

# FINAL REPORT

December 2012

ARCE Groundwater Lowering Response Project, Luxor

“Talatat Project”

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The Egyptian Antiquities Conservation Project (EAC)  
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Awarded to

THE AMERICAN RESEARCH CENTER IN EGYPT (ARCE)

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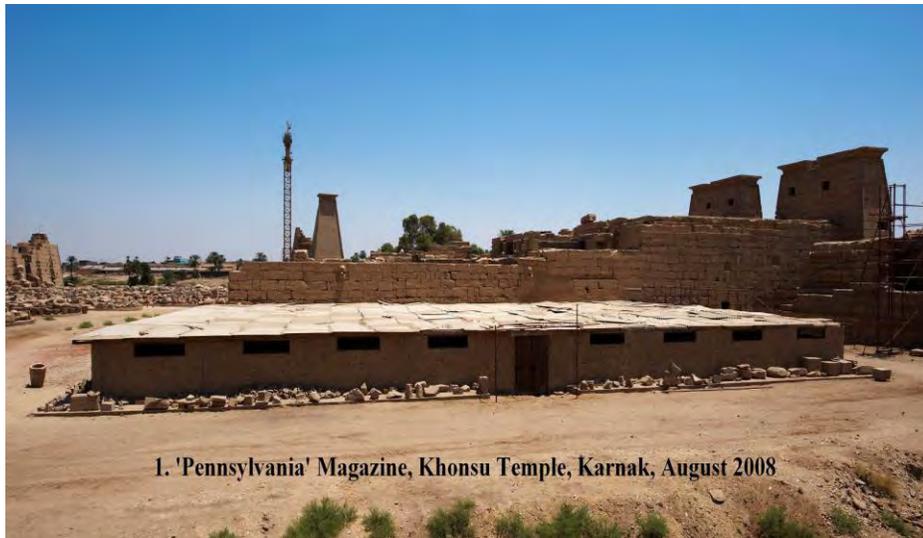
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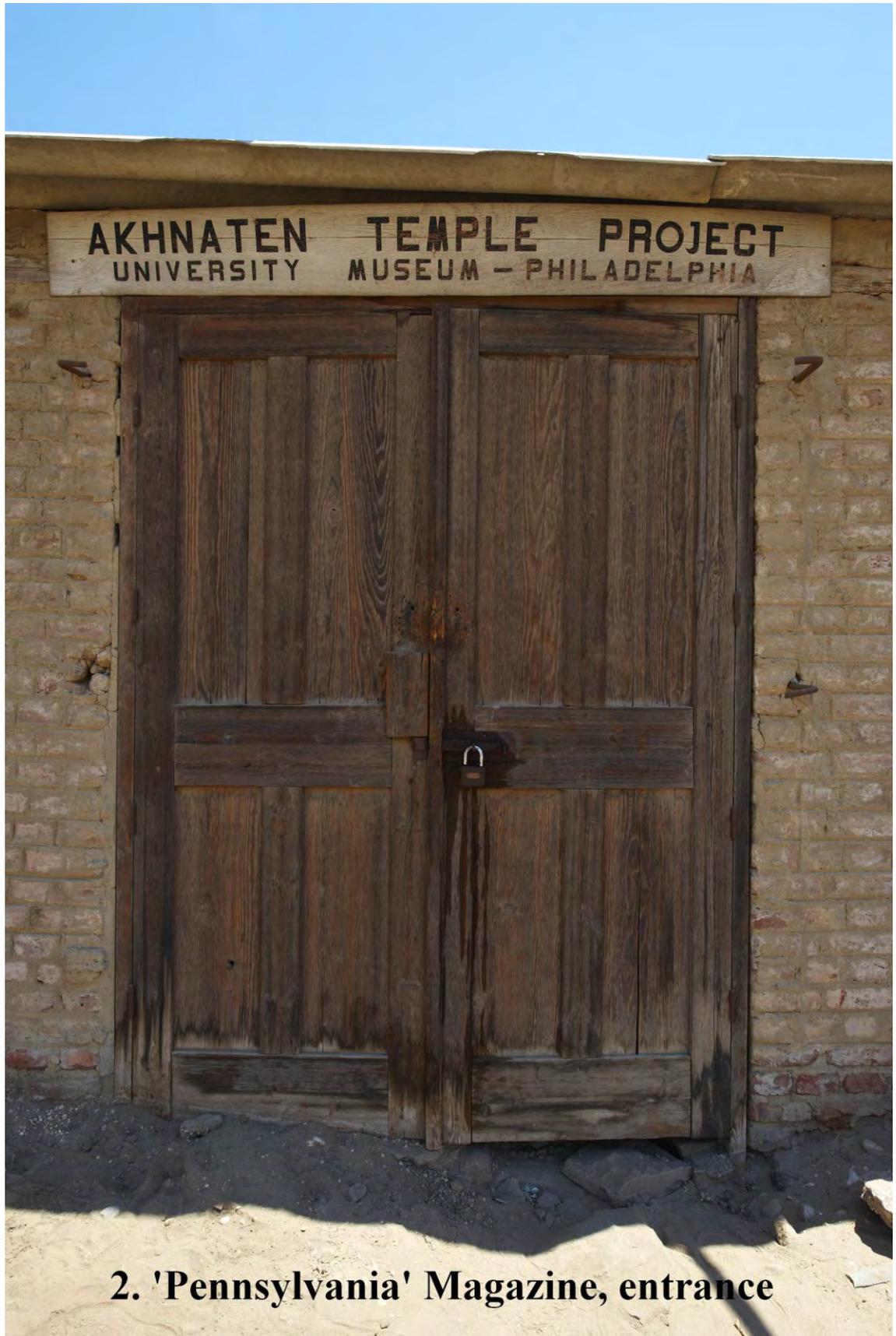
**AMERICAN RESEARCH CENTER IN EGYPT****TALATAT PROJECT, KARNAK****Final Report, December 2012****Introduction**

