

# News story: Status update for record breaking UK-Algeria CubeSat mission AlSat Nano

Launched on September 26 2016 the UK Space Agency funded nanosatellite, delivered in collaboration with the Algerian Space Agency, met its core mission objectives back in February and is on track to complete even more advanced objectives within its first year of operations.

## **Status summary:**

- Stable, healthy spacecraft platform
- All subsystems functional – over 15,000 ground to space commands successfully sent
- Strong communications link – over 1000 files downloaded so far
- Low spin rate
- Longest uptime: 27.4 days
- On board Attitude Determination Control System verified and activated
- Regular datasets returned for Thin Film Solar Cell payload
- Multiple image capture and download for all three C3D2 payload cameras – 105 image files downloaded in total so far, including 16 full size images
- AstroTube Boom payload deployed and stowed multiple times, incl. full 1.5 metre length, captured with dedicated C3D2 camera

## **World Firsts and World Records**

AlSat Nano has provided Oxford Space Systems with the first flight of its innovative flexible carbon fibre composite boom payload, the AstroTube Boom, which is believed to have set a world first as the longest ever retractable CubeSat boom in orbit at 1.5 metres. Oxford Space Systems also believe they have set the space industry's fastest full cycle hardware development; material design to in orbit demonstration in under 30 months.

This has been enabled by AlSat Nano's rapid development programme, just 18 months between spacecraft design and flight readiness. This has allowed industrial and academic mission partners to stay ahead of the curve in the increasingly competitive global nanosatellite market.

The Thin Film Solar Cell test payload, led by Swansea University, is the first solar cell deposited directly onto cover glass to be deployed in space and successfully return data. The ultra-thin (just 1/10th of a millimetre thick) cover glass, developed by industrial partners Qioptiq Ltd, allows for extremely high power to weight ratio which is crucial for saving costs in spaceflight. Flight data returned so far show extremely promising performance, and with proven materials heritage there are now clear routes to secure further funding and eventually commercialise the payload.

## **Mission impact**

The flight opportunity is providing major benefits to those involved already. Below is a snap shot of some of the highlights captured so far by mission partners, which they view as directly attributable to their role in AlSat Nano:

### **Additional contracts and competitiveness**

- Surrey Space Centre's (University of Surrey) role as mission prime has led to successful bids in a range of technology development and international collaboration projects. Knowledge and experience from leading the mission has fed directly in to other ongoing projects
- Oxford Space Systems negotiating approx. £5.6 million export contracts across US, Europe and Israel, plus further enquiries from NASA and Asia, for derivatives of its AstroTube Boom payload and antenna systems based on its proprietary flexible composites
- Open University's industrial partners XCAM Ltd are bidding/negotiating contracts worth approx. £1.1 million following on from its payload role, and Teledyne e2v Ltd, which provided the sensor hardware, are using C3D2 heritage as inputs in to bids worth £2 million+
- Surrey Space Centre industrial partner SSTL secured €12 million contract with Algerian Space Agency

### **Increased Knowledge and Experience**

AlSat Nano was delivered to Algerian Space Agency as its first nanosatellite mission. The programme has seen direct involvement from Algerian staff and students throughout its development:

- The UK Space Agency sponsored five Algerian post graduate students to study at Surrey Space Centre and gain invaluable experience by taking on roles to help develop the AlSat Nano platform
- Surrey Space Centre also provided training and consultation to Algerian Space Agency engineers and spacecraft operators, to help build its new ground station facility in Oran, which is being used to operate AlSat Nano
- The flight data returned from the satellite is feeding directly into the Algerian students' academic courses. These contain specific modules to study how small satellite technology can be applied to address real world problems. The qualifications and real life mission experience will build long term technological capability in the country's developing space sector

### **New partnerships and collaborations**

- Surrey Space Centre and Oxford Space Systems have now teamed up for the RemoveDebris mission, due for launch in late 2017
- Surrey Space Centre and University of Swansea are working on further Thin Film Solar Cell development \* AlSat Nano has facilitated Algerian interaction with a wide range of UK academic and industrial mission partners, acting as a firm basis for potential future collaborations

- XCAM Ltd are now working with 6 other industrial-academic partners for Innovate UK funded cold atom CubeSat mission CASPA
- Oxford Space Systems have partnered with Sen to provide camera deployment boom for high-resolution video from orbit
- Surrey Space Centre is working with the Algerian Space Agency on a large scope follow up proposal with the objectives of setting up a local education and research centre, built using Surrey Space Centre as a blueprint, and deploying a CubeSat constellation for monitoring atmospheric pollution

