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Contents

1. Purpose of this Document

This document has been prepared to provide guidance to Land Surveyors in meeting their compliance requirements for field notes in accordance with the Surveying and Spatial Information Regulation 2017, and to provide guidance for Mining Surveyors to meet their compliance requirements for field notes in accordance with the Surveying and Drafting Directions for Mine Surveyors 2015 (NSW mines).

1.1 Goals

a) Ensure relevant evidence of measurements, observations, findings, marking and decision making is available to support decisions made in relation to Land and Mining surveys.

b) Ensure accessibility to such records continue across time periods and technological changes.

1.2. Objectives

a) To ensure land and mining surveyor's records are available and accessible when required in compliance with statutory requirements and professional standards.

b) To set out guidance on management of both hard copy (traditional) field notes, and electronic field notes to achieve the above goals.

2. General

2.1. What are Field Notes ?

Field Notes include the following:

(a) Hand written or electronically recorded notes, including calculation sheets;

(b) Electronic records from measurement instruments. These may be in their original format, or an equivalent interpretable format;

(c) Records that are Corrected, Adjusted or Rectified by good practice survey methods to allow survey calculations to be undertaken;

(d) Documentation of the correction, adjustment or rectification methods and results;

(e) Imagery including but not limited to, photography and video.

Whilst it is recognized that Field Notes may be modified for the purpose of error distribution and calculation in accordance with good survey practice, the Surveyor must ensure that records are retained that represent the same records as if in its original format.

Field notes should be signed and dated (manually or electronically) by the Registered Surveyor.

Field notes, including electronic data, are a record of the information, evidence, measurements, calculations and circumstance of the undertaking of a Land or Mining Survey. A surveyor may be called upon by the Surveyor General to provide copies of the field notes. It is imperative that they are concise, factual and reliable in their future interpretation.

Field notes come in various forms and formats and the preparation of these documents are an integral part of any survey. Field notes are mostly used by surveyors as the basis for the preparation of plans and electronic data for their clients, or submissions to local government or other government departments.

Electronic Field Notes are to be managed with the same objectives that hard copy (traditional) field notes are managed. Clarity, accessibility and longevity must be considered.

Electronic field notes will often be available in proprietary formats, and specific file structures. Surveyors need to consider that during an archive period access to the recorded data may be required, and so accessibility to the formats and file structures is required.

3. Land surveys

3.1 Field Note Requirements under the Surveying and Spatial Information Regulation 2017

Part 2, Division 6 of the Surveying and Spatial Information Regulation 2017 deals with the requirements for the making, recording, signing, and archiving of field notes for land surveys. In particular it requires surveyors to:

(a) Prepare field notes in a neat, precise, complete and readily intelligible manner in accordance with the usage of surveyors;

(b) Record all facts, readings and observations immediately after they are ascertained;

(c) Keep an archive of all field notes, with indices and cross-references set out in a manner that facilitates the preparation of a complete and accurate survey plan, and all other information and documentation relevant to those field notes;

(d) Include the nature and position of any survey mark or monument found by the surveyor and the nature of any survey mark (other than a peg) placed by the surveyor;

(e) Retain an electronic copy (in the same form as the recording) and a copy of the reduced and formatted data must be retained in a manner that facilitates the preparation of a complete and accurate survey plan if field notes have been recorded in whole or in part by electronic methods other than GNSS methods;

(f) Retain an electronic copy of all recorded data and a copy of the reduced baselines or positional results in a form that facilitates the preparation of a complete and accurate survey plan if a survey has been recorded in whole or in part by GNSS methods;

(g) Clearly indicate the datum line of the survey and the origin of the orientation adopted in their field notes;

(h) Record the names of estates, houses, roads, rivers, creeks, lakes and the like, and house numbers, as far as they are material to the survey and ascertainable by the surveyor in their field notes;

(i) Personally sign and date each page or sheet of the field notes, and (in the case of a survey recorded by electronic means) each page or sheet of the reduced and formatted data, for all surveys that have been performed by the surveyor personally or under the surveyor's supervision;

(j) Ensure the date when the work recorded in the field notes was performed appears on the field notes and that the surveyor is satisfied that the notes are accurate before signing each page or sheet;

(k) Observe and record all angles and bearings in degrees, minutes and seconds, and all bearings must be reckoned and expressed clockwise from zero to 360 degrees.

Part 2, Division 1, 4 and 8 of the Surveying and Spatial Information Regulations 2017 also have requirements which include:

(l) Making recordings in the field notes of differences between the dimensions within the title documents and that found by measurement;

(m) The status of survey monuments relevant to the definition of land (eg: "found", "not found", "gone", "disturbed" or "inaccessible");

(n) Where surveys are carried out by public authorities, field notes must be referenced and indexed in an approved manner and produced to the Surveyor General on request.

3.2 Additional Field Note Requirements

Land surveyors may need to comply with additional requirements relating to the recording and management of field notes, dependant on requirements that relate to the specific survey task being undertaken. The following is not an exhaustive list but provides some indication of additional requirements that may be necessary:

(a) Field notes associated with height surveys for stratum and MHWM surveys;

(b) Details of instrument(s) used (Surveyor General's Directions No. 5 - Verification of Distance Measuring Equipment);

(c) General location and direction of where images and video were taken;

(d) Record age nature and fencing material (S&SI Reg. Cl.20(c) and Surveyor General's Direction No.7 surveying and Spatial Information Regulation 2017 - Applications, Sec 3.27.3);

(e) Recording of depth of marks as required (S&SI Reg. Cl 35(2));

(f) Method of GNSS survey (S&SI Reg., Cl. 22) and (Surveyor General's Directions No. 9 – GNSS for Cadastral Surveys, Section 5.4, and Section 8);

(g) Nature of Terrain (S&SI Reg., Cl 60(e));

(h) Substantial structures within 1m of boundary or as relevant to boundary definition (S&SI Reg., Cl. 63 (1)(e));

(i) Content suitable for the preparation of locality sketch plans (Surveyor General's Directions No. 2 – Preparation of Locality Sketch Plans), including 3 or more measurements to structures and in some circumstances, offset to boundary;

(j) Environmental factors, such as clearance to ground, wind, rain, heat, steep terrain (See Surveyor General's Directions No. 3 – Control for Cadastral Surveys; and, Surveyor General's Directions No. 9 – GNSS for Cadastral Surveys, Cl 5.4.11);

(k) Details of waterways, embankment grade, tide at time of survey etc., (Surveyor General's Directions No. 6 – Water as a Boundary - Procedures);

(l) Surveyor General's Directions No. 13 – Aquaculture Lease Surveys.

3.3 Archiving Field Notes

3.3.1 Public Sector

The retention, archiving and disposal of field notes by government surveyors are governed by the State Records Act 1998. For government organizations, any record dating prior to 1940 cannot be destroyed without first reference to State Records. If records have to be retained indefinitely, they become a State Archive. The organisation needs to have a current Functional Disposal Authority - no record can be destroyed without one. If records are stored by the organisation itself, they must be subject to appropriate temperature and humidity controls.

3.3.2 Private Sector

There is no legal requirement for long term storage of surveyor's field notes. However, there is a presumption that surveyors are responsible for their work until their estate has been declared. As such, surveyors should archive and manage all field note records to permit access and review of the survey field notes over an indefinite time period.