As part of the American Research Center in Egypt (ARCE) Khonsu Temple Conservation Project in the Karnak Temple complex, Luxor, the ARCE Talatat Project has been documenting approximately 16,000 sandstone blocks from buildings constructed at Karnak by Akhenaten (1352–1336 BC) in the early years of his reign. The blocks are stored in a magazine adjacent to the west wall of the Khonsu Temple, which is known as the ‘Pennsylvania’



1. 'Pennsylvania' Magazine, Khonsu Temple, Karnak, August 2008

magazine, as forty years ago, between 1966 and 1975, the contents of the magazine were photographed and studied by the Akhenaten Temple Project (ATP), which was sponsored by University Museum, Philadelphia, Pennsylvania.



**2. 'Pennsylvania' Magazine, entrance**

These blocks are of a type known as *talatat*, small size blocks measuring on average 52 x 22 x 26 cm, which were used during Akhenaten's reign for religious buildings at Karnak, his new city of Akhetaten in Middle Egypt, and elsewhere throughout the country. The assumption is that as the blocks were much smaller than the conventional blocks used in ancient Egyptian temple construction, and each block could be carried by one man, the building work could progress more rapidly, at a time when the king's priority would have been to erect temples to his 'new' god, the Aten disk, as quickly as possible.

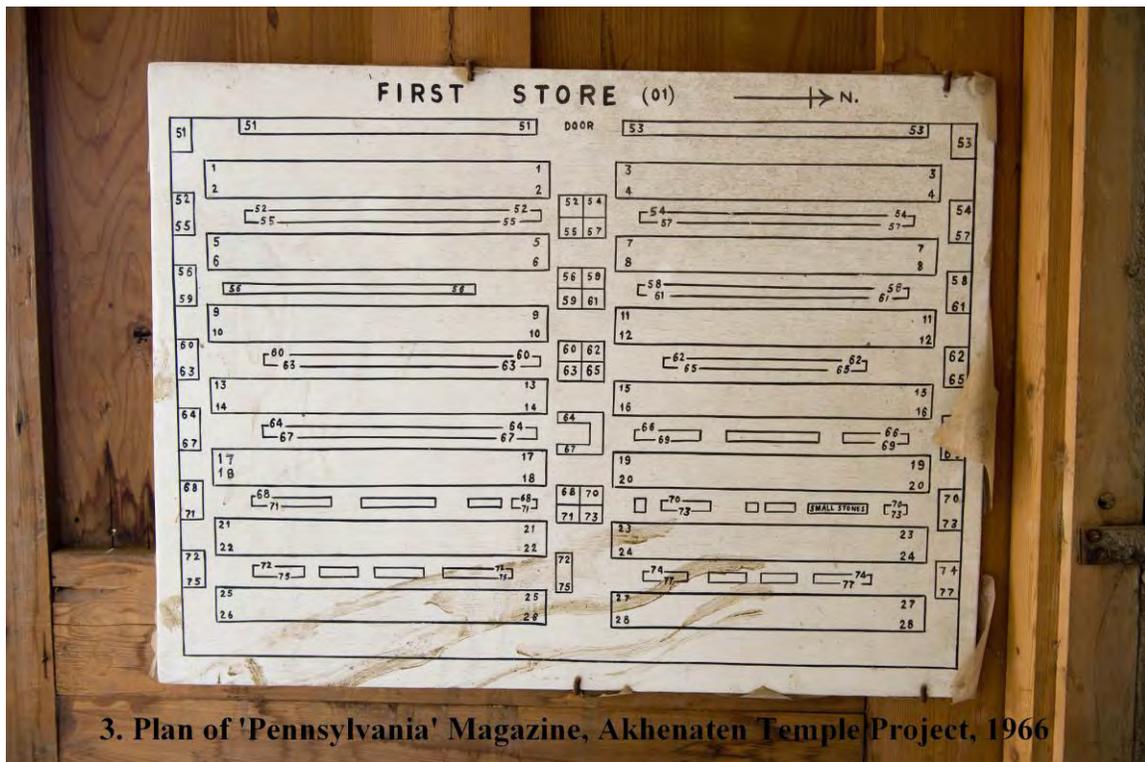
Both sandstone and limestone blocks can be recognised as *talatat* by their dimensions, as well as by the characteristic Amarna style of their carved reliefs. The origin of the word *talatat*, which was given to the blocks when they were first discovered, is uncertain, but a possible explanation is that it comes from the Arabic word 'talata' meaning 'three, as the blocks are roughly three hand spans long. After Akhenaten's death the temples to the Aten were demolished by his successors, in an attempt to wipe out any trace of his existence as he was regarded as a heretic, and the *talatat* were reused in other structures, particularly in parts of the buildings where they would not be visible, such as foundations and as stuffing in the massive pylons. *Talatat* first came to light at Karnak in the mid-nineteenth century, and were then discovered in ever increasing numbers as excavation and restoration work was carried out at Karnak under the direction of French archaeologists, who were in charge of the Antiquities Organisation at that time. Between 1922 and 1953, thousands more *talatat* were discovered in the foundations of the great Hypostyle Hall, and in the Second and Ninth Pylons. These were stored in various open spaces within the Karnak temenos, many of them on mastabas beside the southwest enclosure wall. *Talatat* found at Luxor Temple are now known to have come from the various Aten shrines at Karnak.

In the mid-1960s, the Egyptian Antiquities Organisation began a project to dismantle and restore the badly damaged west wing of the Ninth Pylon, work which was continued by the Centre Franco-Égyptien d'Étude des Temples de Karnak (CFEETK), after it was formed in 1966. Thousands more *talatat* were discovered, and the total now stored in various magazines in Karnak and Luxor is approximately 50,000. However, this is only a fraction of the total number used in the various Aten shrines in the Karnak complex. It is known that *talatat* still remain under some sections of the Hypostyle Hall,

in the two wings of the Second Pylon, the east wing of the Ninth Pylon, and also in the Tenth Pylon.

