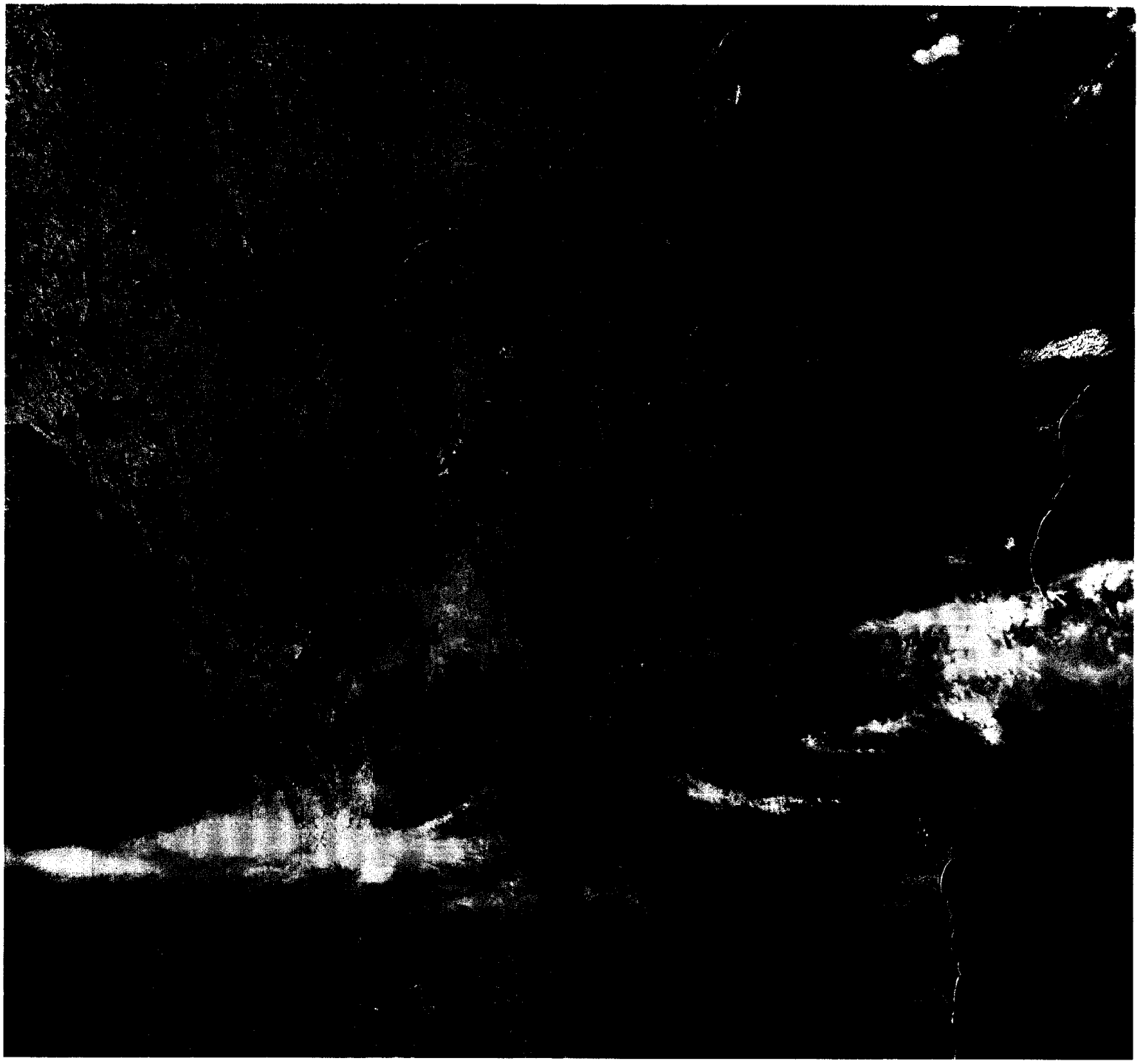
Australian Landsat Station

DIVISION OF NATIONAL MAPPING
DEPARTMENT OF RESOURCES AND ENERGY

NEWSLETTER

FOR THE REMOTE SENSING INDUSTRY



CONTENTS

COVER STORY

Canberra Bushfires

After a two year drought in most of south-eastern Australia, rain finally came in March 1983. Subsequent frequent rains resulted in a tremendous vegetation bloom which lasted into the summer of 1984/85. By the start of 1985 the Canberra region had commenced drying out and the countryside was laden with a tremendous fuel load of tall dry grass.

On 1 March 1985 disaster struck when fires, fanned by very strong westerly winds, began their uncontrolled rage through the Canberra region that lasted for several days. Millions of dollars were lost in property, feedstock and fences, while thousands of sheep, cattle, horses and other livestock were burned alive.

Only days later, on Tuesday, 5 March 1985, while some of the fires were still burning, Landsat 5 scanned path 90 of the world wide reference system (WRS) covering a 185 km wide track connecting Bundaberg with Canberra and Hobart. At an altitude of 700 km the satellite passed over Canberra at 9.20 a.m. to provide the tell-tale story.

As the satellite came over, images provided by the spacecraft's Multi Spectral Scanner (MSS) were transmitted to the ALS data receiving facility at Alice Springs, where they were recorded on high density computer tape. The image data was flown to Canberra that same evening for processing at the Data Processing Facility (DPF). The first images of the fires were released to relevant authorities on Wednesday afternoon.

From the known wind directions and the shape of the fire scars, Police and fire authorities can in most cases easily identify where the fires started. Relevant organisations now have a permanent record, telling which properties were affected by these fires and to what extent owners may be eligible for assistance or claim insurance.

With the aid of LANDSAT images, bushfire risk has been assessed in many parts of Australia. The National Parks and Wildlife Service for instance uses LANDSAT images for fuel load assessments and other applications even in the remotest parts of Australia. Authorities in Victoria and South Australia are still acquiring Images in relation to the disastrous Ash-Wednesday fires in February 1982.

