

PATHFINDER

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RAAF'S FIRST SPACECRAFT INTERCEPT MISSION

"The Buran-Energia project was created at the beginning of the seventies to counter the American shuttle. Indeed, the American shuttle was seen by the Soviet leaders as a formidable military asset, so they decided to create one. This program was the most ambitious project of the history of the Soviet space conquest."

Molniya Company (1993)

At the height of the Cold War, on 3 June 1982, the crew of a RAAF P-3C Orion captured the first images available to the West of a new and previously unseen Soviet spacecraft. The spacecraft had splashed down near the Cocos Islands and was being retrieved by a Soviet recovery ship. The BOR-4¹ No 404 Buran (meaning Snowstorm) spacecraft was a 1:2 scale prototype model of the Spiral VTHL (Vertical Take-off Horizontal Landing) craft. The Spiral VTHL was meant to meet Soviet design requirements for the development of a reusable spaceplane that could deploy and recover payloads from an Earth orbit. BOR-4 was designed at the Gromov Flight Research Institute and manufactured by NPO Molniya.

The USSR was considering designs for a space shuttle to support future military missions into space, provide maintenance to orbiting space missions, deliver and recover cosmonauts from orbit, deploy modules for a large orbiting space station, and to carry scientific sensor payloads and passengers on ground-space-ground trajectories. The maximum planned orbital altitude of the Buran craft was 250 km with a maximum payload of 30 tonnes and eight tonnes of rocket propellant.

Although full-scale variants of Buran were flight-tested in the atmosphere by trained pilots, the first and only space orbital flight was made without a crew. BOR-4 subscale spacecraft were developed in order to test the survivability of the Buran heat shield. Available equipment was inadequate

to validate the heat shield in the lab as it couldn't replicate the plasma sheath that envelopes spacecraft travelling at hypersonic speeds on atmospheric re-entry.

Launched from Kapustin Yar with the space mission designator COSMOS-1374, and after completing one Earth orbit, the spacecraft was deorbited and performed a gliding re-entry before deploying a parachute for a splashdown in the Indian Ocean. Subsequent recovery was effected by a Soviet Navy task force. Seven Soviet ships were deployed into the Indian Ocean to support the first BOR-4 orbital mission, including a Krivak II FFG from the Black Sea

Fleet, three Chumikan-class space tracking support ships, a Sessa-class auxiliary, and three spacecraft recovery vessels.

The RAAF deployed P-3 crews to Cocos Island under Operation *Caterpillar* at short notice to conduct maritime surveillance during the period 1 to 9 June 1982 in order to find the Soviet ships and monitor the BOR-4 recovery mission. No 10 Squadron exercised operational command with four of its crews, 492 Squadron maintenance teams, and two

US Navy aircraft. The BOR-4 splashed down about 300 Nm south of Cocos Islands. The RAAF P-3 Orion gained close-up imagery of the BOR-4 spacecraft floating in the Indian Ocean after splashdown and the efforts by the Soviet recovery vessel crew to retrieve it. The Australian imagery was released publicly and was widely published in the Western press as an intelligence coup by the RAAF.

One Soviet crew member commented on the impact of the release of the Australian P-3 Orion aerial photography,



The image of the first Soviet Buran spacecraft captured by a RAAF P-3 mission flown in 1982.

