



Australian Government
National Archives of Australia

Aerial Survey Photography Records – Appraisal Report

**Prepared by Jenni Davidson as part of a joint initiative for
the National Archives of Australia and Geoscience Australia**

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1. EXECUTIVE SUMMARY

In late 2007 Geoscience Australia and the National Archives of Australia agreed to undertake a joint initiative to examine aerial survey photography and to establish an acceptable set of arrangements for the long-term management of the aerial survey photography records including the identification of that part of the aerial photographic series to be retained as national archives.

The aerial survey photography records are currently held by the National Archives, Geoscience Australia and UPGS (under a section 29 agreement between the National Archives and Geoscience Australia and General Disposal Authority 25) and include more than 11,000 film negatives as well as derivative contact prints, diapositives, laser terrain profile records and flight line or key diagrams. These records were created by Geoscience Australia and its predecessor agencies such as the Australian Surveying and Land Information Group (AUSLIG), the Australian Survey Office and the Division of National Mapping. The records date from the 1920s to the 1990s and have been used as the basis for the Commonwealth government's topographic map production. In addition there are aerial survey photography records controlled by the Defence Imagery and Geospatial Organisation and the Department of Defence, State and Territory aerial photography records and an aerial photography print collection at the National Library of Australia. A duplication assessment was undertaken and is summarised in Appendix 5.

Geoscience Australia has no ongoing business requirement for the aerial survey photography. Current demand for access is from third parties and is managed by UPGS under the contractual arrangements with Geoscience Australia. Potential long-term stakeholders and users of the aerial survey photography records include Commonwealth, State and Territory government agencies interested in the management of the environment, natural environment and land use including the Australian Greenhouse Office, Murray-Darling Basin Commission, Department of Defence, Department of Agriculture, Fisheries and Forestry, departments responsible for natural resources and water, departments responsible for environment, mineral exploration companies and primary producers, geoscience researchers and academia including archaeologists and the Australian public. Usage figures for the aerial survey photography records in National Archives custody are low however this is likely to be due in part to the lack of accessibility (physical and intellectual) to the records. A total of 962 aerial survey films were accessed by UPGS in 2003-07 to fulfil client requests.

Aerial survey photography records are observation records that provide a valuable historical record of development and change to the Australian landscape and enable tracking of environmental changes over time. They provide an accurate record at specific time periods so that changes over time can be measured including such things as the state of vegetation, deforestation,

salinity outbreaks, rivers at specific time periods, drought, infrastructure development, urban sprawl and land use changes etc. The aerial film holdings at the National Archives and UPGS are the primary record of aerial survey photography and as such should be retained as national archives (RNA) in accordance with National Archives appraisal objective 3 from *Why Records Are Kept?*

Flight line diagrams show aircraft paths (also known as runs), the centres of the photos in relation to ground features and film reference numbers and facilitate access to the aerial film and therefore should be retained as national archives (RNA).

Due to the format and volume there will be costs involved in transferring, preserving, storing and making accessible the aerial photography records. The film and diapositives will require special storage and handling arrangements. For the majority of film only one copy exists; therefore accessibility will be reduced as the absence of a duplicating master and access copy means that, for preservation reasons, access to individual films may be restricted until further copying and/or digitisation of films occurs.

There are two main options for the preservation of the films – photographic duplication and digital scanning - both of which are expensive to undertake. The Mollison report¹, the Wise report² and the Arentz options paper³ provide information on these two options. A preservation strategy (including access considerations) for that part of the aerial survey photographic material to be retained as national archives is currently being developed by the National Archives.

The contact prints, print mosaics and diapositives are considered to be derivatives of the aerial film and do not warrant retain as national archives (RNA) status. The contact prints are currently used for reference purposes as it is far easier to access and view the photographic prints than rolls of original film. Therefore the contact prints provide a more accessible form of the record and can be scanned and made available to public users. Once the aerial film is made more accessible, e.g. made accessible in digital format, the reference value of the contract prints will be diminished.

Due to changes in technology, and the decline in the use of diapositives for mapping purposes, it is unlikely that they will be used for mapping projects in the future. Diapositives were reproduced using the highest standards or reproduction processes available at the time. The diapositives currently provide a better quality record for copying purposes than the contact prints and are more accessible than the film. However scanning the diapositives is far more labour intensive than scanning the film and would be far more costly than

¹ J Mollison, *Preservation of the Aerial Photography Archive: Status Report and Suggested Future Direction*, September 2003

² P Wise, *Commonwealth Aerial Photography – its status and options for preservation*, 4 December 2000

³ P Arentz, *Review of Geoscience Australia's Collection of Aerial Photography: Options Paper*, May 2007

scanning from the original film. Once the aerial film is made more accessible, e.g. digitally copied and made accessible in digital format, the value of the diapositives as a duplicating master will be diminished. The contact prints and diapositives should be retained for reference and duplicating purposes until the aerial film is made more accessible.

There is no business requirement or long term need to retain the laser terrain profile records and they should be retained for a temporary period after the business requirement has ceased.

2. ASSESSMENT DETAILS

Geoscience Australia and the National Archives agreed to undertake a joint initiative to examine aerial survey photography - including more than 11,000 film negatives and derivative contact prints and diapositives - created by Geoscience Australia and its predecessor agencies. The records date from the 1920s to the 1990s and have been used as the basis for the Commonwealth government's topographic map production.

Both agencies have a longstanding interest in the long term management of the aerial survey photography and have previously pursued various initiatives to assess its archival value and to address its preservation needs. These initiatives have identified a range of pertinent issues but have failed to provide a practical or comprehensive resolution to the long term management of the records. The records do not appear to have current disposal coverage therefore an appraisal was required to determine if the aerial survey photography records warrant retention as national archives (RNA).

The appraisal investigation was undertaken by Ms Jenni Davidson, Assistant Director, Operations, National Archives of Australia with input from Mr Geoff Lawford and Mr Joe Semmler (Geoscience Australia), Mr Andrew Christie and Mr Lindsay Saunders (UPGS), Dr Martin Woods, Ms Alena Cepelcha and Ms Catherine Argus (National Library of Australia) and Mr Detlev Lueth, Ms Carey Garvie and Ms Anne Robertson (National Archives of Australia).

3. DESCRIPTION OF RECORDS

3.1 Information about the agencies recording and controlling

The Bureau of Mineral Resources, Geology and Geophysics (BMR) (CA 218) was established on 11 June 1946 and amongst the agency functions was the provision of technological and technical advice to the mining industry and undertaking geological and geophysical and other forms of research. On 27 March 1946, the Mining Industry Advisory Panel agreed that because of their cost and highly specialized nature, the States should rely on the Commonwealth to meet their requirements for geophysical surveys.⁴

“The agency's main aim was the systematic geological and geophysical mapping of Australia to ensure informed mineral exploration.....In the early 1970s, the systematic mapping of Australia was nearing completion, so the BMR turned its attention to the mapping of the continental shelf and slope.....In 1978, BMR's main role shifted to developing a geological understanding of the Australian continent and its offshore areas. BMR subsequently moved towards strategic research and lowered the emphasis on surveys and mapping. Changes in government requirements saw offshore

⁴ National Archives of Australia, CA 218 Agency Notes

petroleum research emerge as a high priority to help formulate policy on the exploration of seabed resources...In the 1980s, BMR gained its expertise in remote sensing and groundwater investigations.”⁵

The Bureau of Mineral Resources, Geology and Geophysics ceased on 13 August 1992. The functions of the agency were ultimately divided between the Australian Geological Survey Organisation (AGSO) -which gained all BMR functions except those dealing with petroleum and minerals resources - and the Bureau of Resource Sciences (BRS) which was formed on 21 October 1992 by merging “the Bureau of Rural Resources (BRR) and the petroleum and mineral resources assessment functions of the former Bureau of Mineral Resources (BMR)”⁶.

On the 21 October 1998 “the Petroleum Resources Branch and the Mineral Resources and Energy Branch moved from the Bureau of Rural Sciences (BRS) into the Australian Geological Survey Organisation.”⁷ In August 2001 the Australian Geological Survey Organisation was renamed AGSO – Geoscience Australia.⁸

In September 2001 the Australian Surveying and Land Information Group (AUSLIG) (CA 6762) merged with Geoscience Australia to become the National Mapping Division (NMD) within Geoscience Australia.⁹ “AUSLIG's history includes the functions of the Australian Survey Office (ASO) [CA 2100] and the Division of National Mapping (DNM) [CA 978, a successor agency to CA 1227 National Mapping Section] which were merged in 1987.”¹⁰ In November 2001 the current name of Geoscience Australia was adopted. The National Mapping Division and Geohazards Divisions were merged in 2005 to become the Geospatial and Earth Monitoring Division (GEMD).

Australian Surveying and Land Information Group (AUSLIG)

AUSLIG (CA 6762) was previously known as the Surveying and Land Information Group and was formed on 24 July 1987 by a merger of the Australian Survey Office (CA 2100) and the Division of National Mapping (DNM) (CA 978). The agency specialised “in the disciplines of surveying, geodesy, cartography, photogrammetry, remote sensing, geographic information systems and land information management..... The commercial

⁵ Geoscience Australia website <http://www.ga.gov.au/about/history/> Accessed 16 April 2008

⁶ National Archives of Australia, CA 218 Agency Notes

⁷ National Archives of Australia, CA 7605 Agency Notes

⁸ CA 7605 Agency Notes; Geoscience Australia website <http://www.ga.gov.au/about/history/> accessed 16 April 2008

⁹ CA 7605 Agency Notes

¹⁰ Geoscience Australia website <http://www.ga.gov.au/about/history/> Accessed 16 April 2008

activities of AUSLIG were sold on 11 July 1997, becoming Landinfo, a division of Sinclair Knight Merz.”¹¹ There were offices of AUSLIG in each state.

Division of National Mapping and Predecessor Agencies

The Division of National Mapping (CA 978) within the Department of National Development was established on 2 August 1956. “The Division was responsible for geodesy and medium and small scale topographic mapping required for Commonwealth purposes, for co-ordinating these activities with those of the States, for making bathymetric and thematic maps of Australia and its territories, for providing technical advice on international maritime boundaries, for provision of an astronomical time service for Australia, for the sale of maps and air photographs and for the provision of reproduction material and digital data used in map making....The Director of National Mapping was Chairman of the National Mapping Council of Australia, established by Federal-State agreement in 1945. This was a consultative body on the standardisation and co-ordination of geodesy and topographic mapping in Australia. The NMC was supported by two sub-committees, the Technical Subcommittee of technical representatives of each of the mapping organizations on the NMC; and the Permanent Committee on Tides and Mean Sea Level.¹² “The DNM was established as a separate entity from surveying in 1956. After 1956 the ASO retained responsibility for the large scale mapping of Australia’s Territories alongside its survey role....The DMN was tasked with mapping the entire country to facilitate national development in the post war period.....DNM, together with its successors has been the Australian Government’s key civilian mapping and land information agency.”¹³

The predecessor agency to CA 978 Division of National Mapping was CA 1227 National Mapping Section of the Department of the Interior [II] (1 Jan 1951 - 31 Dec 1956).

The predecessor agency to CA 1227 National Mapping Section is CA 738 Property and Survey Branch (1 Jan 1932 - 1 May 1951). From 1932 the Property and Survey Branch responsibilities included geodesy (International map of the world and 129th meridian) and lands and surveys and from 1947 the Branch responsibilities included geodesy, mapping - topographical and geographical, including international and aeronautical maps and surveys - land, engineering, topographical and geodetic. CA 738 Property and Survey Branch has several predecessor agencies: CA 24 Department of Home Affairs [II], (Central Office) (10 Dec 1928 - 12 Apr 1932) - for lands generally and in the Northern Territory; CA 737 Lands and Survey Branch (1 Jan 1911 - 31 Dec 1932); CA 756 Federal

¹¹ National Archives of Australia, CA 6762 Agency Notes

¹² National Archives of Australia, CA 978 Agency Notes

¹³ Geoscience Australia website <http://www.ga.gov.au/about/history/> Accessed 16 April 2008

Capital Territory (FCT) Branch, Department of Home Affairs [II] - lands functions for the Federal Capital Territory and CA 742 Works and Services Branch [II], Canberra - for tenancy cases.

The first Director of Commonwealth Lands and Surveys, Charles Scrivener, was appointed in 1910 and he established the Land and Survey Branch in the Department of Home Affairs. On 1 Jan 1911 the Commonwealth's first Surveyor General was appointed.¹⁴ The Lands and Survey Branch (CA 737) existed until 1932 when it became the Property and Survey Branch (CA 738) of the Department of the Interior [I] (CA 27).

Australian Survey Office and Predecessor Agencies

The Australian Survey Office (CA 2100) 1 Oct 1975 - 24 Jul 1987 was the "survey division of the Department of Administrative Services II..... The principal function of the Australian Survey Office was to undertake, land, engineering and topographical surveys throughout Australia for Commonwealth departments, municipal and statutory authorities. It provided surveyors for special Commonwealth development projects in Australia and Papua New Guinea, as well as professional advice and assistance in the selection of sites for Commonwealth purposes."¹⁵

The predecessor agency to CA 2100 Australian Survey Office is CA 2099 Survey Division, Department of Services and Property, Central Office (1 Apr 1974 - 31 Oct 1975). The functions of CA 2099 included land, engineering and topographical surveys throughout Australia for Australian Government departments and authorities; surveys for special development projects; maintain and administer the cadastral survey systems of the Australian Capital Territory and the Northern Territory; carry out surveys on behalf of the Australian Government for foreign aid programmes.¹⁶

The predecessor agency to CA 2099 Survey Division, Department of Services and Property, Central Office is CA 825 Survey Branch (a) Department of the Interior [II] Central Office (to 1972) (b) Department of Services and Property, Central Office (1 Jan 1963 - 30 Apr 1974). "The function of Survey Branch was to undertake land, engineering and topographical surveys throughout Australia for Commonwealth Government purposes."¹⁷

The predecessor agency to CA 825 Survey Branch (a) Department of the Interior [II] Central Office (to 1972) (b) Department of Services and Property, Central

¹⁴ Geoscience Australia, *Organisation Context Document*, October 2000 (R400632002).

¹⁵ National Archives of Australia, *CA 2100 Agency Notes*

¹⁶ National Archives of Australia, *CA 2099 Agency Notes*

¹⁷ National Archives of Australia, *CA 825 Agency Notes*

Office is CA 862 Lands and Survey Branch [II] (1 Jan 1957 - 31 Mar 1963). “The agency was responsible for surveys - Land, Engineering, Topographical together with responsibility for Parks and Gardens.”¹⁸

The predecessor agency to CA 862 Lands and Survey Branch [II] is CA 861 Australian Capital Territory Planning and Development Branch (1 Jan 1951 - 31 Dec 1957).

The predecessor agency to CA 861 Australian Capital Territory Planning and Development Branch is CA 738 Property and Survey Branch (1 Jan 1932 - 1 May 1951) which has several predecessor agencies: CA 24 Department of Home Affairs [II], (Central Office) (10 Dec 1928 - 12 Apr 1932) - for lands generally and in the Northern Territory; CA 737 Lands and Survey Branch (1 Jan 1911 - 31 Dec 1932); CA 756 Federal Capital Territory (FCT) Branch, Department of Home Affairs [II] - lands functions for the Federal Capital Territory and CA 742 Works and Services Branch [II], Canberra - for tenancy cases. See above under *Division of National Mapping and Predecessor Agencies* for a description of CA 738 responsibilities.

Agency Number and Name	Date Range
CA 2671 Army Headquarters, Department of Defence [II] - Military Survey Section	1928 - 1939
CA 36 Department of the Army, Central Office - Survey Section	1939 - 1949
CA 990 RAAF Central Photographic Establishment	1949 - 1953
CA 1780 Division of National Mapping, Melbourne Office	1957-1987
CA 2100 Australian Survey Office	1975-1987
CA 6717 Surveying and Mapping Group/(1988) Australian Surveying and Land Information Group, Victoria	1987-1992
CA 7605 Geoscience Australia	1992-

Table 1: Key agencies involved in the creation and management of aerial survey photography records

3.2 Information about the function

The B5424 descriptive note states that “it appears that from 1928, various RAAF squadrons conducted aerial survey photography on behalf of the Military Survey Section of the Army. The private airline company Adastra Airways was also contracted in 1942 by the Survey Mapping Section of the Department of the Army to conduct aerial survey photography during World War II.”¹⁹

¹⁸ National Archives of Australia, CA 825 Agency Notes

¹⁹ National Archives of Australia, B5424 Descriptive Note

Central Photographic Establishment was formed on 14 July 1949 to be responsible for the storage, retrieval and reproduction of all aerial and ground photography. When the Division of National Mapping was established in 1957 it took over from the RAAF and the Army all aspects of mapping for civilian purposes and in 1962 CPE transferred to “National Mapping the aerial survey film in its custody [approximately 3000 rolls of film] which had no military significance.”²⁰ Between the 1960’s and the early 1990’s the Department of Defence (RAAF, Defence Imagery and Geospatial Organisation (DIGO) - and its predecessor Army Survey Regiment) and National Mapping and AUSLIG continued to undertake aerial photography. In 1994 the National Mapping Division “began to routinely use Landsat and SPOT satellite image data to fulfill its public interest mapping role” rather than aerial photography.²¹

The production of photographic products such as contact prints, diapositives and enlargements was undertaken by the National Mapping Division until 1990 when a “contract was tendered to United Photo & Graphic Services (UPGS) to perform this function”.²² This contractual arrangement with UPGS is still in operation. These arrangements are governed by section 29 agreements between the National Archives and Geoscience Australia and General Disposal Authority 25.

“There has been significant cooperation between the Department of Defence and Geoscience Australia and its predecessors and at least some division of work and sharing of results. State governments also do some aerial survey work.”²³

The principle purpose of aerial photographic survey work is to facilitate the production of maps. Aerial photography was historically acquired in blocks of 1:250,000 scale map sheets. “The aerial photography was captured for purposes of army and civil topographic mapping, hydrographic charting, exploration for the development of natural resources and various engineering and agricultural applications”.²⁴

Legislative Basis

There is no specific legislation either establishing the agency or specifically covering aerial survey photography.

²⁰ National Archives of Australia, B5424 *Descriptive Note*

²¹ D.S. Jaska, *A Review of the National Mapping Division’s Collection of Aerial Photography*, October 2004, p4

²² Jaska, p4

²³ F McInnes, *Defence Imagery and Geospatial Organisation Appraisal Report*, January 2007, p1

²⁴ Jaska, p4

CRS Thesaurus

There are two CRS Thesaurus functions covering the records of Geoscience Australia – Survey and Mapping (13 Aug 1992 -) and Earth Sciences (13 Aug 1992 -). The scope note for Survey and Mapping states that it is the “development and management of programs to gather geographical and topographical information about Australia's land and sea.” CA 6762 Australian Surveying and Land Information Group [AUSLIG] is also covered by the Survey and Mapping function (24 Jul 1987 - 13 Sep 2001) as is CA 978 Division of National Mapping (2 Aug 1956 - 24 Jul 1987), CA 2100 Australian Survey Office (1 Oct 1975 - 24 Jul 1987) and their predecessor agencies.

Administrative Arrangements Orders

An analysis of the Administrative Arrangements Orders from 1901-2008 identified the following functions relating to survey and mapping:

- Lands and surveys
- Geodesy
- Mapping, topographical and geographical including international and aeronautical maps
- Surveys, land, engineering, topographical and geodetic
- Geodetic surveying and the production of topographical maps for Commonwealth purposes
- Surveys – land, engineering and topographical for Commonwealth purposes
- Land, engineering and topographical surveys for Australian Government purposes
- Geodesy and mapping
- National mapping
- Geoscience
- Geodesy, mapping and information services
- Geodesy, mapping and surveying services
- Geodesy, mapping, remote sensing and land information co-ordination
- Geoscience research and information services including geodesy, mapping, remote sensing and land information co-ordination

Australian Government's Interactive Functional Thesaurus (AGIFT)

There are no terms in the Australian Government's Interactive Functional Thesaurus (AGIFT) that cover surveying, mapping, geoscience or geodesy. Spatial Information Research is the preferred term for Geographical Information Systems.

Whole-of-Government Functional Analysis

In relation to the whole-of-government functional analysis undertaken in 2003-05 by National Archives²⁵ the most relevant top level functions are:

- Environment (Group 3)
- Science (Group 5)
- Natural Resources (Group 5)

The most relevant second level functions are:

- Mineral Resources (Group 2) - top level function Natural Resources
- Environmental Impact Assessment (Group 3) - top level function Environment
- Intelligence Gathering and Support (Group 3) – for the Army generated film - top level function Security
- Geological Survey (Group 6) - top level function Natural Resources

In the hierarchy of functions associated with the most accessed series of records 2001-05:

- Geological Survey, Intelligence Gathering and Support and Mineral Resources are in Group 2

- Environmental Impact Assessment is in Group 5

Geoscience Australia Business Classification Scheme

A Business Classification Scheme has been developed for Geoscience Australia. GEOSCIENCE INFORMATION PRODUCTS – Production is considered by Geoscience Australia staff to be the most appropriate function/activity set for aerial survey photography records as the principle purpose of aerial survey photography work is/was the production of maps.