OUR FIRST COLOUR ISSUE

At the Australian Landsat Station we are very pleased to be able to bring this, our first colour issue of the ALS Newsletter, to you. While saying this we gratefully acknowledge the special efforts and support by the many contributers who prepared and submitted their work for publication in this issue. We say special effort, because we are very much aware how difficult it is to find the time to actually sit down and write up your work, while you are already flat out doing a lot more than you can readily handle now. We are most grateful for your support in communicating to others the successes, limitations and new developments in the applications of remote sensing data and we hope that through your efforts others may follow suit and help make the ALS Newsletter a forum for the free exchange of ideas and information for the remote sensing industry in Australia.

We aim to publish twice yearly. There were some teething problems with our new word processor for this issue but hopefully, these have been resolved. By the time we come to the next issue we hope to be able to utilise some author—supplied floppy discs (when available). Current facilities permit Wang O.I.S. and T.O.M. Data 3500 imput from 5.25 inch discs.

Contributions: Limited human resourses at the ALS make it impossible to read and write on all relevant remote sensing news. If you come across any information of significance to the Australian remote sensing data users please send us a copy of the article or, better still, write one yourself and send it to: *The Editor, ALS Newsletter, PO Box 28, Belconnen A.C.T 2616.* We also invite organisations actively involved with remote sensing or associated activities to discuss with us the possibility of having set aside 1-2 pages for news on their organisation. For enquiries please ring John Bruyn on 062-524409.

Next issue: A number of papers have been promised for our next issue but it is expected that financial constraints will force us to put limitations on it's size. So please, send your paper in early! We are currently working towards a *deadline of 30 April 1986* for publication in June 1986.

Format: As we aim to conform to standards that apply to most professional publications, you are kindly requested to include in your paper an abstract, introduction, body of the paper with sub-headings, conclusions, acknowledgements and references.

Editing: Due to the fact that remote sensing data is used in a very wide range of scientific disciplines, ALS staff may be insufficiently qualified to edit the contents of your paper. Editing by a peer or supervisor before you send it in, with a word of thanks in the acknowledgements, may be an appropriate way to overcome this limitation.

Acknowledgement: I wish to express my thanks to Jill Rees and Linda Smith for their efforts and assistance in the preparation of this edition of the ALS Newsletter.

John Bruyn

LATE NEWS

LANDSAT COMMERCIALISATION GOES AHEAD

A contract between the US Department of Commerce and the Earth Observation Satellite Company (EOSAT) for the commercial operation of the Landsat system was signed on 26 September 1985.

The contract follows lengthy negotiations between the US Department of Commerce and the final contender for the LANDSAT system, the Earth Observation Satellite Company (EOSAT) and fulfils a long standing desire of the Reagan Administration for the operation of Landsat by private enterprise. (See ALS Newslewtter, Dec. 1984, p.4.)

Signing of the contract transfers the day-to-day system operation of landsat 4 and 5 from NOAA (National Oceanic and Atmospheric Administration) to EOSAT. The contract further binds EOSAT to:

- provide LANDSAT 6 and 7 on orbit
- develop and operate ground system services and data processing
- market LANDSAT data worldwide on a public non discriminatory basis
- leave unchanged system access and data distribution fee level for current MOU (Memorandum of Understanding) signatories
- honour LANDSAT MOUs currently signed with NOAA and extend these during the lifetime of LANDSAT 4 and 5

With the availability of Landsat 6 and 7, EOSAT will assume overall program management responsibility and new agreements will be negotiated to cover programme participation beyond Landsat 5.

The follow-on spacecraft will be provided by RCA Astro-Electronics with instrumentation to be supplied by Hughes/Santa Barbara Research Centre.

This final step in the commercialisation of LANDSAT will put this American remote sensing system on a similar footing to the SPOT Image Corporation and allows EOSAT and SPOT Image to compete on the rapidly growing international remote sensing market.

EOSAT's (draft) Commercial LANDSAT Pricing Schedule reveals the following price structure:

Price US Dollars

Product	*Size(mm)*	*Approx. Scale(mm) (full scene)*	*Black & White*		*False Colour*	
			MSS	*TM*	*MSS*	*TM*
Transparency	185 x 185	1:1 000 000	80	150	150	360
Paper	185 x 185	1:1 000 000	50	100	100	300
Paper	371 x 371	1: 500 000	100	170	200	400
Paper	742 x 742	1: 250 000	150	250	350	500
MSS Master generation charge:			$US 200			
TM Master generation charge:			$US 300			
MSS CCT (4 bands):			$US 660			
TM CCT (7 bands):			$US3300			

(Prices from WRSL, V5, No. 4, Sept '85)

SPOT-1 LAUNCH

Following the in-flight failure of a third-stage hydrogen propellant feed system valve in Europe's Ariane V15 launcher, the Ariane 3 was destroyed by ground safety officers during launch on 12 September 1985.

Ariane's payloads, the GTE Spacenet's Spacenet F3 and the European Space Agency/Eutelsat ECS-3 were both destroyed in the process.

As a consequence the long awaited launch of France's high resolution/stereo imaging Earth resources satellite SPOT, which was scheduled for 15 November 1985, has been postponed.

Although initial speculations following the Ariane-3 loss gave new launch dates for early December 1985, the first official news from CNES/SPOT Image received at the Australian Landsat Station on 8 November 1985 gives a new launch date of Sunday 12 January 1986, 1.44 a.m. Universal Time (12.44 Eastern Summer Time) from the French Guiana Space Centre.

