أزال

حولية الآثار اليمنية

العددان الثالث والرابع

الهيئة العامة للآثار والمخطوطات والمتاحف
صنعاء
١٤٤٤هـ-٢٠٢٣م

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بسم الله الرحمن الرحيم

المحتـويـات

Environmental Impact Assessment Yemen LNG Company
Total E&P Yemen – Archaeological Baseline Survey
Of Block 10 (Al–Kharir area) First season August 2009

Participants

Mohammed Sinnah Yemen LNG \ Project Director

Adel Al–Washaly, Yemen LNG \ Team Leader.

Abdulkarim Al–Barakani, GOAM Representative - Sana'a headquarters.

Hussin Al–Aidarous, GOAM Representative - Syeun branch.

Suliman (Team driver).

Program

From the 9th to the 18th of August, a joint Yemeni team from Yemen LNG Company and GOAM
(General Organization of Antiquities and Museums) representatives (see list of participants),
conducted an archaeological baseline survey from the center of Total E&P Yemen oil block 10 to
the east of Shabwa, the survey was carried out under an official consultancy requisition from
Total E&P Yemen to Yemen LNG.

Objectives

Four main objectives were completed within this study:

1. **Conduct** archaeological baseline study for Al-Kharir area (block 10) to highlight the archaeological landscape of the area
2. **Inventory** the discovered archaeological sites to be included in the archaeological database of the site.
3. **Register** all the archaeological sites, each site, or group of sites, was named KHA with a number starting from 001 (for example KHA-

001). Each one was described with georeferenced localization, photographic and GPS positioning documentation.

4. **Organize** an archaeological preservation management plan.

Achieving the above objectives will provide the required information to produce the archaeological impact assessment as part of the environmental impact assessment of the project.

Survey Technique

The field work was carried out in the following way:

- Study the aerial photos to identify the potential archaeological sites by using Google earth software.
- Divide the block area into sections and survey each section directly – if possible – either going by car or walking to authenticate the archaeological potentiality of the identified archaeological sites during the aerial photo study.

After approving a site it was documented by GPS (UTM 38/39 WGS 84), mapped on the aerial photos, described and photographed.

***Definition of Cultural Heritage**:*

For the purpose of this report *cultural heritage* is concerned with the physical remains of past human activities *(physical Cultural Heritage)*, the following shall be considered as "physical cultural heritage":

Monuments: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;

Groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science;

Sites: works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view.

Introductory remarks about Yemeni Archaeology:

Archaeological framework in Yemen can be divided into four main periods.

The first one, and the earliest, is **Prehistory**, including Paleolithic and Neolithic (from the origin of humanity to the 5th-4th millennium BC). Prehistoric human occupations are still weakly evident in South Arabia, and especially in Yemen. Prehistoric methodical researches are still at an early stage in Yemen— they began about 25 years ago— but we now know that the archaeological history of Yemen began in very early times perhaps some 1.6 million years ago. The oldest sites\artifacts found in Yemen were in Tihama and Wadi Hadramout, including several sites in the central highlands and eastern plateau belonging to the Lower and Middle **Paleolithic** (ca.2.5 M.Y. BP – 9000 BP); If Pleistocene typologically-related artifacts were found in several regions, there is no precise dating for any of them. In consequence, the Paleolithic period is not clearly defined (Crassard, R. and Khalidi, L. 2005). The Paleolithic period is virtually followed by the **Neolithic** (7th millennium to 5th millennium BC), which comprises the most frequent type of prehistoric sites existing in Yemen (Woodward- Clyde, 1997), but with different local traditions to the other Near East regions. Although Early and Mid-Holocene is better known, thanks to a few stratified sites, paleoenvironmental studies and to an abundant surface lithic material, the definition of the Neolithic period in Yemen is still controversial (Crassard, R. and Hitgen, H.2006).

Then, the **Bronze Age period** (4th millennium to 2nd millennium BC) comes with more complicated economic traditions and more developed

funerary customs. The Bronze Age period is mostly known thanks to the discoveries of numerous tombs and cemeteries characterized by megalithic architecture. A strong symbolization appears also in this architecture with elements referring to unknown concepts e.g. tombs' tails, drawings inside dolmen-like structures (Herbert, S. 2003) the dwelling structures are very rarely found and until now mostly known from the Yemeni highlands (Braemer, et al. 2001).