3.4 Access to Government Department Field Notes

(a) State Archives and Records

The majority of field notes prepared by government surveyors, are accessible to surveyors and can be found at State Archives and Records, which are located at 161 O'Connell Street, Kingswood. Field books can be viewed and copies made at their Reading Room. To be able to access documents at State Archives and Records, surveyors must apply for a reader's ticket at the State Archives and Records website which is noted below (https://www.records.nsw.gov.au/visit/readers-ticket). More information can be found on 02 9673 1788, or info@records.nsw.gov.au.

Staff can help with your search but catalogues including references to field books can be found using the online search on State Archives and Records website. (https://www.records.nsw.gov.au/)

(b) NSW Land Registry Services (NSWLRS)

The majority of field books held by NSWLRS (previously, NSW Land and Property Information) have been transferred to State Archives and Records. Field books which have not been transferred can be accessed by contacting NSWLRS's Offline Property Information via PIDS@nswlrs.nsw.gov.au. NSWLRS's Offline Property Information can also organise the retrieval of field books from State Archives and Records at Kingswood for a retrieval fee.

(c) Sydney Water

Old detail survey field books at Sydney Water can be accessed at the Sydney Water or Water NSW Historical Research and Archives facility at 956 Victoria Road West Ryde. Access is by appointment only. More information can be found on 02 8849 6263, or archiverequests@sydneywater.com.au.

3.5 Guidelines for Keeping, Storing and Archiving Field Notes

(a) Field Notes should be kept indefinitely as you may need to refer back to them when answering requisitions, investigations undertaken by the Board or a legal case;

(b) Scanned copies of hard copy field notes are an acceptable format to store field notes in the long term. Legal advice obtained by the Board is that a scanned copy would be admissible in court. Surveyors should ensure that copies are kept in a format that is universally recognised (such as PDF, JPEG, TIFF) and makes retrieval easy. This may mean updating formats in the long term. Field notes should be scanned at a resolution that ensures the integrity of the original field notes is not lost;

(c) Ensure that archived electronic field notes can still be opened with the latest hardware and software. This may involve converting old data into new formats which can still be opened and read at a later date;

(d) Due to the importance of field notes, Surveyors should consider the arrangements for ownership of their field notes when they have left their employment, retired or died. It is recommended that arrangements for ownership and access to field notes be considered at the commencement of employment and not at the end of employment;

(e) Surveyors should also consider making arrangements for the dealing with their plans such as requisitions. It is good professional practice to make arrangements to allow other registered surveyors to deal with your plan if you have left employment, retired or died. Typically these authorisations are given to the registered surveyors within the firm which you were employed. These authorisations should be recorded at NSW Land Registry Services.

(f) For long term safe keeping, and use by future generations, surveyors should consider handing over their field notes to the Surveyor General for archiving. Field notes should not be destroyed if possible.

3.6 Field Note Management

The figure below shows the general life cycle of survey field notes – from capture, to use, and then to archiving. Importantly, consideration also needs to be made to the recovery of field notes at an unknown point in time after archiving. The field notes should be recoverable, to the extent that they can be used to verify and authenticate any results reliant on the captured data. Digital data should be archived in both the raw capture format, and a readable format containing all relevant field data.

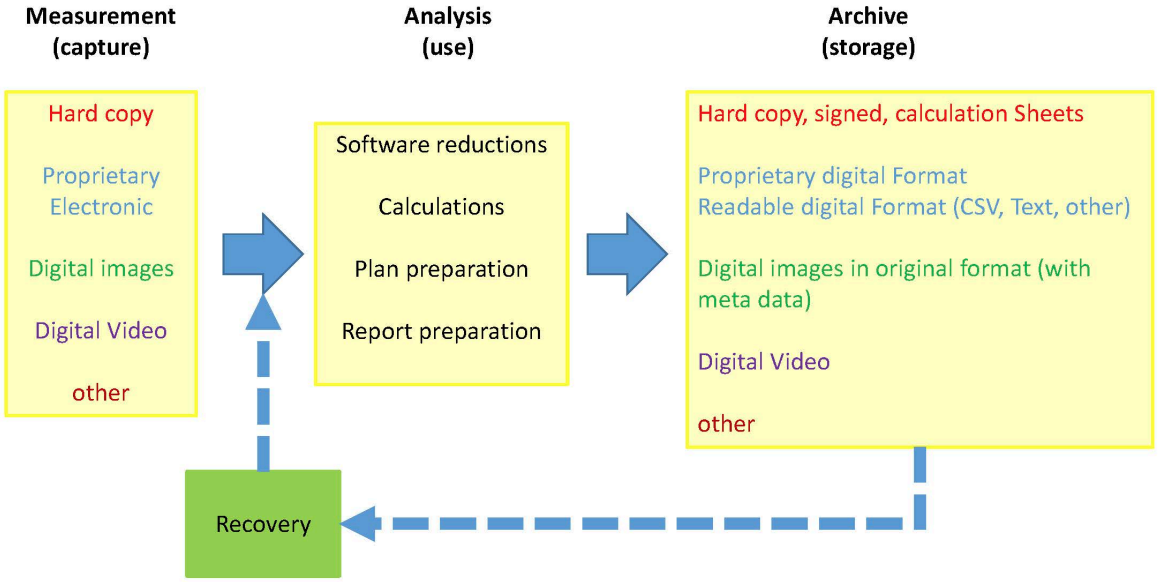

Figure 1 - Field Notes: A life Cycle Plan

4. Mine Surveys

4.1 Field Note Requirements under the Surveying and Drafting Directions for Mine Surveyors 2015

The making, recording, signing, and archiving of field notes for mining surveys is governed by the Survey and Drafting Directions for Mine Surveyors 2015 (NSW – Mines). In particular it requires:

(a) Systematic and reasonable care is taken by the Nominated Mining Surveyor for the safe preservation of all survey records required under the Directions;

(b) Survey records for control surveys, subsidiary surveys, secondary surveys, elevation surveys, and surface movement and subsidence surveys are kept at the survey office for the mine;

(c) Survey records to be maintained manually in field book or other stable material, electronic text or image or other means not visually perceptible without the aid of a machine or other device. Where a machine or other device is required to access the stored data the Nominated Mining Surveyor shall ensure the data is regularly updated to a media and format that is currently available;

(d) Survey records are to be permanently recorded and maintained in accordance with ICSM (2007) SP1 (version 1.7) and the Directions;

(e) All survey books will be maintained in good order and shall include the mine name, catalogue number, the seam or level name to which the book refers for underground mines, and consecutive index number permanently marked on the cover and the inside title page;

(f) Procedures for entries into survey books to include:

(i) All survey observations and measurements shall be recorded at the time of the survey;

(ii) In event of alteration of a mistake there shall be no erasure. The erroneous entry should be struck through and the correction written above;

(iii) The datum line of the survey and the azimuth adopted shall be clearly indicated;

(iv) Lengths shall be entered at the time they are measured. Where appropriate, corrections shall be noted, and the lengths deduced there from shall be clearly indicated;

(v) Bearings and distance from reference marks must be clearly shown;

(vi) Reference marks and bench marks placed by the surveyor shall be so noted and the positions and descriptions thereof shall be shown by a sketch in the appropriate book;

(vii) Lines re-measured shall be so specified and original distances and bearings shown;

(viii) The Nominated Mining Surveyor shall sign the field book that the work shown therein was performed by the Nominated Mining Surveyor or under the Nominated Mining Surveyor's supervision and indicate the date on which the work was signed;

(g) Where surveys are recorded in electronic form the information to be recorded shall be consistent with that required for survey books. A complete and separate duplicate of such records shall be preserved on paper or disc or other permanent electronic medium;

(h) The Nominated Mining Surveyor of any mine, upon the request of the regulator, shall make available, in a format specified by the regulator all or any survey records or certified copies thereof;

(i) Upon suspension of a mine all mine survey records relevant to the preparation of the Mine Survey Plans shall be prepared by the Nominated Mining Surveyor for submission to the Department. A guidance document shall be included detailing file structure, formats, descriptions and other necessary information to enable additional end users to interrogate the information;

(j) On closure of the mine these records shall be submitted to the regulator for retention.

