B. Full blasting and painting operations have been ongoing for several weeks on these blocks and are nearing completion.

*Below: blast and paint operations on CB05B throughout 3 deck*



Heavy fabrication bays are continuing drive toward completion of the remaining units for SP11 and SP12. There are 10 units (including gun sponsons & SPN units) and 4 seats left to complete in Heavy Fab QEC work scope.

Good progress continuing within Build Hall Bay 1 where SP12 exits over the coming weekend to allow SP10 Fwd to be weighed and handed over to Assembly on 6th November.

SP12 will then re-enter Bay 1 build hall to have another 3 units fitted and outfit progressed. Bay 2 SP10 Aft, CB05A, Bay 4 SP11 are all at various stages of block build and outfit with Lloyds heavily involved with dry surveys.

*Below: CB06 EMF store 3UB6; CB06 3TB2 Hilti False floor; CB06 3UA6 Deck store*



# HMS Prince of Wales build update

## Glasgow UB14

### Workstreams closing out

The main focus on the block remains the progress of remaining workstreams towards CHOI Completion and Block Handover

Several workstreams have now closed out with painting of internal compartments, insulation, deck screeding, cable installation, vent installation, terminations, checkwire and electrical equipment installation now complete.

With all compartments now CHOI inspected, the team are working closely together to drive through the close out of observations raised at the inspections to achieve these remaining CHOs.



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