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Geodetic Connections to Tide Gauge at Mawson

	MSL height (m) [1]						
Mark	**1995/96**[2]	**1996/97**[3]	**1997/98**[4]	**1998/99**[5]	**2000/2001**[6]	**2006/2007**[6]	**Comment**
ISTS051	9.792	9.792	-	-	9.7920	9.7920	Datum for comparison
ISTS051 RM2	11.686	11.684	-	11.677	-	11.6833	-
ISTS051 RM4	-	9.587	-	9.580	9.5869	-	-
AUS064	32.449 [7]	32.449	32.449	-	32.4458	32.4441	ARGN GPS mark
AUS064 RM1	-	30.084	-	30.058	30.0792	30.0786	ARGN reference mark
AUS064 RM2 [8]	31.959	31.960	31.956	31.956	31.9557	31.9547	ARGN reference mark
AUS064 RM3	-	28.995	28.993	28.990	28.9905	28.9897	ARGN reference mark
AUS300	-	-	2.148	2.122	2.1328	2.1312	North of fuel farm
AUS301	-	-	1.850	-	1.8351	1.8342	North of Aircraft Hanger
AUS321	-	-	0.745	-	-	-	-
NMV/S/11	1.960	1.960	-	-	-	-	-
BM1	-	11.646	-	11.639	-	-	-
NMV/S/ 3	33.457	33.459	33.452	33.454	-	-	-
AUS258	1.413	1.414	1.427	1.400	1.4108	1.4098	Tide gauge benchmark
AUS251	-	-	-	-	-	18.1385	BM next to smoke hut
AUS267	-	-	-	-	-	2.8755	Tide gauge benchmark
AUS268	-	-	-	-	-	3.5365	Tide gauge benchmark
NMV/S/1	-	-	-	-	-	15.5673	BM near ANARESAT

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A number of marks are used to connect the tide gauge bench mark to the permanent Mawson GPS tracker (AUS064). Connections from the tide gauge benchmark to the tide gauge are held by Antarctic Division.

Notes:
[1] Based on a MSL height of 9.792 metres at ISTS051. This value was adopted from the ISTS051 May 1981 Station Summary.

[2, 3] Class LC* optical levelling, using fibreglass staves. All values corrected for thermal expansion/contraction of the staves (King 2000).

[4] Class LC* optical levelling, using Aluminium staves. All values corrected for thermal expansion/contraction of the staves (King 2000). Although included in the summary for completeness, these results may be dubious.

[5] Class LC* optical levelling. All values corrected for thermal expansion/contraction of the staves (King 2000). Although included in the summary for completeness, these results may be dubious.

[6] Class L2A* levelling, using the "Leap-Frog" EDM Height Traversing. Due to limited time at Mawson Station, only the section between AUS258 and ISTS051 was observed in both directions, with the remaining sections only levelled one way. However, the comparison with previous levelling was acceptable and the superior technique used means that this 200/2001 levelling is the most reliable (see section 3 of AUSLIG Technical Report 5 for more details).

[7] The GPS antenna attached to AU064 was levelled to, but it is not clear which part of the antenna was used. Assuming that the top of the ground plane was levelled, the height shown was obtained by reducing the measured height by 38 mm to bring it to the base of the antenna (the antenna reference point - ARP), plus a further 3½ mm for the height of this antenna above the AUS064 station mark (see the site log sheet for details).

[8] AUS064 RM2 was used as the common point to compare the 1997/98 & 1998/99 results with the other years, as ISTS051 was not connected during these surveys.

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- See ICSM Special Publication 1, "Standard Practice for Control Surveys" for an explanation of optical levelling standards.

- King, M (2000), "Report on Temperature Corrections for Levelling Observations made at Australia's Antarctic Bases", An internal report prepared for the Australian Antarctic Division. Prepared June 2000, Revised November 2000.

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