During the 2nd Millennium BC, various traditional cultures were established in several regions near to fertile wadis ringing the desert, which are known as **Pre–Islamic** South Arabian Kingdoms (2nd millennium BC to 6th Century AD). The "**Pre–Islamic**" **period** is better known in regard to a wide epigraphic corpus from all around the country and to several excavations of major and minor sites appertaining to the different kingdoms. The pre-Islamic period can be subdivided into the Protohistoric time (1200 – 800 BC), the time of the Caravan Kingdoms (800– 100 BC), the Middle South Arabian Time (100 BC – 300 AD) and the Himyaritic Time (300 –632 AD).(Maigret, A. 2002) During the time of the Caravan Kingdoms and the Middle South Arabian period, the southern edge of the Arabian Peninsula was divided into five major kingdoms: Saba, Qataban, Ma'in, Hadramawt and Awsan. These kingdoms developed great irrigation systems to control the flooding waters that came from the highlands during the monsoon rain seasons. Their developments also include the invention of writing systems and

practicing a long distance trade by caravans to transport frankincense, incense and spices to Mediterranean civilizations through caravan routes that crossed the Arabian peninsula from south to north (Crassard, R. and Hitgen, H. 2008) The Total E&P Yemen oil block (Al-Kharir area) that was surveyed for remains of archaeological and historical sites and monuments is situated in the former territory of the Kingdom of Hadramawt..

Finally, the **Islamic Time** (6th century AD to present) is divided in Yemen into several periods.

Contrary to the Pre-Islamic and in particular the Himyaritic (late Pre-Islamic) Time (300 – 632AD) Yemen was until the beginning of the 20th century AD split into several different kingdoms, Sultanates and Imamates. The varied societies differ especially in the three main areas of their region, the highlands, the coastal area and the desert area including the desert fringes (Crassard, R. and Hitgen, H. 2006).

Introductory remarks about Hadramawt Region:

The Hadramawt great wadi is situated in a huge plateau (known as Hadramawt Plateau) which stretches from the Indian Ocean in the south to the Empty Quarter desert to the north.

Hadramawt Wadi is a deep dried valley that cleaves its course within the plateau with a length of 923 km: from its streams at Ramlat-alsabateen desert in the west, running to the east and then turns to the south to disembogue at Sayhoot in the coast of Aden. The plateau height ranges between 400m to 2700m above sea level; it is divided by Wadi Hadramawt into two *Jawls*, the northern Jawl and the southern Jawl. The human occupation was concatenated on the bottom of the wadi where villages, cities and cultivated lands were situated. The human occupation in Hadramawt dates back to early periods. During the wet periods in late Pleistocene and early Holocene, the oldest evidence dates back to the Paleolithic Age (700,000 years BP),

while various sites were discovered in the two Jawls from the Neolithic Age, Bronze Age and Iron Age. Most of the sites were situated around the tops of wadis and sub-wadis and in the natural cliffs (rockshelters), where simple structures and settlements were built, in addition to the funerary structures, which are a significant character of the Neolithic and Bronze Age sites in Hadramawt. Small settlement and funerary structures (tombs) from Neolithic and Bronze Age periods spread out in all the northern Jawl from Al-Mahra in the west to the Al-Abr in the east, such as Wadi Wa'asha where various Neolithic settlements, tower-tombs and lithic industry workshops have been found. Almost the same traditions were also

dominant in the southern Jawl, where similarity in the shape, function and type of the sites were observed during the archaeological studies of the Neolithic and Bronze Age sites in the wadis and sub-wadis of the southern Jawl, such as in Wadi Sana and Idem in the east and Wadi Bin-Ali and Wadi Al-'ain in the middle of the Jawl and Wadi Dawan and Amed to the west as well. The Neolithic and Bronze Age sites from these regions are characterized with circular and elliptical structures and dolmen-like structure and tumulus tombs, which are usually associated with lithic industry sites of stone tools such like scrappers, hand-axes, flakes and arrowheads. These type of sites could be found on the surface of the plateau around the top of the wadis and sub-wadis and on the upper wadi terraces in natural cliffs (rockshelters).

