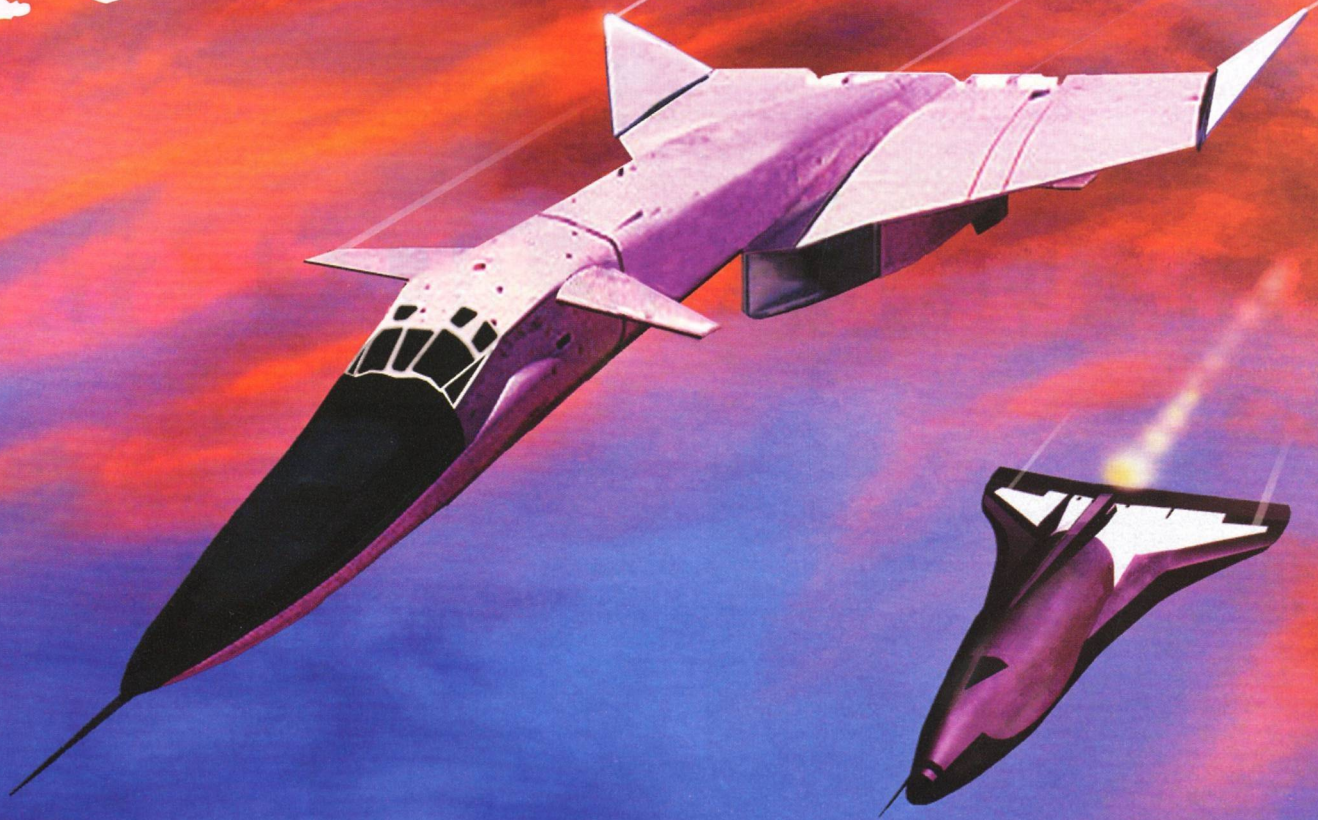


BLACKSTAR

TOP SECRET



FACT OR FICTION?

Is this the real Aurora?

A rendering of the reported
Blackstar/XOV combination.
Steve Douglass

The 6 March issue of *Aviation Week & Space Technology* devoted its front cover and several pages to coverage of what it called Blackstar, though what at first appeared to be another 'AvWeek' exposure of a newly uncovered Black World aircraft programme was actually a series of three articles about a two-stage to orbit space plane that may have existed, may have entered service, and may have been retired. Hard evidence was notable by its almost complete absence!

The aircraft combination described by *Aviation Week* was said to be capable of conducting overflights of hostile territory without warning, without the predictability of an orbiting satellite, able to react to tasking quickly, and able to search for hidden nuclear weapons caches or preparations for military operations, and able to do so at altitudes where they would be invulnerable to enemy air defences.

Even more astonishingly, there were suggestions that though the SR-3/XOV Blackstar project represented a giant technological leap forward, the technology involved was based on tried and trusted existing concepts, namely the XB-70 Valkyrie bomber and the X-20

Dyna Soar (space plane) project, for which the XB-70 was once seen as a potential launch vehicle. There was even the suggestion that the new SR-3 might be based partly on XB-70 components, or on the unfinished third prototype.

Author William B. Scott candidly admitted that 'iron-clad confirmation' that met 'AW&ST standards' was 'elusive', before outlining the provisional history of the programme and the technical features of the aircraft. There was little new in the report, which re-visited aircraft designs that have been referred to by names like Aurora, Brilliant Buzzard, BTSTO and SR-75, and most of the eyewitness reports were unattributed, unsubstantiated, and dated back to the 1990s.

Black Programme sceptics concluded that the article did no more than suggest that a secret aircraft (that may never have existed at all) might have been retired at some indeterminate point in the recent past. Many Black Programme enthusiasts, by contrast, greeted the AW&ST articles with uncritical excitement, not questioning the yawning gaps and inconsistencies presented.

In the first part of a survey of Black World activity, *Aircraft Illustrated* presents both sides of the argument, and leaves you, the reader, to make up your own mind. **JOHN LAKE**

THE CASE FOR BLACKSTAR

words: **Steve Douglass**

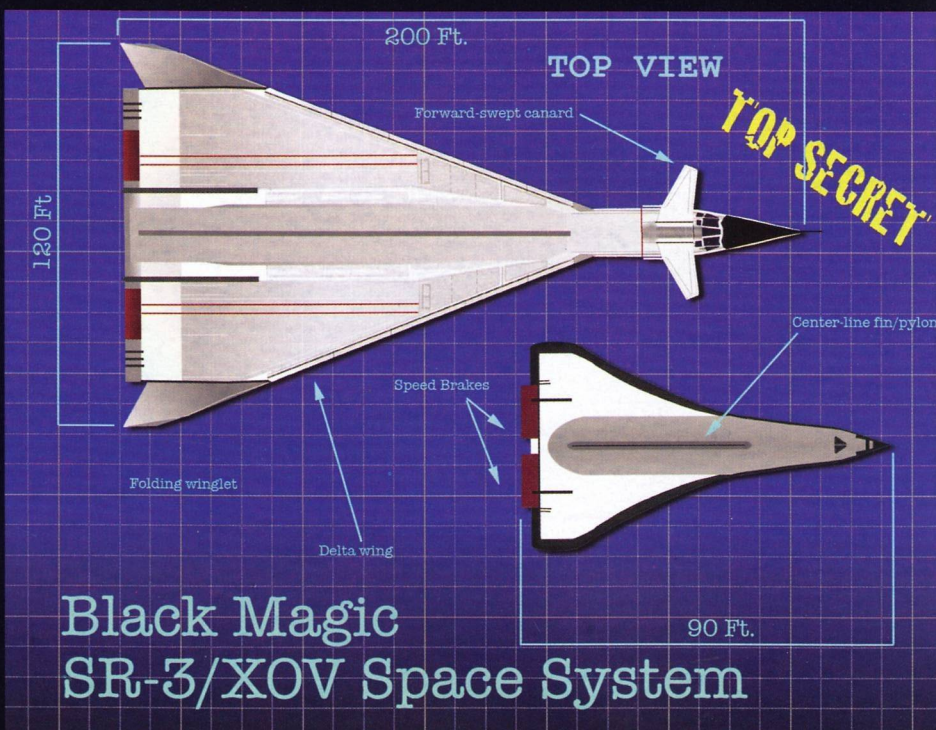
Finally! There it was, revealed in the 6 March issue of *Aviation Week & Space Technology* for the entire world to marvel at — one of the US intelligence community's most closely-guarded secrets, the existence of a covert intelligence-gathering system consisting of a high-speed mother ship and baby space plane.

In three articles entitled 'Space plane shelved?', 'Speedy damaged?' and 'Echoes of Valhalla', *Aviation Week's* William B. Scott laid bare the secrets surrounding the development and operation of two remarkable achievements in aviation and space technology, that until now were only *officially* known by a small group of industry and intelligence agency insiders and kept hidden from even the highest-ranking members of the US Congress.

Known to some as the SR-3 or Blackstar (mothership) and the XOY (Speedy), this two-ship system consists of a large supersonic aircraft (possibly based on the XB-70 Valkyrie prototype of the 1960s) and a mini-space plane that may or may not be a manned aircraft.

Developed in total secrecy by Lockheed and Boeing during the late 1980s and early 1990s, the system filled a desperate need for a quick way to launch small payloads into space, and possibly kinetic energy weapons 'rods from the gods' and mini-reconnaissance satellites capable of sucking up radio communications or photo recon. Although this system was never named 'Aurora', these craft may indeed have been the source of sonic booms, sightings and rumours surrounding a replacement system for the SR-71 after its (premature, many thought) retirement.

According to the *Aviation Week* article, the large 'mothership' that closely resembles the



1960s-era XB-70 supersonic bomber prototype carries the mini-space plane underneath its belly. The carrier aircraft then lifts the space plane up to an altitude in excess of 100,000ft (and at speeds of more than Mach 3) and launches it into a low earth orbit in which it can race across a target country (either for gathering intelligence or dropping a weapon into outer space where it can launch mini-recon satellites) and then glide down to land at a remote and secure landing strip.

REACTIONS TO BLACKSTAR

Just minutes after the article was posted on *Aviation Week's* website, the buzz among black project watchers began. Some scoffed at

the report as being flawed and only based on rumour and hearsay, more conjecture than fact-based. Others saw it as just the logical answers to the source behind a series of perplexing sightings (both eye and ear-witness reports of strange aircraft), unexplained government black-budget line item requests and what many consider the logical follow-ons to retired reconnaissance platforms such as the SR-71.