## **Job Creation and Value**

- As the first in orbit flight demonstration for Oxford Space Systems, AlSat Nano has helped grow the SME company's staff size by approximately 50% and achieved significant global profile raising. The successful mission role has provided excellent credibility when talking with potential domestic and overseas customers, and proven very valuable in investment negotiations with the venture capital community
- Within Surrey Space Centre (University of Surrey), the AlSat Nano programme has led to the creation of 5 jobs, two of which are permanent positions, while the others are on renewable contracts to be funded by further missions

## **Internal investment**

- Surrey Space Centre internal investment of approx. £125,000 to upgrade environmental test facilities, which will now be available to commercial customers
- The Open University has invested approx. £35,000 in a UHF/VHF Ground Station for the OpenSTEMLab to enable practical satellite communications activities for distance learning students and enable new research opportunities
- XCAM Ltd internal investment of approx. £20,000 in thermal cycling test chamber

## **Scientific papers and publications**

14 science and technology papers and articles by academic mission partners (Open University, Surrey Space Centre and Swansea University), published or shortly to be published, with more planned in the future as further data is returned from the satellite.

## **Technological Advances**

- The AlSat Nano flight opportunity has driven the AstroTube Boom payload through the full scale of technology maturity, from initial concept to flight proven; permitting the on orbit verification of deployment mechanism, control electronics and kinetic verification of proprietary composite material
- Surrey Space Centre's new transceiver antennae design has advanced from prototype to flight proven having been deployed successfully and spent over 9 months so far transmitting and receiving data

- Open University's C3D2 camera suite payload is a fully flight proven instrument having captured and returned well over 100 images so far
- Thin Film Solar Cell has demonstrated its prototype's core materials ability to survive in space and be measured remotely, paving the way for development of a fully power generating model
- Flight and mission control software developed by Surrey Space Centre for AlSat Nano is acting as the baseline for further upcoming missions

## C3D2 Images

The Open University's C3D2 (Compact CMOS Camera Demonstrator 2) payload has been busy snapping since November. Its suite of three cameras has captured a range of different continents and islands, interesting geographical features and weather systems. C3D2 is acting as a pilot remote experiment through the University's OpenSTEM labs and will open up a new experience for Open University distance learning students who will be able to interact with a live space instrument. The Oxford Space Systems AstroTube Boom payload can be seen in the foreground of several of the images, with one of the cameras positioned specifically to image the deployment in stages, offering great publicity for the product on its first flight.

Below is a selection of our favourite images captured since launch.

Taken in February 2017, this wintry scene was captured over the Sea of Okhotsk, just north of Japan, and shows mountains with snow, frozen sea, and ice sheets which have broken away. Image credit: AlSat Nano mission, Open University

This image was captured in January 2017 over New Caledonia in the South Pacific. The main island is to the right of the image with low level cloud cutting across it and bright sunlight reflecting off the surrounding ocean. Atoll lagoons can be seen at the bottom right of the image and the Vanuatu island chain to the upper left. Ground resolution at the bottom of the image is approximately 380m per pixel. Image credit: AlSat Nano mission, Open University

Taken in May 2017, this image shows a large weather system over Alaska and the Bering Sea

AlSat Nano's first full size colour image, taken in December 2016 above the Arkhangelsk Oblast region on the North West coast of Russia. It was captured under twilight conditions at dawn, showing the coastline to the top, and a brief winter sunrise over the arctic region with a deep red-brown hue. Through the cloud cover there is evidence of hills and snow on mountains, and mist in the river valleys.

You can find out more mission background here: [bit.ly/2d4w9Uk](https://bit.ly/2d4w9Uk)

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## News story: 1 Million Subscribers to Update Service

The Disclosure and Barring Service (DBS) has now had over 1 million subscribers to its Update Service.

The Update Service, which was launched in June 2013, puts applicants in greater control of their information, and allows subscribers to reuse a DBS certificate when applying for similar roles within the same workforce.