3.3 Information about the records

Film

National Archives holds, in series B5424, approximately 469.8m of negative films of aerial survey photographs of Australia, 30 Mar 1928 - 31 Aug 1953 controlled by CA 7605 Geoscience Australia. This comprises approximately 6474 films including 3124 acetate based films. In conjunction with records held

²⁵ National Archives of Australia website <http://sparweb2/recordkeeping/disposal/appraisal/Whole-of-government-functional-analysis.pdf>

by UPGS – approximately 4621 films including 792 acetate based films²⁶ -these records form the archive of aerial photography covering most of Australia and dating from approximately 1928 until 1993. “The photography was captured for purposes of army and civil topographic mapping, hydrographic charting, exploration for the development of natural resources and various engineering and agricultural applications.”²⁷

In total there are 11,095 rolls of negative film that are stored at the National Archives or UPGS. 3302 films at the National Archives are duplicates from the original nitrate films. As the original nitrate films were destroyed after duplication these 3302 films are now the ‘originals’. Only 209 of these films are duplicated more than once and have a copy stored off-site.²⁸ A 2008 condition survey undertaken on the National Archives aerial film holdings identified 540 items that are considered to be duplicates. “These are preservation and printing masters made from items in series B5424/3, B5424/4 and an unknown series presumed to be a consignment of B5424 (there was no series listed on the canisters).”²⁹

“The film holdings are divided into acetate-based films (usually dated pre-1960) and non-acetate-based (polyester) film (usually dated post-1960).”³⁰ Various film formats were used in aerial photography. 90% of the AUSLIG archive consists of black and white films. There is no “standard” film in regards to quality and/or length. “Since the 1960s the film used had been essentially Kodak [including Kodak 2402 and Kodak 2405 – black and white film, Kodak 2445 – colour film, Kodak 2424 - black and white infrared film, Kodak 2412 – Panatomic X developed for high altitude photography in the 1980s, Kodak 2443 – false colour infrared reversal film]. Pre 1960 the film used was Kodak, and it was only black and white.”³¹

Most of the photography was “taken systematically, the aircraft flying across the block taking photographs in parallel strips. These blocks usually correspond to 1:100 000 or 1:250 000 map areas.”³²

“The leader of most films is marked with the container or reel number, film number, area, range of frame numbers and date of filming. On some films, details of date, time, area, focal length, type of camera, frame number and altitude are recorded automatically alongside each frame. On other films, only a

²⁶ Jaska, p3

²⁷ Jaska, p4

²⁸ Mollison, p4

²⁹ C Garvie and D Lueth, National Archives of Australia, *Condition Survey Report for Geoscience Aerial Film Holdings at East Burwood Repository – NAA Melbourne Office 2008*, July 2008, p9

³⁰ Arentz, p5

³¹ Wise, p42

³² Division of National Mapping, Leaflet 8: *Air Photographs*, date unknown, p1

frame number is entered on each frame, and other details are recorded on the leader. The films vary in length. The frames vary in size from 12.5cm x 12.5cm to 22cm x 16cm.”³³

The storage and condition of the films varies. For further information on the storage and condition of the films refer to the survey work undertaken by National Archives Preservation staff and UPGS staff in 2008.

“The type of photography included in the archive can be broadly described as:

- *Topographic map compilation*: Generally acquired in 250K map sheet areas with east-west flight lines.
- *Topographic map completion*: This supplementary photography was occasionally acquired when, prior to the final publication of a map, field checks revealed that significant topographic change had occurred.
- *Specific Projects*: Non-routine photography acquired for the purposes to fulfil a unique project. Much of this photography was conducted by the Australian Survey Office.”³⁴

According to RecordSearch the recording agencies for the records in B5424 are:

1 Jan 1928 - 13 Nov 1939	CA 2671 Army Headquarters, Department of Defence [II] - Military Survey Section
13 Nov 1939 - 14 Jun 1949	CA 36 Department of the Army, Central Office - Survey Section
14 Jun 1949 - 31 Dec 1953	CA 990 RAAF Central Photographic Establishment

CA 1780, Division of National Mapping was established by 1957, and took over from the RAAF and the Army all aspects of mapping for civilian purposes. From about 1962, RAAF Central Photographic Establishment transferred to National Mapping the aerial survey film in its custody which had no military significance, which included the films contained in B5424³⁵. The controlling agencies recorded for B5424 are CA 6717 Surveying and Mapping Group/(1988) Australian Surveying and Land Information Group, Victoria and CA 7605 Geoscience Australia.

The films in B5424 were originally transferred to National Archives during 1964 (as MP731/1 - nitrate base films later copied to safety film), 1975 (as MP1561/1) and 1977 (as MP1847/1 part).

³³ National Archives of Australia, *B5424 Descriptive Note*

³⁴ Arentz, p5

³⁵ National Archives of Australia, *B5424 Descriptive Note*

“Between the 1960’s and early 90’s aerial photography continued to be captured by the Department of Defence and National Mapping. The rolls of film compiled by National Mapping were stored at Collins Street... later shifted to its new vault in Dandenong.In 1992, the Dandenong vault was closed with... the film that it housed transferred, under contract, to UPGS.”³⁶

B5424 films in National Archives custody are controlled by a film registration number e.g. MAP 1 [MAP = Military Aerial Photography], SVY 76 [SVY = Survey Squadron], CAE 2641 [CAE = Commonwealth aerial photography flown over South Australia]. There are also several different sequences of film registration numbers for films in UPGS custody (see below).

“Some film numbers also bear an "LVR" suffix, or some combination of these letters. The letters stand for left, vertical and right, and refer to the three separate cameras used simultaneously in the "trimetrogon" method of aerial photography. In order to cover a large geographical area in one flight, three cameras were used simultaneously, one photographing the ground directly below (V), one aimed towards the horizon on the right hand side of the aircraft (R), and another positioned on the left (L). The film MAP 3833LVR, for example, consists of three separate lengths of film, one from each camera, taken simultaneously and covering the some geographical area. The film MAP 2813L consists of only the film recorded by the left hand camera on a particular flight.”³⁷

The Wise Report of 4 December 2000 refers to “aerial photography films with the “MAP” prefix acquired in the years 1935 to 1947; aerial photography films with the “SVY” prefix acquired in the years 1943 to 1957; aerial photography films used for Trimetrogon coverage acquired in the years 1942-1950 etc”.³⁸

There are several consignments of B5424 in National Archives custody:

B5424/1 Nitrate negatives from MP731/1/0. Copied and destroyed.

B5424/2 – SVY 4-1378 (with gaps); MAP 1-3613 (with gaps) – dates unknown. Safety film from MP731/1/0. TLL Job Inspection Screen states reference copy. Large part of /2 for which only one copy exists. 243.90m.

B5424/3 – MAP 8-3798 (with gaps) – date range 1942-48. Previously MP156/1/0. TLL Job Inspection Screen states reference copy. 78.48m.

³⁶ Jaska, p4

³⁷ National Archives of Australia, *B5424 Descriptive Note*

³⁸ Wise, p24

B5424/4 – SVY 1-1575 (with gaps) - date range 1945-53; MAP 74-3833 (with gaps) – date range 1942-47. Previously part of MP1847/1/0. TLL Job Inspection Screen states reference copy. 95.94m.

B5424/5 Master copy of nitrate film from /1 stored in National Archives Sydney. Items in /5 are in /2 as well which may be why /2 is described as a reference copy. 21.60m.

B5424/6 – MAP 2814 – 3610 (with gaps); SVY 1109 – date unknown. Duplicating copy of nitrate film from /1. Items in /6 are in /2 as well which may be why /2 is described as a reference copy. 15.84m.

B5424/7 – CAE 1-CAE/M12 (with gaps) Jan 1957-Oct 1987. 5.22m.

B5424/8 – CAH 1-CAH1101 (with gaps); MS-72 – MS-73; SL 25 POS - SL 34 POS & NEG; SL 4 55-60; SL 278-286 POS; Film no. 7807; SL 3 84; SL 4 91 POS; 527-577 (with gaps); SL 25-SL 30; SL 4 55 – SL 4 60; D. OF I. 1 - D. OF I. 18; SP 6-SP 36; NAS 123; NAS 130; V6 RAAF 3298; OPM HOWLONG; QAS 10 – QAS 896C (with gaps); SORTIE 24 – SORTIE 93 (with gaps); ACT 1:2400 – ACT 1:9600 (with gaps); AAM 464 ACT – AAM 485 ACT (with gaps); MOURA 22/9/79; MOURA 13/11/79; LAKE BATHURST 70/1 & 70/2; AAM 52 & 63 WILLIAMTOWN; 2 FLD SVY 108; 1439 NORFOLK IS; FR/C3 NORFOLK IS; FR/C4 NORFOLK IS. No dates. 8.82m

Appendix 1 contains a table outlining aerial photography prefix codes.

“Negatives held in consignment B5424/2 were originally transferred to archival custody in the form of nitrate base film. These have gradually been copied onto polyester film as part of the Australian Archives reprography program, and the original nitrate base negatives have been destroyed.”³⁹

It should be noted that B5424 has an accumulation date range of 1 Jan 1928 - 31 Dec 1953 and that the last recording agency is CA 990 RAAF Central Photographic Establishment. The series description states that this series covers the films with a MAP and SVY prefix and that there is an unregistered subsequent series “Negative films of aerial survey photography of Australia, single number series with CA prefix [subject to research]. Held by CA 6717, Australian Surveying and Land Group, as at July 1989.”⁴⁰ This is subject to further investigation but it may mean that films in B5424/7 and B5424/8 are in the incorrect series.

³⁹ National Archives of Australia, *B5424 Descriptive Note*

⁴⁰ National Archives of Australia, *B5424 Descriptive Note*

The National Archives holds consignment lists for each of the consignments in custody however the quality of the consignment lists is variable. The listings for B5424/3 and B5424/4 contain details of the 250,000 area and the date flown as well as the film registration number, container number and camera. The listings for B5424/2, B5424/6, B5424/7 and B5424/8 contain no information on the 250,000 area and the date flown. These listings only contain basic information such as the film registration number.

The spreadsheet provided by Geoscience Australia (GA_APH_ARCHIVE.xls) lists all films held by the National Archives and UPGS categorised as follows:

MAP Films - MAP 1-3833 (B5424/2, /3, /4) - 4389 films, all black & white;

SVY Films - SVY 1-1575 (B5424/2, /4) - 1587 films including 375 duplicate films, all black and white;

ANT [Antartica] Films - ANT 1-134 plus 4 HIRAN (MP1947/1/1 - see information below) - 282 films, all black and white;

CAE Films - CAE 1-8892; CAEF 8749; CAEG 2876-8893; CAE/C 8779-8781; CAEM1-M11 (B5424/7) - 67 films - black & white, K2405, K2412, K2407;

Miscellaneous films - B5424/8 - see above for control symbols, 122 films, all black & white - includes 70mm "photos from space"; A1103/1 - 45 films;

Films at UPGS - AUS 13-362 (with gaps); AUS/C 7-431 (with gaps); CAB 1-8899 (with gaps); CAB 6032-8895 (with gaps); CABEG 1-6; CABG 1-8842 (with gaps); CABG/C 2559-4007 (with gaps); CAB/C 1-8856 (with gaps); CAB/M1-CAB/M2; CAC 1-8896 (with gaps); CACB 1-1047; CACD 1-8900 (with gaps); CACDE 2753; CACD/C 7530-7531; CACE 8876-8885 (with gaps); CACG 2711; CAC/C 1-8865 (with gaps); CAC/M1; CAD 1-9004 (with gaps); CADE 6015-6017; CADH/C 2572-2576 (with gaps); CAD/C 2601-8899 (with gaps); CAF M1-M6 (with gaps); CAF 1-8800 (with gaps); CAFG 2541-8568 (with gaps); CAFG/C 1-6041 (with gaps); CAF/G 2810-3986 (with gaps); CAF/M1-M8; CAG 1-10012 (with gaps); CAGF 1038-2543 (with gaps); CAG/C 1-10040 (with gaps); CAG/M1-M4 (with gaps); CAI 2883-2886 (with gaps); CAI/C 2884-4003 (with gaps); CAS 231-3998 (with gaps); CAS 3988-3998 (with gaps); CAS/C 3990-8674 (with gaps); S 61-131 (with gaps); SO 1-814 (with gaps); SOC 3-821 (with gaps); 1-196 (with gaps); PR1-PR3 (with gaps); Unknown.

TOTAL no. of films at UPGS = 4621.

Film type at UPGS – K2402, K2405, K2412, K2445 – COL (colour film), K2443 – CIR (colour infra-red film), black & white, K2424 – BWIR (black and white infra-red film).

UPGS holdings include Great Barrier Reef; Blayney; County of Vic; Abermusden Muswell Brook; Barossa Valley; Cobar-Mt Drysdale; Cobar; Canberra.

ACT – this sheet lists the film projects undertaken by the Australian Survey Office and AUSLIG primarily over the ACT region – SO 748; AUS 96-208 (with gaps); ROL 1156; AUS 11-97 (with gaps); AUSC 84; SOC 6-812 (with gaps); SO 1-748 (with gaps); CAC 2778; SVY 108; CAS 230-920 (with gaps); SP 6-34 (with gaps); SOR 70; Y 434; AAM 477-486 (with gaps); TAM 0; SBA 0; SOR 49-132 (with gaps); CAN 3-4; ACT 0; ADA 0.

The spreadsheet contains the following details for films at the National Archives and UPGS: accession number (films at the National Archives only), film registration number, canister number (MAP, ANT and CAE prefix, miscellaneous films and those at UPGS only), reel number (SVY prefix films only), film type, duplicated film (MAP and SVY prefixes and films at UPGS only), comments, acquisition date (ANT prefix films only), format (ANT prefix films only). The spreadsheets provided by Geoscience Australia contain no information about the area each film covers or the date the film was created. Geoscience staff advised that “there is no list here at Geoscience Australia that defines the area(s) covered by a particular film. The closest thing is a list of scanned indexes that comes from the flight diagrams available on Geoscience Australia’s web site.”⁴¹

In addition to B5424 and the holdings at UPGS the following series of records are held at National Archives.

MP1847/1/1 Reels of survey film, 21.24m, containing 282 aerial survey films with an ANT (Antartica) prefix (ANT 1 – ANT 134) including films of Mawson Harbour, Mawson Station Area, Henderson Range, Masson Range, Macquarie Island and Bailey Peninsula. The accumulation date is 1 Nov 1945 - by 31 Jan 1972 and the consignment lists contains the date flown which covers the period 1954-1972. The consignment list also provides location information (i.e. area covered) for some films.

A1103/0 Aerial Survey (Negatives) of Australia, 3.6m. RecordSearch contains little information about this series however a consignment list on the series file indicates that the series comprises 44 aerial survey films. Whilst they are mostly of northern Australia e.g. Broome, Longreach,

⁴¹ J Semmler, Forum discussion – Information about Area Coverage and Date Flown, 12 May 2008

Nullabor Plain, Melville Island, Darwin, Wave Hill there are some films of other locations e.g. west coast Tasmania, Adelaide. The flight dates are 1932 and 1940 and according to the information on the series file the films are “directly connected with the work of Dr Woolnough on the Aerial Geological Survey of Australia 1932.” The films in A1103/1 are listed (45 films) in the “Miscellaneous Films” category on the spreadsheet provided by Geoscience Australia (GA_APH_ARCHIVE.xls).

MP1087/1 Alice Springs contains 5.94m of records of film of the Northern Territory and other states including Alice Springs, Hermannsburg, Tennant Creek, Ayers Rock, Mt Olga, Weipa, Mildura, Broken Hill, Wilcannia, Mackay, Proserpine. These films were transferred by the Survey Section of the Division of National Mapping and have a CAG [Northern Territory] prefix. The accumulation date is 1 Jan 1951 - by 30 Jan 1970 and the contents date is unknown.

Other survey film is contained in the following series:

A893 Aerial survey photographic negatives, all States series, 9m (ACT) – recorded 1961 onwards by the Australian Survey Office (and predecessor agencies) and successor agencies AUSLIG and Geoscience Australia. “The negatives depict a large variety of locations in all States, excluding the ACT. The alphabetical prefixes and film numbers (e.g. AAM, SP, CAS) were imposed by the contractors engaged to carry out the work, and therefore vary according to contractor. (AAM - Australian Aerial Mapping; SP - Services and Property; CAS - Civil Air Survey; currently in use SO - Survey Office).”⁴²

A896 Aerial survey photographic negatives, ACT series, 4.5m (ACT). As per A893 except that a “large variety of locations within the Australian Capital Territory are depicted, on several different scales.”⁴³

B5317 Aerial survey film of Papua New Guinea, by 8 Aug 1938 - 10 Nov 1939, 0.54m (NSW), 5.58m (VIC) “This series consists of aerial survey films which document the activities of the Australasian Petroleum Company P/L in Papua New Guinea during the years 1938 and 1939.”⁴⁴

D4472 Negatives of aerial survey photographs, Tarcoola - Alice Springs Railway, 14 May 1971 - 30 May 1973, 2.25m (NSW). There is no information about the contents of this series on RecordSearch.

⁴² National Archives of Australia, *A893 Descriptive Note*

⁴³ National Archives of Australia, *A896 Descriptive Note*

⁴⁴ National Archives of Australia, *B5317 Descriptive Note*

National Archives Holdings – Geoscience Controlled		
B5317/1, /3-/4 Aerial survey film of Papua New Guinea	6.12m	1938-1939
B5424/2-/8 Negative films of aerial survey photographs of Australia	469.8m	c.1928-1953
MP1087/1/0 Alice Springs	5.94m	c. 1951-1970
MP1847/1/1 Reels of survey film	21.24m	c. 1954-1972
A893/1 Aerial survey photographic negatives, all States series	9m	1966-1968
A896/1 Aerial survey photographic negatives, ACT series	4.5m	1964-1975
A1103/0 Aerial Survey (Negatives) of Australia	3.6m	c. 1932, 1940
D4472/1 Negatives of aerial survey photographs, Tarcoola - Alice Springs Railway	2.25m	1971-1973
National Archives Holdings – RAAF Controlled		
B3957/1 Aerial films, single number series with "CPE" Central Photographic Establishment prefix	102.96m	1942-1999*
UPGS	4621 films	1960 – 1993

Table 2: Aerial Survey Photography Records – Films and Negatives

* predominantly 1942-1948

Diapositives

Diapositives are a positive photographic image on transparent material e.g. a photographic slide or lantern slide. Mr Detlev Lueth advised “that in the context of aerial film they would be direct contact copies from the negative aerial film frame/image. They would never be a direct positive like a 35mm colour slide would be which has no negative image stage.”

“Diapositives for mapping projects undertaken by the Division of National Mapping (Natmap), Australian Survey Office (ASO) and AUSLIG are held by UPGS. They are organised by 250K map areas for projects undertaken by Natmap, and by film number for ASO and AUSLIG projects. All are on polyester based film, cut to the format size of the film (23x 23cm).

Diapositives were only produced when mapping projects were undertaken. For example photography may have been flown, but the diapositive may not have

been produced until the next financial year when more money was allocated. If less money was available then diapositives may not have been produced at all. Therefore not all films have an associated set of diapositives.

All projects were for specific areas, though the intent of the Natmap projects was to eventually have a national coverage of photography. These areas could range from general mapping projects, for example up to 5 x 1:250,000 map sheet areas (also known as a “block” or “block photography”) to very specific areas, such military and civil areas referred to in the A892, A895 & K1301 series (generally referred to as “project” photography).⁴⁵

The last diapositives used by the Commonwealth for civil mapping projects were produced in 1989. There is no listing of Natmap films that have associated diapositives. There are specific records with UPGS that support the use of the diapositives i.e. lists of coordinates for the associated ground control (hard copy computer printouts) – known as analytical control listings but also referred to as triangulation blocks; indexes - flight/control diagrams (normally A1 document size) depicting the location of the ground control in relation to the flight lines; contact prints that depict location of the control points and their reference /identification. The associated documentation contains the horizontal and vertical control values for the diapositives. The date range of the control prints /diapositives is 1960 to 1987.

Analytical control listings or “triangulation blocks were created as part of the aerial photography acquisition process. They were made up of a number of 1:250 000 scale map sheet areas, and were used to compute the relative geographic position of each photograph within that block. They were created by National Mapping as a result of the mapping program. The associated documentation contains the horizontal and vertical control values for the diapositives.”⁴⁶

The quantity of diapositives held by UPGS is approximately 460m. They are generally black and white (although occasional colour diapositives are held by UPGS) and on polyester base. It is believed that there are no glass diapositives at UPGS. Each diapositive has a title strip containing the following details: map sheet number and name, film number, run number, frames, camera, height, time and date. UPGS staff advised that the date range is approximately 1960’s – 1970 and that the records were saved from destruction when the premises at Dandenong were being closed. UPGS staff are not aware of any duplication amongst the diapositives. Mr Semmler advised that there are no diapositives at UPGS for the older military films residing at the National Archives.

⁴⁵ J Semmler, Forum discussion – Diapositives, 15 May 2008

⁴⁶ J Semmler, Forum discussion – Triangulation Blocks, 13 June 2008

“The diapositives are stored upright in two different types of boxes:

1. Standard size photographic brand cardboard boxes with detachable lids (approximately 30% of the collection). These are the same boxes that the original film material used for printing would have been provided in and can hold around 100 prints un-sleeved. The base is usually black with a coloured lid depending on the brand (e.g. Kodak - Yellow, Agfa - Orange).
2. Brown cardboard boxes with detachable lids (approximately 70%). These are slightly larger and deeper than the photographic brand boxes appearing to hold around 150 to 200 prints maximum.