4.2 Examples

The data below is an example of electronic captured field data that has been formatted into a readable hard copy version for inclusion with field note records.

4.2.1 Example One

Mount Thorley Warkworth Mine Field book RT769

Job name:	majsf_w26_180525
Reference:	WP26 25.05.2018
Description:	GNSS Survey RT769
Operator:	J van Wyk
Notes:	
Version:	3.10
Distance Units:	Meters
Angle units:	Degrees
Pressure Units:	mmHg
Temperature Units:	Celsius

Coordinate System

System	Australia/GDA94
Zone	Zone 56
Datum	GDA94

Projection

Projection	Transverse Mercator
Origin lat	0°00'00.00000"N
Origin long	153°00'00.00000"E
False easting	500000.000
False northing	10000000.000
Scale	0.99960000
South azimuth (grid)	No
Grid coords	Increase North-East

Horizontal adjustment

Type	Plane adjustment
Origin north	6388617.963
Origin east	319440.336
Translation north	0.345
Translation east	-0.023
Rotation	-0°00'00"
Scale factor	0.99999763

Vertical adjustment

Type	Inclined plane
Origin north	6392914.378
Origin east	320545.446
Slope north	-22.899ppm
Slope east	6.185ppm
Constant adjustment	-13.288

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Trimble General Survey Reduced Observations

Corrections

South azimuth (grid)	No
Grid coords	Increase North-East
Magnetic declination	0°00'00"
Distances	Grid

Rover Details

Receiver	R10	Serial Nbr	5432474793	Antenna Type	R10 Internal	Firmware Version	4.91

GPS Base Reference

Name	MTWADMIN	East	321646.298	North	6389748.949	Elevation	89.405	Code	BASE
Name	MTWADMIN	Antenna Ht	0.086	Type	Corrected				

Name	Grid Azimuth	Grid Dist	Delta Elev	Code	Ant Ht	Epochs	Hz Prec	Vt Prec	PDOP	Sats	Date	Time
3.1938	273°46'50.6"	3656.321	-164.021	MAJSF	2.060	1	0.010	0.016	1.7	12	25/05/2018	09:29:49
3.1939	273°56'03.9"	3657.941	-163.595	MAJSF	2.060	1	0.011	0.018	1.8	11	25/05/2018	09:30:01
3.1940	274°05'34.9"	3658.199	-163.540	MAJSF	2.060	1	0.011	0.019	1.8	11	25/05/2018	09:30:06
3.1941	274°15'12.2"	3660.713	-163.336	MAJSF	2.060	1	0.013	0.022	1.8	11	25/05/2018	09:30:10
3.1942	274°24'53.7"	3663.124	-163.164	MAJSF	2.060	1	0.013	0.022	1.8	11	25/05/2018	09:30:14
3.1943	274°33'57.5"	3665.679	-163.084	MAJSF	2.060	1	0.011	0.019	1.8	11	25/05/2018	09:30:18
3.1944	274°43'02.1"	3668.619	-163.224	MAJSF	2.060	1	0.010	0.018	1.8	11	25/05/2018	09:30:22
3.1945	274°51'53.0"	3672.005	-163.231	MAJSF	2.060	1	0.011	0.019	1.8	11	25/05/2018	09:30:27
3.1946	275°00'41.1"	3675.867	-163.380	MAJSF	2.060	1	0.011	0.018	1.8	11	25/05/2018	09:30:33
3.1947	275°09'32.7"	3679.243	-163.051	MAJSF	2.060	1	0.011	0.019	1.8	11	25/05/2018	09:30:38
3.1948	275°18'56.6"	3681.804	-162.887	MAJSF	2.060	1	0.011	0.019	1.8	11	25/05/2018	09:30:42
3.1949	275°28'18.0"	3684.715	-162.585	MAJSF	2.060	1	0.011	0.019	1.8	11	25/05/2018	09:30:46
3.1950	275°37'36.8"	3688.157	-162.823	MAJSF	2.060	1	0.011	0.019	1.8	11	25/05/2018	09:30:50
3.1951	275°46'11.0"	3692.308	-162.670	MAJSF	2.060	1	0.011	0.019	1.8	11	25/05/2018	09:30:53
3.1952	275°54'13.1"	3698.316	-162.598	MAJSF	2.060	1	0.011	0.019	1.8	11	25/05/2018	09:30:57
3.1953	276°01'55.4"	3704.732	-162.812	MAJSF	2.060	1	0.011	0.019	1.8	11	25/05/2018	09:31:00
3.1954	276°09'26.2"	3711.476	-163.232	MAJSF	2.060	1	0.011	0.019	2.3	10	25/05/2018	09:31:04
3.1955	276°17'09.5"	3717.790	-162.681	MAJSF	2.060	1	0.011	0.020	2.3	10	25/05/2018	09:31:07
3.1956	276°24'25.7"	3724.159	-162.339	MAJSF	2.060	1	0.011	0.020	2.3	10	25/05/2018	09:31:11
3.1957	276°32'16.3"	3730.391	-162.582	MAJSF	2.060	1	0.011	0.020	2.3	10	25/05/2018	09:31:15
3.1958	276°39'46.4"	3736.893	-162.694	MAJSF	2.060	1	0.011	0.020	2.3	10	25/05/2018	09:31:19
3.1959	276°47'10.2"	3743.018	-162.702	MAJSF	2.060	1	0.012	0.021	2.6	9	25/05/2018	09:31:23
3.1960	276°51'59.0"	3751.577	-163.019	MAJSF	2.060	1	0.012	0.021	2.6	9	25/05/2018	09:31:26
3.1961	276°52'40.7"	3762.077	-163.741	MAJSF	2.060	1	0.012	0.022	2.6	9	25/05/2018	09:31:29
3.1962	276°51'58.4"	3772.717	-164.716	MAJSF	2.060	1	0.013	0.023	3.1	9	25/05/2018	09:31:32
3.1963	276°47'25.6"	3781.806	-165.749	MAJSF	2.060	1	0.014	0.024	3.1	9	25/05/2018	09:31:36
3.1964	276°39'31.4"	3787.057	-166.478	MAJSF	2.060	1	0.014	0.026	3.1	9	25/05/2018	09:32:20
3.1965	276°32'37.5"	3790.347	-166.357	MAJSF	2.060	1	0.015	0.027	3.1	9	25/05/2018	09:32:27
3.1966	276°24'53.1"	3774.676	-166.581	MAJSF	2.060	1	0.015	0.027	3.1	9	25/05/2018	09:32:51
3.1967	276°17'43.0"	3768.142	-166.751	MAJSF	2.060	1	0.015	0.028	3.1	9	25/05/2018	09:33:04
3.1968	276°11'04.5"	3760.903	-166.707	MAJSF	2.060	1	0.015	0.029	3.1	9	25/05/2018	09:33:12
3.1969	276°04'13.3"	3754.011	-166.324	MAJSF	2.060	1	0.016	0.029	3.0	9	25/05/2018	09:33:28
3.1970	275°56'53.8"	3747.740	-165.803	MAJSF	2.060	1	0.016	0.029	3.0	9	25/05/2018	09:33:42
3.1971	275°48'59.5"	3740.859	-165.816	MAJSF	2.060	1	0.016	0.030	3.0	9	25/05/2018	09:33:47
3.1972	275°43'28.4"	3733.548	-165.739	MAJSF	2.060	1	0.016	0.030	3.0	9	25/05/2018	09:34:02
3.1973	275°36'07.8"	3727.470	-165.904	MAJSF	2.060	1	0.016	0.029	3.0	9	25/05/2018	09:34:17
3.1974	275°27'21.6"	3723.447	-165.674	MAJSF	2.060	1	0.015	0.027	3.0	9	25/05/2018	09:34:40
3.1975	275°18'16.5"	3720.372	-165.881	MAJSF	2.060	1	0.015	0.028	3.0	9	25/05/2018	09:34:52
3.1976	275°09'22.2"	3717.449	-166.025	MAJSF	2.060	1	0.015	0.028	3.0	9	25/05/2018	09:35:06
3.1977	275°00'16.2"	3714.173	-166.260	MAJSF	2.060	1	0.015	0.029	3.0	9	25/05/2018	09:35:18
3.1978	274°51'19.9"	3711.227	-166.380	MAJSF	2.060	1	0.015	0.028	2.9	9	25/05/2018	09:35:33
3.1979	274°42'27.6"	3708.004	-166.582	MAJSF	2.060	1	0.015	0.029	2.9	9	25/05/2018	09:35:38
3.1980	274°33'34.7"	3704.945	-165.869	MAJSF	2.060	1	0.015	0.029	2.9	9	25/05/2018	09:35:51
3.1981	274°24'28.5"	3702.766	-166.127	MAJSF	2.060	1	0.015	0.029	2.9	9	25/05/2018	09:36:24
3.1982	274°15'35.1"	3699.817	-166.104	MAJSF	2.060	1	0.015	0.029	2.9	10	25/05/2018	09:36:47
3.1983	274°06'13.3"	3697.346	-166.077	MAJSF	2.060	1	0.015	0.029	2.9	9	25/05/2018	09:37:03