Negative comments centred mostly on the belief that it would be almost impossible to develop such a complicated, expensive and sophisticated system without the American public being aware, but Bill Scott's piece did explain how the

BLACKSTAR ANCESTORS?

Right: An artist's impression of the USAF's X-20 DYNA-SOAR space plane design from the 1960s. Although cancelled in favour of NASA's manned space-flight programme, data obtained during the project led directly to the invention of the Space Shuttle and quite possibly a secret space plane flown during the 1990s known as the XOY or Speedy. NASA

Below right: One of the original XB-70 Valkyrie prototypes that — if reports are to be believed — may have served as the template for the Blackstar, which carries the XOY up into the upper atmosphere for launch. NASA

project was specifically structured to isolate it from the military (promoting 'plausible deniability') with it being overseen by private sector contractors, much like how the United Space Alliance now manages huge parts of NASA's manned space flight programme.

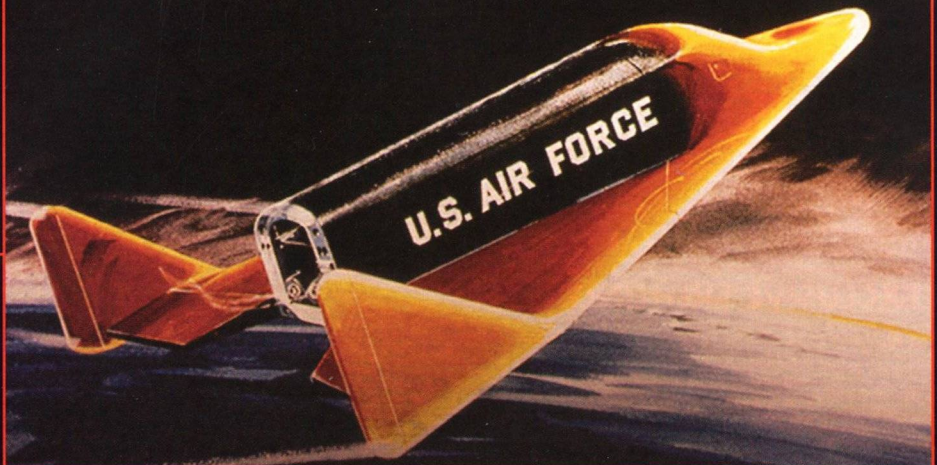
Some of those sceptical of the report did come with bona fide space and aviation journalism credentials, such as MSNBC space analyst James Oberg, who wrote: 'Aviation Week's report did not make clear exactly why such a program might be shelved — and after reading the report, aerospace experts questioned a number of claims made for the Blackstar concept. Speaking on condition of anonymity, sources told MSNBC.com that they believed the concept was unworkable, based on principles of rocket design. One source said the mothership would be flying much too slow and too low for a space plane to reach orbital speed after release. When the Defense Advanced Research Projects Agency sought proposals for an unmanned RASCAL satellite launcher five years ago, the specifications called for the carrier aircraft to go much higher, and the submitted designs still needed two stages to reach orbital speed.'

Another space pundit, Jeffrey F. Bell, was not nearly as kind as Oberg. He called the report a 'false messiah' and a long-standing fantasy in the space community. Bell wrote: 'AvWeek has a long history of 'revealing' secret programs that turned out to be either government disinformation, corporate disinformation, or just plain fantasy.

'In the 1980s and 1990s AvWeek ran lurid pictures of hypersonic 'Aurora' vehicles (my favorite was the one that cruised upside down and was covered with dozens of launching ports for H-bombs). Only last year, AvWeek published a totally credulous article about spaceships powered by 'zero-point energy' which quoted only quack promoters and ignored real physicists.'

But Bell doesn't care to cite instances when an 'AvWeek' disclosure turned out to be right on the money, such as being the first to report on the (also highly classified at the time) stealth fighter project Have Blue which led to the development of the F-117A, Northrop's Tacit Blue programme, or Boeing's Bird of Prey advanced stealth proof-of-concept vehicle.

Bell's report goes on to cite what he sees as other errors in the story, such as: 'The alleged function of Blackstar and sightings that don't make any sense. The manned



SECRETIVE SOURCE

'When sightings of a Valkyrie-like aircraft began to surface, I started my own search for evidence that the cancelled XB-70 might have been resurrected or used as the basis of a modern counterpart. In the course of my research I came across a local man who said he had been a trainee jet mechanic stationed at the old Amarillo AFB.

'This man (who never told me his name) claimed to have seen what he thought was an active USAF B-70 bomber landing at the base one night in the spring of 1968.

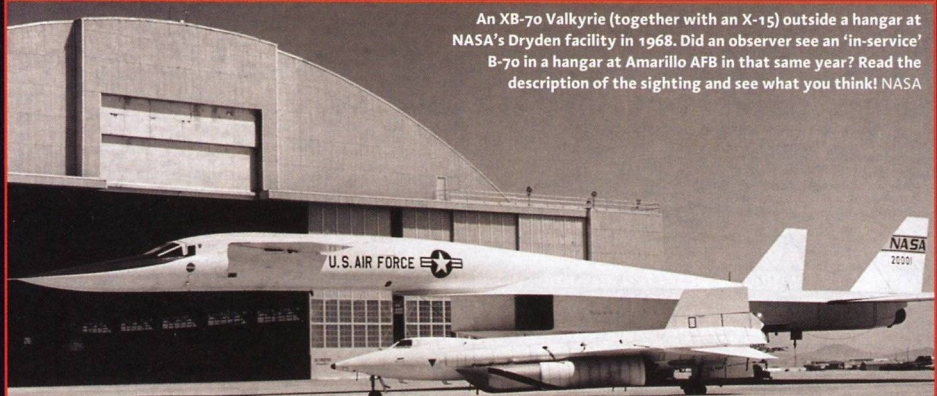
'The next morning, on the pretext of retrieving some tools, he claimed that he and a buddy talked their way past a clueless guard, entering the former B-47 hangar where the aircraft had been hidden. He remembered that the aircraft was wearing USAF (and not NASA) markings and that it was painted light grey, not white like the XB-70 prototypes.

'Though they were discovered and challenged by an officer, the pair were given a tour of the airplane, including a trip to the cockpit, before being ordered to sign a form promising not to disclose what they saw.

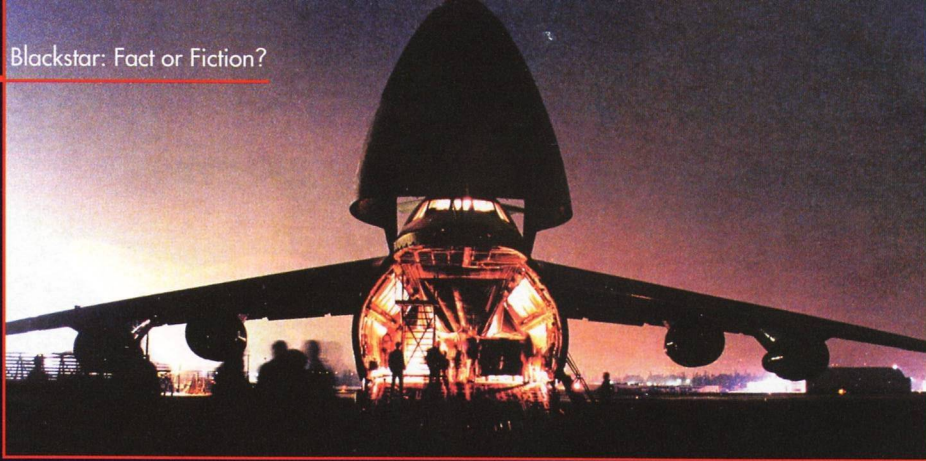
'The officer said that the aircraft had diverted after the crew received a spurious fire warning. Later that night, under the cover of darkness, the aircraft took off with a chest-rumbling roar that caused residents to call the police and ask what the racket was.

'The mechanic seemed to be an 'Honest Joe', though I doubted his story, at the time. But as more and more sighting reports began to surface I began to think again.

'However, since then I have been unable to confirm the report, despite searching the archives at the *Amarillo Globe News* for any stories about noise complaints from the base. I found nothing.' **sd**



An XB-70 Valkyrie (together with an X-15) outside a hangar at NASA's Dryden facility in 1968. Did an observer see an 'in-service' B-70 in a hangar at Amarillo AFB in that same year? Read the description of the sighting and see what you think! NASA



One of the rare published photos that is believed to show what's become known as the C-5C Galaxy, one of two modified C-5s used to ferry secret aircraft from secret base to secret base. In this photo that first appeared in the in-house Lockheed publication *Horizons*, the first F-117 prototype is being loaded for transport to Groom Lake to begin flight tests. Notice how part of the C-5C's interior ceiling has been partially removed to accommodate tall containers. Insiders report that the XOV was flown back to its launching and recovery bases after each mission inside these transports that also don't officially exist. via Steve Douglass

EXCLUSIVE SIGHTING

Sightings of the SR-3 tailed off in 1997, perhaps indicating that the programme had been terminated or shelved for technical reasons. Sightings of the space plane continued, however, and some hardcore Black World aficionados believe that the space plane (now modified to take off from the ground under its own power) is still in operational service and has not yet been withdrawn. Recent reported sightings include one in 2000 by an unnamed FedEx pilot whose regular night-time route took him 60 or so miles north of Area 51. The pilot, who could see the Groom Lake Strip very clearly, watched as an unidentified aircraft with a very bright anti-collision light took off at high speed, climbed through his altitude and just kept going up and up as if into orbit. When he asked ATC controllers what the craft might have been, they supposedly replied 'Probably just one of the spooky flyers flying out of the base that doesn't exist.'

The latest sighting of what might have been the space plane was made by Steve Douglass on 23 July 2005, over Amarillo. Although unable to document the sighting (on film or video), Steve did post the details on several message boards where it was generally dismissed and derided by what he called 'self-appointed internet know-it-alls.' Undeterred, Steve took the sighting (witnessed by his friend Mike Dunlap) as confirmation that some type of space plane or follow-on system exists.

'I had an interesting sighting of a fast-mover tonight over Amarillo that caught a friend and I quite by surprise. Shortly after 10pm (as we were coming home from a movie), I spotted a bright, yellowish light in the south-western sky moving at high speed directly towards us.