Adele Downey, chief executive officer at DBS, said: "We're delighted to reach 1 million subscribers to our Update Service. Joining the Update Service allows your employer to go online, with your consent, and carry out a free [status check](#) to find out if the information on your DBS certificate is current and up-to-date. This reduces the need for an applicant to apply for multiple checks when moving from one job to another in the same workforce or when required to complete a re-check, saving time and money. The vast majority of customers who use the Update Service have told us that they felt the Update Service improves safeguarding, which remains a priority for DBS and for government."

You need to register to use the update service. Registration costs £13 per year (payable by debit or credit card only). There's no charge if you're a volunteer.

For more information about the Update Service, and to sign up, visit: <https://www.gov.uk/dbs-update-service>

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## Press release: Secretary of State visits Washington and New York

The Secretary of State James Brokenshire today embarked on a 3-day visit to Washington and New York. The main focus of his visit is to brief US politicians, influencers and business leaders on the political situation in Northern Ireland, the continued need for strong foreign direct investment into the region and to offer reassurance on current issues including the UK's exit from the European Union.

In a series of intensive meetings the Secretary of State will emphasise that Northern Ireland is open for business as well as highlighting ongoing engagement between the UK Government, the Irish Government and NI's political parties following the recent pause in talks at Stormont.

Speaking ahead of the trip, Secretary of State for Northern Ireland Rt Hon James Brokenshire MP said:

Regrettably my visit takes place against a backdrop of political stalemate in Northern Ireland but this is a timely opportunity to brief members of the US Administration, who throughout history have done so much to support our efforts in moving forward the political process, on the current situation. I also want to reassure them that the UK Government is determined to see devolved, power-sharing government restored.

During a reception at the Northern Ireland Bureau in Washington on Monday evening, Mr Brokenshire will praise the expertise and capabilities of Northern Ireland firms whose endeavours have contributed to attracting over 900 international investors, many of these from the US, employing over 75,000 people. The Secretary of State will highlight a highly educated, skilled and dedicated workforce, a pedigree in advanced engineering and manufacturing and the great transport links to the rest of the UK, Ireland, Europe and beyond.

Mr Brokenshire will hold bilateral meetings with senior political figures, including Conrad Tribble of the US State Department, the Vice President's National Security Advisor, Andrea Thompson, former Senator George Mitchell and various members of Congress to update them on UK Government's priorities in Northern Ireland.

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## **Press release: UK Visas and Immigration offers temporary visa application service in Male, Maldives**

UK Visas and Immigration offers temporary visa application service in Male, Maldives on 16th August 2017

UK visa applicants in the Maldives will be able to apply for their UK visas in Male at a temporary Visa Application Centre (VAC) on Wednesday 16th August 2017. The VAC – based in the Ministry of Foreign Affairs in Male – is intended particularly to benefit students coming to study in the UK, although all visa applicants are welcome to use the service.

James Dauris, British Ambassador to the Maldives, said:

“This year UK Visas and the Foreign and Commonwealth Office are again taking steps to assist students in the Maldives applying to study in the UK by

opening a temporary Visa Application Centre on 16th August, as we did last year.

The centre will save applicants living in the Maldives from having to travel abroad to make their visa application. Our aim is to make the application process smooth and we look forward to seeing everyone who wants to take advantage of the facility.”

Customers using the VAC will need to follow the normal application process by submitting their forms, paying for their visas and booking their appointments at the centre [online](#)

Customers will need to pay a fee of £170 on top of the cost of the visa to use this facility. The fee includes the return of documents via courier.

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## Speech: Lord Ahmad's speech on Global Peacekeeping Reform in Ghana

Good afternoon. I would like to thank the Minister for Defence, the Honourable Mr Dominic Nitiwul for hosting this event.

His Excellency Kofi Annan was a trailblazer – the first UN career official to be appointed Secretary-General and the first from Sub-Saharan Africa. This training centre which bears his name is also blazing a trail. It is at the cutting edge of peace support training and education in Africa, and the only centre of its kind on the continent to have a dedicated institute for Women, Peace and Security. Over fifteen thousand students from around the world have trained here since 2004. That's an impressive contribution to global peacekeeping. It's typical of Ghana's commitment to UN Peacekeeping, from Congo in the 1960s, to South Sudan today – Ghana has always been in the top tier of countries contributing peacekeepers. Back in 2015, when President Obama called on fellow leaders at the UN to commit more resources to peacekeeping operations, Ghana once again answered the call.