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3.1984	273°57'07.0"	3695.106	-166.123	MAJSF	2.060	1	0.015	0.029	2.9	9	25/05/2018	09:37:14
3.1985	273°47'39.7"	3692.891	-166.356	MAJSF	2.060	1	0.015	0.029	2.9	9	25/05/2018	09:37:32
3.1986	273°44'29.3"	3686.817	-164.510	MAJSF	2.060	1	0.012	0.024	2.3	10	25/05/2018	09:38:02
3.1987	273°53'57.5"	3688.458	-164.321	MAJSF	2.060	1	0.012	0.022	1.9	11	25/05/2018	09:38:06
3.1988	274°03'34.9"	3670.409	-164.228	MAJSF	2.060	1	0.012	0.022	1.9	11	25/05/2018	09:38:09
3.1989	274°13'03.3"	3673.360	-163.975	MAJSF	2.060	1	0.012	0.022	1.9	11	25/05/2018	09:38:15
3.1990	274°22'38.5"	3674.916	-163.892	MAJSF	2.060	1	0.012	0.022	1.9	11	25/05/2018	09:38:18
3.1991	274°31'42.3"	3677.439	-163.782	MAJSF	2.060	1	0.012	0.022	1.9	11	25/05/2018	09:38:21
3.1992	274°40'55.6"	3680.542	-163.894	MAJSF	2.060	1	0.012	0.022	1.9	11	25/05/2018	09:38:25
3.1993	274°49'55.0"	3684.421	-163.955	MAJSF	2.060	1	0.012	0.022	1.9	11	25/05/2018	09:38:28
3.1994	274°59'20.3"	3687.915	-164.019	MAJSF	2.060	1	0.012	0.022	1.9	11	25/05/2018	09:38:31
3.1995	275°08'22.8"	3691.510	-163.960	MAJSF	2.060	1	0.012	0.022	1.9	11	25/05/2018	09:38:34
3.1996	275°17'16.0"	3694.709	-163.815	MAJSF	2.060	1	0.012	0.022	1.9	11	25/05/2018	09:38:37
3.1997	275°26'34.0"	3697.702	-163.693	MAJSF	2.060	1	0.012	0.022	1.9	11	25/05/2018	09:38:41
3.1998	275°35'24.9"	3701.878	-163.800	MAJSF	2.060	1	0.012	0.022	1.9	11	25/05/2018	09:38:44
3.1999	275°43'39.9"	3706.646	-163.892	MAJSF	2.060	1	0.012	0.022	1.9	11	25/05/2018	09:38:47
3.2000	275°51'34.7"	3712.552	-163.886	MAJSF	2.060	1	0.012	0.022	2.0	10	25/05/2018	09:38:50
3.2001	275°59'24.1"	3718.708	-164.136	MAJSF	2.060	1	0.012	0.023	2.8	9	25/05/2018	09:38:53
3.2002	276°06'59.7"	3724.572	-164.260	MAJSF	2.060	1	0.013	0.024	3.0	8	25/05/2018	09:38:56
3.2003	276°14'38.5"	3730.520	-163.983	MAJSF	2.060	1	0.023	0.044	2.8	9	25/05/2018	09:38:59
3.2004	276°22'39.5"	3736.511	-163.481	MAJSF	2.060	1	0.012	0.023	2.8	9	25/05/2018	09:39:01
3.2005	276°30'27.4"	3742.695	-163.449	MAJSF	2.060	1	0.013	0.024	2.8	9	25/05/2018	09:39:04
3.2006	276°37'45.7"	3749.669	-163.595	MAJSF	2.060	1	0.013	0.024	2.8	9	25/05/2018	09:39:07
3.2007	276°45'13.4"	3756.374	-163.753	MAJSF	2.060	1	0.013	0.024	2.8	9	25/05/2018	09:39:10
3.2008	276°46'46.6"	3766.771	-164.636	MAJSF	2.060	1	0.013	0.025	2.8	9	25/05/2018	09:39:13
3.2009	276°37'41.3"	3769.813	-165.127	MAJSF	2.060	1	0.013	0.024	2.8	9	25/05/2018	09:39:16
3.2010	276°26'51.1"	3763.483	-164.983	MAJSF	2.060	1	0.013	0.025	2.8	9	25/05/2018	09:39:19
3.2011	276°23'57.5"	3755.780	-164.798	MAJSF	2.060	1	0.013	0.025	2.8	9	25/05/2018	09:39:22
3.2012	276°18'00.3"	3748.062	-164.945	MAJSF	2.060	1	0.014	0.026	2.8	10	25/05/2018	09:39:26
3.2013	276°11'12.6"	3740.861	-165.191	MAJSF	2.060	1	0.014	0.026	2.8	9	25/05/2018	09:39:30
3.2014	276°03'48.5"	3734.122	-164.799	MAJSF	2.060	1	0.014	0.026	2.8	9	25/05/2018	09:39:33
3.2015	275°56'27.4"	3727.743	-164.822	MAJSF	2.060	1	0.014	0.026	2.8	9	25/05/2018	09:39:37
3.2016	275°48'42.3"	3721.945	-164.727	MAJSF	2.060	1	0.014	0.026	2.8	9	25/05/2018	09:39:41
3.2017	275°40'43.1"	3716.573	-164.854	MAJSF	2.060	1	0.014	0.026	2.8	9	25/05/2018	09:39:44
3.2018	275°31'57.5"	3712.724	-164.937	MAJSF	2.060	1	0.014	0.026	2.8	9	25/05/2018	09:39:47
3.2019	275°23'13.0"	3709.320	-164.714	MAJSF	2.060	1	0.014	0.026	2.8	9	25/05/2018	09:39:50
3.2020	275°13'48.6"	3706.063	-164.879	MAJSF	2.060	1	0.014	0.027	2.8	9	25/05/2018	09:39:54
3.2021	275°04'27.0"	3702.925	-164.994	MAJSF	2.060	1	0.014	0.027	2.8	9	25/05/2018	09:39:57
3.2022	274°55'20.8"	3700.396	-164.942	MAJSF	2.060	1	0.014	0.027	2.8	9	25/05/2018	09:40:00
3.2023	274°46'19.9"	3697.901	-164.894	MAJSF	2.060	1	0.014	0.027	2.8	9	25/05/2018	09:40:03
3.2024	274°37'00.5"	3694.912	-164.910	MAJSF	2.060	1	0.014	0.027	2.8	9	25/05/2018	09:40:07
3.2025	274°27'45.5"	3692.114	-165.199	MAJSF	2.060	1	0.014	0.027	2.8	9	25/05/2018	09:40:10
3.2026	274°18'23.9"	3689.734	-165.317	MAJSF	2.060	1	0.014	0.027	2.8	9	25/05/2018	09:40:13
3.2027	274°08'52.5"	3687.379	-165.285	MAJSF	2.060	1	0.014	0.027	2.8	9	25/05/2018	09:40:16
3.2028	273°58'22.6"	3685.572	-165.359	MAJSF	2.060	1	0.014	0.027	2.8	9	25/05/2018	09:40:20
3.2029	273°49'50.0"	3684.463	-165.784	MAJSF	2.060	1	0.014	0.028	2.8	9	25/05/2018	09:40:23

