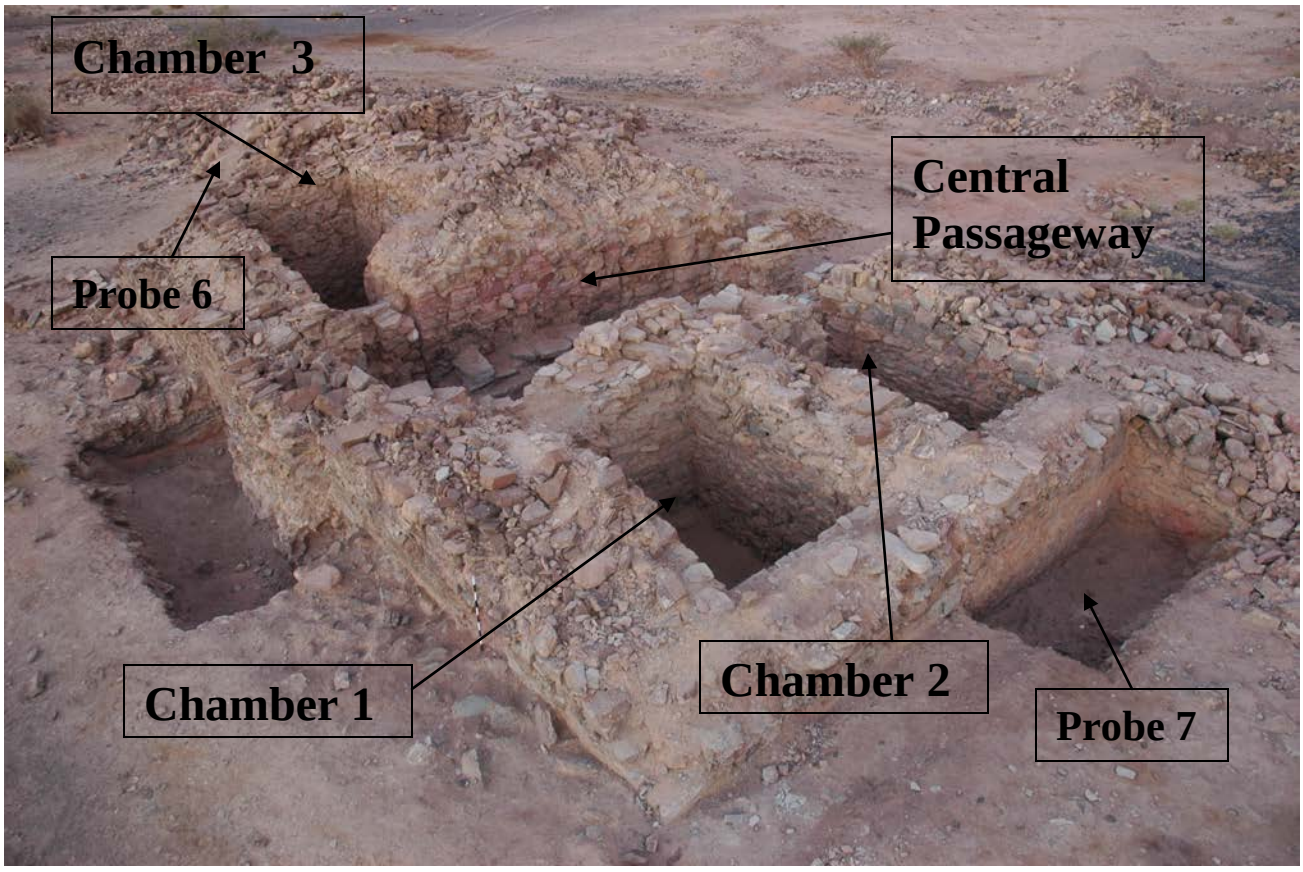
Khirbet El-Nahas Excavations 2006

Final Report

Area A



Introduction

Work in Area A of Khirbet El-Nahas in the Fall of 2006 continues the excavations conducted in 2002. During that season it has been determined that the gate structure leading into the fortified compound at the site was a four-chamber structure of a type also familiar from various Iron Age sites in Israel. The two northern chambers were excavated as well as several probes outside the structure, aimed to investigate the grounds immediately adjacent to the structure.

