

ACRES

UPDATE



Lost in space! LANDSAT 6 fails to operate after 'successful' launch

Shouts of jubilation at Vandenberg Air Force Base in California, USA, on 5 October turned to despair when operators failed to communicate with LANDSAT 6 after an apparently successful launch. The Titan 2 launch vehicle appears to have performed its task, however failure to track the satellite and failure of all attempts at communication indicate that the apogee kick motor on the satellite either failed to operate or otherwise malfunctioned. It is probable the satellite reentered the atmosphere and burned up somewhere over the Pacific Ocean.

The loss of LANDSAT 6 is a major challenge to the USA and international earth observation programs, particularly the loss of the enhanced Thematic Mapper with its 15m Panchromatic sensor that was set to challenge SPOT's large market share.

It now becomes critical that the ageing LANDSAT 5 is kept operational for as long as possible, as a new LANDSAT 6 or 7 could not be launched for some three to four years. We await with more than a passing interest announcements from Washington.

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Manager's Message

The international remote sensing community has suffered a setback with the loss of the long-delayed LANDSAT 6 satellite. We were all looking forward to the continued availability of the multi-spectral Thematic Mapper data, particularly with the opportunity of simultaneous reception of the new 15 metre panchromatic band.

Along with other ground stations, ACRES had upgraded our reception and processing equipment in advance of the launch.

At the same time, we installed a JERS processing capability for the multi-band OPS sensor. Despite the perhaps only minor degradation in data quality because of an on-board problem, JERS has suddenly become more important.

Feedback from NASDA's international principal investigators and our complementary Australian research projects has become urgent. AUSLIG will give priority to requesting NASDA to extend our Agreement for the reception and distribution of JERS data for research to allow for its commercial use.

Of course, SPOT data continuity is assured with the successful launch of SPOT 3 in September and LANDSAT 5 continues to operate normally. Although it would be optimistic to expect LANDSAT 5 to remain operational until the launch of LANDSAT 7, currently planned for early 1998. Perhaps the United States will delight us all with a re-scheduled program.

Carl McMaster

Earth Observation Working Party gets to work

The Australian Space Council has appointed four Working Groups to provide advice to the Council. The groups are Launch Services, Space Science, Communications and Earth Observation. The Earth Observation Working Group is chaired by Professor John Richards (ADFA), who is also Deputy Chair of the Council. The members of the Group are:

- Carl McMaster, ACRES
- Brian Embleton, COSSA
- Doug Gauntlet, BOM
- Ian Tuohy, BAeA
- David Green, DEST
- Neil Williams, DPIE
- Richard Brabin-Smith, DOD
- Mike Aubrey, Technical and Field Surveys
- Colin Simpson, AGSO

The Working Group is presently developing Terms of Reference for three proposed consultancies, namely:

- Market Opportunities for Earth Observation Educational Services in Australia and the Region;
- Pre Feasibility Studies for the Development of an Australian Earth Observation Data Network; and
- Feasibility and Market Studies for the Development of Earth Observation Value Added Services.

For more information contact:

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New order form and licence conditions for ACRES products

A new 'user friendly' order form has been introduced for ACRES products. There are now three order forms:

- One for SPOT/LANDSAT;
- One for ERS1 SAR; and
- One for Image Writing.

The order forms for satellite data now incorporate the licence conditions on the reverse and each order must be signed by the end customer, acknowledging these conditions of sale and the copyright nature of the data.

Editorial Information

ACRES Update is a newsletter published quarterly by the Australian Centre for Remote Sensing and is intended to provide the remote sensing community with information on new satellite and sensor developments, ACRES products and organisational news, national and international developments of interest to ACRES clients and information on remote sensing applications.

ACRES is a business unit within the Australian Surveying and Land Information Group in the Department of Administrative Services.

Items for publication are invited from interested parties and should be forwarded to the Editor.