In some cases the diapositives and the prints are stored in the same box. Note: it appears that there is no particular reason for this other than the operators preference at the time when making the items. This is not a common practice and the items do not need to be stored with each other for reference purposes.”⁴⁷

UPGS staff advised that there are no indexes or lists of the diapositives held at UPGS however there is a *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS*. This listing contains the 1:250,000 map sheet number and name, number of total boxes and several columns headed Control/Date and Other/Date. The columns headed Control/Date indicate whether diapositives exist for a particular year for that map sheet number and name whilst the columns headed Other/Date indicate whether prints exist for a particular year for that map sheet number and name. The date range for the diapositives listed on this spreadsheet is 1960-1989. In addition a spreadsheet titled *aso_film.xls* lists the prints and diapositives associated with the “Project” films located at UPGS.

The National Archives holds three series of diapositives controlled by Geoscience Australia. They are:

A892 Aerial survey photographic diapositives, all States series, on glass plates, 1 Jan 1961 - , 46.62m (ACT) “Positive black-and-white transparencies on film or glass plates. Each item shows some or all of the following: date, location, run number, negative number, scale, date, flight time, altitude, frame number. The frame and negative numbers are not necessarily the same. Projects include aerodromes [e.g. Coolangatta, Kalgoorlie, Darwin, Hobart, Lae - PNG, Gin Gin Satellite Aerodrome, Brisbane, Alice Springs, Tullamarine], military projects [e.g. Northam Army Camp, Balcombe Army Project], stores projects, communications installations.”⁴⁸ Areas include Townsville - Mt Isa, Darwin - Mt Isa, Kiama, Kalgoorlie - Red Hill, Mt Edwards - Alan Hill.

⁴⁷ C Garvie and D Lueth, *Condition Survey Report – Geoscience Non Aerial Film Holdings at UPGS*, July 2008, p5

⁴⁸ National Archives of Australia, *A892 Descriptive Note*

A895 Aerial survey photographic diapositives, ACT series, 1 Jan 1960 - , 2.7m (ACT) “Positive black-and-white transparencies, some on glass, some on film. Each item bears some or all of the following data: location, run sortie number negative number, scale, date, flight time, altitude, frame number (not necessarily the same as negative number). Projects covered include civil and military projects in the ACT (including Jervis Bay).”⁴⁹

K1301 Aerial photographic diapositives, alphabetical order by location, 1 Jan 1969 - 31 Dec 1974, 3.78m (WA) “This series comprises positive black-and-white glass plate transparencies of aerial surveys undertaken in Western Australia. Information shown at the bottom of each transparency is frame/negative number, location, run number, scale, date, altitude, and project number. Projects may include aerial surveys of aerodromes, military projects, stores projects, communications installations.”⁵⁰ The consignment listing includes multiple locations with a date range of the same year.

In addition there are four series of aerial photography records (listed below) that are currently described as glass negatives. Advice from Mr Lueth, Assistant Director, Records Operations and Preservation is that as these records were generated from aerial photography they are most likely incorrectly described and are actually diapositives.

A2829 Aerial Photographic Survey Glass negatives, 1: 250,000 series four mile area, circa 1 Jan 1950 - circa 31 Dec 1961, 2.82m (ACT). Areas include Coburg Peninsula, Junction Bay, Wessel Islands, Londonderry, Drysdale, Ashton, Alligator River, Mount Evelyn, Roper River, Larrimah, Wave Hill, Tennant Creek, Helena, Hermansburg, Alice Springs, Mt Isa, Longreach, Lake Eyre, Callabonna.

A2830 Aerial Photographic Survey Glass negatives, 1:63, 360 series, circa 1 Jan 1951 - circa 31 Dec 1958, 0.18m (ACT). Areas include Cape Hotham, Darwin, Southport, Koolpinya, Humpy Doo, Tumbling Waters, Marraki, Mount Tolmer, Batchelor, Blue Mud Bay.

A2831 Lake Mackay, Mt Rennie MacDonald Tie Runs, Aerial Photographic Survey Glass negatives, circa 1 Jan 1957 - circa 31 Dec 1957, 0.09m (ACT).

A2832 Darwin Aerial Photographic Mosaic Glass negatives, 1 Jan 1944 - , 0.09m (ACT).

⁴⁹ National Archives of Australia, *A895 Descriptive Note*

⁵⁰ National Archives of Australia, *K1301 Descriptive Note*

National Archives Holdings – Geoscience Controlled		
A892/1-/3 Aerial survey photographic diapositives, all States series, on glass plates	46.62m	c. 1952-1961
A895/1 Aerial survey photographic diapositives, ACT series	2.7m	1960-1964
A2829/1 Aerial Photographic Survey Glass negatives, 1: 250,000 series four mile area	2.82m	1950-1961
A2830/1 Aerial Photographic Survey Glass negatives, 1:63, 360 series	0.18m	1951-1958
A2831/1 Lake Mackay, Mt Rennie MacDonal Tie Runs, Aerial Photographic Survey Glass negatives	0.09m	1957
A2832/1 Darwin Aerial Photographic Mosaic Glass negatives	0.09m	1944
K1301/1 Aerial photographic diapositives, alphabetical order by location	3.78m	1969-1974
National Archives Holdings - Defence Imagery and Geospatial Organisation (DIGO) Controlled		
B6631 Aerial photography diapositives and aero-triangulation prints, alpha-numeric series	177.26m	1951-2006
UPGS	460m	1960-1989

Table 3: Aerial Survey Photography Records – Diapositives

Photographic Prints

Photographic prints are held by the National Archives, UPGS and Geoscience Australia. They are generated from the aerial survey film. The format of the photographic prints are black and white (90%) and colour (10%). The scale varies from approximately 1:10 000 to 1: 150 000. Whilst they are generally uniform in size they may include mosaic photographs which involves joining together several aerial photos to form a single non-rectified image that may then be re-photographed and enlarged.

The Geoscience Australia Air Photo Library, located at Geoscience Australia in Symonston, ACT, holds approximately 9100 boxes of aerial photographic prints acquired to support field exploration work undertaken over the past five decades. The document GA_Airphotos-2006.xls (available on the extranet site) contains a list of this material. The date range of the prints is 1939-1994. “Most of the approximately 1.4 million prints are black and white, but some of the more recent images are coloured.”⁵¹ The Geoscience Australia library uses its

⁵¹ Geoscience Australia website <http://www.ga.gov.au/library/collections/> Accessed 11 July 2008

own cataloguing system to control their prints and a unique bar code number identifies each box of prints. These prints are used by the general public and internal stakeholders.

The prints at UPGS are arranged by 1: 250,000 map sheet reference numbers. UPGS staff advised that the date range of the prints would be the same as the films. “The prints are stored upright in thin non archival brown cardboard boxes with a detachable lid. They are grouped together in batch runs as per the film that they have been produced from. The batches are loosely held together by a thick band of non-archival cloth tape (various compositions) that is stapled together at the top with an overhanging tab. On each tab and the tape itself is a description of the prints contained in the batch written in various coloured inks.”⁵²

Each photograph has a photo title strip with the following information: 250K map number and area; film number; aircraft run number; frame number; photo number; time and date of photo; altitude of aircraft/scale. A small proportion of the prints have control points marked on them. The quantity of prints at UPGS is approximately 148m.

Mr Joe Semmler (Geoscience Australia) advised that there were three sets of prints held by National Mapping:

- Dandenong set;
- Production copy – held at National Mapping Head Office (Rialto building);
- Canberra set for printing of maps in Canberra.

The set of prints at UPGS is a combination of the Dandenong set and the National Mapping Head Office (Rialto building) set.

UPGS staff advised that they have no listing or index to the prints they hold on behalf of Geoscience Australia and that there is no mechanism for determining which film have prints and vice versa. However there is a *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS*. This listing contains the 1:250,000 map sheet number and name, number of total boxes and several columns headed Control/Date and Other/Date. The columns headed Control/Date indicate whether diapositives exist for a particular year for that map sheet number and name whilst the columns headed Other/Date indicate whether prints exist for a particular year for that map sheet number and name. The date range for the prints listed on this spreadsheet is 1960-1993. In addition a spreadsheet titled *aso_film.xls* lists the prints and diapositives associated with the “Project” films located at UPGS.

⁵² C Garvie and D Lueth, *Condition Survey Report – Geoscience Non Aerial Film Holdings at UPGS*, July 2008, p3

UPGS staff advised that there was likely to be duplication amongst the set of prints controlled by Geoscience Australia. Mr Joe Semmler (Geoscience Australia) advised that contact prints prior to the late 1960's would be held by the National Library of Australia rather than UPGS. For further detail about the National Library of Australia holdings refer to section 4. UPGS staff advised that they also held a set of prints (approximately 66m) that had been provided to them in the last few years by the National Library of Australia and that it was thought that these were duplicates to those prints held by the National Library. The National Library has no records or recollection of any such transfer occurring.

UPGS staff advised that no new prints are added to their collection and they do not use the prints to generate copies as prints are always generated from the film. The prints are considered by Geoscience Australia and UPGS to be a reference copy. "The prints held at UPGS were used for reference during map production, and later for performing searches in support of sales to external customers. The prints held at Geoscience Australia have been used for reference during geological field work."⁵³

The National Archives holds fifteen series of photographic prints controlled by Geoscience Australia. They are:

B72/0 Quality control photographic prints of aerial survey films of Australia, single number series, 1 Jul 1974 - 31 Dec 1982, 0.72m (VIC). "The series comprises photographic prints of selected frames from CRS B5424, Negative films of aerial survey photographs of Australia, ?1928 - ?1953 (formerly held in AA Accession MP731), produced to check the quality of the copying of these films from the original nitrate base film to safety base film..... These quality control positive photographic prints are referred to as "stereopairs" as for each selected frame checked, a print is produced of the frame as it appears on the nitrate base film and another for the corresponding frame on the safety base film..... This series of prints relates to consignments B5424/1 (nitrate base film) and B5424/2 (safety film) only (formerly accession MP.731)."⁵⁴ The prints in this series have been sentenced under RDA 973/1.31 (see below) however this sentencing may be incorrect as entry 1.3.3 appears to be a more accurate entry.

A1579/1 Aerial survey photographic prints - international sheet numbering system, K 17 (1-50000 scale), circa 1 Jan 1940 - circa 31 Dec 1960, 243m (ACT) "This series consists of prints of aerial photographs taken using a K 17 camera. The photographs were taken by the Division of National Mapping or by private contractors. In those cases where an area had

⁵³ J Semmler, Forum Discussion – *Photographic Prints*, 13 June 2008

⁵⁴ National Archives of Australia, *B72 Descriptive Note*

already been photographed by another authority (eg a State Survey Office) the prints produced by that authority have been included in the series. Three sets of prints were produced as follows: a field set, an office set and a library set. One of these sets, usually but not invariably the office set, has control points marked on it for plotting purposes and this set is kept permanently as these points are necessary for any further use. [These points show the amount of overlap with neighbouring prints, and control points plotted from ground surveys and are essential for reducing the information on the prints to map form. The print showing these points is the only one essential for later use e.g. by mining companies, who often prefer to use the prints and do their own plotting – A5446 series file]. Prints from this series can easily be identified from the scale and by an 'SVY' prefix to the film number, both of which are found in the title strip for each print.... Only items in the period 1947-1960 are in archival custody. The whereabouts of prints from 1940-1947 is as yet unknown.”⁵⁵ A1579/1 is sentenced under RDA 973/1.3.1. This entry covers the control annotated set of copy prints. RDA entry 1.3.2 covers a duplicate set of copy prints (Retain permanently) and entry 1.3.3 covers all other copy prints (Destroy when reference ceases). The Recommended Custody column for entry 1.3.2 (duplicate set of copy prints states) “Transfer to National Library by AUSLIG Central Office when action completed” so the prints held by the National Library may be a duplicate set to the prints held in A1579/1.

A5446 Aerial Survey Photographic Prints, International Sheet Numbering System, RC 9 (1: 84000 scale), 1 Jan 1960 - 31 Dec 1974 is registered as a subsequent series to A1579. There are no records for A5446 in National Archives custody.

A1580/1 Aerial Survey Photographic Prints - Australian 1 Mile System. (Scales 1: 63, 360, 1: 100,000), 1 Jan 1941 - 21 May 1968, 81m (ACT). This is listed on RecordSearch as both a previous and a subsequent series to A1579. According to a note in the consignment list A1580 “contains prints originally controlled by R.A.A.F Central Photographic Establishment and were brought under control of the system in c. 1952.” A1580/1 is sentenced under RDA 973/1.3.1 so may be duplicated at the National Library.

A2827/1 [Stuck-up] Aerial Photographic Print Mosaics 1:250,000 series, four mile area, circa 1 Jan 1950 - circa 31 Dec 1961, 0.63m (ACT).

A2828/1 [Stuck-up] Aerial Photographic Print Mosaics 1:63,360 series, one mile area, circa 1 Jan 1951 - circa 31 Dec 1958, 0.54m (ACT). “Aerial photographs at various scales stuck up on stiff board or plywood.... Stuck-

⁵⁵ National Archives of Australia, *A1579 Descriptive Note*

up mosaics are now discontinued - the Department now uses photographic negatives".⁵⁶

A891/1 Aerial survey photographic prints, all States series, 1 Jan 1961 – 7.2m (ACT) "Positive black-and-white prints. Each item bears some or all of the following data: location, run number, negative number, scale, date. Includes built-up areas, aerodromes, military projects, stores projects, communications installations, geomorphological features. Areas covered include all states, Papua New Guinea and the Northern Territory. Central Australia is delineated as a separate section."⁵⁷ A891/1 is sentenced under RDA 973/1.3.1 so may be duplicated at the National Library.

A894/1 Aerial survey photographic prints, ACT series, 1 Jan 1960 - ,2.34m (ACT). "Positive black-and-white prints. Each item bears some or all of the following data: location, run sortie number, negative number, scale, date, flight time, altitude, frame number (not necessarily the same as the negative number). Projects covered include civil and military projects in the ACT (including Jervis Bay)."⁵⁸ A894/1 is sentenced under RDA 973/1.3.1 so may be duplicated at the National Library.

AP1129/2/0 Aerial photographs, several systems, all single number order, 0.9m (NSW). This consignment includes prints of Mt Eba, Woomera, Salisbury W.R.E, Cultana, Parakylia, Barton and Kingoonye.

BP374/3/0 Aerial photographs of Eagle Farm aerodrome and surrounding areas, 1 Jan 1942 - by 31 Dec 1972, 4.35m (QLD).

D1947/1 Aerial survey photographs, Woomera, frame number, within run number, within location, 0.54m (NSW).

D4467/1 Mosaic photographs, aerial surveys, alphabetical series, 12 Oct 1961 - 26 Apr 1965, 1.5m (NSW). The photographs in this series are of outback South Australia.

D5270/1, /3 Aerial photographs, run number order within alphabetical order of location or project name, 1 Jan 1964 - 31 Dec 1985, 3.24m (NSW). This consignment includes aerial photographs of Broken Hill, Dalhousie, Edinburgh airfield, Gillman Woolstores, Leigh Creek Aerodrome, Maralinga, Mobilong, Mt Gambier Airport, Parafield, Robe and Upper Todd River.

D5271/1 Aerial photographs, Tarcoola to Alice Springs Railway, run number order, circa 1 Jan 1972 - circa 31 Dec 1972, 0.54m (NSW).

⁵⁶ National Archives of Australia, A2828 *Descriptive Note*

⁵⁷ National Archives of Australia, A891 *Descriptive Note*

⁵⁸ National Archives of Australia, A894 *Descriptive Note*

D5272/1 Aerial photographs, Tarcoola to Alice Springs Railway, alphabetical series, 0.36m (NSW).

J2781/1 Aerial photographs, single number series, 7 Sep 1954 - 21 Apr 1969, 1.45m (QLD). This series consists of nine black and white aerial photographs of the RAAF Base, Amberley, Lavarack Barracks, Townsville and the Clevedon Remote Receiving Station.

There is also A2594 Aerial Survey Photographic Prints, Australian 1 mile and 4 mile series, 1 Jan 1930 - 31 Dec 1953. The agency recording this series is CA 990 RAAF Central Photographic Establishment and the controlling agency is CA 7605 Geoscience Australia. This series is registered as a previous series to A1579 and A1580. The series note states that the “prints of this series constitute a record of photographic survey conducted by the RAAF between c.1930 - 1953. The flights were conducted over 1 mile and 4 mile runs at varying heights and followed a set pattern in accordance with the International Map of the World planometric grid (Australian portion). Such surveys included much of the Northern Territory, coastal areas of the Australian Continent, and other areas in each state, including Tasmania but excluded the Territory of Papua and New Guinea.”⁵⁹ There are no records in National Archives custody however the series note states that there are “1080 shelf feet, held by CA755, National Library of Australia, Map Collection.”⁶⁰

In addition there is A8514 Australian Army aerial photographs of Australia - contact prints, 1 Jan 1933 - , 158.4m (ACT) recorded by CA 6046 Army Headquarters Field Survey Depot/ (by 1973) Army Field Survey Depot/ (by 1975) Army Field Survey Map Depot/ (by 1977) Army Map Depot and now controlled by CA 46 Department of Defence [III], Central Office. The series descriptive note states “this series consists of aerial photographs of Australia taken by the Australian Army for use by various army survey units. The photographs are contact prints, 25 x 25cm in size, and comprise both vertical and oblique perspectives of a particular area. The question of whether the post-1949 records in this series held by the Army are duplicates of those held by the RAAF has yet to be resolved [as at 2/1/1991].”⁶¹ Folio 40 on file 1987/1043, dated 7 February 1990, contains correspondence from the Australian Archives ACT Regional Office to the Victorian Regional Office that states “on receipt of the items [in A8514] ... it was understood that these records were the only remaining copies of aerial photographs up to 1949. It was understood that a fire at the RAAF base in Lavington in 1950 had destroyed the original prints and negatives held by the RAAF.” The ACT Regional Office was seeking advice from the Victorian Regional Office as to whether the negatives held in B5424 are the negatives for the aerial photographs in A8514. The Victorian Regional Office

⁵⁹ National Archives of Australia, A2594 Descriptive Note

⁶⁰ National Archives of Australia, A2594 Descriptive Note

⁶¹ National Archives of Australia, A8514 Descriptive Note

contacted the Regional Manager, Australian Surveying and Land Information Group and after viewing the aerial photographs in Canberra Mr Gerry Burns, AUSLIG, Victoria advised on 8 April 1991 that “all photos [in A8514] with either a SVY or MAP prefix would be duplicates of negatives held by [the AA] Victorian Regional Office.”⁶² It should be noted that there are gaps within the SVY and MAP film registration numbers so it is possible that prints may exist but a film doesn’t exist and that there may be other prints in A8514/1 where no corresponding aerial film exists. A8514/1 is sentenced as retain permanently under RDA 978/3. This RDA covers the Australian Army, Army Survey Regiment, Bendigo - Maps and Topographic Information used for the Reproduction of Maps and Indexes to the Maps and was issued in 25/02/1993. Entry 3 covers aerial photographs, negatives, glass diapositives, and adjustment/control values used in the production of maps.

With the exception of BP374/3/0 and J2781/1 and A8514/1 all of the photographic prints in National Archives custody have been sentenced under RDA 973/1.3.1. BP374/3/0 and J2781 /1 are sentenced under RDA 1214/3.1 an entry which covers project records.

⁶² Folio 46 and 47, 1987/1043

National Archives Holdings – Geoscience Controlled		
A891/1 Aerial survey photographic prints, all States series	7.2m	1961 - ?1961
A894/1 Aerial survey photographic prints, ACT series	2.34m	1960-?1972
A1579/1 Aerial survey photographic prints - international sheet numbering system, K 17 (1-50000 scale)	243m	1940-1960
A1580/1 Aerial Survey Photographic Prints - Australian 1 Mile System. (Scales 1: 63, 360, 1: 100,000)	81m	1941-1968
A2827/1 [Stuck-up] Aerial Photographic Print Mosaics 1:250,000 series, four mile area	0.63m	1950-1961
A2828/1 [Stuck-up] Aerial Photographic Print Mosaics 1:63,360 series, one mile area	0.54m	1951-1958
AP1129/2/0 Aerial photographs, several systems, all single number order	0.9m	1955-1968
B72/0 Quality control photographic prints of aerial survey films of Australia, single number series.	0.72m	1974-1982
BP374/3/0 Aerial photographs of Eagle Farm aerodrome and surrounding areas	4.35m	1942-1972
D1947/1 Aerial survey photographs, Woomera, frame number, within run number, within location	0.54m	1950-1972
D4467/1 Mosaic photographs, aerial surveys, alphabetical series	1.5m	1961-1965
D5270/1, /3 Aerial photographs, run number order within alphabetical order of location or project name	3.24m	1964-1985
D5271/1 Aerial photographs, Tarcoola to Alice Springs Railway, run number order	0.54m	1972
D5272/1 Aerial photographs, Tarcoola to Alice Springs Railway, alphabetical series	0.36m	1947-1950
J2781/1 Aerial photographs, single number series	1.45m	1954-1969
National Archives Holdings – Department of Defence Controlled		
A8514/1 Australian Army aerial photographs of Australia - contact prints	158.4m	1 Jan 1933 -
UPGS	148m	1960-1993
National Library of Australia*	c. 600,000 items	1928-1990
Geoscience Air Photo Library	c. 9100 boxes	1939-1994

Table 4: Aerial Survey Photography Records – Photographic Prints

* these records may include A2594 Aerial Survey Photographic Prints, Australian 1 mile and 4 mile series, 1930-1953 in entirety or part as well as

prints received from AUSLIG and possibly other sources. A2594 was recorded by CA 990 RAAF Central Photographic Establishment and the series note states that there are “1080 shelf feet held by CA 755 National Library of Australia, Map Collection”.