The present season concentrated on the central passageway of the fort, between the four chambers, and on the south-eastern chamber. Two additional probes were conducted outside the gate structure. One probe (Probe 6) was excavated to the south of the 2002 probe (Probe 1) that abutted the south wall of the gate structure. The second probe (Probe 7) was dug by the corner between the outer face of the northern wall of the structure and the western inner face of the perimeter wall of the fort. Both the passageway and the chamber were excavated to natural soil, as was the southern probe. With certain additions and variations the present excavations basically confirmed the stratigraphic sequence established in 2002, namely high accumulations of debris over layers related to copper industry over a packed earth surface, probably the same yet readapted surface of the gate structure at its original military phase. In all 4 main strata have been identified, with several subdivisions (Table 1).

Stratum	Description	Approximate Period
A1a-b	Post-abandonment destruction of gate structure	?
A2a	Gate structure used for copper industry	Middle to late 9th century BCE
A2b	Gate structure reused as residence – architectural additions to original plan	Early to middle of 9th century BCE
A3	Four chamber gate structure	10th century BCE
A4	Crushed slag layers	11-early 10th centuries BCE

Table 1: stratigraphic division of Area A

This report covers the results of the excavations from the earliest to the latest stratum, with a subdivision into the four general contexts as specified above: outer perimeter: north and south probe, and gate structure: central passageway and southeastern chamber.

Stratum A1a

The stratum consists of the upper layer of debris accumulated over the whole of the gate structure (Figure 1). Similar layers of debris appear over most of the structures at the site, in particular the large structures, as well as by the all surrounding the fortified compound (L152). The destruction possibly resulted of earthquakes over the generations but was not the direct cause of the abandonment of the site (see stratum A3). The debris layers, represented in Stratum 1, are subdivided into two parts: the uppermost layer (Stratum A1a) and the deep lower debris (Stratum A2b). The division is technical, aimed at isolating the lower layers from the possibly contaminated debris that remained exposed to the elements over the years.

Figure 1: Stratum A1a debris accumulation over two southern chambers, At the foreground probe 1 (2002 season).

The main distinction of Stratum A1a is in the lack of sediment between the debris. The stratum consists entirely of large stones accumulated on one another after having fallen from the upper courses of the building. The lack of soil between the stone can be explained in the washing of sediment down into the lower courses of the debris by the action of rain and its blowing over by the wind. Stones in the debris comprise the wide variety of geological types present in the local and regional environment: dolomite, monzo and other granites, sandstone, and conglomerate. Basalt and flint are much rarer and appear mainly in the form of small stones for consolidation between courses in the case of the latter and as grinders in secondary use regarding the former. While in other cases (see Areas T and R) the relative height of debris accumulation may indicate variations in the original plan of the building, at the gate structure distribution of debris

before excavation was relatively even, other than the depression at the central passageway. Almost no finds were retrieved from Stratum A1a loci, other than occasional shards, three of them painted (B.4223, 4227, 4243) and one incised (B.4226) and grinding stones that were either left behind on the later collapsed floors were incorporated in the construction of the walls of the gate and came down as the walls collapsed.

It should be noted that roughly circular installations made of rocks from the upper layer of debris were detected in two places in the area: 1. Over the blocking of the inner access between the passageway and the inner compound of the fort and over the upper rust of debris in the SW chamber, which remains unexcavated. A Similar installation was found and systematically removed in chamber 1 of Area R (see final report). Owing to the lack of finds n either survey or excavation the date of these installations and their function remain unknown.

Locus	**Description**
150	Upper debris, central passageway
152	Upper debris, fort wall
176	Upper debris, chamber 4

Table 2: Locus list of Stratum A1a

Stratum A1b

Covered by the upper crust of debris of Stratum A1a, the lower debris covering all rooms of the gate structure as well as the grounds adjacent to the gate walls and the fortified compound perimeter wall (see Probe 7, L169, L175, where deep debris layers were found descending along the wall), potentially contains information about the time

and circumstances of the final destruction, or destructions, of the site. It also offers evidence to the latest phase of activity within the structure.

Lower debris include the full assortment of rocks found in Stratum A1a, along with fill (Figure 2).

Figure 2: Stratum A2b fill in central passageway, photograph aimed to the east. See also Figure 3.