### The 'Pennsylvania' Magazine

In the early 1950s, several thousand talatat were stored on low brick mastabas against the west wall of the Khonsu Temple, and probably around 1960, these stacks were roofed over and the so-called 'Pennsylvania' Magazine was created. This storeroom is the largest repository of talatat in Karnak, and contains almost 16,000 blocks, originally stored in 14 large stacks, each measuring approximately 75-80 cm wide, 18 metres long and 2.5 metres high (8-9 courses of blocks). The stacks were 'double-sided', i.e. the talatat were arranged back to back, so that the decorated surfaces were visible on both sides, and each side of the stack had a separate number, e.g. 1 and 2, 3 and 4, and so on. There were 34 smaller, lower stacks between, and at each end of the large ones, many of them containing talatat decorated on more than one surface.



3. Plan of 'Pennsylvania' Magazine, Akhenaten Temple Project, 1966

**First Season, August 2008 - June 2009**

From 5 –17 August, 2008, a preliminary survey was made of the existing condition of the talatat stored in the magazine,



in order to plan for the next stage of the project, which would involve removing the talatat from the magazine, cleaning, conservation, digital photography, database recording, and re-storage of the talatat. The survey was carried out by the Project Director Jocelyn Gohary, and Assistant Director Rawya Ismail, and a digital photographic record was made by Matjaz Kačičnik. Results of the survey recorded that the talatat were stacked on low brick mastabas, but the ground level was irregular, and in several places burrowing by foxes, or other animals, had piled up large mounds of earth against the lowest course of talatat. This factor, as well as groundwater