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Trimble General Survey Reduced Points

Point	East	North	Elevation	Code
3.1938	317997.911	6389989.683	-94.616	MAJSF
3.1939	317996.978	6389999.936	-94.191	MAJSF
3.1940	317997.429	6390010.057	-94.135	MAJSF
3.1941	317995.667	6390020.454	-93.931	MAJSF
3.1942	317994.016	6390030.576	-93.760	MAJSF
3.1943	317992.252	6390040.762	-93.680	MAJSF
3.1944	317990.106	6390050.651	-93.820	MAJSF
3.1945	317987.521	6390060.347	-93.827	MAJSF
3.1946	317984.483	6390070.052	-93.976	MAJSF
3.1947	317981.961	6390079.790	-93.645	MAJSF
3.1948	317980.334	6390090.104	-93.483	MAJSF
3.1949	317978.373	6390100.299	-93.280	MAJSF
3.1950	317975.912	6390110.572	-93.419	MAJSF
3.1951	317972.696	6390120.138	-93.288	MAJSF
3.1952	317967.596	6390129.342	-93.193	MAJSF
3.1953	317962.079	6390138.260	-93.407	MAJSF
3.1954	317956.233	6390147.035	-93.828	MAJSF
3.1955	317950.860	6390156.013	-93.276	MAJSF
3.1956	317945.400	6390164.538	-92.934	MAJSF
3.1957	317940.164	6390173.672	-93.177	MAJSF
3.1958	317934.644	6390182.530	-93.290	MAJSF
3.1959	317929.503	6390191.240	-93.297	MAJSF
3.1960	317921.529	6390197.478	-93.614	MAJSF
3.1961	317911.295	6390199.477	-94.337	MAJSF
3.1962	317900.639	6390199.982	-95.312	MAJSF
3.1963	317891.021	6390196.103	-96.345	MAJSF
3.1964	317884.787	6390188.078	-97.073	MAJSF
3.1965	317890.579	6390179.764	-96.952	MAJSF
3.1966	317895.255	6390170.673	-97.177	MAJSF
3.1967	317900.878	6390162.135	-97.347	MAJSF
3.1968	317907.283	6390154.118	-97.302	MAJSF
3.1969	317913.337	6390145.934	-96.920	MAJSF
3.1970	317918.736	6390137.329	-96.398	MAJSF
3.1971	317925.008	6390129.121	-96.411	MAJSF
3.1972	317931.369	6390121.356	-96.326	MAJSF
3.1973	317936.632	6390112.827	-96.499	MAJSF
3.1974	317939.720	6390102.979	-96.270	MAJSF
3.1975	317941.859	6390092.896	-96.476	MAJSF
3.1976	317943.892	6390083.039	-96.620	MAJSF
3.1977	317946.289	6390073.005	-96.845	MAJSF
3.1978	317948.390	6390063.060	-96.976	MAJSF
3.1979	317950.803	6390053.271	-96.578	MAJSF
3.1980	317953.079	6390043.480	-96.451	MAJSF
3.1981	317954.486	6390033.538	-96.723	MAJSF
3.1982	317956.702	6390023.764	-96.699	MAJSF
3.1983	317958.432	6390013.538	-96.672	MAJSF
3.1984	317959.978	6390003.614	-96.719	MAJSF
3.1985	317961.702	6389993.318	-96.951	MAJSF
3.1986	317987.296	6389988.225	-95.105	MAJSF
3.1987	317986.332	6389998.416	-94.917	MAJSF
3.1988	317985.099	6390008.798	-94.824	MAJSF

Page 4 of 6

3.1989	317982.886	6390019.104	-94.570	MAJSF
3.1990	317982.102	6390029.437	-94.487	MAJSF
3.1991	317980.339	6390039.295	-94.377	MAJSF
3.1992	317978.038	6390049.381	-94.489	MAJSF
3.1993	317974.971	6390059.300	-94.550	MAJSF
3.1994	317972.355	6390069.664	-94.615	MAJSF
3.1995	317969.631	6390079.648	-94.555	MAJSF
3.1996	317967.313	6390089.446	-94.412	MAJSF
3.1997	317965.267	6390099.681	-94.289	MAJSF
3.1998	317962.027	6390109.561	-94.395	MAJSF
3.1999	317958.158	6390118.879	-94.487	MAJSF
3.2000	317953.194	6390127.964	-94.481	MAJSF
3.2001	317947.894	6390137.017	-94.731	MAJSF
3.2002	317942.830	6390145.819	-94.856	MAJSF
3.2003	317937.909	6390154.692	-94.559	MAJSF
3.2004	317932.911	6390164.003	-94.077	MAJSF
3.2005	317927.718	6390173.128	-94.044	MAJSF
3.2006	317921.701	6390181.834	-94.190	MAJSF
3.2007	317915.991	6390190.705	-94.348	MAJSF
3.2008	317905.866	6390193.619	-95.232	MAJSF
3.2009	317901.682	6390184.079	-95.722	MAJSF
3.2010	317906.990	6390174.826	-95.479	MAJSF
3.2011	317913.919	6390167.556	-95.393	MAJSF
3.2012	317920.842	6390160.249	-95.541	MAJSF
3.2013	317927.225	6390152.104	-95.787	MAJSF
3.2014	317933.067	6390143.384	-95.395	MAJSF
3.2015	317938.577	6390134.782	-95.417	MAJSF
3.2016	317943.584	6390125.823	-95.322	MAJSF
3.2017	317947.864	6390116.709	-95.449	MAJSF
3.2018	317950.870	6390106.902	-95.532	MAJSF
3.2019	317953.361	6390097.185	-95.310	MAJSF
3.2020	317955.666	6390086.781	-95.474	MAJSF
3.2021	317957.884	6390076.455	-95.589	MAJSF
3.2022	317959.550	6390068.468	-95.537	MAJSF
3.2023	317961.217	6390056.593	-95.460	MAJSF
3.2024	317963.375	6390046.357	-95.508	MAJSF
3.2025	317965.378	6390036.229	-95.794	MAJSF
3.2026	317966.983	6390026.026	-95.913	MAJSF
3.2027	317968.677	6390015.655	-95.881	MAJSF
3.2028	317969.558	6390005.382	-95.954	MAJSF
3.2029	317970.037	6389995.095	-96.380	MAJSF
30.439	317876.582	6390182.362	-97.073	MAJSF TOE 10m os
30.440	317881.992	6390174.596	-96.952	MAJSF TOE 10m os
30.441	317886.608	6390165.621	-97.177	MAJSF TOE 10m os
30.442	317892.779	6390156.251	-97.347	MAJSF TOE 10m os
30.443	317899.355	6390148.021	-97.302	MAJSF TOE 10m os
30.444	317905.070	6390140.295	-96.920	MAJSF TOE 10m os
30.445	317910.511	6390131.623	-96.398	MAJSF TOE 10m os
30.446	317917.165	6390122.915	-96.411	MAJSF TOE 10m os
30.447	317923.209	6390115.536	-96.326	MAJSF TOE 10m os
30.448	317927.464	6390108.640	-96.499	MAJSF TOE 10m os
30.449	317930.036	6390100.439	-96.270	MAJSF TOE 10m os
30.450	317932.071	6390090.850	-96.476	MAJSF TOE 10m os
30.451	317934.129	6390080.867	-96.620	MAJSF TOE 10m os