I first thought it was the International Space Station, which I have seen on many passes over the city, but as it neared the bright light suddenly switched off and was replaced by a bright red blinking anti-collision strobe. As it flew directly overhead we could see three red lights (including the flashing one) arranged in a triangle shape with the flashing beacon on the south facing (right) side of the craft.

It was moving very fast (much faster than a passing airliner that we could also see) and also appeared to be gaining in altitude. Our 'guesstimation' was that it was climbing up well over 100,000ft but with nothing but black sky to see it against (like high clouds) it's just a guess compared with other commercial aircraft flying in the area. No sonic booms or jet engine noise was heard. We watched as it disappeared in the north-east in less than five minutes (speeding across the entire sky) faster than anything else in the air at the time.

'Although it seemed to move as fast as satellites and the ISS across the sky, I don't think it was either because of the strobes and lights. Both my friend and I came to the conclusion that it was climbing to altitude and, from the direction it had come, it might have come from one of the test ranges in New Mexico.' **MSD**

orbiter's primary military advantage would be surprise overflight. There would be no forewarning of its presence, prior to the first orbit, allowing ground targets to be imaged before they could be hidden.

[Russian] missile-warning satellites would pick up the IR plume from the second stage, and since it would not be at a known space launch site they would interpret it as a covert nuclear missile launch.' However, this fails to take into account the technical breakthroughs that dramatically lower IR signatures, including the successful masking hot exhaust plumes employed by the USAF on modern ICBMs.

Bell also mistakenly seems to think the XOV's advanced imaging suite (that apparently features one metre aperture adaptive optics with an integral sodium-ion-sensing laser) would be detected as some sort of weapon, thus triggering aggression. But terrain-scanning LPI (Low Probability of

Intercept) lasers have been used on earth sensing satellites and stealth aircraft for decades, and they haven't triggered a war yet.

WHY NOW?

Many have asked, if the SR-3 and XOV truly exist, why have so many insiders suddenly come forward, ready now to talk about this still highly classified programme?

The history of black 'Special Access' programmes is piecemeal. Although we now know some of the stories behind several remarkable military aviation technological breakthroughs (such as the discovery of the formula for radar-invisible stealth technology made by Lockheed's Skunk Works), much of the history is still classified and under the threat of being lost forever.

It has been revealed the Have Blue stealth prototypes (considered at the time too sensitive to keep in unguarded or expensive guarded storage) were buried in a deep hole

(now under a paved taxi-way) at Area 51. Those close to the space plane project fear the same fate is slated for the SR-3 (XB-70-type mothership), possibly now kept in flyable storage inside the large hangar at Groom Lake.

It is thought that the space plane (now modified to take off from the ground under its own power) is still in operational service and is not yet threatened with final disposition. This author (and a witness) had a recent sighting of what may have well been this space plane just last summer, detailed alongside.

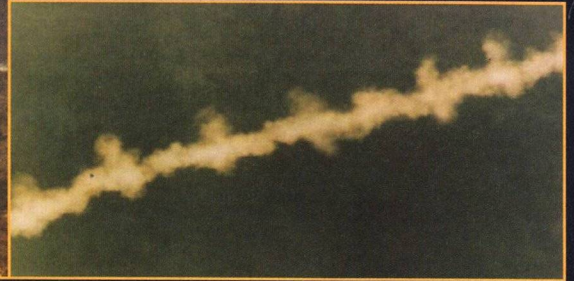
WAS THIS AURORA?

Then there's the question as to whether the mothership and XOV represent the true source of the so-called 'Aurora' sightings and speculation.

Although the dual sightings/dual skyquakes and F-15 pilot witness reports (cited in the 'AvWeek' article) swing the needle heavily in favour of the mothership/space plane combination (accounting for the majority of reported sonic booms and sightings), it is becoming increasingly clear that at least one other classified high-speed aircraft does indeed exist. But if, as the 'AvWeek' item states, the SR-3 has been shelved, and as recent sightings by this author indicate that a new and improved XOV can now reach orbit under its own power, why have the sightings (and sonic booms) continued of a high-speed SR-71-sized craft?

Only recently was this report posted on *Aviation Week's* Aerospace Daily web site: 'Military personnel stationed at Yokota AB, Japan, have spotted what may be highly classified 'black' aircraft that could be flying spy missions over North Korea. Two or three of the unknown aircraft appeared at Yokota periodically over the last year, flying night missions for two-three weeks at a time, then departing. USAF C-5 Galaxy transports may have accompanied the 'black' aircraft. The latter were kept in special hangars, appearing only during night hours, and were described as 'very fast.' The unknown aircraft were smaller and more sleek than now-retired SR-71 Blackbirds, one observer said.'

The last sighting of the SR-3 mothership seems to have occurred in the late 1990s, hinting that the aircraft was retired to make way for a more advanced replacement system. Having served its important gap-filler mission requirements, providing vital intelligence when the US looked as if it was losing its grip on near space, the SR-3 (if not the XOV) may well be sitting quietly awaiting its fate at Groom Lake.



SIGHTINGS TIMELINE

Sightings of unidentified large and/or high-speed aircraft in the same broad category as the SR-3 and/or XOY date back to 1989, though none of these sightings have been supported by independent verification or photographic evidence.

- These began in 1989 when oil drilling engineer and long-time member of the Royal Observer Corps, Chris Gibson, claimed to have seen an unidentified 'triangular'-shaped aircraft flying in formation with several F-111s behind a KC-135 refuelling tanker over the North Sea. Gibson made a sketch of the unidentified aircraft and sent it to aviation author Bill Sweetman, who wrote about the sighting in *Jane's Defence Weekly*.
- Soon after this North Sea sighting, there were descriptions of unusual activity near RAF Machrihanish, stating that civilian air traffic controllers had tracked very high-speed blips on their radar scopes and with reports of great thunderous rolling booms echoing across the Mull of Kintyre.
- In September 1990, there were five separate sightings of a large light-coloured delta-winged aircraft flying near Edwards AFB, CA, though these would not be reported until August 1992. The aircraft was allegedly seen flying near Mojave on 13 September, 19 September and 3 October, with the second occasion providing the first report of the mysterious aircraft's unusual 'low-pitched rumble' engine noise.
- In December 1990, Bill Scott wrote an article in *Aviation Week* about so-called 'black' aircraft developed by the US government during the 1980s. Scott speculated about a hypersonic bomber capable of carrying multiple nuclear warheads in vertical ejection racks.
- The big Delta was seen again in April 1991, flying north of Edwards AFB at an estimated altitude of 5,000-10,000ft. An observer said it was large — dwarfing the F-16 chasing it — and was light coloured, possibly white.
- June 1991 saw Scott writing about a supposedly top secret stealthy reconnaissance aircraft called the 'TR-3 Manta', which he claimed had been deployed to Alaska, Panama, the UK and Okinawa, and which had supposedly 'supported F-117A operations in the Persian Gulf War.'
- Meanwhile, beginning in 1990 and lasting through 1991 and 1992, these visual sightings were backed up by a series of reports of sonic booms rocking cities in Southern California, usually in the early hours of the morning and almost always on a Tuesday or Thursday night. It was as though a secret aircraft was making a high-speed run across the high desert to its secret base in Nevada before the sun came up. Dr Jim Mori of the California Institute of Technology fed the hysteria when he reported his findings. He said: 'The booms came in twos, indicating a pair of aircraft on slightly different flight paths. The frequency and shape of each sonic wave differed from the Space Shuttle and indicated that a high-flying aircraft was flying at hypersonic speeds greater than Mach 3 and above 100,000ft.' At the time, the only SR-71s still flying were leased by NASA and were not airborne on the nights concerned.
- It is not certain whether any of these booms were recorded on 5 April and 22 April 1992, when military radio monitoring hobbyists intercepted the transmissions of what may have been a secret high-altitude aircraft on approach to Edwards AFB. The unknown aircraft, callsign 'Gas Pipe', sounded as though it was re-entering the atmosphere and following a similar flightpath to that used by the Space Shuttle on re-entry.
- Soon after this, sightings of distinctive 'doughnuts on a rope' contrails began. Though many pilots believed that these were a relatively common meteorologically-influenced phenomenon, others maintained that they represented the signature of a high-speed aircraft with a pulse detonation 'pulsar' engine. These sightings began in California in early 1992, subsequent sightings being made over Colorado and then Texas.

- By August 1992, Scott was writing about a new black aircraft that carried a space plane on its back, which it launched at Mach 6-8 at high altitude, describing the mothership as 'XB-70-like' later the same month when recording the sighting of an unusual aircraft flying over Atlanta, GA, on 10 May by one Glenn Emery, now a writer working for the Cable News Network. Because its size was unknown, its altitude was difficult to judge, but was estimated to be 10,000-15,000ft. The vehicle was clearly higher and faster than the airline traffic descending for landing at Hartsfield Atlanta International Airport.

- At the same time, Scott reported the anonymous sighting of another unidentified black aircraft onto a USAF C-5 Galaxy at Lockheed's Burbank, CA, 'Skunk Works' facility on the night of 6 January, bound for Boeing Field, Seattle, WA.

- Another sighting of an 'XB-70-like' aircraft was made on 12 July 1992 near a Lockheed-operated radar cross-section (RCS) test range in the Mojave Desert.

This aircraft turned its landing lights on while at fairly high altitude, then descended quickly, following an S-pattern flight track before making a final turn at about 200ft above a road. A motorist who had watched its descent reported that ambient noise masked any sounds from the aircraft.

- In August 1992, a United Airlines Boeing 747 almost collided with a wedge-shaped object flying near Edwards AFB. The mysterious craft did not appear on radar controllers' scopes, and was described as looking like the front end of an SR-71. The FAA investigated but concluded that the existence of the craft could not be verified.

- In 1994, a British Airways jet recorded an Airmiss with a high-speed aircraft (similar to that described above). Described as being a wedge-shaped object by the co-pilot, the object passed directly in front of the commercial aircraft. The CAA investigated but was unable to identify the craft involved.

- Also in 1994, there were sensationalist reports of a possible crash-landing by a mystery aircraft at Boscombe Down, when radio monitors intercepted and misinterpreted communications after a deployed towed radar decoy was jettisoned on approach. Witnesses claimed to have seen a tarpaulin-covered aircraft sitting on one of the runways.