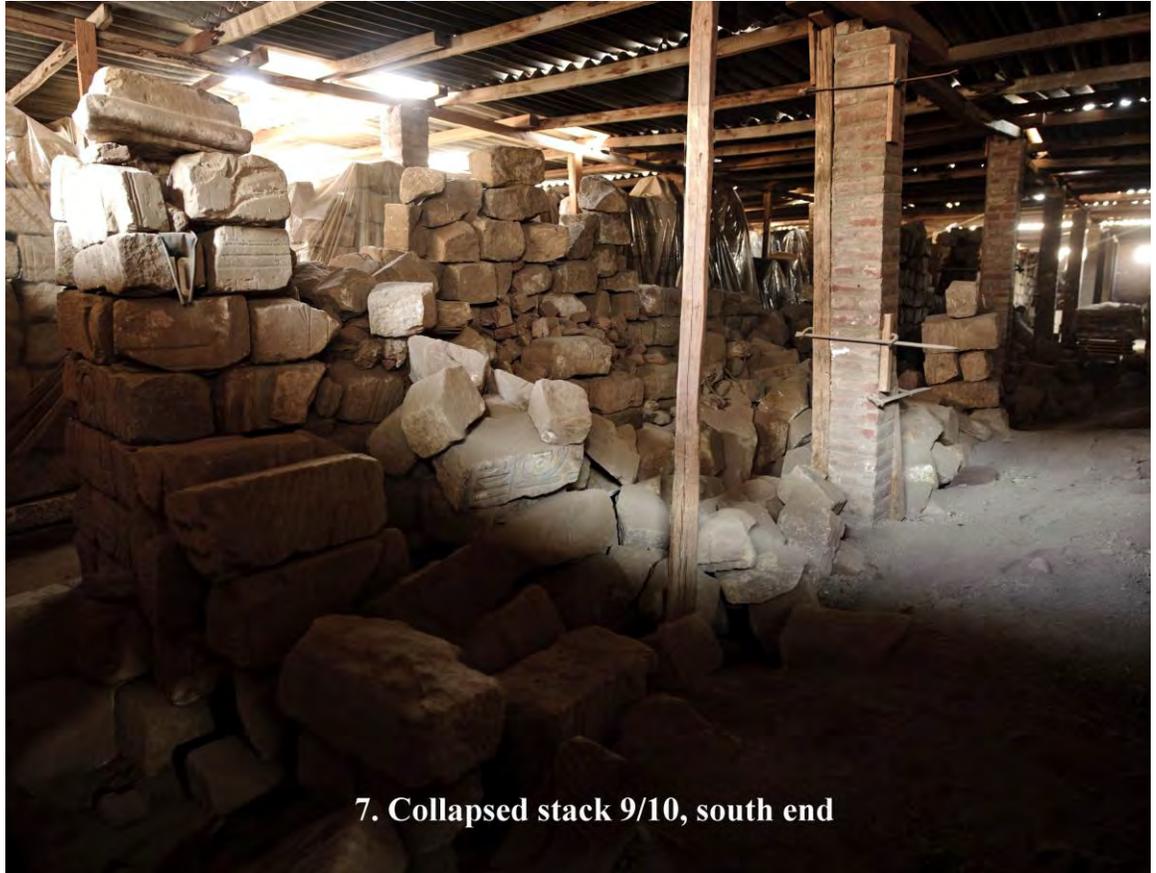


and the passage of time, had resulted in damage to the lowest course of blocks in each stack, causing some blocks to crumble on the underside, or even split or shatter under the weight of 7-8 layers of blocks above them.



Rain water had come through gaps in the roof in some places, and left streaks of mud down several courses of talatat in most stacks.

Although no work had been carried out in the magazine since the Akhenaten Temple Project ended in the early 1970s, at some stage during the past 40 years, the smaller stacks were dismantled and the blocks moved up against the larger stacks, possibly because of problems with groundwater, or foxes. The majority of the main stacks were no longer entirely vertical for their whole length, most of them