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The image in the margin on each page is an ERS-1 SAR image of Sulawesi, Indonesia.

ACRES management contract renewed

The management contract to operate ACRES facilities in Canberra and Alice Springs has been extended for another year to October 1994. The current three year contract expired on 1 October 1993 and an option to extend the contract has been exercised by Graham Bashford, General Manager of AUSLIG, ACRES parent organization.

Computer Sciences of Australia (CSA) is the contractor. The CSA Business Manager for ACRES, Tim Shirley, commented on the extension of the Contract, "CSA is pleased to be continuing to operate ACRES. Over the next 12 months we will continue to improve the quality and reliability of our products and our service to customers. In line with AUSLIG we expect to achieve AS3901 accreditation during 1994."

New appointments in the Australian Space Office

Malcolm Farrow has been appointed to replace Bruce Middleton as the Executive Director of the Australian Space Office. His previous position was as First Assistant Secretary, Construction and Service Industries Division, in DITARD. Donn Corcoran, previously a Counsellor (Industry, Science and Technology) at the Australian Embassy in Japan, has been appointed to the position of Director, Earth Observation. Other key appointments are summarised below.

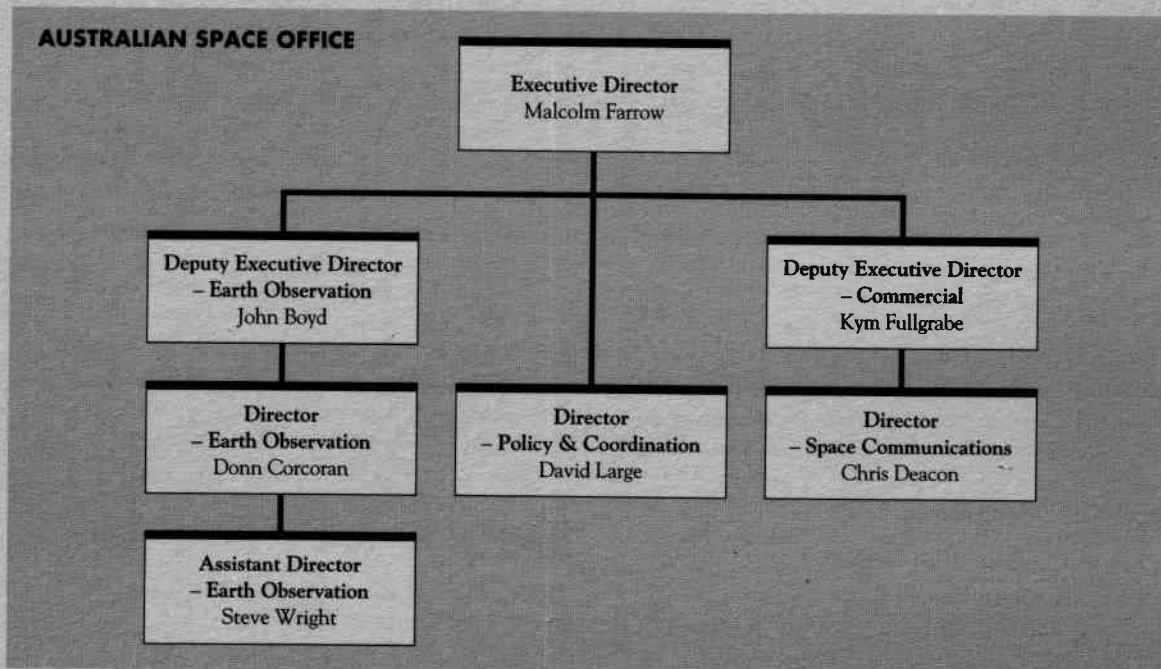
1996 Remote Sensing Conference to be held in Canberra

The Committee of Remote Sensing and Photogrammetry Australia has accepted an offer from a Canberra based committee to run the 8th Australasian Remote Sensing Conference in Canberra. The National Convention Centre has been booked for late March 1996 and an ACT based conference organizer appointed. The committee is chaired by Dennis Puniard (ACRES). The Deputy Chair is Don De Vries (COSSA) and the other committee members are: Stephen Wright (Space Office), Brian Button (Uni of Canberra), Barbara Harrison (CSIRO Water Resources), Robyn Johnston (BRR), Craig Smith, Laurie Oliver and Madeleine Clark (all ACRES).