Flight Line Or Key Diagrams

Flight or key diagrams for aerial survey films of Australia, plus corresponding 1:250 000 map sheets, are listed as an unregistered controlling series to B5424.

“The flight diagrams were normally created as part of the validation process for the aerial photography. Once the photography was acquired, the prints were examined for quality and the centre of each 5th one was plotted onto the relevant base map.”⁶³

The flight line diagrams show the aircraft paths (also known as runs), the centres of the photographs in relation to the ground features, film registration numbers, run number, the 1:250,000 map number, flight path name, camera/focal length, flying height, date of the photography, overlap, approximate photo scale, film type, photo number and index to adjoining 1:250,000 sheets. The flight diagram title is usually taken from the name of the map which covers the same area. The flight path may either be hand drawn or printed on by computer.

“All hard copies of the flight diagrams are held at UPGS. There are two copies: [a large format version and] an A4 size that reside in a number [95] of blue folders. Almost all of [the A4 size] are reproductions of the large format versions that can be found in the [6] vertical plan presses (vertiplans) [which contain approximately 500 diagrams per cabinet], also located at UPGS. The A4 versions have been copied to a form of plastic based media that allowed reproduction using darkroom techniques.”⁶⁴

The bound A4 size copies “range from b&w prints on paper or plastic support (similar to resin coated photographic paper) to slightly larger full colour prints on paper supports. The copies are stored in blue vinyl four ring binder folders. Each folder is labelled on the outside spine with both a folder number (1-95) at the top of the spine and a separate map number range label at the bottom (e.g. D52-5 – D52-8). ... Within the folder maps are grouped and separated by a variety of different sized and coloured sheets of thicker paper. Each one of these has a handwritten descriptor in the top right corner that is written upside down from right to left.”⁶⁵

⁶³ J Semmler, Forum Discussion – *Flight Line Diagrams*, 14 May 2008

⁶⁴ J Semmler, Forum Discussion – *Flight Line Diagrams*, 14 May 2008

⁶⁵ C Garvie and D Lueth, *Condition Survey Report – Geoscience Non Aerial Film Holdings at UPGS*, July 2008, pp6-7

“The large format versions [varying in size from A2 to A0, predominantly A1] are mostly paper maps that have been annotated with information about the flights. Some areas have clear overlays of the flights attached to a base topographic map. All the flight diagrams are organised or grouped by 1:250,000 map sheet area. The date range of the flight diagrams is July 1928 to August 1999.”⁶⁶

Approximately 50% of the large format versions have been laminated. The large format version of the flight diagrams are “stored hanging vertically with each map attached to a plastic tab running the length of the hanging edge. Each tab has identifying information written on it in ink, this can include the title and scale of the map.”⁶⁷

It is suspected by Geoscience Australia staff that the large format set at UPGS may not include the older RAAF flight diagrams however these RAAF flight diagrams may be contained within the 95 blue folders. There is no listing of flight diagrams held at UPGS. They are arranged by 250K map areas and the date range is approximately the same as the films.

“A number of copies may have been produced from the original flight diagram. For instance there were [originally] 2 copies of the A4 folders, one in Canberra and one residing at the National Mapping office in Dandenong. The scanned copies are the latest version of what National Mapping/AUSLIG held. Another set of flight diagrams, in paper format, may also reside at the National Library of Australia.”⁶⁸

In addition UPGS holds unbound duplicate flight diagrams that are “reduced copies of the original flight diagrams that vary in size from A4 – A1. They appear to have been used as a reference library from which to make prints for access purposes..... They also vary from b&w to colour. The copies are stored loosely in standard green hanging files within two four drawer filing cabinets.”⁶⁹

Flight line diagrams are currently used to identify which aerial photography covers the specific area and time period of interest and then to determine the relevant photograph number.

The flight line diagrams are available online from the Geoscience Australia website <http://www.ga.gov.au/nmd/products/photos/photo.jsp>. It is believed (although not possible to confirm) that all of the flight diagrams (4813 in total) have been scanned and uploaded to the website although the flight diagrams for the ACT region projects undertaken by the Australian Survey

⁶⁶ J Semmler, Forum Discussion – *Flight Line Diagrams*, 14 May 2008

⁶⁷ C Garvie and D Lueth, *Condition Survey Report – Geoscience Non Aerial Film Holdings at UPGS*, July 2008, p6

⁶⁸ J Semmler, Forum Discussion – *Flight Line Diagrams*, 14 May 2008

⁶⁹ C Garvie and D Lueth, *Condition Survey Report – Geoscience Non Aerial Film Holdings at UPGS*, July 2008, p7

Office and AUSLIG may not have been scanned and included with the images available from the website. A spread sheet (aerial photo index for web site.xls) listing the flight diagrams was provided by Geoscience Australia and is available on the project extranet site. This spreadsheet contains information that appears to have been collected at the time of scanning including the map sheet reference, file name, area name, state, date of photography, colour or b&w, scale, focal length/camera type. The flight diagrams on this spreadsheet cover aerial photography with a date range July 1928-October 1999.

On the website the relevant 1:250,000 area is selected from a map of Australia which results in a list of available flight line diagrams for that 1:250,000 area. For example selecting the Warburton area results in a list of 23 flight line diagrams covering the following flight paths: Warburton (9 flight paths dated February 1968, June 1975, January 1978, January 1979 - 2, February 1979, February 1984, March 1987, March 1990); Moe-Noojee area; Alexandra; Mansfield; Howitt; Juliet area; Taggerty; Maroka; Matlock; Wellington (2 flight paths dated March 1966 and December 1944); Gembrook; Walhalla; Glenmaggie. By then selecting the relevant flight path name and date you are then able to determine the film registration number that covers the relevant area on the required time period.

There are three series of flight diagrams registered as CRS series. These are:

B5546 Dyeline copies of flight diagrams over the Australian Antarctic Territory, alpha numeric series, 1 Jan 1956 - 31 Jan 1965, 0.01m. "This series consists of sheets of flight diagrams over the Australian Antarctic Territory. They are headed with a place name or just "Australian Antarctic Territory". Each sheet shows a portion of the Australian Antarctic Territory over which are drawn lines representing flight paths of air photography. The flight number and date is given for each flight diagram as well as an evaluation of the quality of the photography..... These flight diagrams relate to the negative films of aerial survey photographs located in MP1847. Agency representatives have advised that the diagrams are of little value as they hold better dyeline copies and the originals are in Canberra." ⁷⁰

B3087 Photographic prints of flight diagrams, alpha-numerical series with 'S' [Southern Hemisphere] prefix, circa 1 Jan 1945 - 31 Dec 1964. This series was destroyed in 1997 as they were considered to be reference copies with no further use as they were incomplete and duplicated only one part of a set of interrelated control records and therefore were of limited use to researchers.

⁷⁰ National Archives of Australia, B5546 Descriptive Note

MP1732/1 Aerial Photography Key Diagrams - Identification - Aerial Survey Film, multiple number series with alphabetical prefix. This series consisted of photocopies of National Mapping control records made for use by the National Archives. The series was destroyed in 1995.

Laser Terrain Profile Records

Mr Joe Semmler (Geoscience Australia) advised that these “records consist of a transparent overlay for a specific 1:250 000 map sheet and associated documentation. The overlay depicts horizontal control points captured from field surveys together with flight lines that recorded a profile of the landscape using an airborne profile recorder (APR). This is an electronic instrument that uses radar to measure the vertical distance between the aircraft and the earth’s surface.

Adjacent runs of vertical aerial photography overlap where it is acquired for mapping purposes. APR profile lines were captured between these two adjacent runs in the overlap area. This information was used to determine spot height information near the corners of each stereo model (i.e.: overlapping pair of photographs). The spot heights and surveyed horizontal control points were then used as fixed references in positioning and correlating map features.

The use of the map overlays and surveyed horizontal control was eventually superseded with the introduction of automated calculation methods resulting in “X, Y & Z” coordinate listings for control points.”⁷¹

Mr Semmler further advised “The LTP [Laser Terrain Profiling] photography was acquired to produce an image of the earth’s surface where the terrain height was known. This was then related back to the block photography so that adjustments could be made to it. This then allowed the extraction of height information (such as contours) using stereo plotting methods and instruments.

Apparently LTP [Laser Terrain Profiling] photography was intermittent, with some runs depicting a single frame every few kilometres (or miles back in the good old days) where the terrain was very flat. The flying height was also quite low; between 2000 – 5000 feet (600-1500m) and the cameras used were all small format: 70mm or sometimes 35mm. Consequently only a very small part of the earth’s surface was/is ever depicted. Unless very accurate records have been maintained, it would be all but impossible to relate the LTP[Laser Terrain Profiling] photography back to the block photography nowadays. Therefore I would suggest that these records should not be categorised as: Retain as National Archive (RNA) along with the block photography.”⁷²

⁷¹ J Semmler, *Airborne Profile Records*, 17 June 2008, p1

⁷² J Semmler, Forum discussion – *Laser Terrain Profile Records*, 18 August 2008

There are six series of laser terrain profile records in National Archives custody: They are:

B1375 Laser profile charts and photographs, single number series, 1 Jan 1967 - 31 Dec 1983, 7.38m (VIC). "This series comprises charts and photographs from the Topographic Survey Branch, Laser Sub-Section of National Mapping. The charts and prints are the product of aerial survey trips using a camera and a Laser Profile Recorder. The plane closely navigates a previously designated "Laser Line" across a specific geographical area, and the terrain profile is recorded on 70mm film and onto a chart by laser beam. The information on the film and chart is then transposed onto photographic prints and paper at the office, and used to calculate heights and distances. Most of the Australian continent has been covered by this process; the surveyed areas are shown on a map of Australia, and on map sheets showing individual survey areas and designated laser lines (flight paths) As a chart and a film provide the same information about the same geographical area, they are stored together in small yellow boxes."⁷³ B1375/4 has been sentenced as retain permanently under RDA 973/1.1 and 1.3.1 whereas B1375/1, /2, /3, /5 were sentenced as temporary records and destroyed under RDA 1214/3.2.

B3385 Negatives of 70mm laser terrain profiler strip film, single number series, 1 Jan 1970 - 23 Mar 1980, 7.74m (VIC).

MT2188/2 Negatives of 70mm Laser Terrain Profiler strip camera, 9.9m (VIC).

MT2188/4 Laser Terrain Profiler original test flights, 1.26m (VIC).

MT2188/5 Charts and 70mm film prints and negatives of Olary area approx, 1.08m (VIC).

MT2188/6 Laser profile charts and photographs from test flights, 0.36m (VIC).

The series above are all currently sentenced as retain permanently under RDA 973/1.1 and 1.3.1.

UPGS holds LTP Final Height Forms. "These are printed forms with handwritten notes detailing the vertical height points which are used to create the terrain for the 250,000 scale map sheets. They vary in size from A4 to foolscap and are generally printed on standard weight white paper with black printing ink for the form section and various inks used for the handwritten

⁷³ National Archives of Australia, B1375 Descriptive Note

notes..some of the forms appear to be photocopies of the original.. The forms are housed in either manila folders or large white envelopes with the top side cut open. These are then stored in standard green hanging files within a four drawer filing cabinet."⁷⁴

Control Records

The following control records have been identified:

"Aerial Photograph Index"- nominal index to place names for aerial survey films of Australia held in Australian Archives accession MP1082, and Commonwealth Record Series A1103, B5424/2 (ex MP731), B5424/3 (ex MP1561), and B5424/4 (ex MP1847). A search of the Reading Room and the office areas at North Melbourne failed to locate this index;

Flight or key diagrams for aerial survey films of Australia [see above], plus corresponding 1:250 000 map sheets – referred to in the B5424 series descriptive note and described as being in the custody of CA 6717, AUSLIG,Vic;

Numerical index to MAP films – referred to in the B5424 series descriptive note. It is possible that this is now the consignment list for B5424/2;

Numerical index to SVY films – referred to in the B5424 series descriptive note. It is possible that this is now the consignment list for B5424/2;

A1104 Aerial Survey Schedules of Prints and Mosaics supplied, 1 Jan 1935 - 31 Dec 1937, 0.09m (ACT). This comprises a “manilla folder containing three schedules listing mosaics and prints received from the RAAF dated 1935, 1936 and 1937 respectively together with draft information relating to 1938 and 1939.”⁷⁵ It has a possible relationships with mosaics associated with the Northern Australian Survey.

B6098 Photo Index series; 1:100 000 scale, Aerial survey photographs of Australia, 30 Jan 1960 - 19 Dec 1972. No records in National Archives custody.

B6099 Photo Index series; 1:253 440 scale, Aerial survey photographs of Australia, 1 Jan 1959 - 31 Dec 1969. No records in National Archives custody. There is also reference to another unregistered series - photo index 1:63 360 scale - in the series notes for series B6098 and B6099.

⁷⁴ C Garvie and D Lueth, *Condition Survey Report - Geoscience Non Aerial Film Holdings at UPGS, July 2008*, p8

⁷⁵ Series History Sheet for A1104 contained in A1104 series file

The series notes state that "Three series of photo indexes have been produced: 1:253 440 scale (one inch to four miles), 1:63 360 scale (one inch to one mile), 1:100 000 scale (one centimetre to one kilometre). A photo index is produced primarily to show photo reference numbers/titles for photomaps. It is made from unrectified aerial photographs i.e. photographs which contain scale distortion and do not always join. Photomaps are individual aerial photographs joined together to give the appearance of a single large photograph from the air. Selective interpretation of distinguishable ground detail is left to the user. A photomap can often be used as an alternative to a conventional topographic map. It is a more accurate portrayal of the landscape than a map but small man-made features are less distinct."⁷⁶ The "1:253 440 series [B6099] is organised using an alpha-numeric grid system consisting of a 2 letter latitude scale combined with a 2 digit longitude scale giving the required major grid. Each major grid is divided into 16 smaller squares - these are numbered from 1 - 16 and the numbering occurs across then down till all squares have been given a number. The combined major grid letters and numbers notation plus the minor grid number indicates one specific photomap."⁷⁷ The "1:100 000 index series [B6098] is organised using the map titles. To identify the specific map required, the name of the map for the area is determined from the index."⁷⁸

Mr Joe Semmler (Geoscience Australia) advised that UPGS holds the negatives to the photo index series which were transferred as part of the handover of the distribution role in 1997. Usage/access to these records is likely to be quite low as few people are aware of this material. The National Library of Australia also holds a partial set of paper reproductions.

4. NATURE AND COMPLEXITY OF THE RECORDS

Whilst the format and content of the records can be considered to be homogenous the aerial film, prints and diapositives cover a diverse range of localities.

There are several levels of potential duplication:

1. Duplication with other agencies holdings i.e. States and Territories, National Library of Australia, RAAF Central Photographic Establishment, Defence Imagery and Geospatial Organisation;

⁷⁶ National Archives of Australia, B6099 Descriptive Note

⁷⁷ National Archives of Australia, B6099 Descriptive Note

⁷⁸ National Archives of Australia, B6098 Descriptive Note

2. Duplication within the National Archives/UPGS aerial film holdings eg same place surveyed over different time periods or multiples copies of the same film eg original, duplicating copy, reference copy;
3. Duplication with other formats eg duplication of film images in diapositives and prints.

During this project it was agreed by Geoscience Australia and the National Archives that duplication <20% would be acceptable.

Duplication with other agencies holdings i.e. States and Territories, National Library of Australia, RAAF Central Photographic Establishment, Defence Imagery and Geospatial Organisation

State and Territory Aerial Photography Records

The report prepared by Mr Jim Mollison, National Mapping Division, Geoscience Australia in September 2003 states that the “aerial photography archive contains unique records of the Australian landscape, captured in great detail, since 1935. According to all available information, including research work performed by our consultant [Mr Paul Wise, Datagrator Pty Ltd], no other State or Territory has aerial photography that covers the same time frames and geographical areas. Additionally, most of the defence aerial photography, potentially covering similar areas, has been destroyed.”⁷⁹

The report prepared for AUSLIG by Mr Paul Wise, Datagrator Pty Ltd in December 2000 states “Today, most States are acquiring their own aerial photography to meet their own infrastructure requirements. In the period when the AUSLIG archive was formed most States were more heavily focused on areas of importance to them, generally around their main cities. This then left the interior as the Commonwealth’s responsibility. For the most part it can be said that historical aerial photography coverage of the mainland States is therefore only held by AUSLIG.”⁸⁰

Department of Defence Aerial Photography Program

The report prepared for AUSLIG by Mr Paul Wise, Datagrator Pty Ltd in December 2000 states “Historically the Defence Department, through its RAAF and Army establishments carried out aerial photography and mapping mainly in Northern Australia.However, their areas of responsibility did not impinge greatly on the Australian interior. Therefore, while some northern areas of Australia might also be covered by RAAF/contract aerial photography

⁷⁹ Mollison, p8

⁸⁰ Wise, p24

the historical coverage is essentially held by AUSLIG.”⁸¹ An additional report on series B3957 (Aerial films, single number series with "CPE" Central Photographic Establishment prefix, 1942-1999) prepared by Mr Paul Wise for AUSLIG states that “details of the coverage of any particular film [in B3957] can only be extracted from the alphanumeric coordinates listed (sometimes) in the ‘CO-ORD’ column.....Looking down this list of coordinates it is strongly suspected that all films contain coverage of specific locations and not block coverage usually needed for mapping purposes. It is therefore possible that the films may contain information of sensitive sites.”⁸²

In 2006-07 an appraisal of Defence Imagery and Geospatial Organisation aerial survey photographic records (glass and polyester diapositives and related records) was undertaken by National Archives staff in consultation with the Defence Imagery and Geospatial Organisation. “These specific records [DIGO diapositives] were created from original film records resulting from aerial surveys flown by the RAAF. They were created to facilitate the production of maps by DIGO. This is not a continuing function/activity for Defence as Geoscience now does all Australian mapping, including for Defence purposes.”⁸³.

The appraisal report states that the “temporary retention set for the DIGO material (and RAAF material) seems to have been justified on the basis that similar AUSLIG records were being kept permanently ie. that they were duplicated. [Ms Fiona McInnes] obtained a detailed list of the DIGO material from Mr Trevor Poll at DIGO (R957912005) and forwarded it to Mr Ian O'Donnell at Geoscience Australia to find out whether these specific records were duplicated. There was some confusion about the response but it was eventually agreed between DIGO and Geoscience Australia that the material was not substantially duplicated in Geoscience Australia holdings (R677762006). There is some extra support for non-duplication from the practice that AUSLIG and Defence divided Australia up between themselves for quite a long period and shared photography (with Defence concentrating on northern Australia and also doing more detailed scale photography).”⁸⁴ 177.26m of the Defence Imagery and Geospatial Organisation diapositives have been transferred into National Archives custody as B6631.

With regard to photographic prints maintained by the Central Photographic Establishment RDA 1189, issued on 26 April 1995, authorised the destruction of “crates of aerial photographic records transferred to Archives by the Central

⁸¹ Wise, p25

⁸² Wise, Paul, *Contract 00/0119 Commonwealth Aerial Photography – its status and options for preservation – Additional Report “Series B3957: RAAF surveys of Australia and overseas, 27 September 2000, p6*

⁸³ McInnes, p1

⁸⁴ McInnes, p3

Photographic Establishment, RAAF Base Laverton, Victoria in 1968". In addition A2594 Aerial Survey Photographic Prints, Australian 1 mile and 4 mile series, 1930-1953 is a series recorded by the Central Photographic Establishment, The series descriptive note states that this series "constitutes a record of photographic survey conducted by the RAAF between c.1930 – 1953"⁸⁵ however there are no records in National Archives custody and according to the descriptive note "1080 shelf feet, [are] held by CA755, National Library of Australia, Map Collection."⁸⁶

National Library of Australia Aerial Photography Collection

The National Library of Australia holds approximately 600,000 black and white aerial photographs covering most of Australia (and including Papua New Guinea and Indonesia) taken between 1928 and 1990. Whilst the collection does contain colour photographs it is estimated to be <1%. "The collection comprises Commonwealth photography flown by the Royal Australian Air Force, Division of National Mapping, Bureau of Mineral Resources and the Australian Surveying and Land Information Group (AUSLIG), now called the National Mapping and Information Group of Geoscience Australia."⁸⁷ This collection was formed when "in 1963, at the suggestion of the Division of National Mapping, a substantial collection of Australian aerial photographs, dating from 1928 to about 1953, was transferred to the National Library from the Central Photographic Establishment of the RAAF at Laverton in Victoria. Small groups of photographs were received from the RAAF, the Division of National Mapping and CSIRO in the 1980's. In 1991-95 large consignments of aerial photographs were received from the Australian Land Information and Survey Group (AUSLIG), the successor to the Division of National Mapping. The photographs mostly dated from 1953 to 1987.....All States and regions are represented in the Library's collection."⁸⁸

The series descriptive note for A2594 Aerial Survey Photographic Prints, Australian 1 mile and 4 mile series, 1 Jan 1930 - 31 Dec 1953 recorded by CA 990 RAAF Central Photographic Establishment states "1080 shelf feet, held by CA755, National Library of Australia, Map Collection".⁸⁹ Mr Joe Semmler (Geoscience Australia) advised that prior to the late 1960's contact prints would be held by the National Library of Australia rather than UPGS.