leaning inwards or outwards to a greater or lesser degree, some of them dangerously. Two adjacent stacks on opposite sides of the central aisle, (9/10 and 11/12), had largely collapsed eastwards, (in the direction of the Khonsu Temple), and many of their blocks were scattered on the ground.



7. Collapsed stack 9/10, south end



8. Collapsed stack 11/12, north end

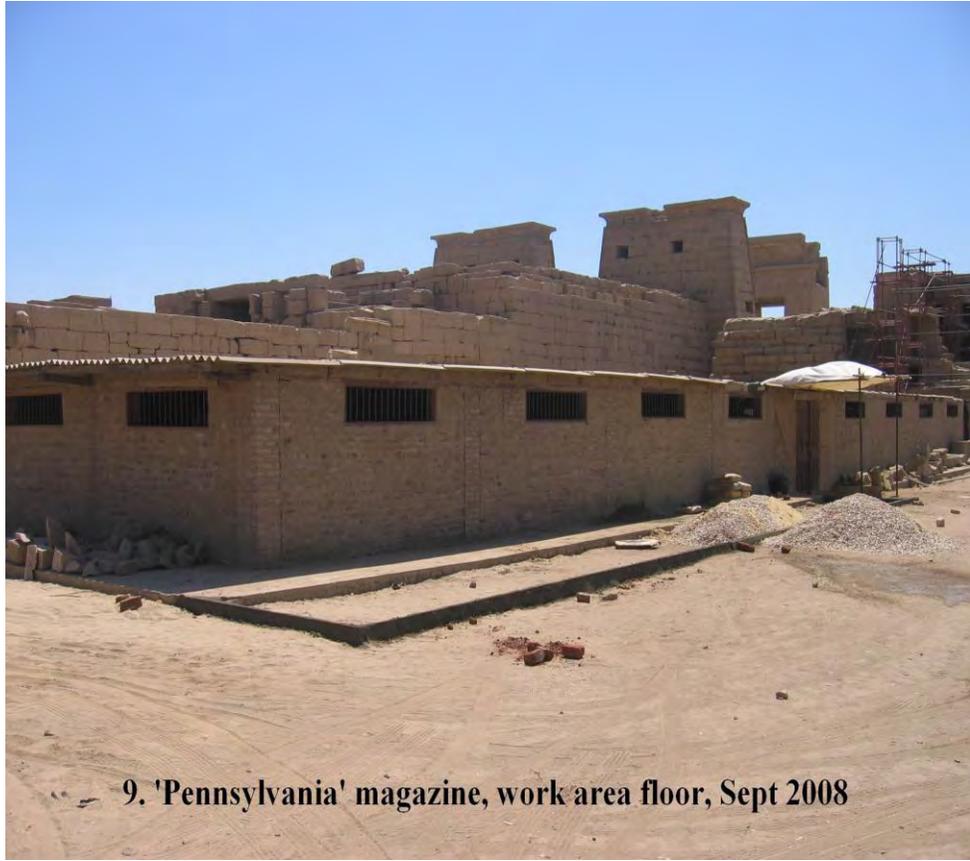
This was due to extensive burrowing by foxes in areas where the original thin cement floor had not been completed for some reason. About 75% of the talatat in the magazine retained most of their original paint, but they were all covered with a thick layer of dust, those in the stacks against the wall of the Khonsu Temple even more so, because the gap in the roof was wider at this end.