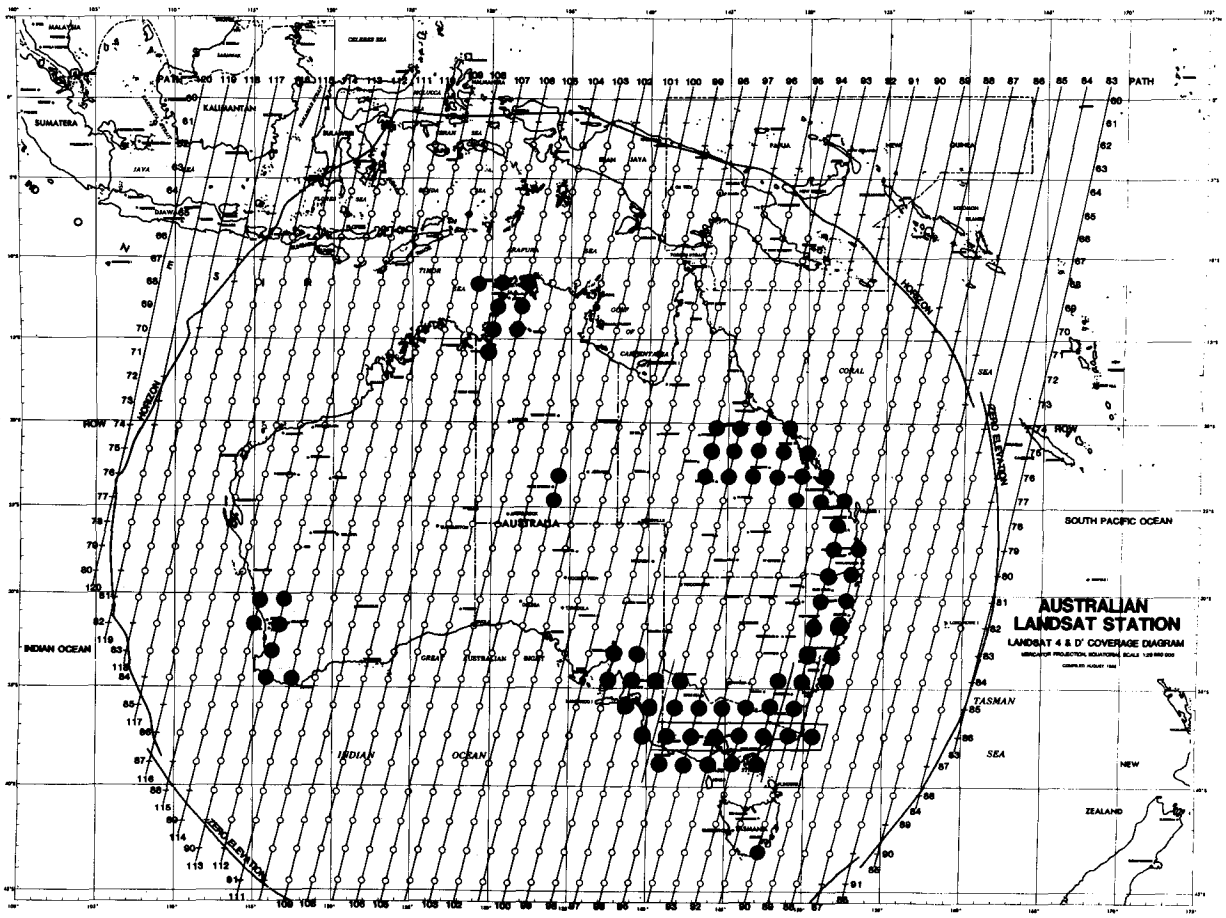
THE ALS PRECISION PRODUCTION SYSTEM (PPS)

For many applications, a final product that conforms to map accuracy standards is often desirable. The PPS is designed for the production of such precision imagery which the ALS now offer as standard products.

While Bulk products are accurate to the level of spacecraft parameters the PPS can provide high accuracy products based on refining radiometric and geometric correction parameters, using surveyed points called GCPs (Ground Control Points). The development of a GCP library has received considerable impetus since responibility for the ALS was transferred to the Division of National Mapping in March 1984. The small but increasing library is illustrated in Figure 1.

The PPS allows for a continuous range of digital image scales ranging from 1:1,000,000 to 1:100,000, imaging of arbitrary subscenes, selectable tick mark spacing or gridding in (UTM) northings and eastings or (LL) latitudes and longitudes. PPS products are available as colour and black and white images.

Mike Linney



Landsat-4, 5 WRS scene identification map. Black dots indicate the scenes for which GCP's have been obtained and precision images can be made.

COHERENT NOISE COMPARISON

A persisting problem with the imagery from Landsat 4 Multispectral Scanner is the presence of low level coherent noise embedded in the data. Landsat 5 Multispectral Scanner had filters added to the detector outputs to reduce the level of coherent noise. Landsat 2 and Landsat 3 Multispectral Scanners did not, as far as we are aware, have a coherent noise problem.

The Processing Facility at the Australian Landsat Station made attempts to remove the coherent noise

from the Landsat 4 data. Whilst the complete removal of the noise was not possible, the software tools developed did allow the effects of the noise to be reduced, and allowed some characterisation of the noise to be made.

A simple test was devised to analyse a common scene from the above Landsats to test for the presence of coherent noise, and if found, to compare it to the Landsat 4 coherent noise.

A table summarises the result:—

	LS4	LS5	LS2
Frequency	905	847	None identified
Amplitude	5.8	0.12	None identified

The frequency and amplitude are relative and show that the coherent noise is present on Landsat 5 but with a very much reduced amplitude (showing that the filters are effective?) and interestingly at a different frequency. No coherent noise could be identified for Landsat 2.

Robert Denize

SPACECRAFT STATUS

Landsat 5

- Landsat 5 is the prime operational spacecraft in the Landsat series,
- The spacecraft is providing full operational support of TM and MSS imaging.
- Coherent noise of a very low amplitude is present in the MSS data.
- A rocket engine module translation thruster has failed, resulting in a loss of redundancy only. Orbit adjustments are performed with back-up thrusters.
- An anomaly exists in the Ku band transmission link, due to the failure of a travelling wave tube amplifier last August. The back-up transmitter for the Ku-band is now used for the relay of data through the Tracking Data Relay Satellite System (TDRSS) from areas where no receiving facilities are available.