30.452	317936.532	6390070.807	-96.845	MAJSF TOE 10m os
30.453	317938.640	6390060.849	-96.976	MAJSF TOE 10m os
30.454	317941.077	6390050.944	-96.578	MAJSF TOE 10m os
30.455	317943.239	6390041.643	-96.451	MAJSF TOE 10m os
30.456	317944.642	6390031.729	-96.723	MAJSF TOE 10m os
30.457	317946.888	6390021.823	-96.699	MAJSF TOE 10m os
30.458	317948.561	6390011.934	-96.672	MAJSF TOE 10m os
30.459	317950.106	6390002.019	-96.719	MAJSF TOE 10m os
30.460	317951.839	6389991.665	-96.951	MAJSF TOE 10m os
MTWADMIN	321646.298	6389748.949	69.405	BASE

Jonathan van Wyk
Candidate Mining Surveyor 8830
Pages 1 to 6 inclusive
25/5/2018

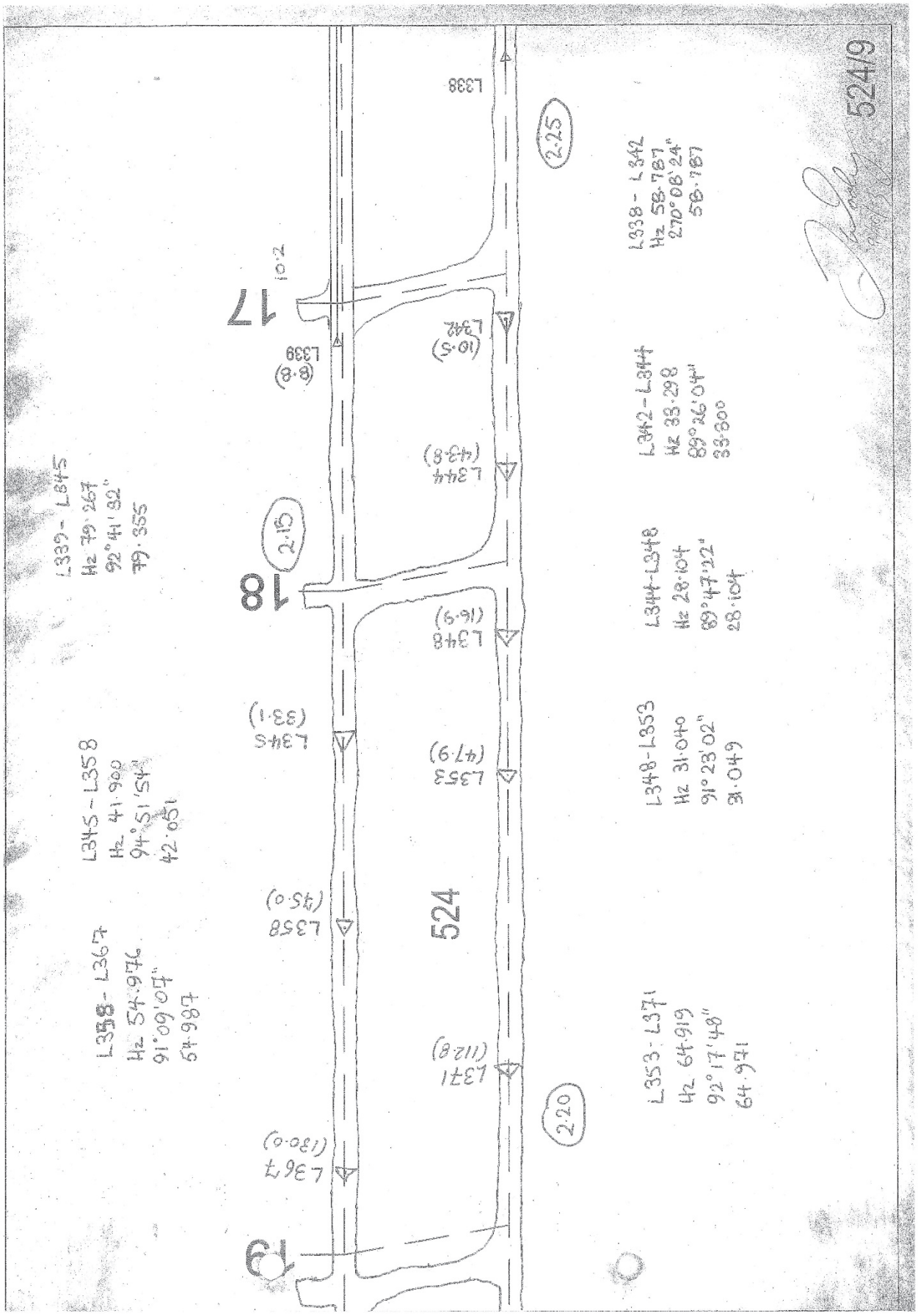
James Sherritt
Supervising Statutory Mine Surveyor 8626
Pages 1 to 6 inclusive
28/5/2018

4.2.2 Example Two (Underground Coal)

Survey___Routine_____ Location_____524A_____ Field Book Ref._____ Back Ref._____ Vol._10___ Page___54___

Map Projection__MGA_ Vertical Datum__AHD__ RT No.__727__ Seam_Bulli_ Instrument_Leica TCRA1201_ Serial No.__223777_ Forward Ref._____