As a new storage area for these talatat had not been decided on, they were to be returned to the same magazine for the time being. A brief survey was, therefore, made of the condition of the magazine building. This is a brick structure, erected in about 1960, which has small barred windows just under the roof on the north, south and west sides. The east side abuts directly onto the west wall of the Khonsu Temple. The roof consists of sheets of corrugated asbestos conglomerate, which is still mostly in place, but there are gaps where some of the sheets have shifted. The roof sheeting is supported inside the building on wooden rafters resting on narrow brick piers (two bricks thick), with a wooden strut giving extra support here and there. Most of the brick piers seemed to be sound, except for the ones beside the collapsed stacks 9/10 and 11/12, which were supported by wooden struts and metal clamps.

From 21–24 September, Project Director Jocelyn Gohary and Assistant Director Rawya Ismail supervised the clearing of the floor of the magazine from thick layers of dust, and large mounds of earth.

The main work of the ARCE Talatat Project commenced in the ‘Pennsylvania’ talatat magazine on 12 October, 2008, with the Project Director Jocelyn Gohary, Assistant Director Rawya Ismail, Conservation Supervisor Hiroko Kariya, and Egyptologist Lindsay Vosburg. The Project Photographers, Sara Lafleur, and Owen Murray, joined on 26 October. Egyptologist Jacquelyn Williamson joined the Project on 2 February 2009, and Claire d’Izarny replaced Hiroko Kariya as Conservation Supervisor on 30 March 2009. Nine local workmen, under the supervision of Reis Mahmoud Farag, assisted with all aspects of the project throughout the two seasons’ work in the ‘Pennsylvania’ magazine.

During September 2008, an existing cement mastaba along the west outer wall of the magazine had been made wider



and a tented work area created around this cement floor, extending for a length of approximately 20 meters.



**10. 'Pennsylvania' magazine, tented work area**

The canvas canopy was later extended outwards in February 2009 to make a larger working space for the conservators outside the covered area, because of the considerable amount of dust brushed off the talatat as they were being cleaned, and the strong smell of some of the conservation materials. A survey was made of the condition of the major stacks in the magazine, and three of them which were leaning outwards dangerously in parts were supported with wooden planks covered in sponge in order to protect the decorated surfaces of the talatat.



The talatat lying on the floor of the magazine between the 14 major stacks were dealt with first, as they were most in need of attention. About 5% of them had been badly affected by groundwater, because they had not been stored on mastabas. Processing these blocks first would also make access to the main stacks easier. After processing, they were stored on several new mastabas constructed between the major stacks as space for them became available.



Work on these talatat, a total of 2358 blocks, was completed on 12 February 2009, except for those to the east of Stacks 9/10 and 11/12, which had collapsed in that direction, and would be dealt with as the large main stacks were being processed.

