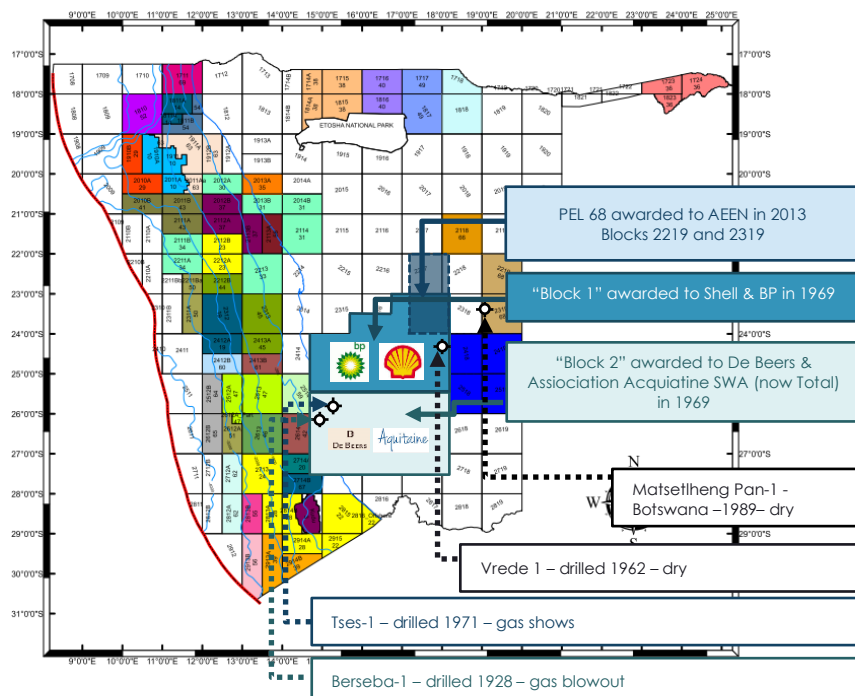


## HISTORICAL EXPLORATION IN THE NAMA BASIN

Exploration for oil and gas in Namibia and Botswana has been carried out over several decades as part of a more wide-ranging pursuit of minerals. As a result, the area covered by the Kalahari Desert sands and the Drakensberg Lavas of Jurassic age has been studied mainly through the drilling of numerous shallow core-holes. For example, in 1961 Standard Vacuum Oil carried out an extensive drilling campaign (comprising over 130 shallow core-holes) which covered the entire Kalahari Basin area. (Kingston et al, 1961).

### Onshore Namibia

After Standard Vacuum Oil had relinquished their concession in 1962, Artnell Petroleum Company (Windhoek) began exploration activity (Wilson, 1961). A stratigraphic test well, Vreda-1, was drilled to the depth of 2,200 meters in 1963 to 1964 to establish whether potential source rocks (Schwarzkalk Limestone) extended as far east as the border with Botswana. The well was terminated in a dolerite sill without indication for hydrocarbons, and the licence area was relinquished in 1965. The Schwarzkalk Limestone was not encountered in the well.



**Figure 1: Companies that have previously explored the Nama Basin**

Concessions were awarded to a joint venture between Shell and BP- both onshore and offshore between 1969 and 1972. Following field and photogeological studies (Wells, 1969; Shell Eksplorasi, 1969) and a sparse aeromagnetic survey was performed (Prakla, 1969). The

onshore concession, Block 1, which included the Vreda-1 well location was relinquished on 1st January 1970 as well as the current Block 2319. The offshore licence was relinquished in January 1972 after acquisition and interpretation of some 2,100 km of seismic data further to the South.

At the same time that Shell and BP were conducting surveys in Block 1, Association Aquitaine SWA and De Beers Oil Holdings (Pty) Ltd held Block 2 to the South of Block 1. The Tses-1 stratigraphic well was drilled in 1970-1971 following a 330-km seismic campaign. The well was located some 45km NE of the Berseba-1 test drilled in 1928 (in which a gas blow-out was violent enough to cause fatalities (Source – anecdotal – conversation with Koujo). The concession was subsequently relinquished.

The eastern part of both Blocks 1 and 2 was explored for coal by CDM (Pty) Ltd, a subsidiary of Anglo-American Corporation, in the late seventies and early eighties (McQuaid, 1985), and by Agip Coal USA between 1983 and 1984, when 36 shallow wells were drilled and some 300 million tonnes of coal resource was found within the Aranos area (20km south of the southern boundary of 2319). The concession was relinquished because the deposits defined by the drilling of shallow core-holes did not reach the minimum tonnage required for economic viability. (Agip Coal USA. 1984).

The Owambo Basin (North of the Damara) was more widely explored, where a concession that was originally assigned to the Etosha Petroleum Company and subsequently acquired by Brilund Mines (Pty) Ltd in 1962 (Etosha Petroleum Company, 1972) was operated until 1992 by OPIC. A farm-in opportunity was offered to Shell in 1967 but was turned down (Mulder, 1967). The well Etosha West-1-5A was drilled in 1970 with reported seepage of oil into the well, at 2,507 meters were 40 gallons of light crude were encountered at the bottom of the well, while waiting for a larger rig. OPIC (a Taiwan-based exploration company) acquired operatorship of the concession from Brilund. Seismic data were acquired in the area and a well (Opo-1), planned to 4000 m, was drilled in the basin but was abandoned at a depth of 700 meters in 1991. (Petroconsultants reports, November 1991). Circle Oil controlled the Namibian side of the Basin in the early 2000's but could not raise funding and in 2011, Hydrocarb Corporation started to explore, performing gravity and aeromagnetic studies. Their programme remains undercapitalised with 85% of their license area without seismic.