B/S	At	F/S	Horz. Angle	Azimuth	Vert. Angle	Slope Dist.	Horz. Dist.	MGA Correction			MGA Dist.	East	North	Station	Remarks
								RL	N	Scale Factor					
				305°.33'56"								296305.914	6218343.105	L321A	Compnet & 10/60
BS	L321A	A14	78°.36'54"	204°.10'50"	90°.31'14"	39.021	39.019	-291	23	1.0001534	39.025	296289.929	6218307.504	A14	
L321A	A14	L328	281°.23'01"	305°.33'51"	270°.00'44"	70.072	70.072	-291	23	1.0001536	70.083	296232.919	6218348.265	L328	
A14	L328	L330	180°.00'00"	305°.33'51"	270°.53'45"	67.576	67.568	-291	23	1.0001539	67.578	296177.947	6218387.569	L330	
BS	L330	L331	180°.00'00"	305°.33'51"	269°.02'09"	91.409	91.396	-291	23	1.0001542	91.410	296103.588	6218440.735	L331	
L330	L331	L334	180°.00'00"	305°.33'51"	89°.37'45"	31.895	31.894	-291	23	1.0001545	31.899	296077.639	6218459.288	L334	
L331	L334	L338	180°.00'00"	305°.33'51"	89°.15'21"	65.825	65.819	-292	23	1.0001548	65.830	296024.089	6218497.575	L338	
L334	L338	L342	180°.00'00"	305°.33'51"	270°.08'24"	58.787	58.787	-292	23	1.0001551	58.796	295976.260	6218531.772	L342	
BS	L342	L344	180°.00'00"	305°.33'51"	89°.26'04"	33.300	33.298	-293	23	1.0001554	33.304	295949.169	6218551.141	L344	
BS	L344	L348	180°.00'00"	305°.33'51"	89°.47'22"	28.104	28.104	-293	23	1.0001555	28.108	295926.304	6218567.490	L348	
BS	L348	L353	180°.00'00"	305°.33'51"	91°.23'02"	31.049	31.040	-294	23	1.0001558	31.045	295901.050	6218585.546	L353	
BS	L353	L371	180°.00'00"	305°.33'51"	92°.17'48"	64.971	64.919	-296	23	1.0001563	64.929	295848.233	6218623.309	L371	


524
17
18
19
2.25
2.15
2.20
10.2
L338
L339
(8.8)
L342
(10.5)
L344
(43.8)
L348
(16.9)
L353
(47.9)
L358
(45.0)
L367
(180.0)
L371
(112.8)
L338 - L342
Hz 58.787
270°08'24"
58.787
L342 - L344
Hz 33.298
89°26'04"
33.300
L344-L348
Hz 28.104
89°47'32"
28.104
L348-L353
Hz 31.040
91°28'02"
31.049
L353 - L371
Hz 64.919
92°17'49"
64.971
L345 - L358
Hz 41.900
94°51'54"
42.051
L358 - L367
Hz 54.976
91°09'04"
54.987
L339 - L345
Hz 79.267
92°41'32"
79.355
52419

4.2.3 Example Three (Underground Metalliferous

615fwd1807

Input File: raw data/615fwd1807.sdf Jul 18, 2018 17:59

RESECTION REPORT

Purpose :

Setup information :

Resected station	TP1
Instrument height	0.000
Backsight station	615-7
Backsight reference angle	337.0758
Back bearing	337.0754

Stations used	Y	X	Z	Target height
615-7	6447476.446	436169.726	9702.171	0.000
615FWD-2	6447463.964	436179.680	9702.272	0.000

UNADJUSTED OBSERVATIONS

Station	H. Angle	V. Angle	Slope Dist.
615-7	337.0758	90.1259	15.806
615FWD-2	61.1822	89.2905	4.342

INSTRUMENT ACCURACIES

Angle standard deviation (seconds)	:	3.000000
Distance standard deviation	:	0.005000
Distance ppm	:	2.000000
Instrument height standard deviation	:	0.003000
Instrument centring standard deviation	:	0.003000
Target height standard deviation	:	0.003000
Target centring standard deviation	:	0.003000

Results

Resected station	Y	X	Z
TP1	6447461.880	436175.870	9702.232
Standard Deviation	0.0020	0.0035	0.0016

Station TP1 has not been inserted into the database.

Global variance factor

Variance factor	0.2717
Test statistic	0.5434

Page 1

615fwd1807

Passed with:
Confidence level 0.9900
Low threshold 0.0100
High threshold 10.5966

Popes Tau Test

All observations passed with:
Confidence level 0.9900
Confidence threshold 1.4140

Station	H. Angle	V. Angle	Slope Dist.
615-7	1.0406	0.9517	1.0455
615FWD-2	1.0406	0.9534	1.1050

Note: * indicates a Popes tau value which is outside the confidence threshold

OBSERVATION ADJUSTMENTS

Station	H. Angle	V. Angle	Slope Dist.
615-7	-0.0004	0.0019	0.0029
615FWD-2	0.0059	-0.0111	0.0006

Note: The Observation Adjustments are tabulated above to help highlight any erroneous observations.

Resected station TP1 not inserted in database.

TOTAL STATION TRAVERSE REPORT - FACELEFT/FACERIGHT

Purpose :

Station		N	E	Z
Backsight	615-7	6447476.446	436169.726	9702.171
Instrument	TP1	6447461.880	436175.870	9702.232
Foresight	615FWD-4			

Instrument height : 0.0000
Target height : 0.0000
Reverse Bearing : 337.0754 (calculated)

OBSERVATIONS

Backsight	Foresight	H. Angle	V. Angle	Slope Angle	Slope dist
337.0758	141.2324	164.1526	88.2315	1.3645	28.1970

Page 2

```
                                615fwd1807
           321.2320  164.1522  271.3644       1.3644     28.1970
     Mean            164.1524                 1.3645     28.1970

New Station
Station                         N           E         Z
-----------------------------------------------------------
Foresight   615FWD-4  6447439.856  436193.459  9703.025
Bearing to   615FWD-4  :  141.2318
Distance to  615FWD-4  :    28.186


Foresight station 615FWD-4 inserted in database.


               TOTAL STATION TRAVERSE REPORT - FACELEFT/FACERIGHT


Purpose :

Station                         N           E         Z
-----------------------------------------------------------
Backsight  615-7     6447476.446  436169.726  9702.171
Instrument  TP1      6447461.880  436175.870  9702.232
Foresight  615FWD-5
Instrument height  :    0.0000
Target height      :    0.0000
Reverse Bearing    :  337.0754  (calculated)

OBSERVATIONS
Backsight  Foresight  H. Angle  V. Angle  Slope Angle  Slope dist
-----------------------------------------------------------------
 337.0758   147.2947  170.2149   88.4853       1.1107     46.0070
            327.2948  170.2150  271.1110       1.1110     46.0070
     Mean             170.2149                 1.1109     46.0070

New Station
Station                         N           E         Z
-----------------------------------------------------------
Foresight   615FWD-5  6447423.088  436200.587  9703.184
Bearing to   615FWD-5  :  147.2944
Distance to  615FWD-5  :    45.997


Foresight station 615FWD-5 inserted in database.


                              RESECTION REPORT


Purpose :
```