It is also typical of the contribution of other African nations. Currently almost half of the men and women in uniform at Peacekeeping missions around the world are African. I want to pay tribute to your commitment, and to remember those peacekeepers who have given their lives for peace.

Today I want to look to the future. I want to talk about the UK's commitment to better peacekeeping and the 3Ps reform agenda. I want to talk about our work on ending sexual violence and stigma. And finally I want to talk about getting more women involved in peacekeeping, and gender issues more broadly.

## **UK Support for Peacekeeping**

The United Kingdom is a long-standing supporter of peacekeeping, although compared to Ghana I recognise that our contribution of troops is still modest. Today, we have around seven hundred British soldiers in blue berets. We have doubled our contribution since committing to do so two years ago, with two new deployments to UN missions in Somalia and South Sudan: our first in two decades.

## **UK Support for Reform – 3Ps**

The UK is also committed to better peacekeeping. The joint Communiqué signed at the London Peacekeeping Defence Ministerial last September is a blueprint for peacekeeping reform.

It calls for improvement in three areas – the 3Ps of peacekeeping – planning, pledges and performance.

### **Planning**

Better planning is about ensuring better coordination across the UN system so that we can get the right missions with the right skills deployed to the right place at the right time. The UK has invested significantly in the Secretary General's Strategic Planning and Analysis Unit, which has led to advances in the UN's ability to identify the needs of missions, and match them with the capabilities offered by member states.

### **Pledges**

Pledges are about helping the UN to identify and meet the specific needs of each mission. In November the UK will co-host Canada's Peacekeeping Defence Ministerial in Vancouver. We will explore smart pledging and innovations in training; look at how we protect those at risk; and consider a rapid response to the early warning signs of conflict.

### **Performance**

Finally, having the right plan and the right people in place only works if they perform effectively. That's why performance is so important. We need to see strong leadership of peacekeeping mission and ensure that troops are doing the job they have been sent to do. The UN needs to be able to take action against troops who do not meet this standard.

## **Sexual Exploitation and Abuse**

When that performance falls below the level that is expected it puts the mission at risk. It can also bring the mission and the UN into disrepute. Such is the case with the appalling sexual abuse, committed by a small number of peacekeepers against the people they were sent to protect. Such crimes are abhorrent; they cannot be allowed to continue.

As the Prime Minister's Special Representative on Preventing Sexual Violence,



as well as Minister for the UN, I applaud the efforts of Ghana and of this Centre in particular, to tackle this difficult issue, through courses addressing the challenges of preventing sexual violence in conflict. We want to see more coordination between member states that need training and those that can offer it.

For our part, I am proud that the UK has delivered training for more than seven thousand African peacekeepers each year since 2014, on gender issues and the prevention and response to conflict-related sexual violence. We must do everything possible to improve the performance of peacekeepers and to ensure they properly protect the people in their care.

I know Secretary-General Guterres is reviewing the UN's peace and conflict prevention structures. I hope his recommendations will lead to improvements in planning, pledges and performance.

## **Women's Rights**

I want to turn now to the role of women. Safeguarding women's rights; ensuring that they take part in political processes; and that they participate fully in conflict resolution are all priorities for the United Kingdom. We have given the UN £2m to help achieve this aim.

## **Tackling Stigma**

I spoke earlier about my particular role with regard to preventing sexual violence. One of my priorities is tackling the stigma that many survivors of sexual violence face. The UK is developing a set of Principles for Global Action, to help policy makers understand how they can incorporate this critical issue into their own work. I look forward to working with Ghana on this initiative.

## **Women in Peacekeeping**

I also hope that we can follow your example of deploying women at all levels in peacekeeping missions. One in ten of Ghana's peacekeepers are women, the highest percentage of the top 10 troop contributing nations. I am sure this is down to the excellent training this centre provides. This, and the Women, Peace and Security Institute here, demonstrate Ghana's commitment to this issue.

By way of comparison, 7% of UK Peacekeepers are women. We are working hard to increase that number and I am very pleased that we will have a female commanding officer leading our troops in South Sudan.

## **Conclusion**

Ladies and gentlemen, I hope I have shown you the UK's commitment to working for better peacekeeping. It is a privilege to be discussing it with you – in a centre dedicated to doing just that. With the growing demands on peacekeeping, it is more important than ever that we work together to make the UN system and our missions as effective as they can be. I look forward to

hearing about your experiences and your views on how we can tackle the many challenges ahead. Thank you.