- Just weeks later, Steve Douglass monitored communications involved in the recovery of a crashed aircraft in New Mexico. On 18 October 1994 at 15.34hrs, he recorded a C-130 operating from Kirtland AFB (callsign Shadow 81) as it placed an HF phone patch to Edwards AFB (callsign Sport Control). The C-130 reported that: 'We have the crash debris on board and are en route to Edwards. Request parking instructions and security to meet them when they land. Cargo is CLOSE WATCH.' Kirtland and the Pentagon maintained that they had no knowledge of any incident, but *Aviation Week's* Bill Scott found out through 'reliable Pentagon insiders' that a 'High Altitude Research Aircraft' had crashed on or around Wednesday 19 October 1994 south of Kirtland AFB near Vaughn, NM. **J/JSd**

Above left: This shot, taken by a German observer of 'Area 51', purports to show a secret research aircraft on the ramp in front of the Groom Lake base's Hangar 18 (the largest building on the airfield). The aircraft is the white object that can be seen just to the left of the hangar. The photographer said that, when observed through a powerful telescope, it resembled the XB-70 Valkyrie. Andreas von Rétyi

Above: A 400mm telephoto shot of a 'pulsar' or 'doughnuts on a rope' contrail, which was beginning to be torn apart by high-altitude winds. When the photos of this contrail were originally published, the photographer received a call from a propulsion engineer who was working for General Dynamics on a pulse-detonation-wave engine design. He asked the photographer to describe the sound and the frequency of the pulses while he tried to duplicate the sound on a synthesised musical keyboard. The engineer played pulsed chords over the phone, striking lower and lower frequencies, until Douglass recognised one that sounded like the 'ripping' sound he had heard. 'Goddamit! They've done it!', the engineer said, knowing someone else had perfected the very theoretical engine design on which he was working. Steve Douglass



Might the J-UCAS programme provide further clues as to the existence, or not, of Blackstar? Observers are at present divided. Northrop Grumman

THE CASE AGAINST BLACKSTAR

words: **Jon Lake**

While many previous *Aviation Week* reports of claimed new black programmes have been widely accepted, the latest revelation has been greeted with greater scepticism, and has been widely dismissed as being based only on conjecture, rumour and hearsay, and as being fatally flawed because it ignores the plentiful evidence against the existence of the programme.

To a certain extent, this reflects the fact that *AW&ST*'s track record on black programmes has been patchy, and that the magazine that 'broke' the Stealth fighter story also invented the entirely specious manned TR-3 reconnaissance aircraft based on a misinterpretation of the Tier 3 UAV code name, and committed pages and pages to the fictional Aurora (a code name used to conceal early spending on the B-2), building up a picture of another imaginary high-speed recce programme.

Few would dispute that *Aviation Week* has any serious rivals when it comes to publishing well-researched, authoritative and credible

articles about real aircraft programmes, but many believe that this reputation does not extend to the magazine's coverage of black world programmes. Critics maintain that *Aviation Week*'s record is actually one of publishing extremely authoritative-sounding but actually poorly-researched articles about top-secret aircraft programmes that are subsequently proven not to exist.

Dwayne Day, writing in the *Space Review*, identified: 'a pattern that Scott repeats in all of his black airplane stories. Usually there is a small bit of real information about a classified aircraft project. Scott then connects alleged sightings of an unusual aircraft in flight to this bit of information. Then the article is padded out with a large amount of speculation, usually involving various studies and research projects conducted by various contractors. The characteristics are always the same, however: he never quotes anybody by name who has any direct connection to the alleged program, and he never even includes anonymous quotes of anybody who supposedly knows the big picture about the alleged program. All of the anonymous quotes of people who are supposedly involved are always clearly low-level worker bees who do not know what they are working on.'

The principal accusation against the *AW&ST* article is that it is doing little more than repeating flimsy and unsubstantiated stories that have been repeated and exaggerated since the early 1990s, without having any solid evidence to support the claims made, without credible named sources, and suggesting a course of events that is at odds with all known facts.

While Blackstar proponents claim that *AW&ST* have solid evidence and sighting reports from witnesses with impeccable credentials, in fact the reverse is true. The sceptics aver that the reports read like the kind of stories told between UFO buffs, with no direct, substantive evidence, and with an over-reliance on anonymous sources, with inconsistent facts, and with no firm dates and locations and few credible or even named sources.

Worse still for the credibility of the *AW&ST* piece are a number of easily disprovable factual statements, the most interesting of which, to aviation enthusiasts, were a series of claims about a trio of supposedly secret C-5C Galaxy transports. These will be more fully described in next month's *Aircraft Illustrated*.

COUNTER INDICATIONS

One of the main pieces of 'evidence' quoted by the Black World enthusiasts in support of a new recce aircraft was the retirement of the 'uniquely capable' SR-71 without a white world replacement, on the basis that the USA would not willingly give up a surveillance capability unless there was something in the pipeline to replace it. In fact, by the time it was retired, the SR-71 was uniquely expensive, but no longer offered a capability useful enough to justify its huge cost. The SR-71 was no longer able to conduct overflight missions of the most heavily defended targets, and was being replaced by a mix of stealthy satellites and long endurance UAVs.

There are a number of other factors that would seem to contradict the existence of the supposed Blackstar. There is clearly a shortage of 'reactive', taskable reconnaissance capability, and of recce assets able to overfly moderately defended areas like Baghdad. Why have top military and top military space commanders not been 'briefed in' to a programme for which they would be the primary 'customers'?

Meanwhile, if Blackstar were able to launch small satellites, there would have been no need for the Pegasus and Minotaur small launch vehicles. If Boeing and Lockheed had sufficient expertise to produce the Blackstar, why were both companies 'eliminated' from the National Aero-Space Plane (NASP) programme — an undertaking that required exactly the same technologies and capabilities?

Even with only two motherships and a handful of space planes, the programme would have been extremely expensive, yet there is little 'untraceable' slack in US budgets during the 1990s, and the idea that funding was hidden in other programmes (for example the A-12) does not bear close scrutiny.

Some suggest that the privately-funded SpaceShipOne, which became the first private manned spacecraft to exceed an altitude of 328,000ft twice within the span of a 14-day

period, (thereby claiming the \$10m Ansari X-Prize) demonstrated that a simple space plane system could be launched into space, without billion-dollar backing. This, though, is to fundamentally misunderstand the very different nature of an operationally useful space capability from the brief ballistic trajectory achieved on 4 October 2004. There is even real doubt as to whether the Blackstar as described (regardless of cost) could have delivered a real capability. Would it, for example, have been able to fly fast or high enough to reach orbital speed after release?

BLACKSTAR, J-UCAS AND THE BOMBER

Observers differ in their interpretation of the USAF's announcement of a new long-range bomber requirement and its withdrawal from the UCAV element of the Joint Unmanned Combat Air System (J-UCAS) programme. Some insist that the fact that the USAF is still looking for a new bomber would seem to suggest that Blackstar did not exist, or at least that it was never designed as a bomber, otherwise it could simply be put into larger-scale production, or used as the basis of any new aircraft. Similarly, the fact that J-UCAS has been split into two separate strands with a residual USAF element covering a classified ISTAR (intelligence, surveillance, targeting and reconnaissance) UAV programme is taken as evidence of a continuing 'recce gap' that would seem to indicate that Blackstar did not provide an operational ISTAR capability.

Others suggest that the exact opposite is true, and that the remaining element of J-UCAS and the new bomber requirement are explicitly intended to replace the capability lost when Blackstar was withdrawn from use.

CONCLUSION

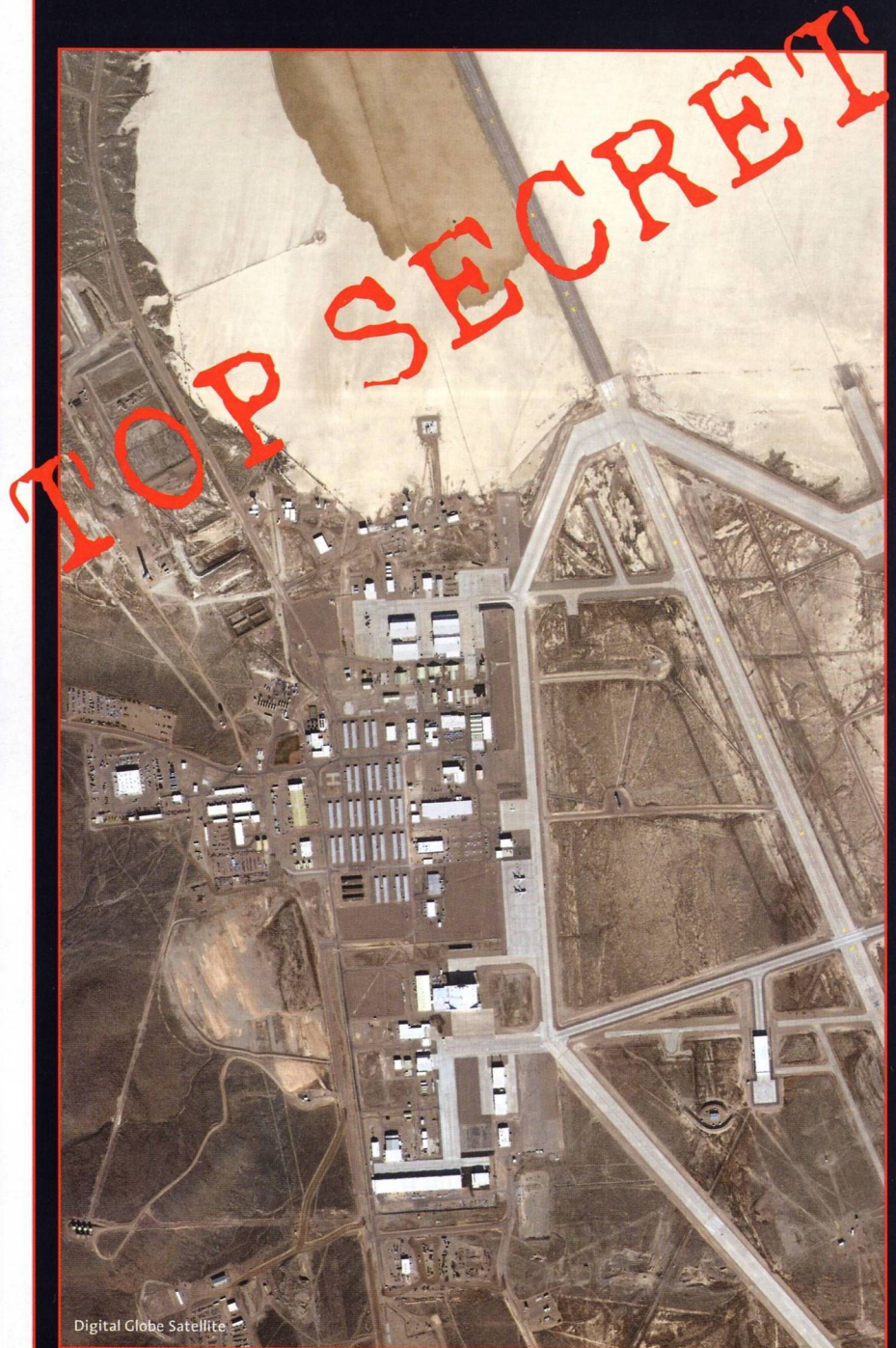
After the publication of the AW&ST report, the important questions remain unanswered. Did the USA deploy a mothership/space plane combo to fill a gap in its intelligence-gathering capabilities during the 1990s, when the nation looked as though it was losing its grip on 'near space'?