4.2.4 Example Four

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                                                    180727EA
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|Deswik - Leica Job Log File                                        Created on: Date 27.07.2018 Time 14:09:46|
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|Project / Instrument Information                                                                           |
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|Job Name    : 180727EA         Coordinate System : Not defined                                             |
|Creator     : CJM              Transformation    :                                                         |
|Description :                  Projection        :                                                         |
|Description :                  Ellipsoid         :                                                         |
|Linear Units: meter            Angular Units     : decimal dd.mm.ss                                        |
|Instr. Typ  : TS15 I 1" R1000  Geoid Model       :                                                         |
|Instr. Num  : 1614762          LSKS Model        :                                                         |
|Version     : 1000.10                                                                                      |
|TPS Scale   : 1.000000                                                                                     |
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| Station Setup (v5.05) Method = Resection                                        Date 27.07.2018 Time 11:18:40|
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|Pt 9670-OD17-1      Cd                 Cl CTRL/TPS      E    10908.613  N    53258.452  H  9668.581|
|                                                        SD       22.073 HA      93.4245 VA   88.2505|
|                                       Hr        0.000 RC        0.000 HD      22.064 VD     0.609|
|                                                        Status       3d dHD      -0.003 dVD   -0.001|
-------------------------------------------------------------------------------------------------------------
|Pt 9670-OD18-1      Cd                 Cl CTRL/TPS      E    10927.401  N    53258.328  H  9669.141|
|                                                        SD       40.845 HA      92.1045 VA   88.2152|
|                                       Hr        0.000 RC        0.000 HD      40.828 VD     1.166|
|                                                        Status       3d dHD       0.003 dVD    0.001|
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|St CM1              Cd                 Hi      0.000    E    10886.598  N    53259.880  H  9667.973|
|                                       Residuals        mE        0.003 mN       0.012 mH     0.001|
|                                                        Scale           mR      0.0217              |
|                                       Ge.PPM 0.0       At.PPM      2.5  P      1050.0  T      25.0|
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| Measuring (v1000)                                                               Date 27.07.2018 Time 11:20:44|
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|Pt 1                Cd 58                                 E    10875.967  N    53258.838  H  9668.547|
|                                                        SD       10.697 HA     264.2358 VA   86.5526|
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|                                       Hr        0.000 RC        0.034 HD      10.682 VD     0.574|
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|Pt 2                Cd 89                                 E    10884.085  N    53258.152  H  9667.846|
|                                                        SD        3.053 HA     235.2835 VA   92.2309|
|                                       Hr        0.000 RC        0.034 HD       3.050 VD    -0.127|
-------------------------------------------------------------------------------------------------------------
|Pt 3                Cd 89                                 E    10882.491  N    53257.806  H  9668.631|
|                                                        SD        4.648 HA     243.1155 VA   81.5207|
|                                       Hr        0.000 RC        0.034 HD       4.601 VD     0.657|
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|Pt 4                Cd 89                                 E    10882.080  N    53263.043  H  9668.548|
|                                                        SD        5.545 HA     304.5924 VA   84.0305|
|                                       Hr        0.000 RC        0.034 HD       5.515 VD     0.575|
-------------------------------------------------------------------------------------------------------------
|Pt 5                Cd 89                                 E    10883.672  N    53263.168  H  9667.601|
|                                                        SD        4.417 HA     318.1944 VA   94.5006|
|                                       Hr        0.000 RC        0.034 HD       4.401 VD    -0.372|
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|Pt 6                Cd 89                                 E    10893.584  N    53257.925  H  9667.667|
|                                                        SD        7.261 HA     105.3832 VA   92.2504|
|                                       Hr        0.000 RC        0.034 HD       7.254 VD    -0.306|
-------------------------------------------------------------------------------------------------------------
|Pt 7                Cd 89                                 E    10892.481  N    53257.880  H  9668.304|
|                                                        SD        6.222 HA     108.4710 VA   86.5719|
|                                       Hr        0.000 RC        0.034 HD       6.213 VD     0.331|
-------------------------------------------------------------------------------------------------------------
|Pt 8                Cd 89                                 E    10892.391  N    53263.266  H  9668.764|
|                                                        SD        6.756 HA      59.4137 VA   83.1654|
|                                       Hr        0.000 RC        0.034 HD       6.709 VD     0.790|
-------------------------------------------------------------------------------------------------------------
|Pt 9                Cd 89                                 E    10892.241  N    53263.299  H  9667.725|
|                                                        SD        6.602 HA      58.4742 VA   92.0921|
|                                       Hr        0.000 RC        0.034 HD       6.597 VD    -0.248|
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|Pt 10               Cd 89                                 E    10893.473  N    53263.169  H  9667.937|
|                                                        SD        7.621 HA      64.2603 VA   90.1619|
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		Hr	0.000	RC	0.034	HD	7.621	VD -0.036

Measuring Reference Line (v5.05)								Date 27.07.2018 Time 11:27:57
Pt	Cd	Cl ----/	S-Pt E	NaN	N	NaN	H	
Pt	Cd	Cl ----/	E-Pt E	NaN	N	NaN	H	
Li 14	Cd		Length	168.089				
Pt 11	Cd 24		E	10887.867	N	53257.932	H	9667.917
			SD	2.326	HA	146.5537	VA	91.2351
		Hr	0.000	RC	0.034	HD	2.326	VD -0.057
		dL->S-Pt	99.998	dL->E-Pt	68.091	dO	-2.877	dH 1.502

Measuring (v1000)								Date 27.07.2018 Time 11:38:55
Pt 12	Cd		E	10875.832	N	53259.810	H	9668.165
			SD	10.768	HA	269.3730	VA	88.5847
		Hr	0.000	RC	0.034	HD	10.767	VD 0.192
Pt 13	Cd 6		E	10893.368	N	53257.941	H	9667.209
			SD	7.083	HA	105.5902	VA	96.1150
		Hr	0.000	RC	0.034	HD	7.042	VD -0.765
Pt 14	Cd 6		E	10892.245	N	53257.684	H	9667.065
			SD	6.126	HA	111.1528	VA	98.3127
		Hr	0.000	RC	0.034	HD	6.059	VD -0.908
Pt 15	Cd 6		E	10890.558	N	53258.050	H	9666.987
			SD	4.472	HA	114.4824	VA	102.4428
		Hr	0.000	RC	0.034	HD	4.362	VD -0.986
Pt 16	Cd 6		E	10888.843	N	53257.929	H	9666.822
			SD	3.190	HA	131.0042	VA	111.0936
		Hr	0.000	RC	0.034	HD	2.975	VD -1.151
Pt 17	Cd 6		E	10887.798	N	53257.802	H	9666.775

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			SD	2.682	HA	149.5947	VA	116.3210
		Hr	0.000	RC	0.034	HD	2.400	VD -1.198
Pt 18	Cd 6		E	10886.319	N	53258.197	H	9666.737
			SD	2.107	HA	189.2603	VA	125.5459
		Hr	0.000	RC	0.034	HD	1.706	VD -1.236
Pt 19	Cd 6		E	10884.187	N	53258.062	H	9666.809
			SD	3.237	HA	232.5810	VA	111.0520
		Hr	0.000	RC	0.034	HD	3.020	VD -1.165
Pt 20	Cd 6		E	10883.270	N	53258.152	H	9666.765
			SD	3.940	HA	242.3307	VA	107.5119
		Hr	0.000	RC	0.034	HD	3.751	VD -1.208
Pt 21	Cd 6		E	10881.277	N	53257.756	H	9666.658
			SD	5.879	HA	248.1411	VA	102.5537
		Hr	0.000	RC	0.034	HD	5.730	VD -1.315
Pt 22	Cd 6		E	10879.742	N	53258.166	H	9666.668
			SD	7.187	HA	255.5745	VA	100.2752
		Hr	0.000	RC	0.034	HD	7.067	VD -1.305
Pt 23	Cd 6		E	10878.342	N	53257.816	H	9666.754
			SD	8.597	HA	255.5728	VA	98.0906
		Hr	0.000	RC	0.034	HD	8.510	VD -1.219
Pt 24	Cd 6		E	10877.043	N	53258.039	H	9666.738
			SD	9.809	HA	259.0528	VA	97.1403
		Hr	0.000	RC	0.034	HD	9.731	VD -1.235
Pt 25	Cd 6		E	10876.100	N	53259.526	H	9666.705
			SD	10.580	HA	268.0356	VA	96.5300
		Hr	0.000	RC	0.034	HD	10.504	VD -1.268
Pt 26	Cd 6		E	10875.965	N	53261.856	H	9666.611