### **Methodology**

One of the major differences in methodology between the ARCE Talatat Project and the earlier Akhenaten Temple Project was the fact that all of the blocks were brought out of the magazine for documentation and conservation, whereas the earlier recording and photography were carried out in situ. In the ARCE project the sequence of documentation was as follows:

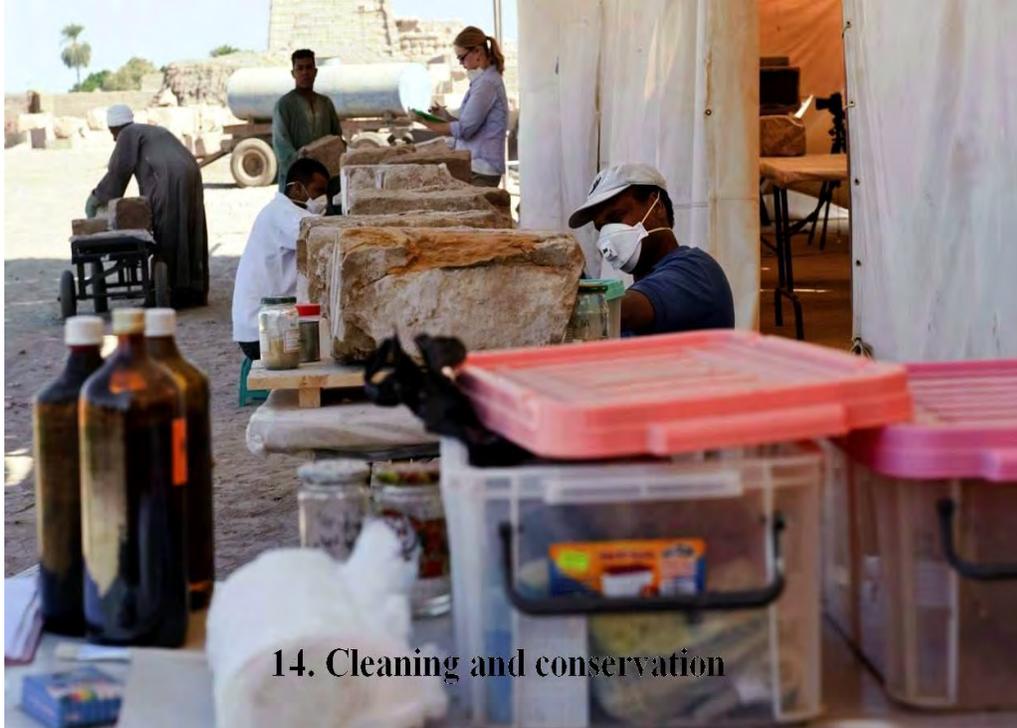
1. Two trolleys, each carrying 4-5 blocks, were used to bring the talatat out of the magazine to the conservation section. One talatat measures approximately 52 x 22

