The Australian Survey Report Format

Gary Johnston, Jim Steed, and John Dawson

Minerals and Geohazards Division, Geoscience Australia, Cnr Jerrabomberra Ave and Hindmarsh Drive, GPO Box 378, Canberra ACT 2601, Australia

1 Introduction

In Australia precision geodetic site surveys are routinely carried out, by Geoscience Australia, at all of the significant co-located geodetic observatories to determine accurate terrestrial connections between each observing system. Sites surveyed to date include Yaragadee, Mount Stromlo, Orroral, Hobart and Tidbinbilla. At Geoscience Australia site survey reports are created and are available from the Internet. In this paper the format and content of these reports is briefly outlined.

2 Australian site survey reports

In general the Geoscience Australia site survey (local tie survey) report includes the following information:

- Background to the survey
  - When was the survey conducted i.e. survey dates
  - What was the purpose of survey i.e. routine resurvey, instrumental change, etc.
- Observations
  - Technical equipment list
  - Observation types
  - Target type eg. precise prisms, tape reflector, etc.
- Survey reductions
  - Observation corrections
    - Atmosphere model and corrections
  - Prism offsets corrections
  - Geoid corrections
  - Global Positioning System (GPS) processing summary
- Equipment calibrations
  - EDM calibrations
  - Offsets for prisms and tape
- Mark descriptions. The mark descriptions have a detail level such that any ambiguity is removed, for example
  - *AU053 (YARR):* Domes 50107M006. The intersection of the top of the stainless steel plate with the vertical axis of a 5/8" Whitworth threaded stainless steel spigot. This pillar plate is set at ground level and is embedded in concrete to a depth of 400mm. The GPS – Glonass antenna currently occupies this monument.
  - *DON95:* Domes 50107M001, CDP 7090. Punch mark in a circular brass plaque 0.080m in diameter set in concrete. The plaque is inscribed “Australian Survey Office Survey Mark” and is stamped

DON 95. This is the primary reference point for the Moblas 5 SLR system.

- Survey network diagram; will include all reference/survey marks and inter-mark observations
- Results (see Fig. 1); final results will include
  - Final coordinates and their precision
    - Geodetic, cartesian
  - Orthometric heights in a local height datum
  - Three-dimensional line error ellipses between the fundamental marks the other significant monuments
  - site-specific information, such as the range to calibration targets from the IVP
  - Inter-survey comparisons
  - SINEX format results
  - Final conclusions

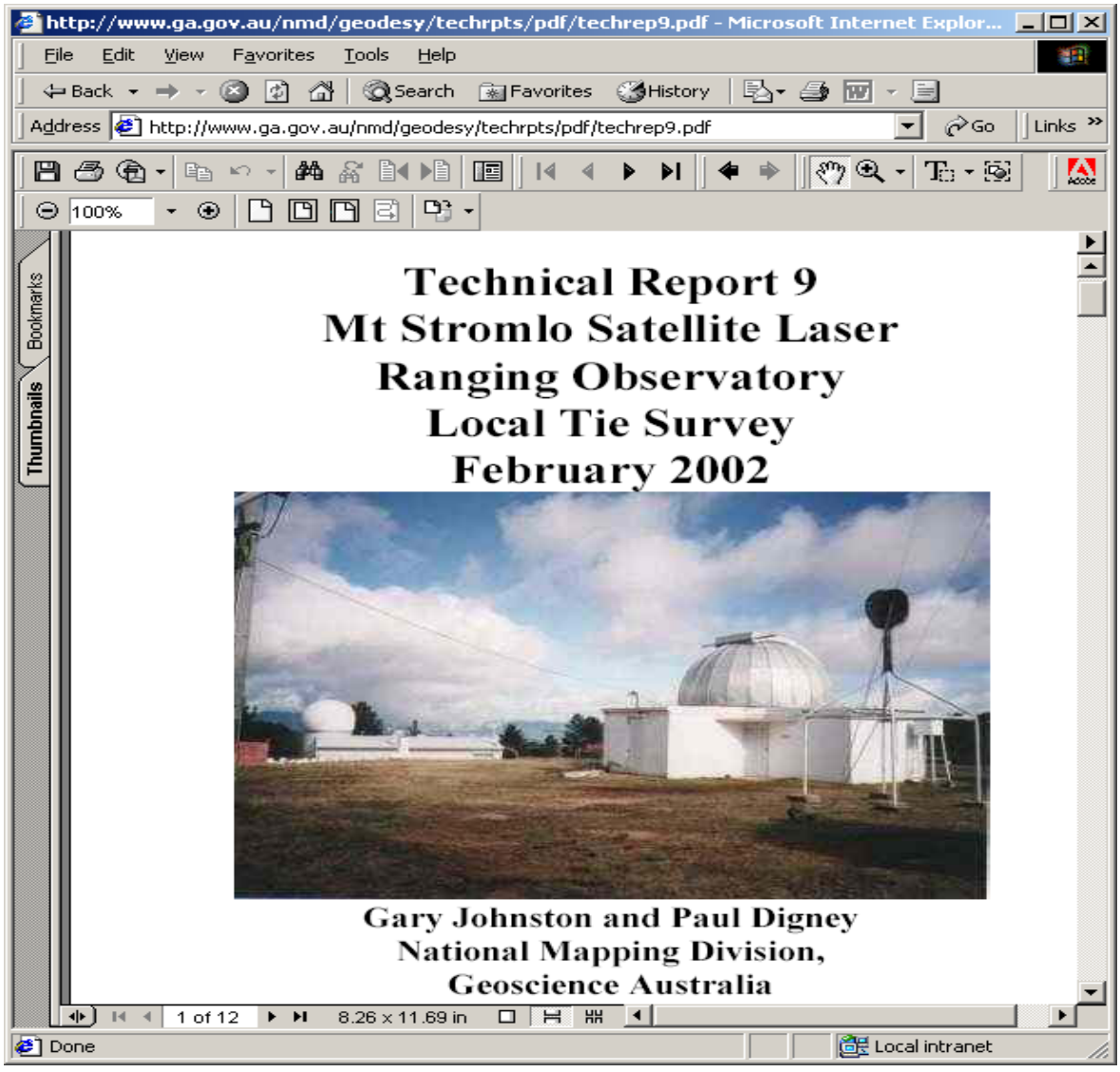

Figure 1. Title page from the 2002 Mount Stromlo local tie survey.

3 Survey database

To ensure the long term archiving and storage of the survey results all report information is stored in the National Geodetic DataBase (NGDB), which is a Windows™ relational database of geodetic positions and associated information. All survey are stored with the following information:

- Earth-centred Cartesian coordinates
- Latitude, Longitude & ellipsoidal height automatically computed
- Reference frame & epoch
- Referenced to source of positions (SINEX file)
- Exact mark descriptions
- Images & diagrams

The NGDB allows the automatic generation of technical reports that are fully user definable. Survey marks at each observatory are linked to facilitate easy report extraction.

4 Report distribution

All Geoscience Australia survey reports are deposited on the Geoscience Australia web site located at <www.ga.gov.au>. SINEX format results files are deposited on the Geoscience Australia ftp server[1].

[1] ftp.ga.gov.au/sgac/sinex/ties