In addition Dr Martin Woods, National Library of Australia advised that "the SCAR (Scientific Committee on Antarctic Research) collection of Antarctic aerial

⁸⁵ National Archives of Australia, A2594 Descriptive Note

⁸⁶ National Archives of Australia, A2594 Descriptive Note

⁸⁷ National Library of Australia website <http://www.nla.gov.au/map/aerialphoto.html> Accessed 20/02/08

⁸⁸ Dr M Woods, Email 21 August 2008, R681762008

⁸⁹ National Archives of Australia, A2594 Descriptive Note

photographs was donated [to the National Library of Australia] by AUSLIG in 1998.”⁹⁰ The Antarctic photographs date from 1956 to 1965, with a small number of later items. According to National Archives records in 1997 the Antarctic Programme Coordinator, AUSLIG transferred to the National Library of Australia holdings of Antarctic aerial photography prints and advised in correspondence that this “collection is very significant as it contains many annotated photographs many of which are the only record of field observations or interpretations.”⁹¹

AUSLIG “also transferred [to the National Library of Australia] a collection of aerial photographs of Indonesia. In 2003 the Research School of Pacific and Asian Studies at the Australian National University presented a collection of Papua New Guinea aerial photographs [taken between 1942 and 1973] ...[that] had originally been in the custody of CSIRO.”⁹²

“The [National Library of Australia’s aerial photography] collection is arranged and indexed according to the Australian 1:63 360 topographic sheet numbering system.....The Maps Reading Room also houses a collection of photomaps, photomosaic, and orthophotomaps.. Flight diagrams which show aircraft flight paths or runs are held for 80% of the collection.”⁹³ The photographs are in good condition and contain title strip information the same as that on the prints at UPGS. The photographs held by the National Library of Australia are rarely annotated with control points.

National Library of Australia staff advised that usage of their aerial photography collection averages one to two readers per week and that the user group comprises park managers, farmers, Landcare, archaeologists, family historians, local and community historians.

By end May 2008 approximately 450,000 aerial photographs (all states except WA and NT) in the National Library of Australia collection had been catalogued. The National Library of Australia consider the item to be the contact print and their “records accumulate the items under the appropriate flight diagram sheet, and list the runs covered, not the prints.”⁹⁴

The National Library of Australia have previously attempted to compare their holdings with the prints held by Geoscience Australia however they found that this was not possible as whilst the National Library of Australia has item

⁹⁰ Dr M Woods, Email 21 August 2008, R681762008

⁹¹ 1997/1072

⁹² Dr M Woods, Email 21 August 2008, R681762008

⁹³ National Library of Australia website <http://www.nla.gov.au/map/aerialphoto.html> Accessed 20/02/08

⁹⁴ Dr M Woods, Email 21 August 2008, R681762008

specific data Geoscience Australia has only high level information about the prints held at UPGS.

The National Library of Australia provided the National Archives with six spreadsheets listing at item level the holdings of their aerial photography print collection for ACT (1940-1987), NSW (1928-1989), QLD (1928-1990), Tas (1931-1983), Vic (1930-1984) and SA (1928-1990). These spreadsheets contain a column titled 'flight no.' which contains film numbers. For each state 10 film numbers were randomly selected and then cross checked with the spreadsheet prepared by Mr Paul Wise of film holdings at National Archives and UPGS. Of the total of 60 film numbers selected 53 were listed on the spreadsheet prepared by Mr Paul Wise of film holdings at the National Archives and UPGS.

In addition cross checking identified that 98 of the film numbers (out of a total of 249 film numbers) listed on the National Library of Australia ACT spreadsheet are also in the list of "Project" films flown by ASO and AUSLIG that are located with UPGS (aso_film.xls) thereby indicating a degree of duplication between the ACT print items and the "Project" films flown by ASO and AUSLIG that are located with UPGS.

The items listed on the National Library of Australia spreadsheets were also compared with the Geoscience Australia *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS*. For each of the states with items listed on the National Library of Australia spreadsheets up to 5 entries for 1:250 000 map sheet numbers were randomly selected from the AUSLIG photo library listing and cross checked to determine if there were prints and diapositives for the specific area and date listed on the relevant National Library of Australia spreadsheet. A total of 23 1:250 000 map sheet numbers were cross checked and of these for only 11 was there any degree of duplication between the National Library of Australia holdings and the UPGS holdings of diapositives and prints. For example for *SJ 54-3 Horsham* the National Library of Australia spreadsheet contains prints for Horsham - 1949, **1963**, 1978(?) and the AUSLIG photo library spreadsheet contains prints for Horsham - **1963**, 1984, 1988. In this example whilst there is potential duplication for 1963 there is no duplication for the National Library of Australia holdings of 1949 and 1978 and the UPGS holdings of 1984 and 1988. In only two cases was there 100% duplication:

SH 52-11 Cook

National Library of Australia spreadsheet: prints for Cook -**1962**

AUSLIG photo library spreadsheet: diapositives **1962**

SH 52-3 Noorina

National Library of Australia spreadsheet: prints for **1962**

AUSLIG photo library spreadsheet: diapositives 1962

The full results of the sampling between the National Library of Australia print holdings and the UPGS holdings of prints and diapositives are outlined in Appendix 2.

In addition a comparison was undertaken of film numbers on the National Library of Australia ACT spreadsheet and the spreadsheet listing Project Prints & Diaps – UPGS (aso_films.xls) which contains a listing of the project prints and diapositives associated with the “Project” films located at UPGS. There are 104 film numbers listed on the National Library of Australia ACT Spreadsheet that are also listed on the Project Prints & Diaps – UPGS spreadsheet (which contains a total of 295 film numbers). This indicates a degree of duplication amongst the National Library of Australia ACT prints and the project prints and diapositives associated with the “Project” films located at UPGS however it should be noted that this analysis was made broadly at the film number level rather than the film number and run number level.

There are two large series of prints held by the National Archives Canberra – A1579 and A1580 - and controlled by Geoscience Australia. The consignment list for A1579 only contains map sheet number and run number which may limit any comparison with the National Library of Australia holdings.

The consignment list for A1580 states that this “series contains prints originally controlled by R.A.A.F Central Photographic Establishment and were brought under control of the system in c. 1952.” The consignment list comprises photocopies of index cards arranged by Zone, Section and Run. Recorded on these cards are film reg. no., run no., photo no. contact prints, scale, date flown. 10 index cards were selected at random and cross checked against the National Library of Australia spreadsheets. Of a total of 90 items selected from the A1580 consignment list 74 items were on the National Library of Australia spreadsheets. Further confirmation is required that the A1580 index card information in the consignment list does relate to the actual records in A1580.

Duplication within the National Archives/UPGS aerial film holdings eg same place surveyed over different time periods or multiples copies of the same film eg original, duplicating copy, reference copy

The spreadsheet titled GA_APH_Archive.xls provided by Geoscience Australia (GA) does not contain information about the area each individual film covers or the date the film was created. The consignment lists at National Archives for B5424/2, B5424/6, B5424/7 and B5424/8 also do not contain this information. The consignment lists for B5424/3 and B5424/4 do contain for each film the "Name of 250,000 Area" and "Date Flown".

The COVERAGE spreadsheet in GA_APH_Archive.xls contains the 1:250,000 scale map sheet names and numbers (536 names and numbers) and recorded against each name and number is the year and camera used. This spreadsheet was constructed from “the year and camera used as documented on the flight line diagramBecause of the variability and piecemeal coverage of project specific and some earlier aerial photography it was not specifically recorded in the COVERAGE spreadsheet.”⁹⁵ From the COVERAGE spreadsheet for a specific 1:250,000 map sheet name you can therefore determine when a film was taken e.g. Pine Creek 1935, 1943, 1948, 1974. “As aerial photography was historically acquired in blocks of 1:250,000 scale map sheets and the flight line diagrams are referenced to 1:250,000 scale map sheet names/numbers the geographical and temporal coverage could be summarized on this basis.”⁹⁶ Whilst this spreadsheet is not 100% complete as it excludes project specific and some earlier photography it can be used to do some analysis of the extent of duplication within the aerial film holdings.

There are 536 map sheet numbers/names listed on the COVERAGE spreadsheet. Of these:

- 28 map sheet numbers/names have no films;
- 115 map sheet numbers/names have one film e.g. Coober Pedy 1947; Albany 1964; Newcastle 1970;
- 183 map sheet numbers/names have two films e.g. Melville Island 1943, 1962; Simpson Desert North 1971, 1978; Tweed Heads 1966, 1989;
- 158 map sheet numbers/names have three films e.g. Gove 1943, 1950, 1969; Walgett 1952, 1972, 1984; Ballarat 1961, 1979, 1989;
- 47 map sheet numbers/names have four films e.g. Darwin 1944, 1950, 1969, 1988; Innisfail 1942, 1943, 1961, 1979; Brisbane 1940, 1947, 1969, 1989.
- 5 map sheet numbers/names have five films e.g. Pine Creek 1935, 1943, 1948, 1974, 1988; Mackay 1942, 1948, 1960, 1979, 1986; Hale River 1945, 1950, 1971, 1978, 1986.

For the majority of localities there was more than one aerial film taken during the period 1935-1991 (e.g. Pine Creek 1935, 1943, 1948, 1974, 1988) however this adds value to the aerial photography records series as the coverage for a particular area provides a historical record of how the landscape of that area has developed and changed over time.

A further area of duplication amongst the aerial films is where more than one copy of the same film exists. In December 2000 Mr Paul Wise reported that 3302

⁹⁵ Wise, pp11-12

⁹⁶ Wise, p11

films at the National Archives “are duplicates from original nitrate films. As the original nitrate films were destroyed after duplication these 3302 films are now the “originals”. Only 209 of these films are duplicated more than once [duplicated three times] and have a copy stored offsite.....The master is held in NSW, accession number B5424/5. The “duplicating” master is held in Victoria, accession number B5424/6.”⁹⁷

The National Archives has previously advised Geoscience Australia that for preservation reasons they require three copies of a film. In 2001 and 2003 267 of the worst affected acetate films were duplicated. “112 of these films were duplicated in 2001 by AUSLIG. Also, 115 were duplicated in 2003 by Geoscience Australia and 40 duplicated in 2003 by National Archives of Australia.”⁹⁸

A 2008 condition survey undertaken on the National Archives aerial film holdings identified 540 items that are considered to be duplicates. “These are preservation and printing masters made from items in series B5424/3, B5424/4 and an unknown series presumed to be a consignment of B5424 (there was no series listed on the canisters).”⁹⁹

One issue raised during the appraisal was whether the National Archives should/would authorise the destruction of an original film if it was in poor condition and had been copied. The General Disposal Authority for source records that have been copied, converted or migrated enables the disposal of source “records that cannot have their authenticity, integrity, or useability protected by keeping them as originals, and where there is no readily available or practical means of capturing the originals in a recordkeeping system” or “records that are at high risk of unplanned loss or alteration because of the inherently unstable nature of the media or technological platform used to record them and therefore, impossible, impractical or inappropriate to retain as originals for any length of time.” In these circumstances the disposal of the source record is permitted once copied regardless of whether the records were created before or after 1 July 2002 and regardless of their disposal status. However it should be noted that in relation to records in National Archives custody this General Disposal Authority would only apply to the Archives’ destruction of another agency’s records after copying if the Archives was acting on behalf of the agency. Therefore at a minimum agency consent would be required. If the source records do not fit into the categories referred to above advice from the Government Information Management Branch is that the

⁹⁷ Wise, p2, 8

⁹⁸ Mollison, p7

⁹⁹ C Garvie and D Lueth, *Condition Survey Report for Geoscience Aerial Film Holdings at East Burwood Repository – NAA Melbourne Office 2008*, p9

disposal of the source records should be dealt with by issuing a separate records authority to cover the specific instance or case.

Duplication with other formats eg duplication of film images in diapositives and prints

Diapositives

Mr Joe Semmler (Geoscience Australia) advised that diapositives were only produced when mapping projects were undertaken. For example photography may have been flown, but the diapositive may not have been produced until the next financial year when more money was allocated. If less money was available then diapositives may not have been produced at all. Therefore not all films have an associated set of diapositives.

Duplication between UPGS diapositives and UPGS prints

UPGS advised that they have no listing of the diapositives in their custody however Geoscience Australia has a listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS (*Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS*). This listing contains the 1:250,000 map sheet number and name, number of total boxes and several columns headed Control/Date and Other/Date. The columns headed Control/Date indicate whether diapositives exist for a particular year for that map sheet number and name whilst the columns headed Other/Date indicate whether prints exist for a particular year for that map sheet number and name. This listing of the photo library therefore includes details (at year level) of what prints and diapositives exist for a map sheet area therefore the degree of duplication between prints and diapositives held at UPGS for a particular map sheet number and name and year can be determined.

An analysis of this listing identified that of 550 map sheet numbers there are 37 map sheet numbers with both diapositives and prints for a particular year e.g.

SE 51-16 Crossland has diapositives dated 1976 and prints dated 1976.
SG 52-9 Talbot has diapositives for 1976 and 1984 and prints for 1960 and 1984.

There is one map sheet number -SF 51-5 Nullagine – which has two sets of diapositives listed dated 1968.

Note that this analysis does not tell us if the diapositives and prints for a particular year are exactly the same. This is not possible without an item level examination. In addition it cannot be determined if the two sets of prints dated 1968 for SF 51-5 Nullagine are identical without an item level examination.

A spreadsheet provided by Geoscience Australia (aso_films.xls) lists the prints and diapositives associated with the ASO and AUSLIG “Project” films located at UPGS. With the exception of two entries (Oallen and PNG) the list covers only ACT projects. Mr Semmler advised that it is not possible to determine which items on this spreadsheet are diapositives and which are prints.

Duplication between UPGS diapositives and UPGS/National Archives aerial films

As stated above diapositives were only produced when mapping projects were undertaken therefore not all films have an associated set of diapositives.

Without a listing of diapositives that identifies film number it is only possible to determine the extent to which the diapositives at UPGS duplicate the aerial films at UPGS and National Archives by undertaking item level sampling or by cross checking the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS* with the COVERAGE spreadsheet compiled by Mr Paul Wise. 60 map sheet numbers were selected from the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS* and were then cross checked with the COVERAGE spreadsheet compiled by Mr Paul Wise to determine what aerial films, prints and diapositives existed for the 60 selected map sheet numbers.

In summary of 39 map sheet numbers that have diapositives at UPGS there is only one instance where there is no corresponding film for a year in which diapositives are held i.e. SF 55-5 Tangorin has diapositives for 1969 and 1984 and film for 1951, 1969 and 1980. As expected there are several instances of film for a specific year but no diapositives. For the detailed analysis refer to Appendix 3.

In addition a comparison was made of the two spreadsheets contained in aso_films.xls. “This file contains two spreadsheets:

1. ASO Film – UPGS: lists the “Project” films flown by ASO and AUSLIG that are located with UPGS. This list form part of the list contained in the file GA_APH_ARCHIVE.xls – Films at UPGS sheet;
2. Project Prints & Diaps – UPGS: lists the prints and diapositives associated with the “Project” films located at UPGS.”¹⁰⁰

It should be noted that there is no way to determine which items on the Project Prints & Diaps spreadsheet are diapositives and which are prints.

¹⁰⁰ J Semmler, aso_film.xls, 15 May 2008

40 film numbers were selected at random from the Project Prints & Diaps – UPGS spreadsheet and cross checked against the ASO Film – UPGS spreadsheet. Of the 40 selected film numbers from the Project Prints & Diaps – UPGS spreadsheet 19 film numbers are not listed on the ASO Film – UPGS spreadsheet. They are listed on the ACT spreadsheet prepared by Mr Paul Wise which lists the film projects undertaken by the Australian Survey Office, and later AUSLIG, primarily over the ACT region. Five of the film numbers (AAM 464, AAM 485, SP 6, SP 32, SOR 70) are listed on the Miscellaneous Films spreadsheet (National Archives holdings) prepared by Mr Paul Wise and one film number (SVY 108) is on the SVY Films spreadsheet.

Mr Semmler advised that there is no listing of NATMAP films that have associated diapositives.

Duplication between UPGS diapositives and National Archives diapositives

With regard to the diapositives held by the National Archives the consignment lists for A892 in some cases contain details of the area (eg Townsville), run number and frame number but do not contain a date flown or film number. This means that unless an item level examination of items in A892 is undertaken a comparison with the diapositives at UPGS cannot be easily made as it would involve trying to determine the appropriate flight diagram. However by identifying the map sheet number it is possible to do a basic comparison with the diapositives on the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS*. For example on the A892/1 consignment list there are diapositives listed for the Townsville-Mt Isa M/W Link, Coolangatta Airport, Kalgoorlie Airport, Darwin Airport, Darwin-Mt Isa M/W Link, Hobart Aerodrome Approach, Tottenham Stores Project, Gin Gin Satellite Aerodrome, Brisbane Airport, Alice Springs Airport, Tullamarine Airport yet there are no diapositives listed for these map sheet numbers on the UPGS diapositives and print listings. Therefore the majority of diapositives in A892/1 do not appear to be duplicated by the diapositives at UPGS.

In other cases (A892/2 and A892/3) they contain item numbers such as F55/1/00/1, F55/1/00/2 which may include a reference to the map sheet number eg F55-1 covers Hughenden and therefore duplication may be able to be determined by referencing the flight diagrams, determining the year flown and then cross checking with the diapositives on the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS*.

The consignment list for K1301 contains multiple locations with a date range of the same year.

The A895 consignment list contains a film number (eg Sortie 23, Sortie 24, Sortie 26 etc) which can be compared to film numbers in the GA_APH_Archive.xls spreadsheet to obtain the year flown and map sheet area. The year flown and map sheet area can then be cross checked against the diapositives on the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS*. Cross checking indicated that for all of the A895 diapositives for which a film number and year flown exists there are no diapositives for that year and map sheet area listed on the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS*.

In addition the film number listed on the A895 consignment list can be cross checked against the films numbers in the aso_films.xls – Project Prints & Diaps – UPGS spreadsheet to determine if prints and diapositives exist for that film number. Of 15 film numbers on the A895 listing 10 film numbers were included on the aso_films.xls – Project Prints & Diaps – UPGS spreadsheet indicating that there are prints and/or diapositives at UPGS as well as diapositives at National Archives. For the remaining 5 film numbers the year flown could not be determined. However it should be noted that the aso_films.xls – Project Prints & Diaps – UPGS spreadsheet does not distinguish between prints and diapositives for a particular film so it may be prints rather than diapositives that are held at UPGS and also the above comparison has been made at the year flown level rather than an exact comparison of individual diapositives.

The A2829 consignment list contains the map sheet number and the area eg C53-13 Coburg Pensinsula A-F, X, Y but no dates of the photography apart from the consignment date range of 1950-1961. Whilst it is possible to determine that for the diapositive item described as C53-13 Coburg Pensinsula there are several flight diagrams it is difficult to determine to which film and run number the diapositive listed on the A2829 consignment listing actually relates. However a comparison at map sheet number and the year range was made between the A2829 consignment list and the diapositives listed on the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS*. Whilst a majority of the map sheet number and names on the A2829 consignment list are present on the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS* all of the diapositives listed on that spreadsheet for those map sheet numbers and names post date the date range of A2829. Therefore it has been assumed that there is no duplication between the diapositives at UPGS and A2829. In addition there is no duplication with the prints and diapositives listed on the aso_films.xls – Project Prints & Diaps – UPGS spreadsheet as the latter only contains ACT, OALLEN1 and PNG.

Photographic Prints

UPGS staff advised that within the prints they hold there may be duplicates as it was normal to produce three prints. UPGS advised that they are also holding a set of prints that they received from the National Library of Australia several years ago and that these may be duplicate prints from the National Library of Australia collection. Refer to the section above on National Library of Australia for further information on these prints.

Duplication between UPGS diapositives and UPGS prints

UPGS advised that they have no listing of the prints in their custody however Geoscience Australia have a listing of the AUSLIG photo library compiled in 1997 (*Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS*) as part of the handover to UPGS. This listing of the photo library includes details (at year level) of what prints and diapositives exist for a map sheet area therefore the degree of duplication between prints and diapositives held at UPGS for a particular map sheet number and name and year can be determined. For the outcomes of this analysis see the section above on Diapositives - Duplication between UPGS Diapositives and UPGS Prints. In addition it should be noted that there are three map sheet numbers (SF 50-7 Pyramid, SF 50-8 Marble Bar, SJ 55-9 Queenscliff) that have two sets of prints dated the same year. Note that this does not tell us if these sets of prints are exactly the same. This is not possible without an item level examination.

In addition a spreadsheet provided by Geoscience Australia (aso_films.xls) lists the prints and diapositives associated with the ASO and AUSLIG “Project” films located at UPGS. With the exception of two entries (Oallen and PNG) the list covers only ACT projects. Mr Semmler advised that it is not possible to determine which items on this spreadsheet are diapositives and which are prints.

Duplication between UPGS prints and UPGS/National Archives aerial films

Without a listing of prints that identifies film number it is only possible to determine the extent to which the prints at UPGS duplicate the aerial films at UPGS and National Archives by undertaking item level sampling or by cross checking the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS* with the COVERAGE spreadsheet compiled by Mr Paul Wise. 60 map sheet numbers were selected from the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS* and were then cross checked with the COVERAGE spreadsheet compiled by Mr Paul Wise to determine what aerial films, prints and diapositives existed for the 60 selected map sheet numbers.