Is it possible that there was a secret store of two or more complete or near-complete B-70 airframes after the cancellation of the XB-70 programme, and that these aircraft were later taken out of mothballs, upgraded and updated with 1990s technology and avionics and used as launch platforms?

Or, when faced with the threat of having no way to conduct direct satellite surveillance on the enemies of the US, did the NRO or CIA take the plans of two proven Cold War-era technologies, dust them off and create entirely new and improved versions of a 1960s high-altitude bomber and a baby space plane to fill an urgent need?

Or is the truth more prosaic, and is there nothing more out there than people's unfulfilled wish for something a bit more interesting and exciting than the programmes about which we all know?

Aircraft Illustrated retains an open (if slightly sceptical) mind, and next month will bring you further details of the putative SR-3 and XOY platforms, and of the C-5C Galaxy transports that are supposed to support them, as well as a brief run-down of what other Black Programmes may still be out there. **A**



NEXT MONTH: EXCLUSIVE

AREA 51

CLOSER THAN EVER BEFORE

- 🔴 This base officially does not exist...
- 🔴 We bring you the most detailed pictures yet



**We take
you for a
walk-round
at the
base that
officially
doesn't
exist...**

words: Joerg Arnu



AREA 51

GUIDED TOUR

Few places on Earth have captured the imagination of people as much as Area 51, the top-secret US test facility in the Nevada desert. For the last 51 years, the Groom Lake base has been the birthplace of many exotic Black Projects, such as the U-2 and A-12 reconnaissance aircraft and, more recently, the F-117 Nighthawk. A common misconception about Area 51 today is that it has been closed, and that operations have been moved to other locations. Nothing could be further from the truth. It has just become a lot stealthier, while at the same time expanding and taking on many new top-secret Black Projects that will not see the light of the 'White World' for many years to come.

In the early 1980s, you could drive right up to the north end of Groom Lake, and look at the base across the dry lakebed, from less than five miles away. Then, after a land purchase in 1984, the curious visitor had to climb a hill 12 miles away to see the base, which is located in a valley surrounded by mountain ranges. After another land grab in 1995, the closest viewing spot now is Tikaboo Peak, 26 miles from Area 51. To get there requires some four wheel-drive off-roading, and a moderate three-hour mountain hike — not to mention good optics, in order to see at least some detail!

The Area 51 panorama shown on the gatefold (sections of which are blown up in this article) was taken under exceptionally good viewing conditions in the early morning hours of 7 August 2005 from the top of Tikaboo Peak. The three segments, arranged from south to north, were assembled from 16 individual photos, taken with a Canon D-60 digital camera mounted to a Celestron C-5 spotting scope. The effective focal length was 2,000mm, resulting in a 1/4-metre resolution. The panorama is available as a professionally-printed large poster from www.dreamlandresort.com.

So, in this feature, join *AI* as we take you on a uniquely detailed walk-round of the secret base that officially doesn't exist, complete with exclusive new satellite images from DigitalGlobe. It's the next best thing to being there...

ENGINE TEST CELLS

Viewing the panorama from left to right, the first section shows some Remote Facilities at the far south end of the base. The two light-coloured buildings in the far left background are the Engine Test Cells. This is where new jet engines are tested. Due to noise and the possibility of explosions, it makes sense to have them as far away from the main base as possible. The scraped area behind the left-hand Test Cell is a waste burial site. It has not changed much since 1995, and it is not clear whether it is still in use.



EXPLOSIVES STORAGE

Further to the right, the circular area with the long light-coloured building is the Explosives Storage Area. Note that the entire area is surrounded by a mound of dirt to protect the rest of the base in case of an accident.

NEW RUNWAY

In front of the Explosives Storage Area, you can see the southern end of the two runways and the southern taxiway and holding pad. Two red-and-white arresting devices, designed to catch aircraft that are about to overshoot, can be seen at the south end of the new runway (14L/32R).



GRAVEL PIT

At the foot of Papoose Mountain, is a big scraped area. This is a large gravel pit and concrete plant. It supplies the building material for new construction works at the base, such as runway extensions. This photo shows that what looked like an underground tunnel entrance in older panoramas and satellite images is really a truck ramp, where trucks dump their loads onto the conveyor below. There is a large parking area for construction vehicles on the far right-hand side of this segment.



SOUTH RAMP

Moving on to the second section of the panorama, this shows the South Base area, with the Southern Ramp and hangars.

The ramp was re-paved in the summer of 2003; several new buildings were added and there is still some construction equipment visible in the area. This part of the base is clearly getting ready for a major new project to move in. This is likely to be related to the development and test of a larger UAV or UCAV than those that are currently operational.

The building in the foreground, surrounded by a mound of dirt, is the weapons assembly and storage facility. As with the aforementioned explosives storage area, the surrounding wall of dirt is designed to deflect a blast in case of an accident.

Behind it, in front of Hangars 9-16, is a large new hangar built in the spring of 2005. It is taller than the other hangars, which could indicate that it is used to mount a test vehicle on top of a carrier aircraft. Many experimental high-speed aircraft are taken to their operating altitudes by carrier aircraft or 'motherships'.

Hangars 9-16 were used for development of the A-12 and its successor, the SR-71. It appears that these long-disused buildings are part of the recent renovation, and that they will be used for the new project(s) mentioned above.

The long two-tone building to the rear is Hangar 17. The two white double hangars in front of it are Hangars 20-23, and the lower building to their left is an associated storage building. Hidden behind Hangar 22 is another new building, constructed in 2003. It is smaller, and connected to the surrounding hangars by underground pipes; it's probably a fuel storage or heating unit.

In front of that group of hangars, next to the weapons storage facility mentioned above, is Hangar 19. It is used for the arming and de-arming of aircraft weapons. In spring 2005, two extensions were constructed to the north and south, effectively tripling the size of this hangar. The purpose of this extension is not yet known, but it is interesting that the lower sections of the extensions are open. This could indicate a need for good ventilation, possibly due to running jet engines. It appears that the extensions are designed to hide something from curious eyes. This is supported by the fact that the open section of the southern extension is hidden by an additional screen in the direction of Tikaboo. Whatever goes on there is obviously top-secret!

A new concrete ramp connects these hangars to the new Center Taxiway, constructed spring 2003. This connects the South Ramp with the new runway 14L/32R.



In the background, on the slope of the Papoose Range, is a group of water tanks. Originally there were only four white tanks. The three large dark-coloured tanks were added between 1995 and 1999.

Further over to the right is Hangar 8, which is said to be used by Northrop Grumman. To the right of it is Fire Station #2 (#1 is near the four northern hangars). Sometimes the doors can be seen open, and we have seen the inside lit brightly at night, with what appeared to be a fire truck inside. The next building is the PE (Plans & Engineering) Building. It contains technical offices, and we can assume that a lot of the planning for current and future projects is done there. It is surrounded by marked parking spaces and the only trees at Area 51.

The panorama also shows various other features of the South Base. To the right of the gravel pit shown earlier is the main fuel





storage area. There used to be eight large fuel tanks, which were left over from the A-12 'spy plane' development at Area 51 in the 1960s. Most of the tanks were removed in early 2001, and only the southern two remain. In early 2003, two large new fuel tanks were installed to replace the older tanks. The brown building near the fuel truck parking area is probably a fire station or maintenance building.

In front of the fuel storage area and to the right is a site with aircraft communications and navigation equipment. Several tall antenna poles can be seen next to the left-hand building. Another antenna pole is further to the right. Behind it is another parking area with construction vehicles, surrounding a vehicle maintenance building.

In the background of that site is the Area 51 'boneyard'. This is where abandoned projects and prototypes end up after they reach the end of their useful lives. Some test platforms, such as the Boeing Bird of Prey or Northrop's Tacit Blue, were stored in the hangars there for years, before finally being declassified and displayed in a museum. Others are disassembled and never reach the 'White World'.

The long light-coloured building to the right of the 'boneyard' is the pistol range, facing away from us (and from the base).

Top: Part of the South Ramp area. The hangar on the right of the row at the bottom of this satellite shot was finished in spring 2005. Hangars 9-16 alongside it were used for development of the A-12 and SR-71 programmes in the 1960s, and may well be about to return to use after years of inactivity. DigitalGlobe

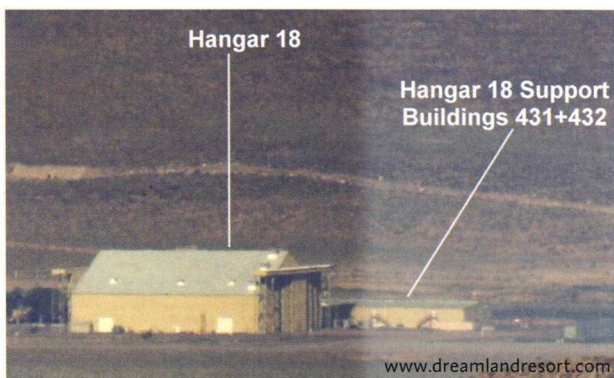
Left: Hangar 19 is used for the arming and de-arming of aircraft weapons, and was given extensions to the north and south in 2005. Aircraft can clearly taxi straight into this building and out of the other end, via the new taxiway (added Spring 2005). DigitalGlobe

HANGAR 18

The huge Hangar 18 is approximately eight storeys high and is big enough for even the largest aircraft. A Boeing 747 could easily fit inside. It opens at both ends to make it easier for large aircraft to get in and out. The exact purpose is not known, but it is assumed that it is used for new developments. We have also seen the Janet aircraft (Boeing 737s that are used to shuttle workers back and forth between Area 51 and Las Vegas) on the ramp north of Hangar 18. So, it may be used for maintenance work on the Janet fleet as well. Behind Hangar 18, partly visible on the right, is a connected office and support building.