## Botswana

Shell Coal Botswana (Pty) held exploration licences for minerals between 1964 and the early eighties. None of the coal deposits in these concessions were developed by Shell Coal. These evaluations included a study of the hydrocarbon prospectivity of Botswana (Clark-Lowes & Yeats, 1971). No seismic data were acquired.



In 1981 to 1984, applications were made by Weeks together with Exxon for concessions in the basinal areas. Weeks relinquished their licence in 1984 and Exxon subsequently withdrew in 1982, concerned about the Angolan War, civil unrest and the possibility of economic sanctions.

In 1986, the Government of Botswana and Petro-Canada International Assistance Corporation (PCIAC) entered into a cooperation agreement (with a grant from the European Development Fund) and began a 900-km seismic campaign. The stratigraphic well Masetlheng Pan-1 was drilled in 1990 to 1991 in the Nosop-Ncojane Basin in western Botswana. This well site is about 100 km East of Block 2319.



## NAMA BASIN EXPLORATION HISTORY

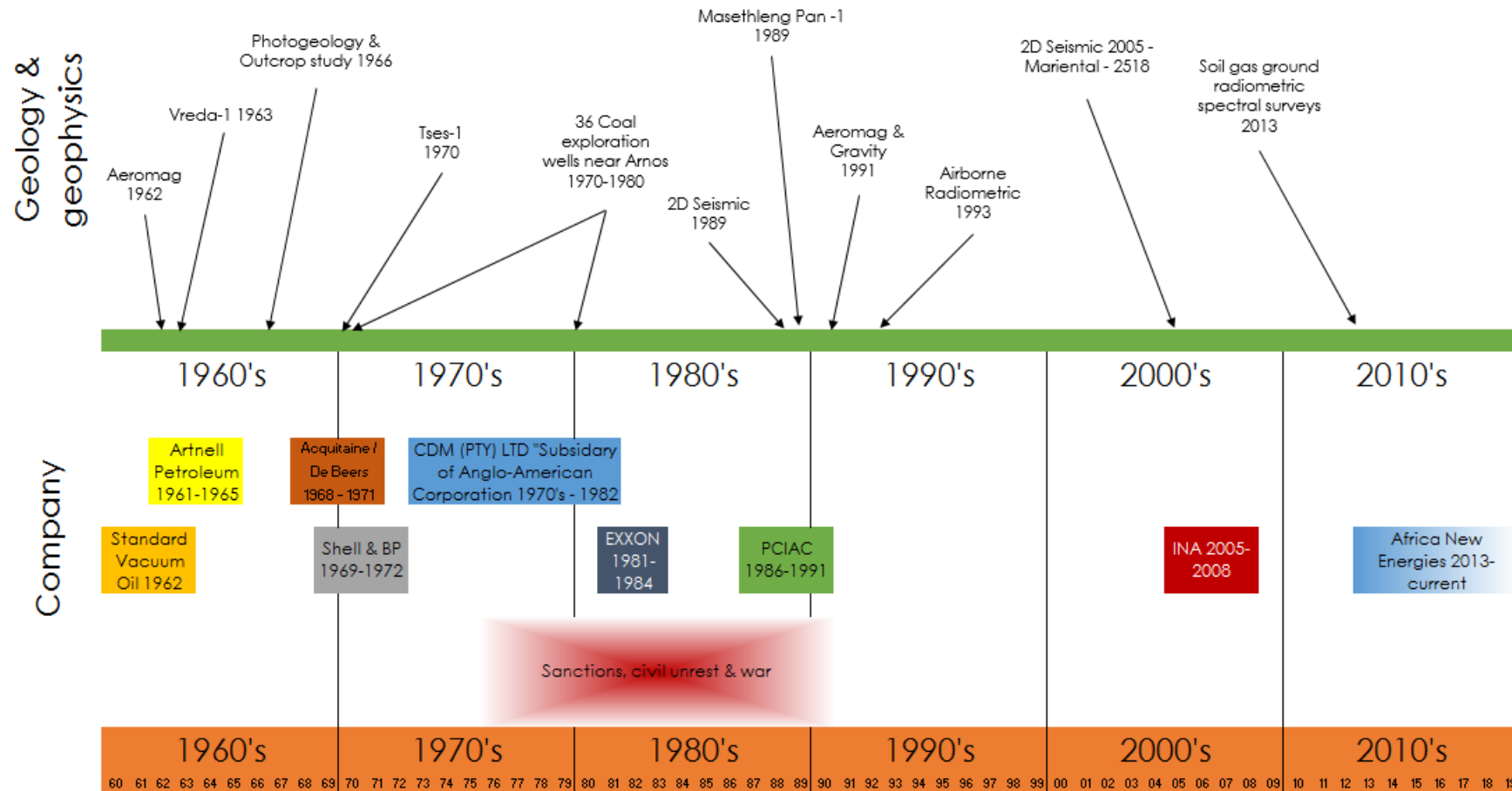


Figure 2: Nama Basin Exploration History

