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LICENCEE AND OPERATOR,
ADELAIDE BRIGHTON CEMENT LTD.

RELINQUISHED AREA REPORT,
on
EXPLORATION LICENCE 4968
ALEXANDRIA STATION
N.T.

by
L.G. Nixon,

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SUMMARY.

Gypsum is widespread in the region and large clusters of coarsely crystalline gypsum can be found on the spoil heaps of most of the "turkey nest" dams which have been dug in the black soil plains in the area.

A rapid reconnaissance of the region resulted in the discovery of significant deposits of gypsum at and around the No.6 Waterhole on the Playford River west of Alexandria Station Homestead, at the No.18 Waterhole and in the black soil plain about 1 mile to the ESE of No.6 Waterhole.

No significant gypsum deposits were found in the exploration licence area away from the vicinity of the Playford River.

INTRODUCTION.

Mr. J. Sickert, General Manager of Northern Cement commissioned the present writer to locate gypsum in the Northern Territory.

Following a literature search, Playford River near Alexandria Station was selected as a having the potential to develop gypsum at shallow depth and of economic grade and size to warrant exploitation. Consequently, an exploration licence was applied for covering the areas of interest to the company.

The initial search was carried out using a Toyota 4WD Land Cruiser. This search resulted in the discovery of gypsum at the No.6 and 18 Mile Waterholes on the Playford River and a beneath shallow black soil at a location approximately 1 kilometre to the east of the discovery at No.6 Waterhole.

A wide ranging helicopter survey along all the creeks and across all the paddocks was carried out about six months later. No additional gypsum deposits were located during this survey. Part of the reason may have been that the creeks were full, obscuring any exposures the may have been in the beds and banks of the creeks.
REGIONAL GEOLOGY.

Sediments in the region range from Upper Proterozoic to Recent. Outcrop is poor and large areas are covered with black soil and sand with sub-outcrops of dolomite, limestone and extensive areas of chert pebbles and pisolithic gravel.

Upper Proterozoic. Mittiebah Sandstone.

A medium grained quartz sandstone forming a low rubble covered ridge south of Alexandria homestead, elongated along Buchanan Creek. This outcrop is regarded as the axis of an anticline with low flanking dips.

Middle Cambrian. Rankin Sandstone.

Burton Beds. This unit outcrops between Buchanan Creek and the Playford River. The sediments are mainly limestone, chert and siltstones. Fossils including trilobites of Cambrian are common in the shales and siltstones.

Cainozoic.

Brunette Limestone. This is a limestone of Tertiary age. It occurs as scattered boulders in the black soils and is exposed in the bed of the Playford River where it occurs as a rubbly, white to brown, fine to coarsely grained, cherty limestone. The environment of deposition is thought to be brackish water. Gypsum is associated with these Tertiary limestones but this may be fortuitous although some writers think the gypsum may be formed as a result of replacement of the limestone.

Recent. Widespread dark grey and black pedocalcic soils which produce the rolling grass covered downs of the Barly tableland. These soils are weakly leached and contain carbonate and gypsum horizons.

LOCAL GEOLOGY.

The oldest sediments in the licence consist of sub outcropping, brown, Middle Cambrian Burton Beds in the Ralhin Limestone formation. These limestones may be over lain by Brunette Limestone of Tertiary age which outcrop sporadically in the region and are exposed in the bed of the Playford River or they may be covered by black soils of more recent origin.

Gypsum occurs as large, twinned crystals or clusters of crystals in the black soil or as a coarsely crystalline rock, layer up to 3 metres thick immediately beneath the black soil which can vary from less than a centimetre to over two metres.
ECONOMIC GEOLOGY.

For the purposes of this investigation, only relatively pure crystalline gypsum was considered to be of economic importance to Northern Cement.

Gypsum was discovered in significant volume at the No.6 Waterhole. An extension of the deposit is exposed in a low rise about 1 kilometre to the ENE of the deposit at the No.6 Waterhole. This occurrence is estimated to be at least 2 metres thick in its thickest section and is exposed in a roughly oval shape, measuring about 150m x 250m. It too disappears beneath black soil to the south, east and west, but coarse clusters of gypsum float extend for many hundreds of metres beyond the outcrop limits.

Although other gypsum occurrences cannot be ruled out elsewhere in the licence area, it is thought that the effort and expense in trying to locate "blind" occurrences remote from the existing known outcrops is not worth the company's time or expense.

CONCLUSIONS.

Gypsum of Recent has formed along the southern side of the Playford River at the Six Mile Waterhole and the Eighteen Mile Waterhole.

Aerial reconnaissance of the licence area failed to locate additional gypsum deposits.

Although the possibility of other sub-surface accumulations of gypsum may occur elsewhere in the licence area, it is considered that the cost and effort in trying to find additional "blind" deposits is unwarranted.

RECOMMENDATIONS.

Relinquish those blocks furthest away from the Playford River.

Peg additional claims contiguous with and south of the claims currently held by the company.

Signed.
L.G. Nixen
22/4/1988