DEPARTMENT OF MINES
SOUTH AUSTRALIA

Rept. Bk. No. 63/84
G.S. 3563
Hyd. 1829
D.M. 670/64

GREAT ARTESIAN BASIN

TESTING AND INSPECTION OF FLOWING BORES

PROGRESS REPORT NO. 2

Grids J2, 3, 4, K1, L3

INTRODUCTION

Twelve bores were visited to carry out annual flow and pressure measurements and to determine which bores were in sound condition for the fitting of orifice plates to control the flow. Two recently repaired bores, namely Dullingari and Merrimelia, were inspected.

TEST RESULTS

Prom Creek Bore

Grid J4, P.S.12N, P.L.1770, Block 916

		Previous Test	Difference (+or-)
Tested on:	21.9.1966		
Depth:	569'	13.10.1964	
Static Pressure:	35 p.s.i.	34.5 p.s.i.	+0.5
Temperature:	90°F	86°F	+4°F
Flow:	300 gallons/hr.	380 gallons/hr.	-80

Remarks: No deterioration in condition of headworks.
Small flow - control not necessary.

Lake Harry Bore

Grid J4, P.S.12N, P.L.1946, Block 1040

		Previous Test	Difference (+or-)
Tested on:	21.9.1966		
Depth:	1360' logged depth 1349'	13.10.1964	
Static Pressure:	64 p.s.i.	64 p.s.i.	0
Temperature:	118°F	118°F	0
Flow:	2400 gallons/hr.	2500 gallons/hr.	-100

Remarks: Most of the flow from bore head is piped away and little wastage.

Clayton Bore

Grid J4, P.S. 12N, P.L.1713A, Block 1086

Tested on: 22.9.1966
Depth: 1717'
Static Pressure: 39 p.s.i.
Temperature: 128°F
Flow: 28,800 gallons/hr.
Remarks: Leaks developed around head when valves closed. The low pressure reading with the valves closed suggests that water is being lost through the casing at depth.

Dulkaninna Bore

Grid J4, P.S. 12N, P.L.2135, Block 154

Not tested.

Remarks: Bore leaking beneath surface and water seeping out on surface. Leakage has increased during year. Urgently requires recasing and cementing.

Cannawaukaninna Bore

Grid J4, P.S.12N, P.L. 1681, Block 751

		Previous test	Difference(+or-
Tested on:	25.9.1966		
Depth:	2847'	14.10.1964	
Static Pressure:	125 p.s.i.	125 p.s.i.	
Temperature:	175°F	172°F	+3°F
Flow:	22,500 gallons/hr.	22,000 g.p.h.	+500

Remarks: A small leak developed when valve was closed. An orifice plate was not fitted due to leakage under pressure.

Kopperamanna No. 2

Grid J3, P.S.168, P.L. 1681, Block 751

		Previous Test	Difference (+or-)
Tested on:	26.9.1966		
Depth:	3256'6"	16.10.1964	
Static Pressure:	149p.s.i.	138 p.s.i.	+11 p.s.i.
Temperature:	177°F	180°F	-3°
Flow:	21,000 gallons/hr.	21,000 galls./hr	0

Remarks: Bore in sound condition. A/three outlet head is required to be fitted to the borehead so that water can be piped. An orifice plate was not fitted pending fitting of piping which will limit the flow.

Kopperamanna No. 1 Bore

Remarks: Flowing to waste. Should be cemented off.

Mulka Bore

Grid J3, P.S.168, P.L. 1639, Block 103

Depth: 3445'

Not tested.

Remarks: Valves not working. Previously repaired with a short liner. Needs recasing and cementing before flow could be controlled.

Mungeranie Bore

Grid J3, P.S. 168, P.L. 1771, Block 766

Tested on: 25.9.1966

Depth: 3370'

Static Pressure: 100 p.s.i.

Temperature: 187°F

Flow: 24,300 gallons/hr.

Remarks: Leak developed at borehead when valves closed. Not suitable for fitting of orifice plate.

Mirra Mitta Bore

Grid J2, P.S. 168, P.L. 1935, Block 778

Tested on:	25.9.1966	Previously Tested 17.10.1964	Difference (+ or -)
Depth:	3534'		
Static Pressure:	134 p.s.i.	125 p.s.i.	+ 9p.s.i.
Temperature:	192°F	194°F	-2°
Flow:	19,200 gallons/hr.	22,400 gp.h.	320 g.p.h.

Remarks: Leak developed at borehead when valves closed. Not suitable for fitting of orifice plate.

Mt. Gason

Grid J2, P.S. 168, P.L.1601, Block 827

Depth: 4420'

Not tested.

Remarks: A serious leak has developed beneath surface. The ground is collapsing around borehead forming an open crater from which steam issues. Water disappears into the ground and passes beneath the road to reappear ¼ mile east of the bore forming a large swamp. A borehead with three outlets was fitted last year at the request of the Lands Department, but cannot be used due to deterioration of the bore casing. It is considered that the bore is in a dangerous condition due to the open hole and steam issuing from the ground and should be repaired and recased immediately.

Goyders Lagoon Bore
(Clifton Hills Homestead)

Grid J2, P.S.16N, P.L. 640/1356

Depth: 4850'.

Not tested.

Remarks: A short liner is inserted in the bore and the bore is not considered to be sound enough to shut in. The water is at 212°F and boils as the pressure is released causing the water to surge.

Pandie Burra Bore

Grid K1, P.S.15N, P.L. 1601, Block 827

		Previously Tested	Difference (+or-)
Tested on:	28.9.1966	21.10.1964	
Depth:	7253' (casing fractured at 4570')		
Static Pressure:	180 p.s.i.	165 p.s.i.	+15
Temperature:	203°F	210°F	+7°
Flow:	18,600 gallons/hr.	17000	+1600

Orifice plate: 1" diameter fitted

Flow through orifice 9,000 g.p.h. 95 p.s.i. on head.

Remarks: Good condition. No repairs necessary.

Dullingari Bore

Grid L3, P.S.158, P.L.1714, Block 757

Depth: 11,588' (filled in to 6,000').

Not tested.

Remarks: Headworks recently repaired. Small leak from flange behind valve. Swamp drying out. Flow line needs protective railing to prevent stock knocking and causing leaks.

Merrimelia Bore

Gidgealpa block

Not tested.

Remarks: New valve, headworks and flow line fitted. Swampy ground drying out. Can now be fitted with piping and used for stock.

CONCLUSIONS AND RECOMMENDATIONS

Flows and pressure readings on Observation bores show little annual variation over the two year period since readings commenced. Most variations are within the range of error expected in measurement. The flow for Frome Creek bore near Marree on the edge of the basin does show a significant diminution in flow.

A general deterioration in the condition of older bores is apparent. Bores which could be shut in under pressure two years ago now leak. The subsurface leak on Dulkaninna bore has increased during the year and repair work is urgently needed before complete collapse occurs.

Mt. Gason bore has broken out beneath the surface and is considered to be in a dangerous condition. Steam is issuing from a crater around the borehead. If this is allowed to continue repair work will become very expensive.

Station lessees are showing interest in piping water. However, there are very few bores from which this is possible and the number is decreasing each year. Kopperamanna No. 1 is to be connected to piping shortly.

Dullingari bore was repaired recently and the swampy ground around it is drying out. However, a small leak had developed behind the valve probably due to bumping of the flow line by cattle. The lessees of Innamincka station should be asked to erect railing, to protect the flow line.

Merrimelia bore on Gidgealpa block is drying out around the borehead and water can now be piped for stock use.

It is considered that flow control of most bores will not be possible until major repairs are carried out.

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ERH:SMA
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