The brown building further over to the right as shown on the full panorama is the Security Building, the headquarters of the famous 'Cammo Dudes'. Area 51 security is split into several elements. The Cammo Dudes (so named after their camouflage outfit) are employees of a private contractor, guarding the outer perimeter of Area 51. They can be seen near the Groom Lake Road entrance of the base, keeping an eye on curious tourists. Security further inside is probably provided by USAF Police.

Behind these two buildings are the old toxic waste burning pits. This is where, until the early 1990s, highly toxic waste products were burned in open trenches. After several workers became sick and even died from breathing the toxic fumes, the open-air burning has stopped and the area has been covered up with dirt.



Above: A satellite image of Groom Lake's enormous Hangar 18. DigitalGlobe

JANET TERMINAL, TOWER AND DORMS

Moving along the panorama, next to the Security Building and the Labs is the Janet Terminal. This is where the workers arrive when they fly in from Las Vegas on the unmarked Boeing 737s of EG&G. When a Janet 737 is at the terminal, you can see its white tail sticking up over the hills. In the mornings and evenings, the terminal and tarmac area are brightly lit by yellow floodlights.

In front of the Janet Terminal is the Area 51 Control Tower, partially hidden by the Jumbled Hills in the foreground.

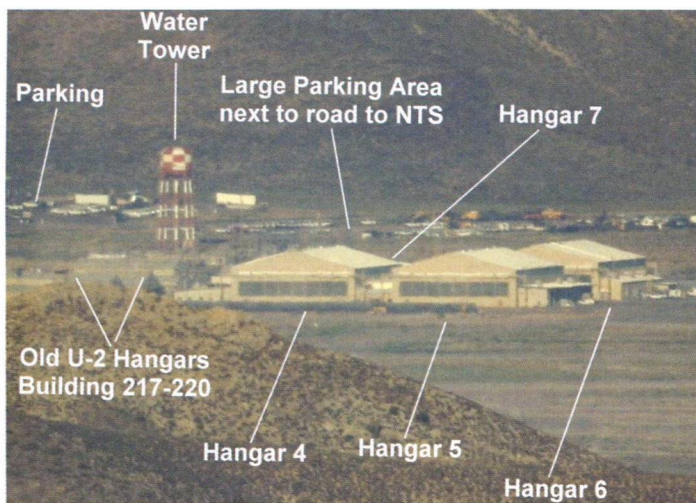
Behind the Terminal are three taller dormitory buildings. There are a total of 33 dormitory buildings that can house over 1,000 civilian contractors and military personnel. Instead of flying home to Las Vegas every night, the workers have the option to stay at the base during the week. There is a financial incentive for this, and many employees choose to do so. Most of the dormitory buildings in the central part of the base are single-storey in construction and are barely visible from Tikaboo Peak. Near here is the Area 51 baseball field. This is part of the base recreation complex, which also includes tennis courts, a gym, a swimming pool and a popular bar known as Sam's Place.

Above right: The 'Janet Terminal'. Three aircraft from contractor EG&G's fleet, comprising two Boeing 737s and a Beech King Air 200, can be seen on the ramps. These aircraft mount regular shuttle flights (callsign 'Janet') between Groom Lake and Las Vegas-McCarran International Airport, carrying Area 51 workers. DigitalGlobe

Right: Various buildings in the North Base complex, including rows of single-storey dormitories. Just above them and to the left is the Area 51 baseball field. DigitalGlobe



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NORTH BASE

The third section of the overall panorama shows the central part of the site and the North Base Area, containing some of the oldest buildings at the Groom Lake base. Foremost among these are some of the original hangars from the 1950s. They were used for development and testing of the Lockheed U-2. This 'Skunk Works' project, and its need for secrecy, was the reason Area 51 was founded 51 years ago in this remote location. Continuing to the right are Hangars 4-7, and the northern ramp area. These hangars were used for the A-12 programme, and later housed a fleet of Soviet-built aircraft types that the US Government acquired through various channels. These aircraft, flown by US pilots known as the 'Red Hats', were used to evaluate the capabilities and weaknesses of Soviet designs. This information of course gave US pilots a huge advantage in air-to-air combat. The hangars are still known as the 'Red Hat hangars'. It is not clear what these are used for today, but we

have seen light in some of them on several occasions, and once we observed an aircraft taxi into one of the hangars. As far as the other buildings shown on the third section of the panorama are concerned, the first one on the right, almost hidden behind the Jumbled Hills, is the Test Engineering Support Center (TESC). This is the central intelligence repository of the base, containing data on various research projects in several vaults. Next to the TESC building, also partially hidden, is the Consolidated Services Facility. It is used by various services such as the base telephone service and electric power supply. Further over to the right is the lower Base Supply and Administration Building. Behind it, among the group of smaller buildings, are the Dining Hall, the Main Operations Building (from where all activities at Area 51 are controlled) and Fire Station #1. Behind these, and various workshops and support buildings, is a fenced-in area that we don't know much about. Two fairly large hangars, clearly visible in these

Above: Hangars 4-7 on the northern ramp area. Note the pair of standard-looking two-seat F-16s on the adjacent pan. Just below those large hangars in this view are the original U-2 hangars, built when the Groom Lake base was founded in 1955 to support the testing of Lockheed's then new 'spy plane'. DigitalGlobe

photos, were added there in late 2002. It is interesting that, although the hangars are side-by-side, one of them is inside and one outside the fenced area. The huge building next to this area on the right is the Shipping and Receiving Facility. Notice the air conditioning units on the roof, and the trucks parked all around it. On some nights, the whole area is brightly lit with white floodlights. The S&R facility is located on the road coming in from the NTS via gate 700. On the other side of the road is a large parking area. This is where workers who drive in via Mercury and the NTS leave their private vehicles. Then, working left to right, come the aforementioned hangars.



Towards the north of the main Groom Lake base area are three helipads for the airfield's security helicopters. A single HH-60G Pave Hawk can be seen parked there in this view. Above that are the DYCOMS (Dynamic Coherent Measurement System, a radar cross-section measurement system for the development of Stealth technology) and Quick Kill radar systems and various support buildings. DigitalGlobe

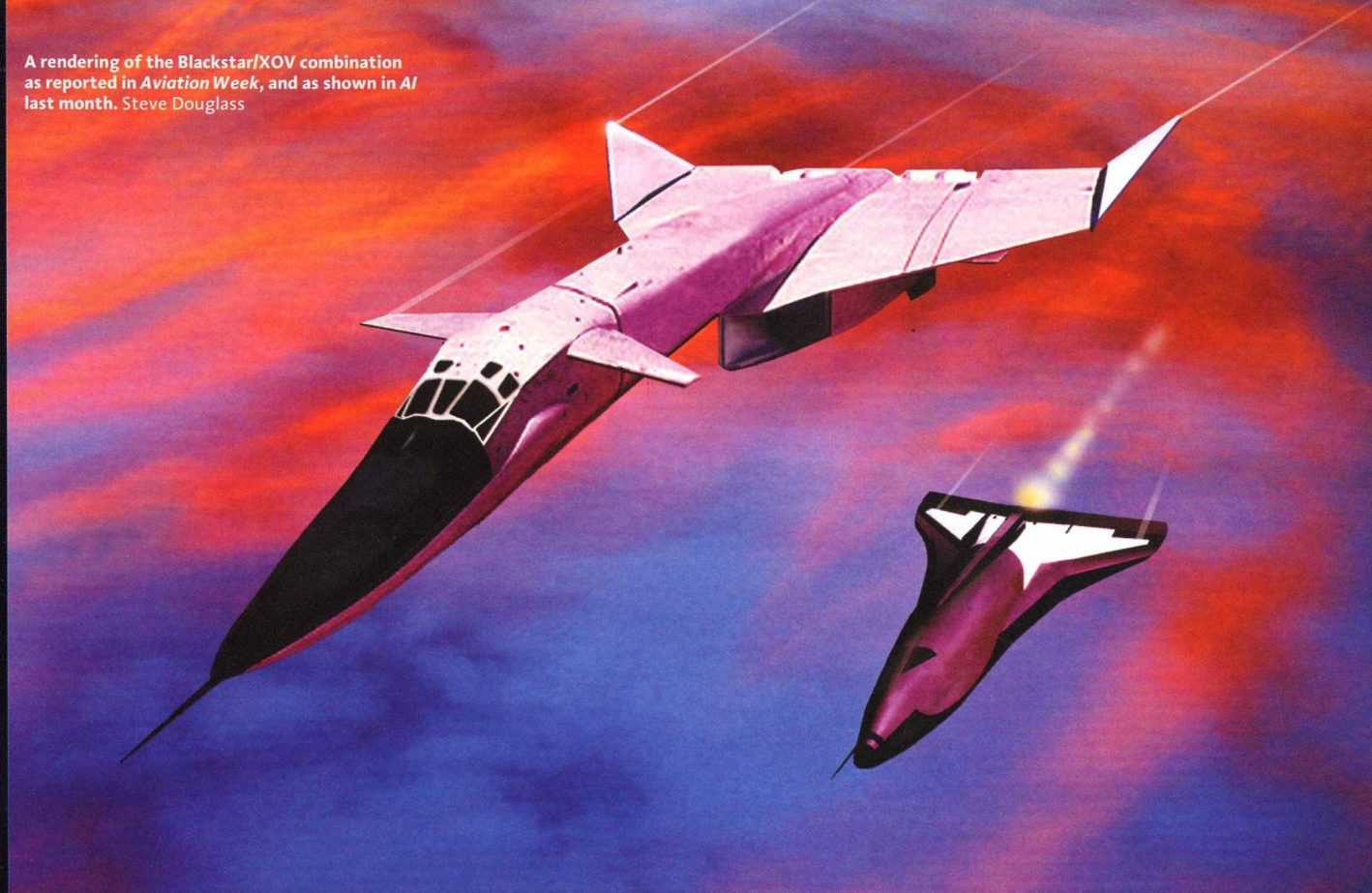
FURTHER NORTH...

