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Geodetic Connections to the Tide Gauge at Davis

Mark	MSL HEIGHT (m) ¹								Comment
	Sept. 1994 ²	1995/1996 ³	1996/1997 ⁴	1998/1999 ⁵	1999/2000 ⁶	Jan 2001 ⁷	2004/2005	2006/2007	
AUS099	27.874		27.869	-	27.861	27.8686	27.8637	27.8628	ARGN GPS
NM/S/5	27.855		27.854	-	-	-	-	-	Directly below AUS099
AUS099 RM1			25.542	-	-	25.5415	25.5370	25.5363	ARGN GPS RM 1
AUS099 RM2			27.425	-	-	27.4245	27.4202	27.4191	ARGN GPSRM 2
AUS099 RM3			26.921	-	-	26.9206	26.9163	26.9155	ARGN GPS RM3
BMR Gravity			27.592	-	-	-	-	-	
MET MARK	18.404		18.399			18.4013	18.3957	18.3956	Near Mt building
HBM2			4.110	4.110	4.106	-	-	-	
HBM1			2.867	2.866	2.863	-	-	-	
NMV/S/4	2.179		2.179	2.179		2.1790	2.1790	2.1790	Near Beach, West side of Station
D3				23.087	23.080	23.0843	23.0810	23.0803	NE of workshop
D4				18.926	18.923	-	-	Disturbed	East of Workshop
D5						19.9195	19.9161	19.9161	East of Science Building
AUS303				15.494	15.493	15.4995	15.4953	15.4952	Approx. 100 m North of Station
AUS302				1.660	1.670	-	-	-	
AUS186	4.713	4.713	4.732	4.706	4.713	4.7202	4.7151	4.7155	Tide Gauge Benchmark
AUS184		2.022	2.041	2.014	2.023	-	-	-	



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A number of [survey marks in the Davis area](#) are used to connect) between the permanent Davis GPS tracker ([AUS099](#)) and the tide gauge benchmark (AUS186), using both GPS and conventional optical levelling techniques. Connections from the tide gauge benchmark to the Platypus Engineering bottom mounted tide gauge (installed in 1993) are held by [Antarctic Division](#).

Notes:

¹ The MSL heights are based on a 1993 MSL height determination for NMV/S/4 of 2.179 metres

² Class LC* optical levelling by Hyslop & Gordon, using Aluminium staves. See Antarctic Division 1994/95 report.

³ Class LC* optical levelling by Adams & Gordon, using fibreglass staves. All values corrected for thermal expansion/contraction of the staves (King 2000). See Antarctic Division 1995/96 report.

⁴ Class LC* optical levelling by Ward & Digney, using fibreglass staves & a Leica™ NA2000 bar code level. All values corrected for thermal expansion/contraction of the staves (King 2000). See Antarctic Division 1996/97 report.

⁵ Class LC* optical levelling by King, Manson & Palfrey, using Aluminium staves. All values corrected for thermal expansion/contraction of the staves (King 2000). See Antarctic Division 1998/99 report.

⁶ Class LB* optical levelling by Anderson, using Aluminium staves. All values corrected for thermal expansion/contraction of the staves (King 2000). See Antarctic Division 1999/2000 report.

⁶ Class L2A* levelling, using the "Leap-Frog" EDM Height Traversing., by Gary Johnston & Paul Digney (Geoscience Australia) using a Leica TC2003 Total Station - see [Technical Report 5](#).

⁷ In 1998/99 and again in January 2001, GPS was observed between AUS099 and the tide gauge benchmark (AUS186). In both cases there was excellent agreement (4 mm & 3 mm respectively) between the levelled difference in height and the orthometric difference in height derived from GPS and corrected for geoid-ellipsoid separation. See section 4.1 of [Technical Report 5](#) for more details.

- 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.