In summary of 38 map sheet numbers that have prints at UPGS there are 11 instances where there is no corresponding film for a year in which prints are held e.g. SD 54-12 Ebagoola: Prints 1972; Film 1945, 1955, 1969; SF 50-5 Onslow: Prints 1967, 1976 CMLW; Film 1943, 1949, 1967. As expected there are several instances of film for a specific year but no prints. For the detailed analysis refer to Appendix 3.

Duplication between National Archives prints and UPGS/National Archives aerial films

With regard to the prints held by the National Archives the consignment list for A1579/1 contains the map sheet number (eg C53-13) and another number which is probably a range of run numbers (1-4, 508, 9-13, 14-15 & KEYS) however it does not contain the date flown or film number so the only way of determining to which film the prints relate is to narrow it down to the film taken by K17 photography and then check the flight diagram to determine which films cover each run. For example C53-13 covers the Coburg Peninsula and K17 photography was taken in May 1950, July 1950 and August 1943. The May and July 1950 flight diagrams are the same and have 15 runs covering eight aerial films.

The A1580 consignment list contains copies of index cards by location (number eg Zone 7 No. 605 and name eg Merigal) and these cards record the film number eg SVY519, run number eg 1, photo numbers eg 5055-5080. Ten locations were selected at random and the film numbers checked against the films listed in the GA_APH-ARCHIVE.xls spreadsheet. All of the film numbers on the selected cards were located on the GA_APH-ARCHIVE.xls spreadsheet.

There are no consignment lists for A891 and A894 so duplication with films cannot be determined. The AP1129/2 consignment list contains area names and run numbers eg Run 1A Mt Eba Nos 1-61; Run 1D Mt Eba Nos 1-9. There are no dates so determining duplication with films is very difficult without viewing title strip information on prints. The D5270/1 consignment list contains area names, run numbers and dates eg Broken Hill Run 1 1974; Dalhousie Run 1 1985. For this consignment determining any duplication with films would be difficult without viewing title strip information on prints as checking the flight diagrams and the COVERAGE spreadsheet indicates that there are no films for Broken Hill dated 1974 and other locations such as Parafield are not listed on either of these spreadsheets.

There is also potential duplication between the aerial films in B5424 and contact prints in A8514/1. For a detailed description of A8514 refer to the section above titled *Information about the records – Photographic prints*. Folio 40 on file 1987/1043, dated 7 February 1990, contains correspondence from the Australian

Archives ACT Regional Office to the Victorian Regional Office that states “on receipt of the items [in A8514] ... it was understood that these records were the only remaining copies of aerial photographs up to 1949. It was understood that a fire at the RAAF base in Lavington in 1950 had destroyed the original prints and negatives held by the RAAF.” The ACT Regional Office was seeking advice from the Victorian Regional Office as to whether the negatives held in B5424 are the negatives for the aerial photographs in A8514. The Victorian Regional Office contacted the Regional Manager, Australian Surveying and Land Information Group and after viewing the aerial photographs in Canberra Mr Gerry Burns, AUSLIG, Victoria advised on 8 April 1991 that “all photos [in A8514] with either a SVY or MAP prefix would be duplicates of negatives held by [the] Victorian Regional Office.”¹⁰¹ It should be noted that there are gaps within the SVY and MAP film registration numbers so it is possible that prints may exist but a film doesn’t exist and that there may be other prints in A8514/1 where no corresponding aerial film exists.

Duplication between UPGS prints and National Archives prints

Using the map sheet number and year of prints as the point of comparison, the consignment lists for the National Archives print series greater than one metre were cross checked with the prints listed on the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS* and the *aso_films.xls – Project Prints & Diaps – UPGS spreadsheet*. With the exception of two items the latter spreadsheet contains only ACT prints and diapositives.

The prints listed on the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS* have a date range of 1960-1993 whereas the main two National Archives series of prints have earlier date ranges: A1579 - 1949-1955 and A1580 - 1952-1959. The prints and diapositives on the *aso_films.xls – Project Prints & Diaps – UPGS spreadsheet* have a date range of 1960-1989. Therefore it is assumed that there is no duplication.

There is no consignment list for A891/1 however as the contents date range is 1961 and the quantity 7.2m it is assumed that there is only minimal duplication with the UPGS prints. Similarly there is no consignment list for A894/1. This consignment has a date range of 1966-1972 and covers the ACT therefore it is possible that these prints are duplicated by the ACT prints in the *aso_films.xls – Project Prints & Diaps – UPGS spreadsheet* however as the volume of A894/1 is 2.34m the duplication is considered to be minor.

In relation to D5270 (3.24m) approximately 50% of the records are unlikely to have duplicates at UPGS. It was not possible to identify whether the other 50%

¹⁰¹ Folio 46 and 47, 1987/1043

are duplicated as the map sheet numbers could not be determined for their locations listed on the consignment list.

In relation to J2781 one item from a total of nine items may be duplicated in the UPGS prints. There was no duplication identified for BP374/3, D4467 and B72.

On the basis of a comparison of the consignment lists for the National Archives print series greater than one metre and the prints listed on the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS* and the *aso_films.xls – Project Prints & Diaps – UPGS spreadsheet* it is likely that the duplication is a minor issue.

Duplication between UPGS prints, Geoscience Australia Air Photo Library and National Library of Australia prints

A comparison of holdings of UPGS prints and the Geoscience Australia Air Photo Library was undertaken by Mr Joe Semmler (Geoscience Australia) using a sample of 1:250 000 scale map sheet areas and associated date of photography. The comparison identifies dates of photographic prints held by UPGS but not by the Geoscience Australia Air Photo Library. Where a gap within the Geoscience Australia Air Photo Library holdings was identified, a further comparison was made against the National Library of Australia holdings.

“A total of 88 map sheet areas were examined which comprised 190 associated dates that made up 402 of the 1837 boxes at UPGS. This equates to approximately 22% of the total number of boxes transferred to UPGS. The following results are based upon corresponding dates rather than boxes of films as there is no clear correlation between the number of boxes for a given date of photography.

Of the 190 dates compared:

- 117 dates found to correspond with Geoscience Australia’s Air Photo Library records. [This equates to 62%.]
- 73 dates did not correspond with Geoscience Australia’s Air Photo Library records. This equate to 38%.
- Of these 73 dates, six were found to correspond to the lists provided by the National Library of Australia.
- This left 66 dates of photography without a corresponding date either at Geoscience Australia or the National Library of Australia or 35%.

An observation noted is that of the 73 dates identified, 80% were found to be from 1979 onwards. This relates approximately to the time that the Division of National Mapping and the Bureau of Mineral Resource went their separate ways. It was also observed that a significant number of dates corresponded

between the holdings at Geoscience Australia and the National Library of Australia.”¹⁰²

In summary as it “was extremely rare that a second coverage of aerial photography was acquired over a given map sheet in a particular year for mapping purposes the dates corresponding between UPGS, Geoscience Australia and the National Library of Australia holdings indicate that duplicate copies of prints exist between the holdings at UPGS, Geoscience Australia and the National Library of Australia. Of the sample examined 35% did not have corresponding dates, and therefore no duplicates prints existing either at Geoscience Australia or the National Library of Australia. This figure may be lower if the National Library of Australia records included WA and NT regions.”¹⁰³

Duplication between Geoscience Australia Air Photo Library and National Archives prints

A comparison was made between the photographic prints in the Geoscience Australia Air Photo Library and A1579/1 and A1580/1 held by National Archives.

The consignment list for A1579/1 contains the map sheet number (eg C53-13) and another number which is probably a range of run numbers (1-4, 508, 9-13, 14-15 & KEYS) however it does not contain date information therefore an adequate comparison with the list of holdings of the Geoscience Australia Air Photo Library cannot be made. Whilst the series A1579 covers K17 photography the K17 photographic prints on the Geoscience Australia Air Photo Library list can have several different dates which cover the date range of A1579/1 and therefore in the absence of a date for items on the A1579/1 listing it is difficult to determine if duplication exists.

However from observing the map sheet numbers and camera type on the list of prints held by the Geoscience Australia Air Photo Library it appears that there may be a significant degree of duplication of the items listed on pages 1-2 of the A1579/1 consignment list with the prints held by the Geoscience Australia Air Photo Library.

The A1580 consignment list contains copies of index cards by location (number eg Zone 7 No. 605 and name eg Merigal) and these cards record the film number eg SVY519, run number eg 1, photo numbers eg 5055-5080. Ten locations were selected at random and the map sheet number, run number and date checked against the list of the prints held by the Geoscience Australia Air

¹⁰² J Semmler, *Retention of Prints and Diapositives held at United Photo & Graphic Services (UPGS) Pty Ltd, July 2008*, pp1-2

¹⁰³ J Semmler, *Retention of Prints and Diapositives held at United Photo & Graphic Services (UPGS) Pty Ltd, July 2008*, p2

Photo Library. Of 20 dates there were only four instances where there may be duplication i.e. corresponding location and year on both lists.

Flight Diagrams

There are two sets of flight diagrams held by UPGS - an A4 size that are in 95 blue folders and a mostly laminated large format version that can be found in six vertical plan presses (vertiplans). It is suspected by Geoscience Australia staff that the large format set at UPGS may not include the older RAAF flight diagrams however these RAAF flight diagrams may be contained within the 95 blue folders. There are also some A4 size copies in manilla folders. In addition there are scanned images of flight diagrams available from the Geoscience Australia website and there are also copies in the Geoscience Australia library.

5. DISPOSAL INFORMATION

Geoscience Australia and Predecessor Agencies

Records Authority 2005/233013 was issued on 20 January 2006 and provides coverage for all functional records of Geoscience Australia. As stated earlier Geoscience Australia staff advised that GEOSCIENCE INFORMATION PRODUCTS – Production is the appropriate function/activity set for aerial survey photography records. During the course of this project it was determined that Records Authority 2005/233013 does not provide adequate disposal coverage for the aerial survey photography records.

B5424 Negative films of aerial survey photographs of Australia is currently sentenced as retain permanently under entry 1.1 of RDA 973 AUSLIG Central Office & All States issued 11 Feb 1993. This entry covers film negatives – master set.

RDA 973 also contains entries for control diapositives (pugged) (entry 1.2 - Retain permanently) and copy prints (positives). Three entries cover copy print (positives):

- | | |
|-----------------------------|-------------------------------|
| 1.3.1 Control annotated set | Retain permanently |
| 1.3.2 Duplicate set | Retain permanently |
| 1.3.3 All other copy prints | Destroy when reference ceases |

In relation to entry 1.3.2 the Recommended Custody column states “Transfer to National Library by AUSLIG Central Office when action completed.”

Records Disposal Schedule A1579/1 (issued 29 June 1982) and A5446/1 (issued 29 June 1982) each contained an identical entry (1.1) covering aerial survey prints:

- (a) 1 set showing Control Points - Retain Permanently
- (b) Other sets – Destroy when reference ceases

In an earlier disposal authority CA 218/2/1 (issued 19 June 1969) the following records had a disposal action of retain permanently:

Aerial survey negatives;
Numerical list of aerial survey films;
Schedule of aerial survey mosaics and prints forwarded from RAAF; and
Aerial survey mosaics.

Records Disposal Authority 1275 class 4 (Destroy when reference ceases) contains a reference to “flights paths”: “Airborne survey material for topographical, hydrogeological, geophysical, gravity and seismic surveys including track maps, flights paths, total magnetic intensity (TMI), contours and profiles such as fish-eye film and borrower’s cards relating to aerial runs and surveys.” Records Disposal Authority 1275 covers Australian Geological Survey Organisation Central Office Spatial Information and Mapping Section (incorporating the former Cartographic Services Unit) operational records and was issued in March 1997. Class 4 was amended in March 2000.

Defence – RAAF Central Photographic Establishment

Records Disposal Authority 1368 was issued in September 1998 and covers aerial imagery records (film, registers, cover traces, aperture cards) generated by the RAAF Central Photographic Establishment. Entry 1 covers aerial survey film covering Australia and the Pacific region containing details of physical features and geographic formations. Aerial survey film created pre 1951 has the disposal action Retain Permanently (entry 1.1) whilst post 1950 aerial survey film (entry 1.2) has the disposal action Destroy when Reference Ceases.

In 1998 102.96m of aerial survey film covering Australia and the Pacific region 1942-1948 were transferred by the RAAF Central Photographic Establishment to the National Archives Melbourne office (B3957). The appraisal undertaken prior to the development of Records Disposal Authority 1368 determined that “the National Archives regarded the aerial survey films post 1950 as having insufficient research value to warrant the cost of repackaging and subsequent storage within our facilities. The National Archives already holds AUSLIG films which are used to measure land shift over time and to check geographical features and other details. In addition the origins and provenance of the RAAF CPE films is unclear, obscuring and reducing their research value.”¹⁰⁴ An earlier draft of the disposal authority included two entries for post 1950 aerial survey

¹⁰⁴ Folio 176, 1998/68

film – those films relating to specific theatres of wars (eg Korea, Malaysia, Vietnam etc) - Retain Permanently and other films - Destroy when Reference Ceases.

The Class Appraisal Report for Records Disposal Authority 1368 entry 1.1 states that the records cover the period late 1930s to 1950 and that fire destroyed many pre WW II records¹⁰⁵. This report also states that AUSLIG films are “already RP, though flown at higher altitude – give broader rather than specified detail. Research mechanism already in place, used for environmental & research purposes. N.B. photographic prints held by AAVIC at Dandenong duplicate information for this period. Destruction of prints [see below] agreed to on basis of film availability.” The records in class 1.1 were described as having significant research and/or display value as they “detail formations and establishments during war period and immediately after in Australia and South Pacific regions”.¹⁰⁶

The Class Appraisal Report for Records Disposal Authority 1368 entry 1.2 states that the records cover the period late 1951 to 1985 and that “for research purposes, AUSLIG records already available, prints provided through commercial contractor. However, the film appraised in this class relates to specific theatres of war, such as Korea, Malaysia, Vietnam, not covered by other AUSLIG film holdings.”¹⁰⁷ In this Class Appraisal Report aerial survey film – post 1950 – relating to specific theatres of war was recommended for permanent retention. “Agency staff said that almost all related to Vietnam had already been destroyed”.¹⁰⁸ However as stated above the final records disposal authority contained only two classes covering pre 1951 film - Retain Permanently (entry 1.1) - and post 1950 aerial survey film - Destroy when Reference Ceases (entry 1.2).

Records Disposal Authority 1189 covers “aerial photographic records transferred to Australian Archives by the Central Photographic Establishment, RAAF Base Laverton in 1968”. There is one class covering these records with the disposal action of Destroy Immediately [see the reference above to photographic prints held by AAVIC at Dandenong].

Defence - Defence Imagery Geospatial Organisation

Records Disposal Authority 1236 was issued to the Army Survey Regiment (a predecessor of the Defence Imagery Geospatial Organisation) in 1996 and covered maps and associated mapping records. Entry 7 covers aerial

¹⁰⁵ Folio 119, 1998/68

¹⁰⁶ Folio 115, 1998/68

¹⁰⁷ Folio 108, 1998/68

¹⁰⁸ Folio 20, 1998/68

photographs, negatives, glass diapositives and adjustment/control values and has a disposal action of Destroy when superseded. “The justification for this disposal action given in the relevant class appraisal report is that these records are duplicated in the original prints and negatives held by RAAF (Central Photographic Establishment) and in the hard copy maps produced from the diapositives. DIGO reported that the original film for this photography held by RAAF had been 'accidentally' destroyed.”¹⁰⁹ In the earlier Records Disposal Authority 978 aerial photographs, negatives, glass diapositives and adjustment/control values used in the production of maps have a disposal action of *Retain Permanently*.

The 2006/07 appraisal of Defence Imagery and Geospatial Organisation controlled glass and polyester diapositives resulted in a retain as national archives (RNA) recommendation under appraisal Objective three *To preserve records containing information that is considered essential for the protection and future well-being of Australians and their environment*. This retain as national archives (RNA) recommendation was based on the value of “aerial survey photographic records ... for use in environmental research as they can provide an accurate record of the state of vegetation, rivers etc at specific time periods so that changes over time can be measured. They are observation records which can't be recreated.... RNA retention is appropriate because of this potential use, where such records are not substantially duplicated..... it was eventually agreed between DIGO and Geoscience that the material was not substantially duplicated in Geoscience holdings (R677762006).”¹¹⁰

6. LIKELY OR ACTUAL USAGE

6.1 Usage

Geoscience Australia advised that they have no ongoing business requirement for the aerial survey photography records. Current demand for access is from third parties. This access is managed by UPGS under contractual arrangements with Geoscience Australia.

Lending statistics for the aerial photography records in National Archives custody for the period 2001-2008 are outlined in Appendix 4. With the exception of B5424 lending for all other series has been minimal. Only six series have had any lending activity for the period 2001-2008: B5424, MP1847/1 (24 lending jobs), A1579 (two lending jobs), A1580 (three lending jobs), A894 (three lending jobs) and J2781 (14 lending jobs). The absence of any 'real' items on RecordSearch for B5424 indicates that the lending activity has been agency lending ie lending of items to UPGS to fulfil their client requests. The B5424

¹⁰⁹ McInnes, p2

¹¹⁰ McInnes, pp2-3

lending activity may also reflect lending by UPGS to undertake earlier aerial film preservation work. The low lending figures for the aerial photography records in National Archives custody are likely to be due, in part, to the lack of accessibility (physical and intellectual) to the records.

The Films Accessed worksheet in GA_APH_ARCHIVE.xls identifies the films used by UPGS to fulfil client requests for reproductions between 2003 and 2007 including the number of times the film(s) have been accessed. The spreadsheet is arranged in columns by film prefix number eg AUS/C, AUS, CAB, SVY, MAP, CAE and then in each column lists the films used. According to the spreadsheet summary a total of 962 films were accessed in 2003-07 with a further breakdown of 20 films per month and 4.63 films per week. The breakdown of these figures for National Archives and UPGS film is:

- 428 National Archives films accessed 2003-07 [note these figures would also be part of the B5424 National Archives lending figures];
- 8.92 National Archives films accessed per month;
- 2.06 National Archives films accessed per week;
- 534 UPGS films accessed 2003-07;
- 11.13 UPGS films accessed per month; and
- 2.567 UPGS films accessed per week.

The greatest number of requests were for:

- SVY films (148 requests across approximately 98 films);
- MAP films (280 requests across approximately 188 films);
- CAB films (83 requests across approximately 66 films);
- CAG/C films (71 requests across approximately 46 films);
- SOC films (65 requests across approximately 33 films); and
- AUS films (60 requests across approximately 34 films).

There are several instances of films being accessed more than once eg MAP 225 (two requests), MAP 589 (three requests), MAP 1309 (seven requests), MAP 1313 (five requests), SVY 122 (four requests), SVY 549 (seven requests), SVY 1033 (three requests), CAB 323 (three requests), CAG/C 1004 (two requests), CAG/C 7510 (three requests), SOC 626 (five requests), AUS 99 (four requests), AUS 222 (three requests).

In relation to aerial films UPGS staff advised that the users comprise farmers, mining companies, environmental managers, local history researchers and individuals e.g. aerial image of their house, local area over time etc. UPGS staff advised that they receive few, if any, queries from State government agencies wanting to look at Commonwealth aerial photography.

UPGS advised that the diapositives are rarely used and that any prints required would be duplicated from the film rather than from a diapositive. UPGS advised that the prints are occasionally (rarely) viewed by UPGS staff or customers – if there is a print they view that rather than viewing the film. The prints therefore are used as reference copies. Prints are not used to generate copies as UPGS generates prints from the film.

UPGS refer to the hard copy of the flight diagrams when the website version is not clear.

For the period 2001-2008 there has been no usage of the laser terrain profile records in National Archives custody.

Potential stakeholders and users of the aerial photography records include:

- Australian Greenhouse Office;
- Murray-Darling Basin Commission;
- Department of Defence;
- Department of Agriculture, Fisheries and Forestry;
- departments responsible for natural resources and water; and
- departments responsible for environment.

It should be noted that Mr Peter Arentz in his draft report *A Review of Geoscience Australia's Collection of Aerial Photography: Options Paper* (May 2007) stated that “the contemporary utility of the collection to Geoscience Australia, other Australian Government agencies, State and Territory Governments, industry, academic institutions and the general public is unclear.”¹¹¹ Mr Peter Arentz also noted that usage of the archive, measured by sales from the archive, is declining and that since 2003/04 sales have halved and with it the royalties payable to Geoscience Australia.

6.2 Accessibility

RecordSearch item statistics for the aerial photography records in National Archives custody are outlined in Appendix 4. Overall there are few ‘real’ (ie non lending generated) items entered on RecordSearch.

Film

In relation to B5424 whilst there are 2174 items on RecordSearch these are all ‘unknown’ items (ie no item title apart from the word ‘unknown’) that are lending generated item entries for agency lending requests. The lack of item entries on RecordSearch reduces public accessibility to the records.

¹¹¹ Arentz, p3

Whilst consignment lists exist for B5424/2, /3, /4, /6, 7 and /8 the information contained on the listings is variable. The consignment list for B5424/2 is divided into two sequences “SVY” and “MAP” and contains the following details: new container serial number (eg 1, 2, 3 etc); film registration number (eg SVY 4, SVY 5, SVY6 etc); old CPE container number. The consignment list has been annotated with details of missing and reproduced items. No title details or details of area or date filmed are included.