ACRES image writing service gets new impetus

For several years ACRES has offered an Image Writing Service to its customer base to write film or photographic copies of digital image data supplied by customers. With the delivery of an additional FIRE Film Writer, ACRES is now in a position to offer an even better service to write negatives or transparencies on film, or for specially tailored photographic prints on very high quality paper at prices very comparable with any photographic laboratory. Enlargement factors up to 15 times are possible, the only limitation being the 1.25m width of our paper and processor. Both colour and black and white products can be processed.

For further details see enclosed information sheet or contact the ACRES sales team.





Which way now? Some intriguing possibilities

Some key events in the past few months have put a completely new perspective on space based remote sensing. LANDSAT 6 has failed; SPOT 3 has successfully launched and the race for the first high resolution space sensors has intensified.

From the USA perspective, the failure of LANDSAT 6 is a major disaster. The possibility that LANDSAT 5 could fail at any time (it is several years past its expected life) means there is a real prospect that with SPOT 2 and 3 both operational, the French could dominate the high resolution market for some years to come.

On the other hand, two major proposals have emerged from the US for high resolution (1-3m) sensors to be launched in the next 2-5 years. Lockheed Corporation has well advanced plans for its Commercial Remote Sensing System (CRSS) with a 1m resolution PAN sensor and 3m resolution multispectral sensor. They are seeking international funding partners and have recently visited Australia. The first of these satellites is proposed for a possible 1996 launch. An even more interesting proposal has come from the WorldView Corporation, who propose a constellation of commercial satellites with 3m resolution PAN and 15m multispectral sensors and aim for two day repeat coverage. The first satellite is proposed for 1995 launch. Although official US Government sanction of these higher resolutions has not yet been confirmed, it seems imminent. With the threatened demise of the LANDSAT series, the US Government should be supportive.

The other interesting prospect is that the Japanese may now be more interested in the commercial release of data from the JERS optical sensor, if some data quality problems can be solved. Of course their ADEOS satellite is under development and it would not surprise to see it accelerated to an earlier (1994/5) launch date.

On the radar scene, RADARSAT seems to be on track for 1994/95 launch and the European ERS2 is also planned for 1995 launch.

In the looming race for the first high resolution sensors in space, the French are unlikely to concede easily here. The military HELIOS system is due for launch soon. It is said to be capable of 1m resolution. Could it be demilitarized? Of course the Russians are also potential players. ALMAZ 2 (SAR) is proposed for 1995 launch, however with their economic and political problems in the CIS, there is some doubt on what they can deliver.

All in all, the hiatus left by the demise of LANDSAT 6 has created some interesting scenarios. Stay tuned for the next instalment of the race for 'eyes in space'.

Dennis Puniard

ACRES staff on the move

Erik Elmar, ACRES Senior Engineer, has accepted an offer to move to the USA and work for Datron Systems. He and his wife, Matilda, who for the past few months has also been working in the photolab at ACRES, left for the US in October.

Erik's departure has resulted in some reorganisation of some key ACRES staff.

- Karl Nissen has moved from Production Manager to the vacant Senior Engineer (Projects) position.
- Mike Pasfield has taken over as Production Manager.
- Mike Linney is now Production Coordinator, whilst Lorree Aalders will supervise computer room operations.



Erik Elmar at his farewell dinner with Lien Ly in the background.