Landsat 4

- acquisition of MSS data occurs on special customer request only.
- Landsat 4 MSS data has a coherent noise problem which is of limited significance to most applications.

THE GOOD NEWS AND THE BAD NEWS

To satisfy the few pessimists amongst our readers, and for chronology's sake, we shall start with the bad news:

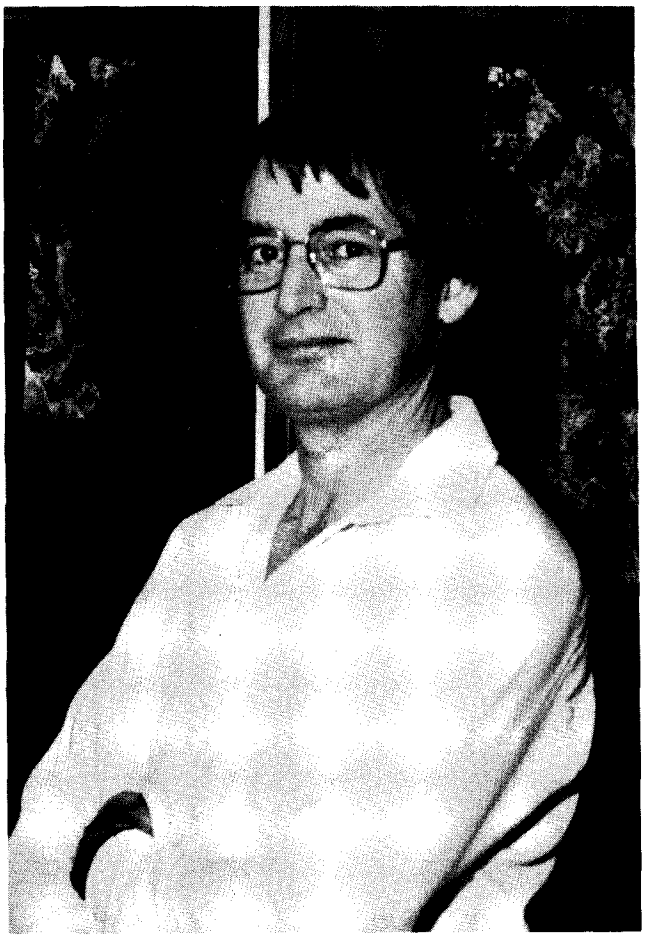
Our Digital Engineer Robert Denize, has left the ALS to further his career as Satellite Advisor to the Saudi Arabian Meteorological and Environmental Protection Administration (MEPA) on behalf of the AOPC (Australian Overseas Project Corporation).

Robert came to the ALS from the Canberra Deep Space Communications Complex, Tidbinbilla, where he was involved with digital ranging on NASA planetary exploration projects. His contribution in getting the ALS on its feet and in post-installation improvements has been invaluable.

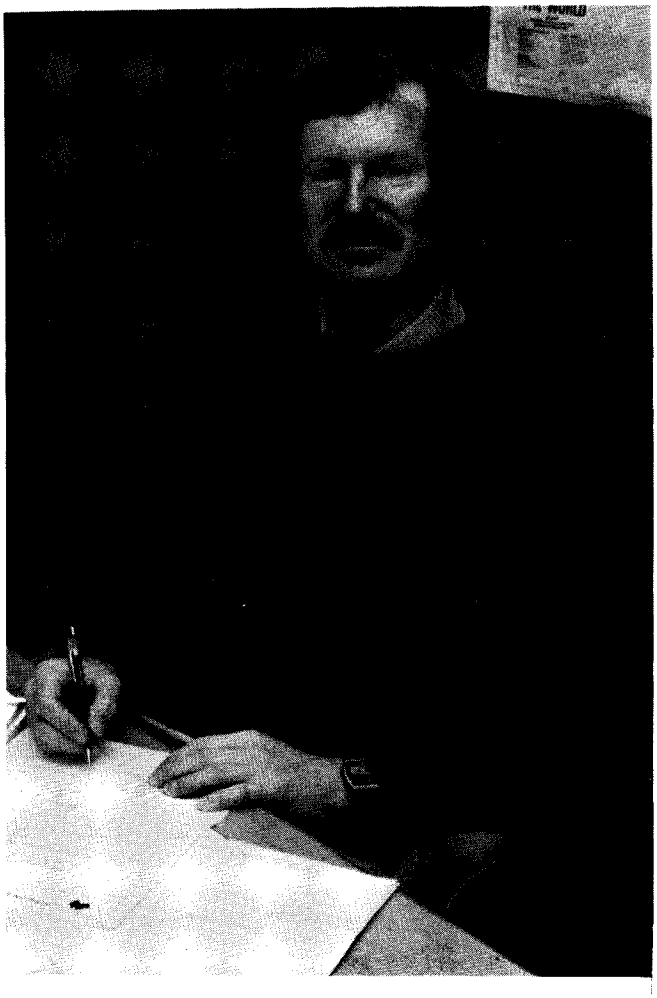
Being a Master in Engineering and with photography as a hobby and , he was able to solve problems and make improvements at the level of the often poorly understood computer-photographic interface. Through his efforts, combined with those of other specialists both from within and outside the ALS, Robert made a major contribution in the development of the high quality of ALS products, which now rank amongst the best in the world.

Here at the ALS we gratefully acknowledge the contribution Robert made and wish him the best of Aussie-Luck in years to come!

The good news is that the person who vacated Robert's new position in Saudi Arabia is Robin Buckley, our new Digital Engineer. While in the process of completing his Master of Engineering thesis at the University of NSW, Robin is preparing to give his best to the second phase of the ALS—the TM, SPOT, AVHRR Upgrade of ALS facilities, when this takes place.