The consignment lists for B5424/3 and /4 contain the following details: film number (eg MAP 8, MAP 333, SVY830, SVY 971); container number (eg 1607, 1657); 250,000 area (eg I54-5, E51-8); name of 250,000 area (eg Burra; Lennard River); camera (eg K17, E4); date flown (eg 11/44, 8/45).

The consignment list for B5424/6 contains the following details: reel number (eg 2848, 2868); MAP (eg 2814R, 3398); frame number (eg 173, 76); width (eg 9, 7); comments. No title details or details of area or date filmed are included. The consignment lists for B5424/7 and /8 only contain a list of film numbers eg CAE 1, CAEG 2877, CAE/M12.

In order to determine which film is required the user needs to know the film number which can be determined from the flight line diagrams on the Geoscience Australia internet site. Basically the user determines the area and relevant year(s) of interest, locates the relevant flight line diagram(s) and from there the user can determine the film number, run number and the centres of the photos in relation to ground features.

For MP1847/1/1 whilst there are 231 items on RecordSearch these comprise 230 ‘unknown’ items plus one ‘whole of series’ item entry. The consignment list includes the area number and name and date flown. The consignment list for MP1087/1/0 contains the area name but no date flown.

A listing of the film located at the National Archives and UPGS is available from the GA_APH_ARCHIVE.xls spreadsheet however it should be noted that this listing only contains the accession number, film registration number, can number or reel number, film type, duplication information, acquisition date (only for ANT films), project description, focal length, photo scale, month and year (note: these last four elements are only for ACT films) and in some instances format and comments. For the vast majority of films on this spreadsheet information on the area and date flown is not included.

In addition the physical format of the aerial films reduces the accessibility of the records. National Archives do not have facilities for viewing or copying film. For the majority of the films only one copy of the film exists and as this is considered to be the master copy it cannot be used for reference purposes.

Photographic Prints

Only five of the 15 series of prints held at the National Archives have ‘real’ items on RecordSearch: A1579 (three), A1580 (seven), A894 (five), J2781 (nine) and BP374/3 (14). Given the quantities of A1579 (243m) and A1580 (81m) the number of items on RecordSearch is minimal. The nine items entered for J2781 comprises the whole series. As with the film and diapositives the lack of item entries on RecordSearch reduces public accessibility to the records.

The consignment lists are variable in their quality. The A1579 list contains map number and a further number which may be the run number but no date number or area name. The A1580 list contains photocopies of index cards arranged by location. The index cards contain details of film registration number, run number, photo number, contact prints, enlargements, date flown, scale and remarks. There is no consignment list for A891 or A894. The consignment list for AP1129/2 contains run number, area and photo number but no date information. The list for D5270 contains area, run number and date.

The *Listing of the AUSLIG Photo Library Compiled in 1997 as Part of the Handover to UPGS* provides information on the number of boxes and date of prints and diapositives held at UPGS for a particular map sheet number and name.

Diapositives

There are no ‘real’ items entered on RecordSearch for the National Archives series of diapositives apart from A2832 Darwin Aerial Photographic Mosaic Glass negatives which contains two ‘real’ item entries. The lack of item entries on RecordSearch reduces public accessibility to the diapositives.

In addition the consignment lists for diapositives held at National Archives are variable in their quality. For example the consignment lists for A892 contain area (eg Northam Army Camp), run number and diapositive number. The list for A895 contains a film number and a further number which is probably the diapositive number. There is no information on the area or date flown. The lists for A2829 and A2830 contain area number and name and a further control symbol eg A-F, X, Y which may be the diapositive number.

The *Listing of the AUSLIG Photo Library Compiled in 1997 as Part of the Handover to UPGS* provides information on the number of boxes and date of prints and diapositives held at UPGS for a particular map sheet number and name.

Flight Diagrams

The hard copy flight diagrams are accessible to clients of UPGS and are also available from the Geoscience Australia website. To access the flight diagrams

the user only needs to know the geographic location in which they are interested. The details on some of the flight diagrams on the Geoscience Australia website are not clear and in these instances reference needs to be made to the hard copy.

Laser Terrain Profile Records

There are no 'real' items entered on RecordSearch for the National Archives series of laser terrain profile records.

Control Records

There are no items on RecordSearch for A1104 Aerial Survey Schedules of Prints and Mosaics supplied, 1935-1937 and there is no consignment listing.

7. ASSESSMENT OF OBJECTIVES AGAINST NATIONAL ARCHIVES FIVE APPRAISAL OBJECTIVES

Aerial survey photography records are observation records that provide a valuable historical record of development and change to the Australian landscape and enable tracking of environmental changes over time. They provide an accurate record at specific time periods so that changes over time can be measured including such things as the state of vegetation, deforestation, salinity outbreaks, rivers at specific time periods, drought, infrastructure development, urban sprawl and land use changes etc.

Objective three from *Why Records Are Kept?* covers the preservation of “records containing information that is considered essential for the protection and future well-being of Australians and their environment..... unique, irreplaceable information that is needed by national governments now and, probably, in perpetuity for effective planning, decision-making and transfer of knowledge in matters such as health and safety, security, social cohesion and environmental management.”¹¹²

The aerial film holdings at the National Archives and UPGS contain unique records of the Australian landscape captured during the period c.1928-1993 and provide an opportunity to track environmental changes in the landscape over an extensive period of time. Antarctic films are also included in the aerial film holdings. The aerial films meet the criteria for retain as national archives (RNA) outlined in objective three from *Why Records Are Kept?* Flight line diagrams facilitate access to the aerial film and also meet the criteria for retain as national archives (RNA) outlined in objective three.

¹¹² National Archives of Australia, *Why Records Are Kept? Directions in Appraisal*, Canberra, March 2000, p7

The contact prints, print mosaics, orthophotos, photomaps, enlargements, proof prints and diapositives are considered to be derivatives of the aerial film and as such do not meet the criteria for retain as national archives (RNA) outlined in *Why Records Are Kept?* However there are likely to be instances where a contract print or diapositive exists but a corresponding master aerial film no longer exists. It was agreed by National Archives and Geoscience Australia staff that this would be a small number and was a low risk. However in such instances the diapositive should be retained as national archives and in the absence of both a corresponding master aerial film and a diapositive the contract print should be retained as national archives.

The laser terrain profile records do not meet any of the five objectives in *Why Records Are Kept?*

8. OTHER INFORMATION

Geoscience Australia has no ongoing business requirement for the aerial survey photography. Current demand for access is from third parties. This access is managed by UPGS under contractual arrangements with Geoscience Australia. At present approximately 60% of the film negative component of the records is in the custody of the National Archives and the storage of the balance is outsourced to UPGS. UPGS also stores a range of related records. These arrangements are governed by section 29 agreements between the National Archives and Geoscience Australia and General Disposal Authority 25. Under the terms of the contractual arrangement UPGS has the right to sell copies of the films at agreed prices inclusive of a royalty which is paid to Geoscience Australia. UPGS's income is derived from their profit from sales. There has been a gradual decline in sales and Geoscience Australia staff advised that there is little to reason to preserve the films for the reasons of maintaining or increasing revenue from sales of aerial photography.

Due to the format and volume there will be costs involved in transferring, preserving, storing and making accessible the aerial photography records. The film and diapositives will require special storage and handling arrangements. For the majority of film only one copy exists. Therefore accessibility will be reduced as the absence of a duplicating master and access copy means that for preservation reasons access to individual films may be restricted until further copying and/or digitisation of films occurs. Currently the contact prints (a derivative of the film) provide a more accessible form of the record and can be scanned and made available to public users. The diapositives (a derivative of the film) currently provide a better quality record for copying purposes than the contact prints and are more accessible than the film.

A survey and condition report on aerial survey photographic material in custody of UPGS and National Archives was undertaken in 2008 by National Archives and UPGS staff. The *Condition Survey Report for Geoscience Aerial Film Holdings at East Burwood Repository – NAA Melbourne Office 2008* prepared by Ms Carey Garvie and Mr Detlev Lueth states that of “the 6,357 original items surveyed approximately 0.2% are considered missing, 0.4% have more than one reel in the canisters, 0.2% are in non-archival canisters, only 10% are on archival spools and 0.3% show obvious signs of vinegar syndrome. In regard to the duplicate material all are on archival spools but approximately 75% are housed in non-archival canisters.”¹¹³

The report of the UPGS condition survey of the aerial film held by UPGS advised:

“Number of films at UPGS:	4,576
Number of films with apparent vinegar syndrome:	108
Number of films without spools:	2,202
Number of films on cardboard spools:	41
Number of films on archival spools:	3
Number of films in metal cans:	33

The amount of films with vinegar syndrome was initially less than expected and this would appear to be due to the project of the early 2000’s where there was a project to clean and inspect the films. Part of that project was to put new leaders and trailers on the films. The film product used for this was ESTAR based film. As these new leaders encompass or wrap around the acetate film this would appear to limit the VS “smell” test as the new leaders are acting as a sealing enclosure. If these films are “unwrapped” or opened up properly then the Vinegar Syndrome is evident.”¹¹⁴

The UPGS condition survey report also contains a reference to “the brittle nature of the film and the physical decay that may be occurring. The brittle nature is due to the loss of elasticity in the base so that as they are wound off the spool they will be increasingly at the risk of cracking and fracture.....The recommendation would be to inspect all the acetate films, put them onto archive spools and make a decision as to whether to duplicate or scan the film. We would also recommend a digital duplication start as soon as possible even with small batches of films to keep the cost within reasonable manageable yearly budget. As time goes on if more break down then this will make them

¹¹³ C Garvie and D Lueth, *Condition Survey Report for Geoscience Aerial Film Holdings at East Burwood Repository – NAA Melbourne Office 2008*, p3

¹¹⁴ A Christie, *UPGS Condition Survey Report, 2008*, p1

harder to handle especially for any duplication or recording of the film info, whether a reproduction of the film or a digital copy is made.”¹¹⁵

An earlier report on the preservation of aerial film states that the “major issue is the gradual decay of 3649 acetate films, due to the phenomenon known as “vinegar syndrome.” Many of the acetate films are in poor condition and are decaying rapidly, therefore requiring urgent preservation work. The remainder of the archive (7179 films) exists as polyester film and is not at risk since it has a theoretical shelf life of several hundred years.”¹¹⁶ An earlier report by Mr Paul Wise in 2000 stated that the “focus should be on the preservation of the 3916 acetate based films”¹¹⁷ however 267 of these acetate films were duplicated in 2001 and 2003 hence Mollison’s figure of 3649 acetate films.

There are two main options for the preservation of the films – photographic duplication and digital scanning - both of which are expensive to undertake. The Mollison report, the Wise report and the Arentz options paper provide information on these two options. A preservation strategy (including access considerations) for that part of the aerial survey photographic material to be retained as national archives is currently being developed by the National Archives.

In relation to the Geoscience non aerial film holdings at UPGS the Condition Survey Report prepared by Ms Carey Garvie and Mr Detlev Lueth in July 2008¹¹⁸ can be summarised as follows:

Photographic Prints

- The prints appear to be in a fair condition showing general wear and tear around the edges.
- All of the prints show some degree of curl as a result of insufficient support in the box resulting in slumping. This is generally very minor.
- Control Prints: These show slightly more wear and tear than the general prints and have various ink markings on the emulsion surface noting position details.

Control Books [known as National Mapping Program analytical control listings]

- The printouts are in generally good condition though they are printed on poor quality papers.

¹¹⁵ Christie, p2

¹¹⁶ Mollison, p4

¹¹⁷ Wise, p3

¹¹⁸ C Garvie and D Lueth, *Condition Survey Report – Geoscience Non Aerial Film Holdings at UPGS*, July 2008

Diapositives

- The diapositives appear to be in good condition. They are printed on an archivally stable base and have been stored in clear plastic sleeves that while not entirely archival quality do not appear to be PVC.

Flight Diagrams

- Those that are not laminated show minor wear and tear on the edges and generally have some hand written markings on them in various media though nothing predominant
- Some of the maps have an overlay of the flight path diagram that has been adhered with tape. The tape is generally attached to the plastic tab on the top edge though it may be adhered to the map in some cases. These maps also tend to have paper labels at the edges.
- In general the items are in good condition being printed on good quality papers. As mentioned earlier they all have a flight path diagram overlayed on top of them. This can either be handwritten in fine art markers or printed on.

Duplicate Flight Diagrams – Bound

- The copies are generally in good condition displaying evidence of general wear from use but no major damage.
- There are some slightly larger, around foolscap size, colour copies located in the later folders. These are generally stored in A4 size sleeves and the top section of the copy overhanging the sleeve, and sometimes folder, display signs of creasing and heavier wear.
- The cover pages used to separate groups of maps also display intermittent wear on the top edge, particularly those that rise above the edge of the folder.
- Many of the copies also have stickers on the front or hand written notes on the back. These all appear stable and do not appear to have had a deteriorative affect on the copies.

Duplicate Flight Diagrams – Unbound

- The copies are generally in good condition displaying evidence of general wear from use but no major damage.
- The larger copies are generally folded several times
- Nearly all of the maps have a blue ink stamp on the back “Photo Library Copy – not to be taken away”

- Many of the larger folded maps have handwritten notes on the back in various inks that appear to detail the location and scale of the map.

LTP Final Height Forms

- The forms are generally in good condition displaying evidence of general wear from use but no major damage.
- They are often multiple forms to a bundle which are held together with metal pins/staples.

Further work is also underway to define physical and intellectual control issues, activities and associated costs required to prepare for transfer that part of the series to be retained as national archives.

In relation to the prints Mr Semmler (Geoscience Australia) advised that “it is far easier to access and view photographic prints rather than rolls of original film. Specialist experience and facilities are required to handle the large format negatives to ensure no damage occurs. Potential users have the ability to access and view photographic prints through the extensive Geoscience Australia, the National Library of Australia and UPGS holdings. Given the potential overlap between these, it may not be necessary to retain all the prints located at UPGS. Retaining the photographic prints located at UPGS not duplicated by holdings at Geoscience Australia or the National Library of Australia would complement these agencies holdings, and make the information on the original films far more accessible to future users. The full extent of material not held at either Geoscience Australia or the National Library of Australia could be determined as part of the item level assessment to be undertaken as part of the transfer of material (films and flight diagrams) to the National Archives of Australia.”¹¹⁹

In relation to the diapositives Mr Semmler (Geoscience Australia) advised that “given the changes in technology, and the decline in the use of diapositives for mapping purposes, it is unlikely that they will be used for such projects in the future. It is more likely that future users will want to scan the original film so that the data can be used in digital formats and applications, rather than referring to the diapositives. Diapositives were reproduced using the highest standards or reproduction processes available the time. Therefore, they represent the next-best-thing to the original film, and potentially can be an alternative source for duplication rather than the original film. However scanning the diapositives is far more labour intensive than scanning the films, and would be a far more costly than scanning from the original film. The main reason for this is aligning individual diapositives so that the scanner recognises the fiducial markings on the edge of the image.

¹¹⁹ J Semmler, *Retention of Prints and Diapositives at UPGS*, July 2008, p2

The diapositives held at UPGS are stored in amongst the corresponding photographic prints. Separating the diapositives from the prints would be a time consuming exercise.¹²⁰

9. RKS REFERENCE

2008/1752

10. RECOMMENDATION AND JUSTIFICATION

The aerial film holdings at the National Archives and UPGS are the primary record of aerial survey photography and as such should be retained as national archives (RNA) in accordance with appraisal objective three in *Why Records Are Kept?*

Flight line diagrams show aircraft paths (also known as runs), the centres of the photos in relation to ground features and film reference numbers and facilitate access to the aerial film and therefore should be retained as national archives (RNA).

The contact prints, print mosaics, orthophotos, photomaps, enlargements, proof prints and diapositives are considered to be derivatives of the aerial film and do not warrant retain as national archives (RNA) status. The contact prints are currently used for reference purposes as it is far easier to access and view the photographic prints than rolls of original film. Therefore the contact prints provide a more accessible form of the record and can be scanned and made available to public users. Once the aerial film is made more accessible, e.g. digitally copied and made accessible in digital format, the reference value of the contact prints will be diminished.

The diapositives currently provide a better quality record for copying purposes than the contact prints and are more accessible than the film. However scanning the diapositives is far more labour intensive than scanning the films and would be far more costly than scanning from the original film. Once the aerial film is made more accessible, e.g. digitally copied and made accessible in digital format, the value of the diapositives as a duplicating master will be diminished.

The contact prints and diapositives should be retained for reference and duplicating purposes until the aerial film is made more accessible.

However in instances where a diapositive exists but a corresponding master aerial film no longer exists the diapositive should be retained as national

¹²⁰ J Semmler, *Retention of Prints and Diapositives at UPGS*, July 2008, p3

archives. In the absence of both a corresponding aerial film and a diapositive the contract print should be retained as national archives.

There is no business requirement or long term need to retain the laser terrain profile records and they should be retained for a temporary period after the business requirement has ceased.

Duplicate sets of contact prints and flight diagrams exist and require a disposal mechanism to enable their disposal at some point in the future. In addition there may be duplicate prints within each individual set of prints at UPGS, Geoscience Australia and National Archives. There may also be duplicate print mosaics, photomaps, proof prints, enlargements, orthophotos and diapositives. Advice from Government Information Management staff is that using NAP (normal administrative practice) for the destruction of duplicate records over 25 years old is not in the spirit of the Archives Act and that coverage in a records authority is required.

Jenni Davidson
October 2008

APPENDIX 1 AERIAL PHOTOGRAPHY PREFIX CODES, FILM TYPES, CAMERAS AND FILM FORMATS

Source: Mr Paul Wise, *Commonwealth Aerial Photography – its status and options for preservation*, December, 2000, pp42-43

Aerial Photography Prefix Codes

STATE / REGION	BLACK & WHITE	COLOUR
NATMAP		
Queensland	CAB	CAB/C
New South Wales	CAC	CAC/C
Victoria	CAD	CAD/C
South Australia	CAE	CAE/C
Western Australia	CAF	CAF/C
Northern Territory	CAG	CAG/C
Tasmania	CAH	CAH/C
ACT & Island Territories	CAI	CAI/C
Papua New Guinea	CAJ	CAJ/C
Southern Ocean & Antarctic Region	CAS	CAS/C
NATIONAL		
ASO	SO	SOC
AUSLIG	AUS	AUS/C
Initial coverage	SVY	Not applicable
Initial coverage	MAP	Not applicable
Initial coverage (Antarctica)	ANT	Not applicable

Aerial Photography Film Types

Film Code	Description
Kodak 2402	Black and White film
Kodak 2405	Black and White film
Kodak 2445	Colour film
Kodak 2424	Black and White infrared film
Kodak 2412	Panatomic X developed for high altitude photography in the 1980s
Kodak 2443	False colour infrared reversal film

Aerial Photography Cameras And Film Formats

Camera reference	Description (incl. manufacturer and film format)
F8	Royal Air Force F8 camera (AKA Williamson "Eagle 3") with 18cm (7") film format
F24	Royal Air Force F24 camera with 14cm (5.5") film format
E4	Williamson "Eagle 4" camera with 18cm (7") film format
K17	Fairchild K17 camera with 23cm (9") film format
OSC	Williamson Ordnance Survey Camera (OSC) with 23cm (9") film format
E9	Williamson "Eagle 9" camera with 23cm (9") film format
T11	Fairchild T11 camera with 23cm (9") film format
RC8	Wild RC8 camera with 23cm (9") film format
RC9	Wild RC9 camera with 23cm (9") film format
RC10	Wild RC10 camera with 23cm (9") film format

APPENDIX 2 COMPARISON BETWEEN THE NATIONAL LIBRARY OF AUSTRALIA SPREADSHEETS AND THE 1997 LISTING OF THE AUSLIG PHOTO LIBRARY

Methodology: For each of the states listed on the National Library of Australia spreadsheets (Vic, ACT, NSW, Qld, Tas, SA) up to five entries were randomly selected from the 1997 Listing of the AUSLIG photo library and cross checked against the relevant National Library of Australia (NLA) spreadsheet.

A (?) means that it may not be aerial photography from AUSLIG and predecessors eg it may be RAAF aerial photography.

Victoria

SJ 54-3 Horsham

NLA spreadsheet: prints for Horsham - 1949, **1963**, 1978 (?)

AUSLIG photo library spreadsheet: prints **1963**, 1984, 1988

SJ 54-4 St Arnaud

NLA spreadsheet: prints for Dunnolly - 1948; Donald - 1940 (?)

AUSLIG photo library spreadsheet: prints 1964, 1989

SJ 54-7 Hamilton

NLA spreadsheet: prints for Hamilton - 1965, **1966**

AUSLIG photo library spreadsheet: prints **1966**, 1989

SJ 55-6 Warburton

NLA spreadsheet: prints for Moe-Noojee area - 1943; Alexander - 1943; Mansfield - 1944, 1976 (?); Howitt - 1944; Jamieson - 1944; Maroka - 1944; Juliet - 1944; Matlock - 1944; Gembrook - 1944; Glenmaggie - 1944

AUSLIG photo library spreadsheet: prints 1968, 1984, 1989; diapositives 1979

SJ 55-11 Sale

NLA spreadsheet: prints for Sale -1935 (?), 1943, 1944 (?), 1951 (?), 1952, 1953, 1954, 1959, 1965, 1976 (?), 1978 (?)