Origins of the fill are probably triple-fold: 1. Fill used for consolidation between the stones of the walls. 2. Material washed down from the upper crust of debris. 3. Wind-blown sediment. A very similar fill appeared in all rooms of the gate structure and similar material was met during the removal of parallel layers at Area R. The fill is light colored, dense, dry and contains a large number of stones of various sizes, all of which originating

in the collapse of the structure's walls. No plaster was identified and no inner stratigraphy was detected in the sections. The appearance of the debris is uniform and must be credited either to a single trauma or to several events of the same nature within a relatively short span of time, which did not allow other materials, such as stone-free wind blown sediment, to settle in. It should also be noted that no rough installations or structures were identified in the debris or between its layers. The only such structures are known from over Stratum A1a, as has already been discussed. As can be expected, the inner debris contained more finds than the upper crust though in general the quantity and quality are poor. In any case, due to the nature of the stratum it is difficult to determine the origins of the finds. Notable are a tube-like object of undetermined material carrying stamped or carved botanical impressions (L153, B.4120, a stamped shard (L157, B.4030) a piece of crucible (curiously rare at this industrial site – L163, B.4130, and a Busseira shard recovered from the western perimeter wall of the central passageway (L158, B.4147). Other than those finds in the inner debris include scattered pottery, including some painted shards, grinding slabs, and copper industrial waste such as furnace fragments, tuyere pipes and some slag. It should be emphasized that the copper waste reaches nowhere near the volume of copper industrial waste found at occupation levels in 2002 of chambers 1 and 2. Here they were sporadic.

Locus	**Description**
154	Lower debris, fort wall
155	Lower debris, central passageway
158	Lower debris, access to chamber 1
159	Lower debris, access to chamber 2
160	Lower debris, central passageway (2^{nd})
163	Lower debris, central passageway (3^{rd})
165	Lower debris, central passageway (3^{rd}), localized
169	Upper debris, Probe 7
175	Lower debris, Probe 7

177	Debris, access to Chamber 2, (2nd layer)
183	Lower debris, Chamber 4
184	Debris, access to Chamber 4

Table 3: Locus list of Stratum A1b

Stratum A2a

The stratum represents the latest phase of activity at the gate structure, after its military function and an intermediate phase in which several architectural changes and additions have been introduced, maybe to serve a residence. This latest phase appears immediately beneath the debris (Figure 3).

Figure 3: Stratum A2a ash layer related to copper production waste emerging beneath Stratum A1b debris inside central passageway.

It does not show signs of trauma – it seems that activities have long ceased and the structure was abandoned by the time the final destruction occurred, probably by earthquake.

Stratum A2a consists of a limited copper production activity, either inside the gate or next to it. In the latter case the gate, being obsolete as an active structure, was used for industrial waste concentration. The industrial waste is manifested mainly in ashy layers containing some slag and other related waste such as tuyere pipes and furnace fragments. Nowhere was the appearance of copper production waste as substantial as discovered in the season of 2002 in the two northern chambers. Scene in the central passageway and in the southeastern chambers shows either sporadic activity or such whose waste was disposed off elsewhere. No signs of furnaces or significant smelting or melting activities have been detected. This picture contrasts with that found outside the gate structure, at the southern probe (Probe 6). There the layer related to the stratum (L157) contained many pieces of slag along with furnace fragments and tuyere pipes (Figure 4). Apparently the area outside the gate structure was used for industrial waste disposal, along with parts of the gate structure which were not used in the industrial process itself.

Figure 4: The north section of the southern probe. Above: the debris from the compound wall. Stratum A2a is represented by the dark layer beneath the debris.

The surfaces used were probably identical to the surfaces used n the gate structure's previous two capacities. In any case, no surface stratigraphy has been detected in either the central passageway or in the southeastern chamber. Sections of the eastern, northern and southern sides, under the central passageway two perimeter walls and by the blocking on the east show superimposed layers of ash with no surfaces between them (Figure 5).

Figure 5: Stratum A2a industrial ash layers under the debris, eastern end of central passageway

In addition, two unusually compact concentrations of ash (170, L171) were discovered over and utilizing the southern bench belonging to the previous phases of utilization (Figure 6).

Figure 6: Compact industrial ash (L1070) over emerging passageway bench

It seems therefore that all three phases of utilization of the gate structure too place within a relatively short period of time, leaving no time for decay and formation processes to produce new surfaces for the later occupations.

Finds from Stratum A2a are mainly related to copper production waste. They include a relatively large number of pounding and girding artifacts, as well as some tuyere pipes and occasional furnace fragments. Only two unusual finds emerged from this stratum: a stamped shard (L157, B.4030) and what may be a fragment of a hematite mace head (L171, B.4225).