Robert Denise, former ALS Digital Engineer



Robin Buckley in his new office at the ALS.

Indeed, with Australian and overseas experience in software and hardware development of computer image analysis and display equipment as well as photography and tracking of amateur radio satellites as hobbies,Robin should be well suited to the position of Digital Engineer at the ALS.

RETIREMENT

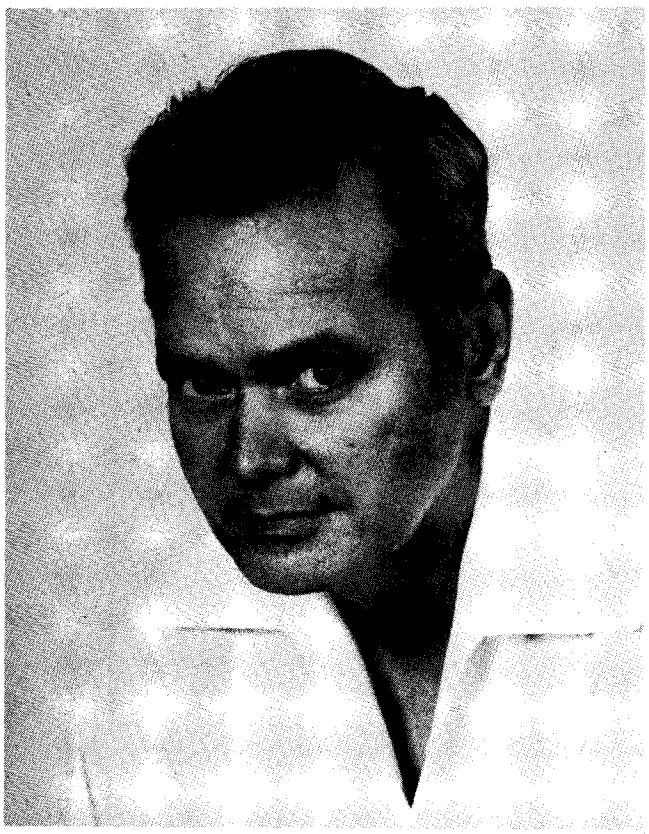
Mr W. "Bill" Kempees

The Chief Engineer at the Australian Landsat Station, Mr Bill Kempees, has announced his intention to retire on 29 November 1985.

After a thirteen year career in the Dutch Navy as Marine Engineer and Radar expert Bill came to Australia in 1953.

In subsequent years Bill held various engineering positions before entering the Space Tracking Industry in 1961, when NASA, the US Space Agency was establishing its facilities in Australia. Bill became involved in the tracking of Space missions such as Mercury, Gemini and Apollo while serving at Ground Stations Woomera, Muchea WA, Carnarvon, Orroral Valley and Honeysuckle Creek before joining the Australian Landsat Station in April 1979.

As Chief Engineer of the ALS for the Operations and Maintenance Contractor, Fairey Australasia Pty Ltd, Bill Kempees led the Station from a temporary office with a staff of three, and no equipment, to the present highly efficient and professional operation. Much of the high reputation of the Australian Landsat Station and the development of quality products is due to Bill's knowledge, experience and drive.



Bill has also taken a leading role in the developing of specifications for the proposed upgrade of the ALS for reception and processing of Landsat Thematic Mapper and SPOT image data. His expertise and experience will be sorely missed when this project gets underway.

Apart from having been a most competent professional engineer and an efficient manager in ALS operations, Bill Kempees has also been a valued collegue and personal friend for many years. On behalf of the remote sensing community, ALS staff—past and present, and former collegues from his NASA days, I thank Bill for his invaluable contribution and wish him well in his retirement.

Don Gray
Station Director

AUSTRALIAN NEWS

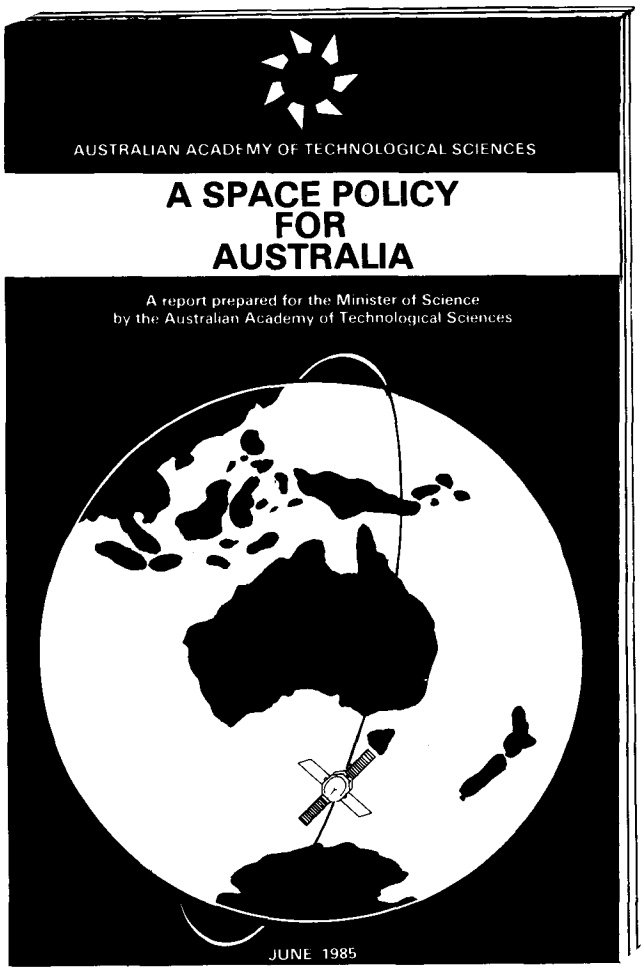
MADIGAN REPORT

In relation to the proposed upgrade of ALS facilities to receive and process Landsat-TM and SPOT data, as well as other remote sensing and space related activities, some very good news came with the release last June of the report by the Space Science and Technology Working Party of the Australian Academy of Technological Sciences under chairmanship of Sir Russel Madigan, OBE, FTS.