ACRES retires its MSS processor

After 13 years of sterling service, the original ACRES computer system will be permanently put to rest in early December. The latest upgrade to ACRES processing system was completed by MacDonald Dettwiler and Associates (MDA) in September. MSS processing has now been transferred to the GICS system and this will allow the production of a wider range of product formats similar to the current LANDSAT TM product range. The new product range and price list will be announced in November for availability on 1 December 1993.



Robert Denize (ACRES Chief Engineer), Pat Campbell (MDA) and Carl McMaster seem relieved that the MSS Upgrade is complete.

LANDSAT 21 years old

Report on the celebrations at the University of New South Wales Advanced Remote Sensing Conference 19-23 July 1993

Oh, what a rage it was! All the family were there; well almost all. While the birthday kid became a little spaced out – a number of us were blaming the new designer drugs from the US on this – the parents' generation reminisced about past achievements with a panel session, and also gazed into the crystal ball and sagely stated what the future may hold.

Following the usual 21st birthday party conventions, the proud father (BF) acted as host and introduced his family and friends, as they offered advice to the younger generation. Father was positively glowing with pride and optimistically said that the youngster had generated a critical mass of friends which would ensure future successes. Mother (AKM) seemed a little concerned about the employment prospects for the youngster in the private sector and thought that the Government should be doing more to help her offspring.

The famous uncle (JAR) made it to the early part of the party, but unfortunately could not be found to make a speech during the latter part of the celebrations. "Typical...", sniffed the birthday kid, but luckily a favourite god-father (BJT) volunteered at the eleventh hour to stand in and gave a thoughtful speech.

Father then introduced the boss of the 21 year old (CM), who commented that greater productivity was required – perhaps an Australia wide data base. The boss's son (DP) gave some facts and figures to support this idea. It is always so difficult to separate business and pleasure!

A rather embarrassing speech by a distant relative from France (on the mother's side) (PvG) followed. The French 'reli' told the parents and the boss that they should have brought their child up better and that a lack of discipline and direction was stunting the child's development! Bloody cheek! Mother said it was lucky that the French didn't play cricket!

However, this outrage was mild compared with the eccentric of the family (JH), who told the assembled friends and family that he thought the birthday kid was retarded! What was required was some 'hot-housing' to develop the 21 year old more fully. The eccentric reported that his offspring already had two degrees and a PhD, even though his child was only nine years old.

A token Pom (PC) was flown in to talk about the old country, and gave some advice on how to win political favours. Rather unkindly, mother made a comment about putting his own house in order first and winning at cricket or rugby first. A young American cousin (JC) talked of his experiences with alternative lifestyles, but nobody really understood what he was saying.

The youngest uncle (AKS) told the gathering that they were all wrong in the way they were educating the youngster and that modern parenting required a new vision about how the output of the child should be best utilised.

By this stage the youngster and mates were totally bored with proceedings and retired to the University Club to continue the party. The 21 year old was last seen talking to an elegant French person, as well as a Japanese and a Canadian, in terms that none of the older generation fully understood.

We all missed the speech by the third cousin twice removed from Western Australia (NC), but at least that meant there was more drinking time.

Happy Birthday, LANDSAT – long may you prosper!

Note 1: To aid interpretation for the less initiated, this article was composed by AKS – Andy Skidmore (UNSW). Other personalities are: BF – Bruce Forster (UNSW); AKM – Tony Milne (UNSW); JAR – John Richards (ADFA); BJT – Brian Tuner (ANU); CM – Carl McMaster (ACRES); DP – Dennis Puniard (ACRES); PvG – Patrick van Grunderbeeck (SPOT); JH – John Huntington (CSIRO); PC – Paul Curran (UK); JC – John Curlander (USA); NC – Norm Campbell (CSIRO).

Director of Malaysian Centre visits Australia

Mr Nik Nasruddin, the Director of the Malaysian Centre for Remote Sensing (MACRES), recently spent some time in Perth, Canberra and Sydney, exploring some possible cooperative ventures between MACRES and Australian agencies. A major upgrade of capabilities in Malaysia is presently in the planning stages. He attended the opening of the Leeuwin Centre in Perth and spent some time at ACRES and UNSW.