Locus	Description
157	Slag layer, Probe 6
168	Ashy fill, central passageway
170	Compact ash over southern “bench” - east
171	Compact ash over southern “bench” - west
187	Mixed fill, Chamber 4
189	Ash and slag layer, Chamber 4
190	Small furnace fragments concentration, by entrance to Chamber 2
192	Ash and slag fill around stone installation, Chamber 4

Table 4: Locus list of Stratum A2a

Stratum A2b

The stratum represents a series of improvisations inside and at the perimeter of the gate structure, probably carried out after the building no longer served is original function. The improvisations are apparent mainly at the entrances, both to the complex itself and between the central passageway and t least two of the chambers. The exact purpose of the changes, namely the function of the re-arranged structure, remains unclear, though an analysis of the final plan and comparisons with Areas T and R seem to indicate a possible residence of one of the supervisors, administrators, officers or some other official resident at the site during that phase of occupation and copper production.

Four main architectural changes have been noted:

1. The narrowing of the entrance from outside the fortress into the central passageway.
2. The erection of a massive blocking wall that detached the passageway and the gate in general from the former fortified compound.
3. The construction of a stone doorway considerably narrowing the entrance between the central passageway and the northeastern chamber.
4. The partial blocking of the entrance between the central passageway and the southeastern chamber.

What was during the original phase of the gate a wide entrance (3.5m) capable of allowing in traffic that included pack animals and equipment, had been transformed into two parallel accesses (ca.0.90-1.10m) between three pilasters (L164, L178, L186).

Two of the pilasters abut the original gate frame. An additional pilaster was built in the middle of the entrance space (Figures 7-8).

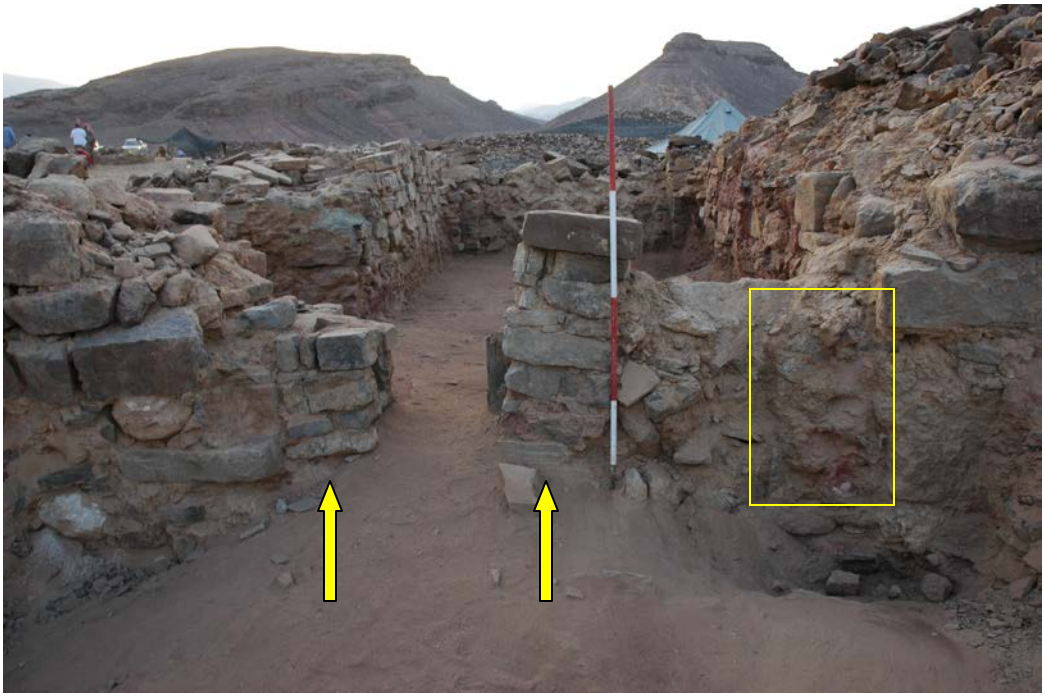


Figure 7: The three pilasters at the gate's entrance

Figure 8: General picture of the gate after narrowing of the entrance

Persons would have had no problems using the narrowed entrance but it was not wide enough for traffic of pack animals. It seems therefore that the readjustment had been aimed at changing the function of the gate from passage to a closed residence, into which humans alone were allowed. The blocking of the inner end of the passageway may have been done for the same reason (Figure 9). New light over the possible reason for the blocking has been cast after the exposure of two additional four-chamber structures in Areas T and R. In both cases the structures are closed on the back part by walls. The structure at Area A may have been the prototype for those structures. Its central passageway had been converted into an inner yard, which in the later structure became already part of the original plan.