It has been observed during the archaeological baseline survey for Al-Kharir area and block 10 that the same cultural traditions of the north and south Jawls of Hadramawt dominate the entire block.

Al-Kharir Region (Block 10)

Al-Kharir region which is the subject of the archaeological baseline study is part of the southern Jawl of Hadramawt. It has the same geo-system features of the Hadramawt Plateau which is characterized by wadis and sub-wadis outflow to three directions. The first direction is to the east to Wadi Idem through three sub-wadis (Bayot, Tamran and Kuwah), the second is to the west ol Wadi Bin Ali and Wadi Jub and the third direction is to the north of Wadi Dhjathmah, Taribah and Wadi Bin Slman.

Climate change and an increase in aridity that happened in the 3rd millennium B.C, has impacted the economy of the people in that region, and subsequently their settling strategies changed. As people shifted from a consumptive economy of hunting and gathering to a more productive economy based on agriculture and animal pasturing, mass migration occurred from the plateau and sub-plateau areas to the main wadis.

Type of discovered archaeological sites:

During the archaeological survey in the center of the block, 168 single archaeological structures and artifacts have been identified.

Chronologically, sites were observed from the prehistoric period to the current time. Concentrations of sites from the Bronze Age and Iron Age periods are numerous.

Three types of archaeological sites have been discovered:

1. **Tombs**: usually circular, elliptical tombs, some of them have one or more tails, in the form of small stone piles.
2. **Structures**: stone structures, multi-cellules, and irregular structures with different sizes.
3. **Lithic industry sites**: Lithic industries remains were found scattered on the surface in numerous areas.

Figure 1: **Al-Kahrir block archaeological sites**, **general view** (**Google Earth Image**).

General overview of the discovered archaeological sites

The surveyed area during the first phase of the archaeological baseline study is approximately 25% of the entire block 10 area (fig 2). The discoveries from the surveyed area vary in type, function and origin date. The total of the registered archaeological structure\artifact is 168; for a

better handling of these archaeological remains they were combined according to contents-related, chronological and geographic aspects to 28 main sites (named from KHA-001 to KHA- 028), the term "site" refers to all material manifestation of one or more human occupations.