Don Gray (L), ex Manager ACRES, Carl McMaster (current Manager) and Mr Nasruddin, at the ACRES display at the Leeuwin Centre in Perth.

Graziers are getting smart with satellite image technology

Hundreds of graziers in Queensland have purchased recent satellite images over their properties to help manage them and apply for government permits for tree pulling and drought assistance.

The satellite property images are supplied by a Townsville company, Mapping & Monitoring Technology Pty Ltd, from \$200 per property. Dr Debbie Kuchler from the company said that "the satellite image gives the grazier a lot more power to negotiate with suppliers and government bodies and to plan for the properties' future".

Dr Kuchler says that the company custom makes each satellite property image to suit the individual property and its owners' requirements. To design the product, a telephone discussion is held with the owner on their property information needs and their intended use for the product.

The satellite acquires the image using digital recording scanners and thus the image is processed on computers using special programs. When the processing is being performed, it is possible to colour enhance the image so that features of particular interest to the land owner are highlighted. Many land owners request that roads on the property be highlighted, or fence lines, dams, vegetation clearings, fire scars, different types of crops, outcrops of rock, healthy and diseased vegetation, rivers, soil erosion and many other land cover features. Because the satellite image is computer processed, many of these features can be highlighted in one image.

The satellite property image is a colour satellite image of a property on photographic paper and similar to a high altitude aerial photograph. However, the image is different to an aerial photograph in that the image is true to the layout of the land and therefore very accurate ground measurements can be made on it. An aerial photograph cannot be accurately used in this way since it has several distortions in it due to the aircraft movement and the camera.

The satellite property image is very versatile. It comes in different views and different sizes, depending on the size of the farm or property and how the land owners would like to see their property presented. Both detailed or broad perspective views of the property are available. The date on which the image captures the property is also selectable by the property owner. Since 1972, the satellite has been taking one snapshot a month of every property in Australia, so there are many, many dates available. Some owners like to choose a date when the property was suffering under a drought while others prefer to get information on how their property responds in a wet season. Many land

owners simply want a very recent image, up to a few weeks old, of their property, so that they can get an overview of its current condition. Some owners want an image to illustrate their property when being offered for sale.

The satellite property image is being put to practical use by many different types of people on the land. Graziers are using it to map out a plan of their property and then to update the plan as they add new paddocks, dams and so on. It is also being used to get a long-term overview of how the property has changed over several years. Once it is displayed on a wall, it becomes a mind-jogger of work tasks that still have to be done.

The people at Mapping & Monitoring Technology work in close association with Department of Primary Industries, Land Management Unit, to educate the grazier in how to use the product. Mapping & Monitoring Technology can be contacted on: (077) 71 6622.

Reader Feedback

Below is an edited copy of a letter received by the Manager ACRES. Feedback is always appreciated!

Dear Mr McMaster,

I have just received a copy of the July 1993 issue of "ACRES UPDATE" with your picture and message on the front page. Frankly what caught my attention was a photograph of quite a familiar face with whom I had spent long hours of discussions during the Remote Sensing Seminar at Tehran in December 1992.

In the "ACRES UPDATE" I particularly found articles entitled "Raster/Vector Integrated GIS" and "Eliminating Geometric Distortions in Remotely sensed Satellite Data" very interesting. Information available in this issue on various remotely sensed data processing, display and GIS equipment is also quite relevant to those engaged in the remote sensing/GIS programmes. It appears that the Australian Centre for Remote Sensing is doing quite well under your leadership. Please keep me posted with further developments at your Centre.

With warm personal regards

Yours sincerely

Salim Mehmud
Chief Scientist and Scientific Advisor
Ministry of Defence
Pakistan

1 September 1993