Figure 9: Blocking of inner access from central passageway into the fortified compound.

Additional alterations were done inside the structure. The access between the central passage and the northeastern chamber has been narrowed through the construction of a narrow and relatively low doorway (L162), which is perfectly preserved (Figure 10). The doorway measures 0.92m in height and 0.60m in width. The full width of the improvised structure reaches 1.19m. Human access through this narrow entrance is uncomfortable due to its narrow size. The chamber may have therefore been used as a storage place or for other purpose other than domestic living. No evidence survives to indicate that function due to the massive later utilization of the chamber for the accumulation of copper industrial waste.

Figure 10: The secondary doorway between the passageway and the NE chamber

The access between the central passageway and the southeastern chamber was also narrowed (L195), though in this case the new space was created through the construction of a pilaster by the western doorframe (Figure 11).

Figure 11: Narrowing of the access between the central passageway and the southeastern chamber. The narrowing pilaster can be seen in the square. The accumulation of stones o the left is mostly collapse.

The pilaster resembles in both style of construction and dimensions those constructed at the main entranceway to the gate structure. While no substantial copper related industrial accumulations have been fond in his chamber finds within it do not provide a clear indication as for its purpose or the reason for the narrowing of the access.

Occupation levels of Stratum A2b are represented mainly by light ashy layers or lenses above the surfaces and below the industrial related layers of Stratum A2a. There is no feasible way o isolate the occupation layers of the two

sub-strata, and industrial waste is found in both, as are groundstones which were presumably used n the extraction of copper from slag.

Stratum A2b probably represents a relatively short period in the history of the gate structure. For reasons yet unclear, the gate and probably the whole fortified compound it had accessed became obsolete as military-defensive buildings and the still complete structure was readjusted probably to serve a civilian function. There is no apparent military purpose in narrowing the entrance and some of the accesses to the chambers, yet such improvisations would have been detrimental to a structure whose aim was to accommodate incoming traffic. On the other hand, the narrowed entranceway afforded a degree of privacy and better scrutiny over incoming persons. The narrowing of the inner accesses cannot correspond to public military activity, as store rooms or armories need to be readily accessible and there is no point in creating what would have been rather cumbersome conditions for entering and leaving the chambers with packs or weaponry. A similar logic can be applied for ruling out the possibility that the readjustments were made to accommodate copper industrial activity. Industrial structures, like military ones, are essentially public buildings, aimed at constant traffic of persons and equipment. No purpose would have been served by narrowing down accesses.

Two additional issues demand consideration: 1. Why were not the architectural additions removed during the industrial phase to facilitate access? 2. Why were no domestic finds discovered n the surfaces of the stratum?

The answer to the first point must be circumstantial: there is no evidence or large scale smelting taking place at the gate structure, nor could the relatively narrow chambers accommodate it. Small scale activity, such as is probably attested to in the compact ash layers in the passageway (L170, L171), and would not be affected by the narrowing of the entranceway. At the same time, it would not have provided an incentive to narrow it in the first place, which directs us again to search for a sub-stratum in which there was a non-military and non-industrial purpose to the gate structure. As for the lack of domestic finds, the industrial phase would have obliterated most of them if not all, and even the ashy layers or lenses associated with Stratum A2b should be treated with suspicion, due to the presence of some industrial waste in each. It should also be noted that in Areas T and R, where no industrial activity has been definitely detected within the structures, some domestic finds have been retrieved (see corresponding reports).

Locus	**Description**
162	Secondary doorway to chamber 1
164	Western pilaster, gate passageway
174	Ashy fill, central passageway
178	Central pilaster, gate passageway
180	Slag layer in lower layer of access to Chamber 2
181	Ash fill sealed under compact ash layer L171
182	Ash fill sealed under compact ash layer L170
186	Southern pilaster, central passageway
193	Wall or later threshold remains in access to Chamber 2
195	Partial blocking at access to Chamber 4

Table 5: Locus list of Stratum A2b

Stratum A3

Stratum A3 represents the original military phase of the gate structure. While most of the architecture of the structure belongs to that phase actual occupation layers are almost non-existent, due to later utilization of the original floors for domestic use (Stratum A2b) and finally, industrial use related to copper production.