The report was prepared for the Minister of Science, and following are some excerpts from the Executive Summary including all of the sixteen recommendations:

"It has been estimated that, by 1995, Australia's annual expenditure on space services will be between $370m and $500m. Yet unless firm action is taken by the Government—action which both supports, and is supported by Australian industry—there is an overwhelming probability that the great majority of this expenditure will be made overseas."

"Most developed, and several developing countries have recognised the importance of participation in space programmes as a significant factor in shaping their industrial future."



The Madigan Report, released June 1985

"Even with a concerted effort by government and industry, and with careful selection of market areas, there can be no guarantee of commercial success. But without that effort it is certain that Australia will be sitting on the sidelines in the fastest growing international market area."

Benefits: "Australia's sparse population, vast earth and ocean area, and economic dependence on natural resources and agriculture, render satellite technology perhaps of greater potential value to Australia than any other country. We are a present and growing user of spacecraft of economic, social, and defence importance, and these interest must be maintained and protected."

"The particular advantage of involvement in space R & D is that it alone combines many of these technologies under conditions where best performance only is mandatory and where the product can fulfil national needs in a variety of essential applications such as communications, meteorology, and remote sensing."

"A national space policy needs to be instituted to give the stability and continuity of government commitment, which industry and the scientific and technological community require in order to develop their plans and build up the capability essential to the success of a space programmme."

Recommendations

(1) "Australia should as a matter of urgency establish a national space policy to facilitate the achievement of an appropriate industrial, technological, and scientific structure for Australia's participation in space."

(2) "In the communications market Australia should, in the near term, concentrate on the ground-station equipment sector."

(3) "The major market thrust of Australian space activities should be in the remote-sensing sector, involving both hardware and software."

(4) "Research institutions and educational establishments should arrange to co-ordinate and consolidate their space capabilities in order to contribute effectively to development of Australian space science and technology."

(5) "The Government should take the leading role in facilitating the development of Australian space science and technology capabilities through the 1980's."

(6) "Australia should actively pursue the possibility of international collaboration in space and, in particular, of joint space initiatives with countries in the East Asian region."

(7) "A major component of the national space

programme should be government-funded R & D contracts placed within Australian industry."

(8) "The first phase of the national space programme should have the objective of achieving in industry the capability to participate in complex spacecraft either as subcontractor or with prime-contractor responsibility for a major system."

(9) "The space segment of the national space programme should be directed towards development of eart-resources spacecraft equipment suitable for inclusion in other nations' spacecraft or at some future time in spacecraft of Australian origin."

(10) "Australia should built on its expertise in reception, image processing, andanalysis of remote-sensing data with a view to:

- developing significant exports of hardware, software, and ground receiving equipment; and
- becoming a regional centre for provision of processed data and images, and for training in remote-sensing techniqes."

(11) "The government should ensure a continuing Australian capability to receive the latest types of earth-observation satellite data, and in particular should allocate funds at the earliest opportunity for:

- the upgrading of the Australian Landsat Station; and
- the upgrading of Bureau of Meteorology receiving facilities."

(12) "Space science should be a continuing component of the annual budget for the national space programme."

(13) "Australia should participate in international space science and application programmes relevant to Australia's requirements as a means of being involved in state-of-the-art developments."

(14) "The Government should accept a commitment over the next five years of up to $100m to finance:

- participation in a number of space projects in which Australia would have a significant design and construction resposibility; and
- associated basic research, general administrative costs, and appropriate support facilities."

(15) "An independent Statutory Authority, with its own Board of Management, should be created to:

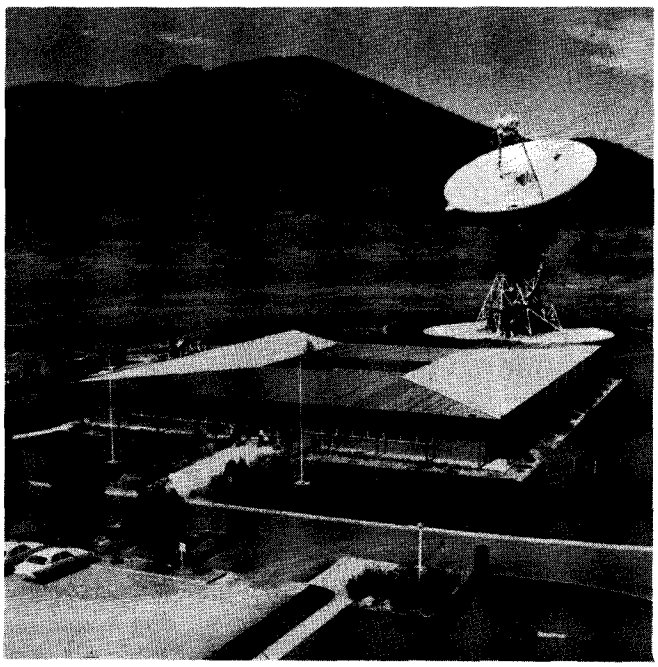
- advise the Government on space R & D policies and priorities;
- co-ordinate and manage the national space programme;
- liaise with research institutions, user groups, government departments, and other agencies to establish long term developmental requirements;
- formulate and implement a co-ordinated and cohesive series of space projects in accordance with the national space policy;
- place government-funded contracts in industry, research establishments, and centres of higher education; and
- interface with the major overseas space organisations."

(16) "The national space programme should be reviewed at the end of the fourth year of operation."

TASMANIA TO GET ORRORAL VALLEY ANTENNA

NASA has donated a 26-metre antenna, located at the Orroral Valley Tracking Station in Australia, to the University of Tasmania. The Orroral Valley Station ceased operations in December 1984.