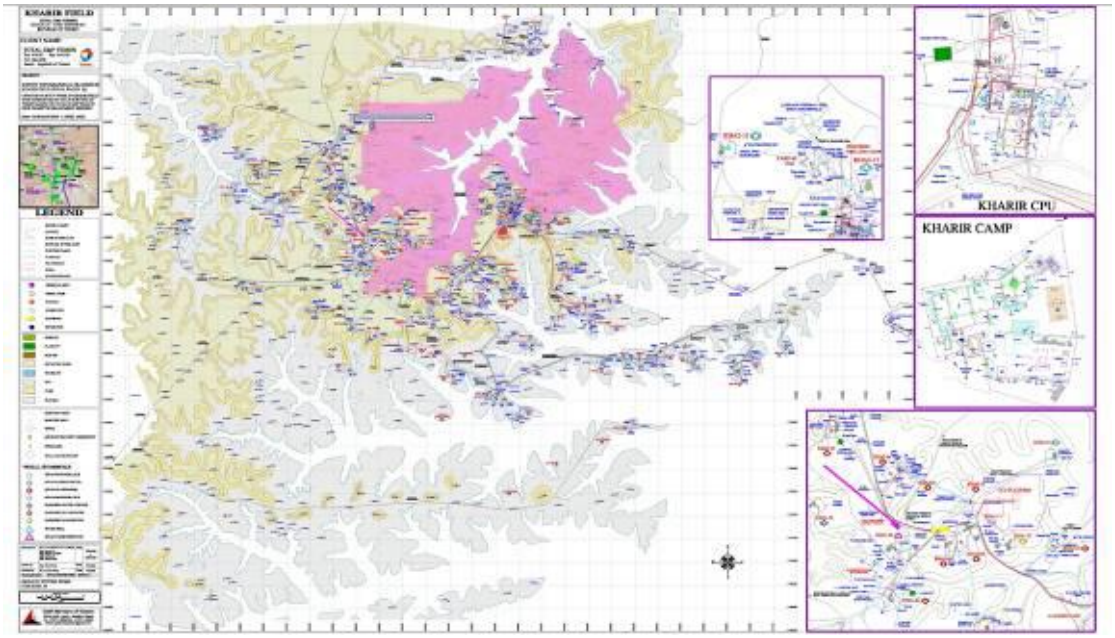

Figure 2: Surveyed area in Al-Kharir block during the first phase.

Bronze Age \ Iron Age tombs

During the survey of the central area of block 10, a large number of structures were registered. Characterized by megalithic architectural elements, these structures consist of circular\elliptical structures built by rough limestone slabs. These structures consist of a circular\elliptical wall with a height of 30-40cm, laid on the bedrock. Surrounding the burial chamber, which is mostly filled with rubble and soil. this type of structure is typical for the funerary structure (tombs) dated to the Bronze Age and Iron Age in Yemen. Strong symbolism also appears in the funerary architecture of this period bearing elements that remain little understood, such as tomb tails and drawings inside dolmen-like structures.

Most of the discovered tombs are poorly preserved and situated mostly on the top edge of the small wadis. These types of sites are scattered on the

entire area of the project. Some tomb sites were found associated with prehistoric lithic industry dated to earlier periods.

Stone structure

Several types of stone structures were found in the entire surveyed area, scattered on the surface of the plateau around the top edge of the wadis and sub-wadis or in the upper terraces of the wadis. These structures are commonly have single wall circular, elliptical or irregular in shape, built with pebbles and small limestone slabs, surrounding a single room or multi-cellular structure, some structures have a small entrance. The dimensions of the structures are disparate from small structure with 0.5 m diameter to large structure with 2-3 m diameter. Some of the large structures were probably dwellings, but the function of the small structures still undetermined in most sites because of the lack of pertinent material homogeneity, as it could be funerary related structures. Apparently, most of the structures are poorly preserved, some of them could have been reused also, as stables for instance. This disturbance makes it difficult to identify these structures definitely without further excavations.

Lithic Industry site

Lithic industries remains were found scattered on the surface in numerous areas. Some flakes are commonly found in most of the places, potentiality of real assemblage (one which can be really studied) is present. Consequently, more detailed scientific study can be carried out for some sites, which have shown a consistent lithic assemblage, with many bifacial shaping technique occurrences. The assemblage consists in foliate bifacial shaped tools, probably fragments of pre-forms of arrowheads made by pressure technique. This area showed also older artifacts, seen by the different patina and the techniques used, such as the Levallois method. This knapping system seen on cores is typical from the Middle Paleolithic, even if no dating permits until now to attest this chronological determination in Yemen. A presence of good raw material in the surroundings can explain the presence of multi-period artifacts in a same single area.

The Hadramitic plateaus are usually considered as very rich areas for observing rich and varied lithic industries scatters. Therefore, number of lithic artifacts have been discovered in several sites in Al-Kharir. Some real "Neolithic" surface sites have been individualized with the presence of bifacial shaped fragments of bifaces, very thin and carefully worked by pressure. The observed pieces are very probably fragments of arrowheads or pre-forms of arrowheads, but also perhaps little foliate bifaces such as the ones seen in Wadi Wa'shah1, or Wadi Sana for example. On the same sites, scrappers apear to be quite standardized with a circular direct retouch on a thick flake. The final tools are round and finely made. They show a possible cultural marker for the period, as seen in Manayzeh site in Hadramawt, where very typical small scrapers have been also discovered, but not typologically similar. The surface found artifacts are commonly scattered on the surface around and close to circular and elliptical supposed structures. Only stone-lines structures are remaining, but they could have be part of an associated dwelling structure with the lithic industries. Remains of burnt stones all around suggest the occurrence of hearths probably contemporary.