The walls that have been excavated during this season are similar in plan and style, certainly corresponding to a single plan but there are variations in the type and size of building stones that have been used. The distinctions are particularly clear in the two perimeter walls of the central passageway. The northern wall (L151) is built of small and medium size dolomite stones, with no consolidation other than small stones and some sediment. It should be noted that dolomite, with an occasional insertion of granite and sandstone, is also the ore common construction stone for the walls of the chambers. For the opposite southern wall use was made of large monzo granite stones (ca. 40x50 cm), consolidated with sediment (Figures 12-14).

Figure 12-14: The central passageway walls. Top: the northern dolomite wall. Center: Southern granite wall. Bottom: general view.

No apparent structural reason could be determined for the difference between the walls, and it may be accounted to technical situations of building material availability as he gate was being constructed. In general, while the structure is solid, little attention had been invested in aesthetics or exact correlation between parallel parts, which can be expected in a remote site dedicated to industry.

Preservation is relatively good, up to 7 courses on the southern wall (ca. 3.5 m. in height) and 11 courses on the northern wall (over 2m). There is reason to suspect the existence of a second floor, to which the masses of debris (Stratum A1a-b) can be credited.

Other than the walls, there are few other architectural elements belonging to this stratum. Along the base of the two perimeter walls of the central passageway two platforms have been exposed (L172, L173). The platforms are

elongated (ca.4.50x1.00m) and made of flat dolomite slabs (Figure 15). Both platforms are built over a lower line of stones. Marks of wear are apparent in some f the stones. The platforms may have been used as benches. Social as well as legal functions are known to have taken place n and around city gates in antiquity.

Figure 15: The “benches” along the perimeter walls of the central passageway.

It is likely that during the phase of Stratum A2b no changes have been made on the platforms, as they could have served various functions also in domestic settings. During the industrial phase (Stratum A2a) the southern bench was used for some undetermined function, a thick layer of white-grey ash was accumulated over it (Figure 16).

Pavement stones (L194) exposed by the northern pilaster addition to the central passageway main entrance can be associated with Stratum 3, as they

penetrate below the original northern gate frame (Figure 17). No pavement stones were discovered elsewhere in the passageway, whose surface seems to have been made of a layer of packed earth over natural soil (L179).