The ramp area north of the 'Red Hat hangars' is used for the security helicopters, which can often be seen parked here. The three HH-60G Pave Hawks can sometimes be watched patrolling the perimeter of the restricted area. As you look at this section on the panorama, the building in the background with open sides and a grey roof was added between 1998 and the spring of 2000. It is connected to the North Ramp Area around the 'Red Hat hangars'. The area to the north contains the DYCOMS and Quick Kill radar systems and various support buildings. DYCOMS stands for 'Dynamic Coherent Measurement System', and is basically a radar cross-section measurement system for the development of Stealth technology. The two large dishes are typically pointed straight up when not in use. The Quick Kill radar site visible in the photo has two individual antennas near the south end of the dry lakebed. Two similar sites, connected to this one by underground lines, are located out of view east of the runways. Not much is known about these

sites, but they appear to also be related to radar cross-section measurements. There are several smaller facilities scattered all over Emigrant Valley west and north of Groom Lake. Most of them are radar sites of various types, used to test the stealth capabilities of new developments. Some of these radar sites, and the road to Gate 700 and the NTS, can be seen on the right side of this section. A section of Groom Lake Road is visible on the far side of the dry lakebed of Groom Lake. The facility on the far right is near Slater Lake. This man-made lake, surrounded by trees, was established in the 1960s as a recreation area for workers at the base. There are rumours that today it is surrounded by so many classified sites that access to the lake has had to be restricted, even for most Area 51 personnel. A

For more information on Area 51 and the latest news, please visit www.dreamlandresort.com

A rendering of the Blackstar/XOV combination as reported in *Aviation Week*, and as shown in *AI* last month. Steve Douglass



BLACKSTAR INVESTIGATED

Looking behind the 'Black world' spaceplane headlines

words: **Jon Lake**

In last month's *Aircraft Illustrated*, we made a preliminary examination of the 'new' evidence claimed by the prestigious US aeronautical trade magazine, *Aviation Week and Space Technology*, for a newly revealed 'Black' aircraft programme. *AW&ST* charged that the USA had, when faced with a shortfall in recon capability, taken unfinished and unacknowledged prototypes from the long-cancelled B-70 bomber programme and used them as launch platforms for newly-developed secret spaceplanes, or perhaps as the basis of newly built and improved derivatives of the ancient Valkyrie.

The cases 'for' and 'against' the existence of the Blackstar aircraft were briefly outlined, and the history of sightings of this class of aircraft was laid out. This month, we take a much closer look at the two aircraft described by *Aviation Week*.

THE MOTHERSHIP

The first of the 'Black' aircraft featured last month was a large high-altitude supersonic 'mothership', reportedly known as the SR-3 Blackstar, which supposedly acted as a carrier and launch platform for a mini-space plane known as the XOV (Experimental Orbital Vehicle, or Speedy).

The report outlined the SR-3 as a 180-200ft-long, cropped delta-winged aircraft,

white or light-coloured, with forward, rearward or variable sweep canard foreplanes, a dorsal ridge along the spine and up-swept fins mounted on the wingtips. The article reported at least four engines (though the artist's impressions all showed a more impressive six) in two well-separated banks (the renderings showed an evenly spaced row of jetpipes). It described discontinuities, blended curves and bumps on the underside, perhaps to allow semi-conformal carriage of a spaceplane under the belly.

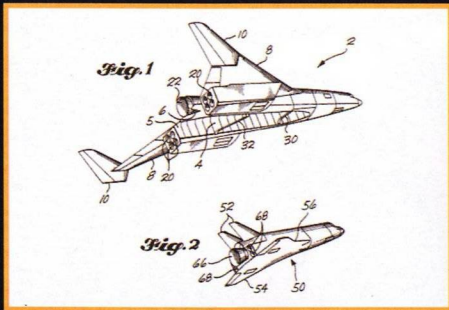
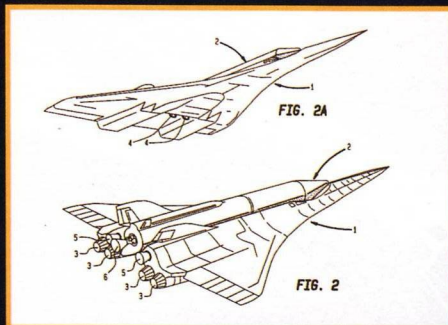
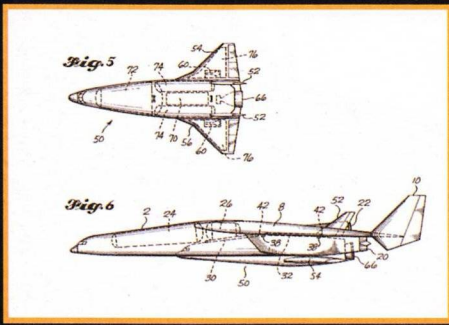
The *Aviation Week* article described the aircraft as 'closely resembling' the historic XB-70, going on to emphasise reported plans to use an un-built version of the Valkyrie as a launch aircraft for the X-20 DynaSoar and a 40,000lb rocket booster. The item surmised that 'several' SR-3s could have been quickly assembled from material delivered for use in the un-built third XB-70 prototype, alleging that 'six or seven warehouses full of spare parts for the XB-70' had never been properly accounted for.

It is highly unlikely that an aircraft whose production was cancelled in 1961, and whose prototype test programme was abandoned in 1964, should have been resurrected 20 or 30 years later, even had a spare airframe been available, since its high-altitude and high-speed capabilities had been handsomely exceeded by the A-12/YF-12/SR-71 family.

But while the idea of a resurrected XB-70 serving as the SR-3 mothership is highly improbable, there have been plenty of studies of two-stage-to-orbit mothership/spaceplane combinations, and while unlikely, it is possible that one of these may have been built as Black world hardware, though the level of funding required would have been extremely hard to hide.

Such a combination promised to give a degree of re-useability impossible with conventional two-stage to orbit rockets (or even the Space Shuttle, which requires new boosters for every flight, and lengthy maintenance and preparation between flights), with a relatively short turnaround before the 'carrier' could deliver another payload to orbit. A fully reusable hypersonic single stage to orbit vehicle (such as BAe's HOTOL or NASP) was then, and remains, not technologically achievable.

Combinations of this type have been seen in a number of patent applications, and indeed in the proposed German Sanger Space Transportation System. The Sanger spaceplane was a two-stage concept designed to reduce the cost of putting payloads and people into space, with air-breathing turbo-ramjet engines for the first stage, and with alternative second stages including a reusable HORUS (Hypersonic Orbital Reusable Upper Stage) for manned missions, or an expendable



Above left and left: Boeing's patent (4,802,639) filed in October 1986 for a mothership/spaceplane combination. via Jon Lake

Above: Spread Spectrum Inc's November 1991 patent (5,295,642) showed a configuration involving a rocket payload being mounted above the carrier aircraft's back. via Jon Lake

CARGUS (Cargo Upper Stage). It was designed to take off from a standard runway without special launch assistance, reaching Mach 3.5 and 19,500 metres with the first stage turbojets, before the ramjet propulsion system boosted the altitude to 24,500ft and the speed to Mach 4.4, and then on to Mach 6.6 and 30,000ft, where the second stage LOX/LH₂ propulsion rocket would take the second stage to orbit. Both stages were to have been reusable, returning to land on conventional runways.

A Boeing patent filed in October 1986 (4,802,639) described and illustrated a motherplane/spaceplane combination. The motherplane was a delta-winged aircraft, without canard foreplanes, but with a dorsal ridge along the spine, and with upward swept fins mounted on the wingtips. The aircraft had eight jet engines in two well-separated banks with a single rocket engine above, on the centreline, and with a scooped-out belly to allow for the semi-conformal carriage of a spaceplane. Though the aircraft looked nothing like a Valkyrie, the similarities to *Aviation Week's* 'verbal' descriptions are striking. The flight profile showed the combination using afterburning jet engines to accelerate to Mach 0.85 at 30,000ft, where rocket ignition occurred, with booster/orbiter separation at Mach 3.3 and 103,800ft. This was very similar to the SR-3 profile described by *Aviation Week*.

A Spread Spectrum Inc patent filed in November 1991 (5,295,642) illustrated just such a combination, with a rocket payload mounted above the carrier's back. The patent included diagrams showing the combination refuelling from a tanker at 32,000ft before carrying its payload to 48,000ft, where the two 16,000lb vt Pratt and Whitney RL-10A-3A 'mid plane' LOX LH₂ rocket motors augmented the carrier's four 30,000lb st F101-GE-102 jet engines, until at between 75,000ft and 80,000ft the combination used the mid-plane RL-10A-3A and two aft mounted 237,000lb vt Rocketdyne RS-27A rocket engines only, the payload then being launched at Mach 3.8 and

156,000ft with its own powerplant, 'probably' a version of the Space Shuttle engine. The patent saw a 'converted SR-71A' as a possible basis for the motherplane element.

THE SPACEPLANE

According to *Aviation Week*, the two-aircraft Blackstar system was developed in total secrecy by Lockheed and Boeing during the late 1980s and early 1990s after the Challenger disaster and subsequent solid booster failures removed the USAF's 'assured access to space'. The spaceplane element of the Blackstar was thus of greater importance than its carrier.

The orbiter, reportedly a McDonnell Douglas product designated XOV (Experimental Orbiter Vehicle) and named 'Speedy' or 'Black Magic', is said to have carried an advanced imaging system with an integral sodium ion sensing laser and one-metre adaptive optics, giving high resolution and compensating for any atmospheric turbulence. It might also have been equipped to launch small payloads into space, including mini reconnaissance satellites and possibly kinetic energy weapons.

Aviation Week said that the space plane would have been lifted up to altitudes in excess of 100,000ft under the belly of the carrier aircraft and then, at speeds of Mach 3+, been launched into a low earth orbit (300 miles). At this lofty height, it could then race across a target country immune from interception and, having given no warning of its arrival, glide back.