The antenna had been used in a variety of international programs including the Skylab Program, the Apollo Soyuz Test Project and the Space Shuttle Program. NASA offered to provide assistance for the dismantling and transfer of the antenna to Hobart, Tasmania, Australia.



Orroral Valley Antenna on location at tracking station

The University of Tasmania's Physics Department, one of Australia's major centres for astronomy and astrophysics, will use the antenna as part of its teaching and research activities. One of the planned uses for the antenna is in operation with the Australian telescope presently under construction in New South Wales. This application will dramatically improve the telescope's performance.

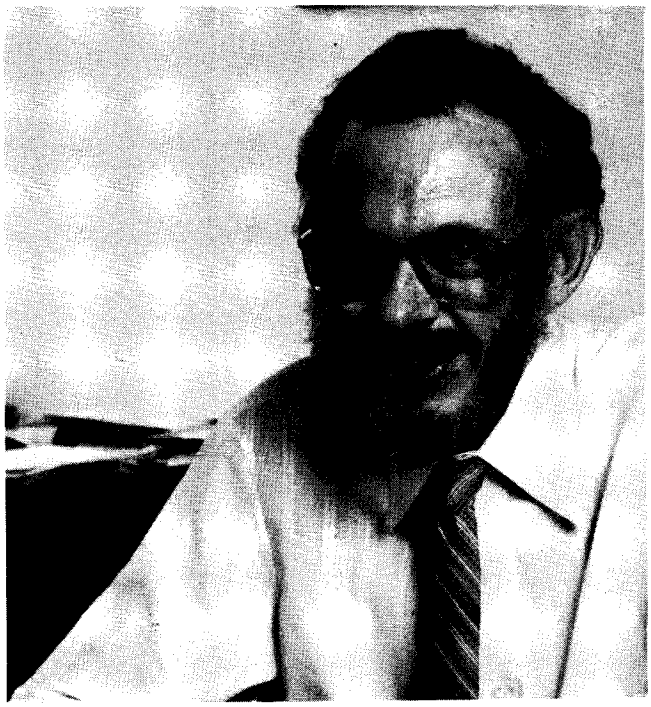
The antenna also will be available for very long baseline interferometry in conjunction with other instruments, a system which uses a number of separate antennas to construct a radio telescope with a high

resolution capability. Using the antenna for interferometry will assist geodynamics and geophysical research by obtaining more accurate measurements of the Earth's surface and will contribute to the data base on the Australian continent.

NASA may use the antenna for its geodesy, geodynamics and astronomy projects in the future.

CSIRO SPACE RESEARCH

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) has set up an Office for Space Science and Applications (COSSA) to coordinate and expand it's activities in space research and development. COSSA is under the direction of Dr Ken Mc Cracken, former chief of CSIRO's Division of Mineral Physics, and a well known advocate of Australian involvement in the space industry.



Dr Ken McCracken, Chief of COSSA

The establishment of the new office follows Dr Mc Cracken's involvement in earlier space related activities during the sixties and seventies and a continued involvement in remote sensing while at Mineral Physics, before embarking on a 2 months fact finding mission with Ms Cristine Astley Bowden of CSIRO and Mr Stan Schaetzel of Hawker de Havilland, to a number of oveseas countries during the middle of last year. As members of the Space Science and Technology Study Group, the team visited several EEC countries, as well as India, Japan, Canada and the USA.

The Space Research Office was established, largely as a result of the study group's recommendations and following the recognition that Australia's space effort is lagging badly in the research and development area.

By the end of 1985 Australia is expected to have spent about $500 million on operational systems such as Intelsat and Aussat, with little of the satellite equipment having been manufactured in Australia. Similarly, equipment needed to upgrade the ALS to receive remote sensing data from the current generation of satellite instruments such as Landsat-TM and SPOT-HRV, is likely to have only limited Australian content.

The 1984-85 FY spending of Australia on space research and development was at about 33 cents per head of population, while countries such as France, Sweden, Germany, Japan and Canada spent from around $4—$10 and the USA around $33 per head of population per year. According to CSIRO estimates, the annual Australian expenditure on space related technologies is expected to be in the vicinity of $500 million p.a. (1984 values) by 1995. Even if only half of this money would be spent on Australian technology, it would provide around 10 000 man years of employment.

At present, Australian manufacturers find themselves in a "catch 22" situation; a company can get a contract to build space technology components if it has succesfully done so before — No previous experience, No job! — for in space technology best performance only, is mandatory.

Following Cabinet approval, CSIRO/COSSA will spend $3.3 million during the 1985-86 FY, including re-deployed funds, while an additional $2.6 million will be spent by the Department of Industry Technology and Commerce. These figures are expected to rise substantially towards the end of the decade. It is intended that approximately 70% of CSIRO's space activity contracts go to Australian industry.

If funding goes ahead at the rates CSIRO expects, the CSIRO space program will contribute to

- the development of an Australian industrial competence in space technologies;
- the development of specific high value-added space technologies; and
- the use of space technologies in applications appropriate to Australia's needs.

While space related technologies are evolving rapidly and assume major significance throughout the world, it provides a new impetus to those economies that are not only willing to participate, but also do something about it. Canada may be mentioned as an example, where the Federal Government's commitment to space for the next two financial years is almost $223 million p.a.. Canada's Minister for Space, Mr D.J. Johnston pointed out, that the Canadian space industry sells more than the government spends on space.

It is not just space related design and manufacture that would benefit from an increase in Australia's research and development effort; it would also stimulate the aerospace, communications, computing, electronic and instrument manufacturing industries, as well as providing opportunities for software development and

system integration techniques. These are areas where we have significant and increasing local needs, and for which there is a rapidly growing market throughout the world, particularly in the Asia—Pacific region.

AUSTRALIAN JOINT VENTURE WITH NASA

An aircraft, believed to be the most advanced airborne remote-sensing facility in the world, will visit Australia for a 30-day survey, starting early October 1985, and covering sites in almost all states.