AUSLIG photo library spreadsheet: prints 1967, 1983, 1989

NSW

SH 54-11 Cobham Lake

NLA spreadsheet: prints for Cobham - **1972**, 1973; Morden - 1955; Wonominta - 1955; Koowarea - 1955

AUSLIG photo library spreadsheet: diapositives **1972**, 1983

SH 55-10 Bourke

NLA spreadsheet: prints for Bourke – 1941 (?), 1950, 1952, 1963 (?); Waddells Tank - 1941 (?); Narcona - 1941 (?); Byrock - 1941 (?); Glenariff - 1941 (?)
AUSLIG photo library spreadsheet: diapositives 1973; prints 1973

SH 56-6 Grafton

NLA spreadsheet: prints for Grafton – 1932 (?), 1940 (?), 1941 (?), 1952 (?); Coutts Crossing – 1942 (?); Deepwater - 1942 (?); Wellingrove - 1942 (?); Clive – 1943, 1944, 1948, 1950; Tenterfield – 1940 (?), 1941 (?), 1943; Alice - 1948, 1953; Emmaville – 1948, 1954; Spirabo – 1948, 1954; Glen Innes – 1942 (?), 1943, 1948, 1955; Mitchell – 1943, 1944, 1948, 1951, 1955; Glencoe – 1943, 1944, 1948, 1955, 1956; Newton Boyd – 1943, 1955; Nymboida – 1943
AUSLIG photo library spreadsheet: prints 1964

SH 56-13 Tamworth

NLA spreadsheet: prints for Tamworth – 1940 (?), 1950, 1953(?); Moonbi – 1943; Werris Creek – 1943; Nundle – 1944, 1954; Quirindi – 1943, 1952; Berry – 1944; Wingen – 1938, 1943; Ellerston – 1960 (?); MacQueen – 1944
AUSLIG photo library spreadsheet: Nil

SH 55-1 Eulo

NLA spreadsheet: Nil
AUSLIG photo library spreadsheet: diapositives 1969; prints 1981

ACT*SI 55-16 Canberra*

NLA spreadsheet: prints for Canberra – 1974; ACT – 1940, 1942, 1949 (?), 1950, 1951 (?), 1952(?), 1954 (?), 1956, 1959, 1960, 1962, 1963, 1965 (?); 1966 (?), 1967 (?), 1968, 1969, 1970, 1971, **1972**, 1973, 1974, 1975, 1976 (?), 1977, 1978, 1983, 1984, **1985**, 1986, 1987
AUSLIG photo library spreadsheet: diapositives **1972**; prints 1979, 1981-82, **1985**, 1988

Tas*SK 55-2 Flinders Island*

NLA spreadsheet: Nil
AUSLIG photo library spreadsheet: prints 1979

SK 55-4 Launceston

NLA spreadsheet: prints for Launceston -1932 (?)
AUSLIG photo library spreadsheet: prints 1979

Note: there are only two entries on the AUSLIG photo library spreadsheet however the NLA spreadsheet includes SK 55-3; SK 55-5; SK 55-6; SK 55-7; SK 55-9; SK 55-10; SK 55-11; SK 55-15

SA

SH 52-11 Cook

NLA spreadsheet: prints for Cook -**1962**

AUSLIG photo library spreadsheet: diapositives **1962**

SH 52-3 Noorina

NLA spreadsheet: prints for **1962**

AUSLIG photo library spreadsheet: diapositives **1962**

SH 53-4 Lake Eyre

NLA spreadsheet: prints for Noorina -1948, **1973**

AUSLIG photo library spreadsheet: diapositives **1973**

SH 54-9 Copley

NLA spreadsheet: prints for Lyndhurst - 1944, 1948; Mt Painter - 1944; Serle - 1948; Angepena - 1948; Farina - 1948; Myrtle - 1948; Beltana - 1952 (?); Copley - 1948, 1949, 1957

AUSLIG photo library spreadsheet: Nil

SI 54-9 Adelaide

NLA spreadsheet: prints for Riverton - 1945, 1946; Eudunda - 1945, 1946; Mallala - 1942 (?), 1951 (?), 1952 (?); Mannum - 1935, 1936, 1949, 1950; Truro - 1945; Gawler - 1935; Dublin - 1939, 1945, 1946; Parafield - 1941 (?), 1947; Eden Area 1935, 1936; Vincent - 1945, 1946; Semaphore - 1945, 1949; Adelaide - 1932 (?), 1935, 1936, 1939, 1943, 1944, 1945, 1949, 1951 (?), 1971, 1972, 1974, 1981

AUSLIG photo library spreadsheet: Nil

Qld

SE 55-2 Cairns

NLA spreadsheet: prints for Cairns Reef - 1945 (?); Low Islets - 1928, 1954 (?), Mis. Outer Barrier Reef - 1945 (?); Ruby Reef - 1945; Cairns - 1938 (?), 1943 (?), 1944, 1975 (?), 1977 (?); Fitzroy Island - 1943 (?); Green Island - 1938 (?); Port Douglas Beach - 1943 (?)

AUSLIG photo library spreadsheet: prints 1984

SE 55-9 Einasleigh

NLA spreadsheet: prints for Einasleigh - 1945, 1951, 1952, **1967**; Mt Surprise - 1940; St Ronans - 1940; Cashmere - 1940, 1944, 1945; Blacktop - 1940;

Gunnawarra – 1940; Wairuna – 1945; Arthur Range – 1940; Kidston – 1940; Dido – 1940 (?); Greenvale – 1945

AUSLIG photo library spreadsheet: prints **1967**

SF 54-2 Cloncurry

NLA spreadsheet: prints for Ballara – 1932 (?), 1935 (?), 1936, 1938, 1950, 1960 (?), **1966, 1984**; Augustus Downs – 1943 (?); Bower Bird Area – 1943, 1935; Jessievale Emerg. Dome – 1943; Clonagh Emer. Dome – 1943 (?); Cloncurry – 1943 (?), 1950; Soldier's Gap – 1935

AUSLIG photo library spreadsheet: diapositives – **1966, 1984**

SF 54-5 Urundangi

NLA spreadsheet: prints for Urundangi -1947, **1970**

AUSLIG photo library spreadsheet: diapositives **1970**; prints 1979

SF 55-12 St Lawrence

NLA spreadsheet: prints for St Lawrence - 1943 (?), 1944 (?), 1947, **1960**, 1961, 1967, **1986**; Hinton – 1947; Connors Range – 1939, 1947; Broadsound – 1947, 1956; Bombandy – 1947; Killarney – 1947; Windeyer Hill - 1947

AUSLIG photo library spreadsheet: diapositives **1960, 1986**; prints 1984

APPENDIX 3 COMPARISON BETWEEN PRINTS AND DIAPOSITIVES AT UPGS AND AERIAL FILM AT NATIONAL ARCHIVES / UPGS TO DETERMINE DEGREE OF DUPLICATION

The aim was to compare map sheet numbers, names and years for prints and diapositives on the *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS* with the map sheet numbers, names and years for films listed on the COVERAGE spreadsheet compiled by Mr Paul Wise in order to determine the degree of duplication.

The *Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS* contains 550 map sheet numbers. Every 10th map sheet number plus 5 at random were selected to create a sample of 60 map sheet numbers.

SC 54-8 DARU

Prints 1971

Film 1971

SD 51-16 Prince Regent

Prints – no year listed just reference to see D 51-15 which has an entry for 1967

Film 1943, 1949, 1967

SD 52-13 Ashton

Prints 1967

Film 1949, 1967

SD 53-6 Mount Marumba

Prints 1969

Film 1950, 1969

SD 53-16 Pellew

Diapositives 1968

Film 1943, 1950, 1968

SD 54-12 Ebagoola

Prints 1972

Film 1945, 1955, 1969

SD 55-9 Cape Melville

Prints 1969

Film 1942, 1959, 1969

SE 51-10 Lagrange

Prints 1967

Film 1943, 1947, 1967

SE 52-4 Victoria River Downs

Diapositives 1967, 1983

Prints 1983

Film 1948, 1967, 1983

SE 52-14 Billiluna

Diapositives 1971

Film 1949, 1971, 1977

SE 53-8 Calvert Hills

Diapositives 1968

Film 1947, 1968

SE 54-2 Cape Van Diemen

Film 1943, 1947, 1966

SE 54-12 Georgetown

Prints 1967

Film 1951, 1967

SE 55-10 Ingham

Prints 1961

Film 1943, 1961, 1979

SF 50-5 Onslow

Prints 1967, 1976 CMLW

Film 1943, 1949, 1967

SF 50-15 Turee Creek

Diapositives 1972

Film 1972

SF 51-9 Balfour Downs

Diapositives 1973

Film 1973, 1977

SF51-13 Robertson

Diapositives 1973

Film 1973, 1977

SF 52-3 The Granites

Diapositives 1971

Prints 1986

Film 1950, 1971, 1977, 1986

SF 52-3 Ryan

Diapositives 1985

Prints 1973, 1976

Film 1953, 1973, 1976, 1985

SF 53-7 Elkedra

Diapositives 1971

Film 1950, 1971

SF 54-1 Mount Isa

Diapositives 1966, 1984

Film 1947, 1966, 1984

SF 54-11 Mackunda

Diapositives 1970

Prints 1989

Film 1951, 1970, 1989

SF 55-5 Tangorin

Diapositives 1969, 1984

Prints 1979

Film 1951, 1969, 1980

SF 55-15 Emerald

Diapositives 1960, 1986

Prints 1981

Film 1946, 1960, 1981, 1986

SF 56-13 Rockhampton

Diapositives 1961

Prints 1980, 1984, 1992

Film 1941, 1942, 1961

SG 50-1 Kennedy Range

Diapositives 1968

Film 1944, 1949, 1968

SG 50-11 Belele

Diapositives 1969

Prints 1983

Film 1969, 1983

SG 51-5 Nabberu

Diapositives 1974, 1977

Film 1974, 1977

SG 51-15 Throssell

Diapositives 1960, 1976

Film 1960, 1976

SG 52-9 Talbot

Diapositives 1976, 1984

Prints 1960, 1984

Film 1960, 1976, 1984

SG 53-3 Hale River

Diapositives 1971

Prints 1986

Film 1945, 1950, 1971, 1978, 1986

SG 53-6 Finke

Diapositives 1971

Prints 1987

Film 1950, 1971, 1987

SG 53-13 Everard

Diapositives SA Lands

Film 1947

SG 54-7 Canterbury

Diapositives 1970

Prints 1988

Film 1958, 1970, 1981

SG 55-1 Blackall

Diapositives 1969

Prints 1979

Film 1951, 1969, 1979

SG 55-11 Mitchell

Diapositives 1962, 1987

Prints 1979

Film 1948, 1962, 1987

SG 56-5 Mundubbera

Diapositives 1961

Prints 1969

Film 1948, 1961, 1969

SH 50-2 Yalgoo

Prints 1972

Film 1943, 1972

SH 50-12 Jackson

Diapositives 1968

Prints 1968, 1988

Film 1952, 1968, 1988

SH 51-2 Laverton

Diapositives 1969, 1977

Prints 1982

Film 1969, 1977, 1982

SH 51-7 Minigwal

Diapositives 1970

Prints 1984

Film 1970, 1984

SH 52-1 Vernon

Diapositives 1970

Prints 1976

Film 1970, 1976

SH 52-11 Cook

Diapositives 1962

Film 1962

SH 53-5 Tallaringa

Film 1949

SH 53-15 Gairdner

Diapositives SA Lands

SH 54-9 Copley

Film 1945, 1948

SH 55-3 Dirranbandi

Diapositives 1963

Prints 1982

Film 1963, 1982

SH 55-13 Barnato

Diapositives 1972

Film 1972

SH 56-9 Manilla
Prints 1964

SI 50-5 Busselton
Prints 1964
Film 1964

SI 51-1 Lake Johnston
Diapositives 1971
Film 1971

SI 52-2 Noonaera
Diapositives See I 52-1 which has an entry for 1961
Film 1961

SI 53-16 Kingscote
Prints 1989
Film 1989

SI 54-10 Renmark
Film 1945

SI 54-16 Swan Hill
Diapositives 1964
Prints 1984, 1988
Film 1964, 1988

SI 55-4 Dubbo
No prints, diapositives or film

SI 55-14 Jerilderie
Diapositives NSW
Prints 1984
Film 1968

SJ 54-3 Horsham
Prints 1963, 1984, 1988
Film 1963, 1989

SJ 54-4 Bega
Prints 1967, 1977
Film 1966

APPENDIX 4 RECORDSEARCH LENDING AND ITEM ENTRY STATISTICS

Refer to accompanying Excel spreadsheet – Rks R844892008

APPENDIX 5 SUMMARY OF DUPLICATION ASSESSMENT

State & Territory aerial photography records	“According to all available information, including research work performed by our consultant [Paul Wise, Datagrator Pty Ltd], no other State or Territory has aerial photography that covers the same time frames and geographical areas” – Mollison Report, September 2003.
Defence aerial photography records	<p>“mainly in Northern Australia.However, their areas of responsibility did not impinge greatly on the Australian interior. Therefore, while some northern areas of Australia might also be covered by RAAF/contract aerial photography the historical coverage is essentially held by AUSLIG” – Wise Report December 2000.</p> <p>“it was eventually agreed between DIGO and Geoscience that the material was not substantially duplicated in Geoscience holdings (R677762006). There is some extra support for non-duplication from the practice that AUSLIG and Defence divided Australia up between themselves for quite a long period and shared photography (with Defence concentrating on northern Australia and also doing more detailed scale photography)” – Appraisal report on Defence Imagery and Geospatial Organisation aerial survey photographic records, January 2007.</p> <p>A8514 – after viewing the aerial photographs in Canberra Mr Gerry Burns, AUSLIG, Victoria advised on 8 April 1991 (folio 46 and 47, 1987/1043) that “all photos [in A8514] with either a SVY or MAP prefix would be duplicates of negatives held by [the AA] Victorian Regional Office.” It</p>

	<p>should be noted that there are gaps within the SVY and MAP film registration numbers so it is possible that prints may exist but a film doesn't exist and that there may be other prints in A8514/1 where no corresponding aerial film exists.</p>
<p>National Library of Australia aerial photography print collection</p>	<p>National Library of Australia Collection - Most likely comprises duplicate prints from AUSLIG & RAAF.</p> <p>UPGS/National Archives aerial films: Of 60 film numbers randomly selected from National Library of Australia spreadsheets (10 per each state) 53 film numbers were listed on the spreadsheet prepared by Mr Paul Wise of film holdings at National Archives and UPGS. In addition cross checking identified that 98 of the film numbers (out of a total of 249 film numbers) listed on the National Library of Australia ACT spreadsheet are also in the list of "Project" films flown by ASO and AUSLIG that are located with UPGS (aso_film.xls) thereby indicating a degree of duplication between the ACT print items and the "Project" films flown by ASO and AUSLIG that are located with UPGS.</p> <p>UPGS prints and diapositives: 23 1:250 000 map sheet numbers on UPGS prints and diapositives listing were checked and for only 11 map sheet numbers was there any degree of duplication between the National Library of Australia holdings and the UPGS holdings of diapositives and prints. Four map sheet numbers and years had prints at National Library of Australia and UPGS. Ten map sheet numbers and years had diapositives at UPGS and prints at National Library of Australia. Refer to Appendix 2 for</p>

	<p>more detail. There are 104 film numbers listed on the National Library of Australia ACT spreadsheet that are also listed on the Project Prints & Diaps – UPGS spreadsheet (which contains a total of 295 film numbers). This indicates a degree of duplication amongst the National Library of Australia ACT prints and the project prints and diapositives associated with the “Project” films located at UPGS.</p> <p>National Archives prints: A1579 - consignment list for A1579 only contains map sheet number and run number which meant comparison with the National Library of Australia holdings could not be easily done. A1580 - of a total of 90 items selected from the A1580 consignment list 74 items were on the National Library of Australia spreadsheets.</p> <p>Geoscience Australia Air Photo Library prints: “It was also observed that a significant number of dates corresponded between the holdings at Geoscience Australia and the National Library of Australia” (Mr Joe Semmler 10/7/2008).</p>
<p>UPGS/National Archives aerial film holdings</p>	<p>For 393 map sheets numbers (out of 536 map sheets numbers listed) there is more than one film taken over different time periods e.g. Pine Creek 1935, 1943, 1948, 1974.</p> <p>3302 films at National Archives “are duplicates from original nitrate films. As the original nitrate films were destroyed after duplication these 3302 films are now the “originals”. Only 209 of these films are duplicated more than once [duplicated three times] – Wise Report December 2000.</p>
<p>UPGS diapositives</p>	<p>UPGS prints: Of 550 map sheet numbers there are 37 map sheet numbers with both diapositives and</p>

	<p>prints for a particular year. Aso_films.xls lists the prints and diapositives associated with the ASO and AUSLIG “Project” films located at UPGS - not possible to determine which items on this spreadsheet are diapositives and which are prints.</p>
	<p>Aerial films: Diapositives were only produced when mapping projects were undertaken therefore not all films have an associated set of diapositives. 60 map sheet numbers were selected from the <i>Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS</i> and then cross checked with the COVERAGE spreadsheet. Of 39 map sheet numbers that have diapositives at UPGS there is only one instance where there is no corresponding film for a year in which diapositives are held. Of 40 selected film numbers from the Project Prints & Diaps - UPGS spreadsheet 19 film numbers are not listed on the ASO Film - UPGS spreadsheet but are listed on the ACT spreadsheet prepared by Mr Paul Wise. Note that it is not possible to determine which items on the Project Prints and Diaps spreadsheet are diapositives and which are prints.</p>
	<p>National Archives diapositives: A892/1 - majority not duplicated by UPGS diapositives; A892/2, /3, K1301 - duplication could not be easily determined; A895 - for all diapositives for which film number and year flown exists there are no diapositives for that year and map sheet number listed on the <i>Listing of the AUSLIG photo library compiled in 1997 as part of the handover to UPGS</i>. Of 15 film numbers on the A895 listing 10 film numbers were included on the aso_films.xls - Project</p>

	<p>Prints & Diaps – UPGS spreadsheet indicating that there are prints and/or diapositives at UPGS as well as diapositives at National Archives. For the remaining five film numbers the year flown could not be determined. However it should be noted that the <i>aso_films.xls</i> – Project Prints & Diaps – UPGS spreadsheet does not distinguish between prints and diapositives for a particular film so it may be prints rather than diapositives that are held at UPGS; A2829 – assumed no duplication with UPGS diapositives.</p>
<p>UPGS prints</p>	<p>There may be duplicate prints within the UPGS print holdings.</p>
	<p>UPGS diapositives: Of 550 map sheet numbers there are 37 map sheet numbers with both diapositives and prints for a particular year. There are three map sheet numbers that have two sets of prints dated the same year. <i>Aso_films.xls</i> lists the prints and diapositives associated with the ASO and AUSLIG “Project” films located at UPGS - not possible to determine which items on this spreadsheet are diapositives and which are prints.</p>
	<p>UPGS/National Archives aerial films: Of 38 map sheet numbers that have prints at UPGS there are 11 instances where there is no corresponding film for a year in which prints are held. As expected there are several instances of film for a particular year but no prints. Refer to Appendix 3.</p>
	<p>National Archives prints: A1579 and A1580 -assumed no duplication as date range precedes date range of UPGS prints; A891/1 – assumed only minimal duplication; A894/1 – no consignment list but if any duplication exists it will be minimal as total</p>

	<p>volume is 2.34m; D5270 – 50% unlikely to have duplicates, other 50% can't determine duplication; J2781 -one item (of nine in total) may be duplicated; BP374/3, D4467, B72 – no duplication identified.</p>
	<p>Geoscience Australia Air Photo Library prints: Of 88 map sheet areas comprising 190 associated dates, 62% found to correspond with Geoscience Australia's Air Photo Library prints, 38% did not correspond with Geoscience Australia's Air Photo Library prints but of these 3% were found to correspond to items on the lists provided by National Library of Australia. Therefore 35% of UPGS prints did not have a corresponding date either at Geoscience Australia or National Library of Australia. This figure may be lowered by inclusion of National Library of Australia WA and NT items.</p>
	<p>National Library of Australia prints: Refer to above section on National Library of Australia.</p>
<p>National Archives print holdings</p>	<p>Aerial films: A1579 listing contains no date flown or film number therefore duplication assessment could not be done. A1580 - 10 locations were selected at random and the film numbers checked against the films listed in the GA_APH-ARCHIVE.xls spreadsheet. All of the film numbers on the selected cards were located on the GA_APH-ARCHIVE.xls spreadsheet thereby indicating films at UPGS/National Archives. A891, A894, AP1129/2 and D5270 – inadequate or no consignment list therefore duplication could not be determined.</p>
	<p>Geoscience Australia Air Photo Library: A 1579/1 – due to lack of dates on consignment listing</p>

	<p>duplication assessment can't be made. However from observing the map sheet numbers and camera type on the list of prints held by the Air Photo Library it appears that there may be a significant degree of duplication of the items listed on pages 1-2 of the A1579/1 consignment list with the prints held by the Air Photo Library. A1580/1 – of 10 selected locations comprising 20 dates only four instances of potential duplication were identified.</p>
	<p>National Library of Australia prints: Refer to above section on National Library of Australia.</p>
	<p>UPGS prints: Refer to above section on UPGS.</p>
<p>Flight diagrams</p>	<p>UPGS: A4 size in 95 blue folders; large format (mostly laminated) version that can be found in six vertical plan presses (vertiplans); some A4 size copies in manilla folders.</p> <p>Geoscience Australia: flight diagrams on website; copies in the Geoscience Australia library.</p>