The aircraft described and depicted by *Aviation Week* was a bulky, highly-swept, wedge-shaped lifting body design with a short, very broad-chord fin that may have 'doubled as a mounting pylon'. A flat, 'spade-like' nose reportedly gave the vehicle a 'shark-like' appearance, while the leading edges curved downwards outboard. This was thus very similar to the planform of the carrier aircraft illustrated in the 1994 Spread Spectrum patent (5,295,642). The vehicle did resemble one of the orbiter designs shown in the Boeing patent (4,802,639), though the main orbiter design shown in this document was more conventional-looking — resembling a scaled-down Space Shuttle with twin tailfins.

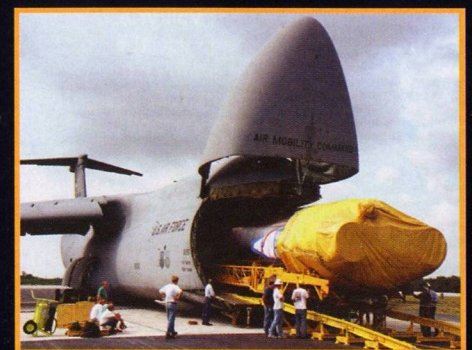
An eyewitness report by an un-named F-15 pilot who supposedly saw the vehicle on the ground at Holloman AFB added a retractable nose gear, 'pogo' outriggers and a centreline ski or skid to the description, together with four rectangular engine nozzles on the blunt rear face of the fuselage, and with two round rocket nozzles further outboard. *Aviation Week* speculated that the round ports may have housed re-loadable boosters, which had been seen by some witnesses on the ground near the orbiter. The magazine described two distinctive orbiter types, one a 'technology demonstrator' with a length of 60-65ft, and the other a larger vehicle, 90-100ft (or 97.5ft) long.

Its report also suggested that the Blackstar combination 'may have been declared operational during the 1990s' when the availability of Blackstar supposedly allowed the cancellation of the USAF's SR-71, the USAF's unclassified spaceplane project and US Army anti-satellite programmes. *Aviation Week* reported heavy activity after a 'breakthrough' in developing fuel for the new vehicle in 1990-91. This was supposed to have been a boron-based gel that had the consistency of toothpaste, with low volume and high-energy characteristics.

BLACKSTAR CARRIERS?

One of the criticisms of *Aviation Week's* Blackstar coverage lay in the way in which very specific (but irrelevant or unconfirmed) detail was included in order to distract attention from the essentially nebulous and unreliable nature of the core of the story.

Very detailed information was presented about the 'fat C-5 Galaxy transports' used to retrieve orbiters from their landing sites. *Aviation Week* stated that 'three oversized transport aircraft were modified with 8ft-wide 'chipmunk cheek' extensions on each side of the cargo compartment aft of the nose hinge point; an extra six-wheel set of landing gear that partially retracts up against the after fuselage, forward of the ramp; a shortened upper deck, and two internal harness/cradle supports.' It gave 00503 and 00504 as the 'tail numbers' for two of the aircraft, and stated that the third, used by the CIA, carried a large red 'CL' on its tail. The magazine quoted an unnamed



This shot shows one of the C-5 Galaxy transports (68-0126) that was modified to C-5C SCM (Space Cargo Modified) configuration in order to carry satellites and other large payloads for the US space programme. via Jon Lake

NASA contractor as saying that 'All three C-5s may have been retired in recent years.'

The magazine also stated that the Galaxies had originally been modified to enable the carriage of 'dome-topped containers measuring 61.2ft long, 17.2ft wide (maximum) and 16.7ft tall at the highest point.' These containers, *Aviation Week* said, 'normally protected satellites during transit to launch sites.'

The serial numbers given do not tally with any known Galaxies (70-0503/4 were assigned to cancelled F-4Es, 80-0503/4 to F-16As and 90-0503/4 to Egyptian AH-64A Apaches) and it is not credible that 'extra' C-5As were built in secret. These Galaxies have never been seen, photographed or reported. Interestingly, though, the description of the modified C-5s' original role matches descriptions of that of the two C-5C SCMs (Space Cargo Modified), specially modified to carry satellites and other large payloads for the space programme including Atlas rockets and Space Shuttle boosters.

The modifications detailed by *Aviation Week* have sometimes been ascribed to the C-5C, though this was a more modestly modified aircraft, with the troop compartment removed and with modifications to the rear loading doors, giving a cargo area larger than other C-5s, and with an extra power input socket to allow ground power to be plugged into both the aircraft itself and into the payload canister. This canister was the Space Container Transportation System (SCTS), which just fits into the specially modified C-5Cs though clearances are tiny, and the load has to be carefully inched in and out of the cargo hold. The C-5C is the only aircraft that can accommodate the SCTS canister.

It seems certain that the Blackstar-carrying C-5 variant and the C-5C were one and the same, and that *Aviation Week* confused the two, not discerning which of the modifications described had actually been incorporated and which (cheek fairings, extra landing gear unit) were invented. It was perhaps an easy mistake to make, since the C-5Cs have sometimes been thought to operate in support of various Black programmes, in addition to their NASA and USAF tasking. Two aircraft (68-0213 and 68-0216) were modified to C-5C SCM standards after being damaged in service. They were assigned to the 433rd Airlift Wing, and later the 60th AW at Travis AFB.

OTHER BLACK PROGRAMMES?

Could there be secret aircraft flying?

In the USA, there are a number of airfields and bases deep inside enormous range areas, surrounded by sanitised 'no go' airspace and inaccessible to any civilian. Groom Lake is just one, but there are others, including Tonopah (vacated by the F-117A in July 1992, but still active) and a huge facility at White Sands with runways that are capable of handling a Space Shuttle landing.

Groom Lake has little or no acknowledged 'open world' work, yet is

understood to host Detachment 3 of the Air Force Flight Test Center. Its role can only involve the test and evaluation of classified platforms and systems, but nothing is known about any of these.

Moreover, several Black world aircraft and weapons have reached full front-line service while remaining secret, unknown to most of the USAF and the public. Thus the existence of the AGM-86C conventionally armed cruise missile was not revealed until after it was used to open the 'Desert Storm' air campaign, while the U-2, the SR-71 and the F-117 were all in full operational service before their existence became known.

There is even greater secrecy in the test world, where technology demonstrators and classified research aircraft can sometimes be kept secret for even longer, even more easily. The existence of the Lockheed Have Blue, the Northrop Tacit Blue, the Senior Prom stealthy cruise missile and the Boeing Bird of Prey remained unknown until long after they had been retired.

These are believed to represent a relatively tiny fraction of recent Black programmes. It has been suggested that at least seven as yet unveiled classified manned aircraft have flown at Groom Lake since the mid-1980s, excluding MiGs and other foreign types under evaluation, and modified in-service aircraft such as test and trials F-16s.

What might the Black world aircraft do?

It has always been assumed that any so far unrevealed 'Black aircraft' would be a covert reconnaissance platform or strike/attack type, like previous Black aircraft whose role relied on a degree of 'plausible deniability' and where secrecy would be useful in giving the US a capability that its enemies would not know it had.

Many have pointed to apparently important gaps in the USAF's order of battle (for instance following the retirement of the RF-4C and F-111) as evidence that 'white world' aircraft might have been replaced by aircraft developed in the Black World. While a stealthy tactical reconnaissance aircraft might seem eminently sensible, the USAF rebuffed Lockheed proposals to build an additional 24 F-117As, and to purchase equipment that would enable these to perform reconnaissance missions, with a palletised ATARS camera system in one weapons bay, and a synthetic aperture radar (SAR) in the other.

While the Senior Trend bomber and Tacit Blue battlefield surveillance aircraft both used 'YF-for-experimental fighter' designation suffixes, it is possible that there may have been a fighter programme kept under Black World wraps, either for some highly specialised and deniable role, or to allow the US to 'leap a generation' and field new fighter capabilities while preventing any potential enemy from developing a counter to the new aircraft. There are also prototypes and demonstrators that may have flown without being publicly revealed, like Northrop's failed XST contender or even Lockheed's Senior Peg (the company's unsuccessful B-2 competitor).

MORE ON THE YF-24

After seeing the references in the March issue of *AI* to the YF-24 aircraft on Col Joseph Lanni's biography, I asked several people associated with flight test programmes if they could identify this type. Lanni has been selected for promotion to brigadier general and is now stationed at Eglin AFB. While not speaking for quotation and not shedding any light, Lanni told me his official biography would be amended to delete the reference to the YF-24. In his earlier assignment at Edwards AFB, Lanni had been a key figure in operations at Edwards and at the sequestered air base at Groom Lake. I also spoke to a civilian who worked in 'black' flight test programmes. This individual told me the YF-24 designation was being used as the radio callsign for a Sukhoi Su-27 'Flanker' that is one of a handful of Soviet-era aircraft being flown in secrecy at Groom.

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CONCLUSION

The key questions remain unanswered, however. Despite the articles in *Aviation Week*, and despite all of the claimed sightings, there is no more than the slenderest circumstantial evidence that the aircraft described actually exist, or existed, in the form of actual flying hardware. The question as to whether the USA deployed a mothership/spaceplane combo to fill a gap in its intelligence-gathering capabilities during the 1990s remains unanswerable.

On balance, this author would be inclined to dismiss the reports of Blackstar as a flying programme, let alone one that reached any form of operational service, while claims that the XOY may have somehow developed into a single-stage to orbit vehicle are patently farcical.

But while Blackstar may not have existed in the form outlined by *Aviation Week* and *Space Technology*, it is much more difficult to dismiss all reports of Black aircraft.

BAE's ambitious UAV programme demonstrated that it's entirely possible to keep multiple prototypes secret, even in Britain's crowded skies, operating from airfields that can be closely approached and overflown. In the USA, with its vast tracts of Government land and inaccessible airfields, keeping such programmes 'under wraps' is even easier. Moreover, the USA has a long history of developing aircraft and weapons in complete secrecy, and even of deploying them operationally before revealing their existence.

Lapses in security have allowed some fascinating glimpses 'behind the Black curtain', as described in the March issue of *Aircraft Illustrated*, for example, after a noted USAF pilot's biography revealed that he had flown 'numerous classified prototypes', conducting the maiden flights of two of them. Unless this is all mischievous disinformation, there is, most assuredly, something out there, even if it isn't a 'two stage to orbit' composite spyplane combination!