1 Bepilotnyi Orbital'nyi Raketoplan 4 translates as "Unpiloted Orbital Rocketplane 4"

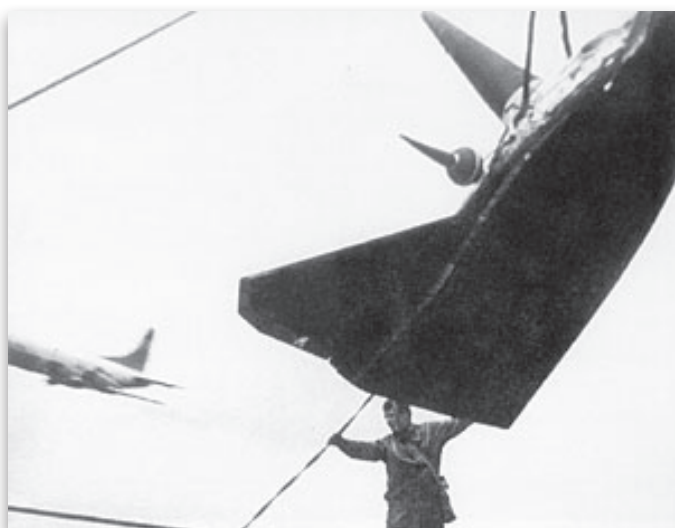
taken while he was performing seemingly insignificant ship's kitchen duties,

"... I was at the potato drudgery, assisting the cook master. Early in the morning before the beginning of the drudgery was a large tank of waste. We did not want to move it to the dumpster, this is why we poured all by the port-hole. Nobody noticed anything, but during the evening the commander of the flotilla received remonstrances from Moscow. In fact Orion which flew to a few kilometres of the ship had photographed the floating waste on the sea. They developed the film and one submits a report with the commander of the military base in Australia by specifying that the Russian ships had rejected to the sea a thing impossible to identify. From Australia the message went to the USA then to Brussels. A protest note left Belgium to Moscow, specifying that it was intolerable that the Russian ships reject substances to the sea. Lastly, Moscow contacted the base of Petropavolsk in Kamchatka and the latter the Tsoumicana ship to order an investigation right away. And all that in one day space." Nobody would have thought that the rejection of a kitchen dustbin would have so much political resonance!?"

During the period 6 to 19 March 1983, RAAF again deployed P-3 Orions from No 10 and 11 Squadrons at short notice under Operation *Enquarier* to conduct surveillance against a second Soviet Buran BOR-4 No 402 space mission. This mission was designated COSMOS-1445 and was launched on 15 March 1983 for an eventual recovery in the Indian Ocean. Once again, RAAF successfully gained imagery of the Soviet recovery efforts when the spacecraft splashed down about 250 Nm south of Cocos Islands.

RAAF P-3 imagery was shared with the USA. Subsequent analyses resulted in the US construction of a model for wind tunnel testing. US trials showed that the slanted wings gave the BOR-4 vehicle good stability, and that its shape offered good turning and gliding capability. These design characteristics may have been exploited in design considerations for later US space glider designs such as "Dream Chaser."

The USSR launched its first full-scale reusable Buran on 15 November 1988 using 'Energia,' then the largest available Soviet-made space launch vehicle. The first full-size Buran spaceflight trial completed two orbits before performing a controlled re-entry and successful landing in automatic mode at an aerodrome in Baikonur. Two full-scale Buran



Soviet image of a RAAF P-3 Orion on-station during the Soviet Buran recovery operation.

spacecraft were manufactured. However, the Soviet space priorities had changed and the USSR cancelled the Buran program after the one successful unpiloted space mission.

After the break-up of the Soviet Union, the two Buran spacecraft became the state property of Kazakhstan: the spacecraft that had flown a space mission was destroyed in a 2002 building collapse, the second spacecraft is an interactive museum at Gorky Park.

Key Points

- *Whilst this event is not strictly a space intercept, it illustrates the flexibility and adaptability of air power, to be applied at short notice, to meet new and unexpected mission needs.*
- *The ability to rapidly access imagery to validate the Buran had a significant effect on public perceptions of the RAAF's response capabilities.*
- *At the height of the Cold War, developments in space technology were closely guarded secrets.*

2 Buran-Energia. www.buran-energia.com/bor/bor-recup.php



Air Power Development Centre

F3-GF, PO Box 7932, Department of Defence
CANBERRA BC ACT 2610

Ph: 02 6128 7041 Fax: 02 6128 7053

Email: airpower@defence.gov.au

Web: www.airforce.gov.au/airpower