The major instruments to be used in the survey are the NS001 Thematic Mapper Simulator, the Thermal Infrared Multispectral Scanner (TIMS) and the new highly discriminative 128 channel Airborne Imaging Spectrometer (AIS).

The instruments will collect digital image data at resolutions varying from 2.5 metre to 20 metre pixels and covering swathes of terrain from a few hundred metres to 15 kilometres.

The C-130 Hercules NASA aircraft, with the above three instruments, has never been used outside the US before and according to Dr Ken McCracken, Director of the CSIRO Office for Space Science and Applications (COSSA) and Prof. Roye Rutland, Director of the Bureau of Mineral Resources (BMR), the project will collect data that could not be obtained any other way in this decade.

The project, for which the overall resposibility lies with COSSA, was organised by Dr John Huntington of CSIRO's Division of Mineral Physics, and involves private enterprise, government agencies and of course the US National Aeronautics and Space Administration (NASA), the owners of both the aircraft and the instruments. The major contributors to the $400 000 data acquisition phase of this project are CSIRO/ COSSA and the Department of Resources and Energy (through BMR and the ALS). The overall cost for the two year research project is estimated at $1.3 million.

NASA will provide the C-130 Hercules remote sensing aircraft as well as a 19 member crew for air and ground operations, starting early October 1985. In addition, the CSIRO research Fokker Friendship with it's own advanced remote sensing scanners, will be used for part of the project.

The Joint Scanner Project will collect data for research on a diverse range of topics such as groundwater hydrology, soil salinity, wetlands and rangelands mapping, forrestry, soil degradation processes, lithological mapping and the detection of mineral deposits. The data collected should allow for the development of new techniques for geological mapping, especially of surface materials, and would supplement newly developed image processing and conventional map production methods, as well as improving the content and precission of geological maps.

In addition, several CSIRO and BMR projects will determine the most effective form of scanner to be used by the Australian minerals industry in the detection of the surface expression of mineral deposits.

The Madigan report on a Space Policy for Australia has urged the development of an Australian space industry, with the major market thrust of Australian space activities to be in the remote sensing sector, involving both hardware and software. This joint scanner project is an important step towards proficiency in remote sensing from space. The instruments that we will use in space in the 1990's will be designed on the basis of the experience gained in this aircraft project.

The parties involved in the NASA joint scanner project are 5 CSIRO Divisions and COSSA, 3 BMR Divisions, WA Department of Lands, Qld Departments of Mapping & Surveying and Water Resources, the NSW Soil Conservation Commission, the Australian Survey Office, the Defence Research Centre, the SA Centre for Remote Sensing, the British Environmental Research Council, BHP, CRA, Western Mining, ESSO, BP, Sumitomo, the ALS and the University of NSW Centre for Remote Sensing.

Information will be gathered on salinity in the Murray Valley and in Western Australia; irrigated and non-irrigated crops in the Townsville and Burdekin regions of Queensland; the extensive die-back in WA eucalypt forests; and alteration halos often associated with in situ mineral occurrences such as gold, copper and tin.

For it's part, the ALS will investigate the data over a Natmap test site just south of the Denham Ranges, east of Rockhamton. The ALS will also act as the repository and archive for the original raw data and provide limited use of the ALS Image Writing Service to the principal investigators.

NASA's C-130 Hercules special remote sensing research aircraft

THE AUSTRALIAN LIAISON COMMITTEE ON REMOTE SENSING BY SATELLITE (ALCORSS)

The Australian Liaison Committee on Remote Sensing by Satellite (ALCORSS) was established as a permanent body in June 1980 to foster consultation, co-operation and liaison among users of remote sensing data and as a formal channel by which advice on user needs would be transmitted to the Department responsible for the operation of the Australian Landsat Station.

The functions of the ALCORSS Committee have been defined as follows:

(a) to advise the Department of Resources and Energy on matters relating to the operation of the Australian Landsat Station;

(b) to examine and recommend on the national need for data manipulation and interpretation processes;

(c) to encourage collaborative research and applications programs in the field of remote sensing;

(d) to maintain continuing liaison with other committees and agencies with interests in remote sensing;

(e) to encourage improvements to and, as appropriate, co-ordination of remote sensing methodologies and equipment;

(f) to monitor programs of education and training in remote sensing;

(g) to encourage the collection, storage and dissemination of information relating to remote sensing;

(h) to consider any other matters appropriate to the stated objective of the committee.

The Australian Landsat Station provides the Secretariat support for ALCORSS and is the vehicle whereby its views and recommendations of the Committee are conveyed to the Department of Resources and Energy.

Membership of ALCORSS comprises representatives of the Commonwealth, the six states and Northern Territory, Industry, Universities, Colleges of Advanced Education and CSIRO. The present nominated members representing the various states/ organisations are as follows:

States/Territory

New South Wales:	Mr. C. Champion
Victoria:	Dr. P. Rudman
Queensland:	Mr. K. J. Davies
Western Australia:	Mr. W. Henderson
South Australia:	Mr. J. Douglas
Tasmania:	Mr. R. G. Roberts
Northern Territory:	Mr. T. Menzies

Organisations/Institutions

Universities:	Assoc. Prof. J. Richards
Colleges of Advanced Education:	Dr. E. Clerici
CSIRO:	Dr. K. McCracken
INDUSAT (Industry):	Mr. M. C. Aubrey

Chairman

Mr. C. Veenstra
Director
Division of National Mapping

Secretary

Mr. D. J. Gray
Station Director
Australian Landsat Station

Each of the members represents a constituency of users and potential users of remote sensing and it is through them that ALCORSS activity encourages input and advice that will benefit the remote sensing industry.

Further information on ALCORSS may be obtained by writing to:

Mr. D. J. Gray
Secretary
ALCORSS
PO Box 28
BELCONNEN ACT 2616

The Australian Landsat Station Newsletter will in future be used to inform the remote sensing sector of the more significant views of ALCORSS.