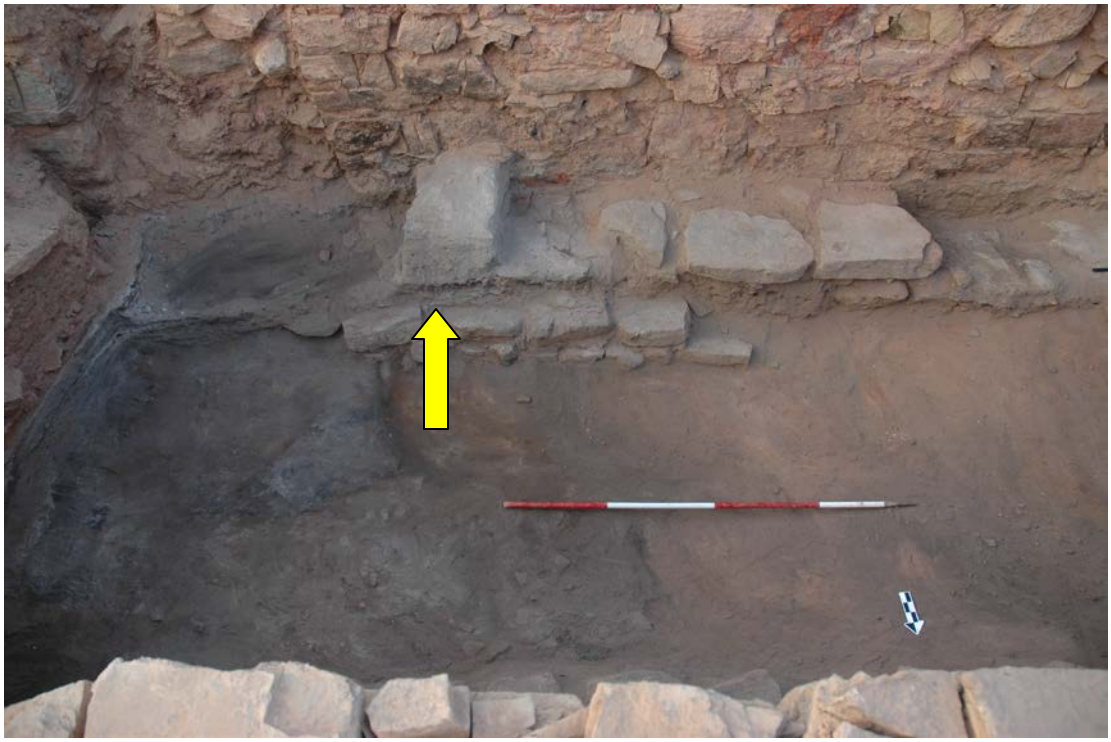


Figure 16: Industrial ash accumulations over he southern “bench”.

Figure 17: Stratum 3 pavement slabs below original northern gate frame

A rectangular platform (L191) constructed of flat stones found at the southeastern corner of Chamber 4 can also be associated with Stratum 3 (Figure 18). The platform (ca.2.20x1.80m) is one course deep and abuts both southern and eastern inner walls. Function is unclear. A small concentration of ash to the west of the platform (L192) is probably associated with Stratum A2a, as it contains some slag, yet it seems to be a later addition to the context and originally disassociated with the installation.

Figure 18: Stratum 3 installation at the southeastern part of chamber 4. Note ash from Stratum A2a limited copper industry activity

Locus	Description
151	Northern wall, gate passageway
153	Western fort wall
156	Southern wall, gate passageway
161	Compact fill, Probe 6
172	“Bench” by northern wall, central passageway
173	“Bench” by southern wall, central passageway
179	Original surface, gate passageway
185	Lower course, southern “bench”
191	Stone slabs installation, Chamber 4
194	Stone pavement remains by gate structure entrance

Table 6: Locus list of Stratum A3

Stratum 4

Two features are associated with this stratum. At the southern probe (Probe 6) a packed earth surface paved over natural soil (L166), where the remains of a small hearth (L167) have been discovered and a layer of crushed slag (L188) found below the main Stratum 3 walls of the gate structure (Figure 19).

Figure 19: Stratum 4 crushed slag layers beneath the walls of Chamber 2

The fact that layers of crushed slag were not found throughout the gate structure implies that the material was introduced as a foundation bed for the walls rather than being the remains of a copper production waste concentration. It should be noted that crushed slag was also found beneath the walls of the structures at Areas T and R. The use of the material for foundation bed is reasonable, in light of its density and flexibility. Lack of finds prevents at this point the dating of production of this material, until analysis is completed for C14 samples collected from it.

Locus	**Description**
166	Surface
167	Hearth

188	Crushed slag layer under gate walls

Table 7: Locus list of Stratum A4

Summary

The gate structure at Area A underwent three main phases.

A. Military. During this phase the structure served as the main access to the fortified compound which would have controlled and scrutinized incoming traffic into the site. Analysis of the possible function of the fortified compound should take into consideration the lack of an additional access in the wall around the compound and that no structure within the compound that relates to this phase has so far been found. It is possible that the compound operated as a large storage area for both materials needed for the operation of the industrial site, such as wood for the feeding of furnaces as well as for outgoing copper product, mainly ingots. The gate structure would have served not only in the control of flow, but also in basic administration, conducted, perhaps, from its upper rooms. Finds from the gate provide little information associated with this phase, due to later domestic and industrial utilizations. At least until analysis of C14 samples is completed, any dating of this phase would be speculative.

B. Domestic. During that phase the military function of the structure was abandoned and the building was architecturally readjusted, probably to serve a domestic use. Taking the preliminary conclusions from the excavations of Areas T and R into consideration, the gate structure

served as a residence for persons of some authority at the site, though the type of semi-prestigious items found there did not emerge in Area A, probably due to the later limited industrial utilization.

C. The domestic phase was followed by a limited industrial phase, in which parts of the structure were used for the discarding of industrial waste and others for what seem to be small-scale fire relate activities, perhaps melting. This phase is probably related to the construction of buildings such as the one excavated in Area F, where industrial activities related to the production of copper were conducted, and to the scatter of slag that can be seen on the topsoil of the compound.

Other than roughly built irregular structures to the west of the perimeter of the compound and to rough installations over the ruins of the northwestern chamber which remains unexcavated, no later remains of activity were detected. The function and dates of these later structures have et to be determined.

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December 5, 2006