x 26 cms, and weighs about 60 kgs. First, the dust was brushed off the talatat,



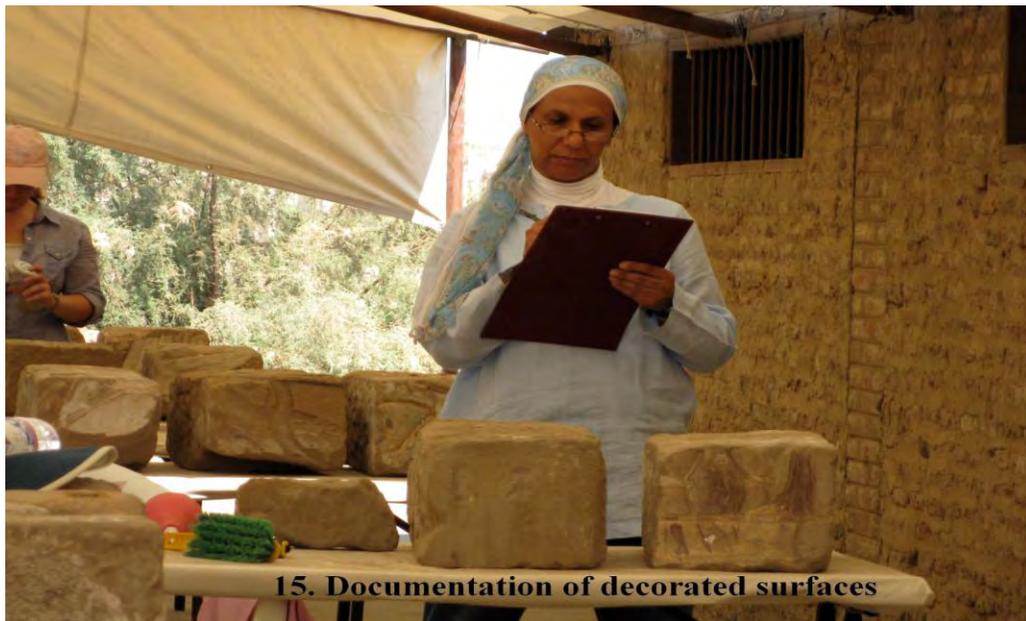
**13. Removing dust from talatat on trolley**

and then the decorated surfaces were cleaned and any necessary basic conservation was undertaken. A conservation report was made for each block.



(See a more detailed description of the conservation methods below).

2. Next, the decorated surfaces were documented, each block was measured and observations recorded regarding the subject of the carved relief, surviving pigments, sunray measurements, and so on.



3. Each talatat was given a new 6-digit number, which incorporates the original stack number assigned by the Akhenaten Temple Project in the late 1960s. This is based

on the assumption that blocks in the same stack may have been located close to each other when they were discovered in modern times, and so may have come from the same part of the Aten Temple when it was dismantled by the ancient Egyptians. The stack numbers assigned by ATP were retained as far as possible, but as it would be impossible to restack the talatat in the original order after documentation, only the odd number for a double-sided stack was incorporated into the new ID number. Therefore, original stack 1/2 is now all 01, 3/4 is now 03, and so on. The numbers were written with permanent marker on a resin base, and were painted over with another resin layer when dry.



**16. Applying new numbers on resin patches**

The decorated surfaces were then photographed with a digital camera in high resolution,



after which the talatat were restacked in the magazine.

4. On average, 70-80 blocks were processed in a day, and the information from the conservation and documentation reports was entered daily in the specially created Talatat Database.

### Conservation

With regard to the state of preservation of the paint layer, as the windows of the magazine were only barred, and not covered, a great deal of dust had accumulated on the blocks. Because of gaps in the roof, there were mud slides, bird droppings, cement and mortar slides on many decorated surfaces. Where blocks had been reused, faces were covered with plaster or sandy mortar. Many decorated surfaces had lost the paint layer, or had only a few powdering traces, usually of blue pigment. The paint layer was frequently found to be flaking and in need of readhesion.

Regarding the state of preservation of the stone, two types of degradation were noted. The first was linked to the constitution of the stone, where in some cases tension points had developed around iron nodules, causing cracks and sometimes shattering of

the block. The concentration of iron at some bedding planes caused lower resistance in the layer, with sanding and delaminating.



Block 250794  
Iron inclusions with stone cracks.



Block 250816  
Strong  
concentration of  
iron at bedding  
planes

The second type of degradation was linked to environmental conditions related to the position of the block in the stack. Blocks in the upper course were exposed to rain water flow from gaps in the roof, which caused delamination and friability in some, and in others dried mud had dripped onto the decorated surface. Other blocks in the lowest course with earth piled against them were exposed to groundwater, and supported the weight of the layers of blocks above them. Some were buried, for example from Stacks 9 and 11, and the loose blocks lying directly on the ground had no protection from groundwater.

Approximately 70-80 blocks were processed each day, which required fast and effective treatment in order to keep up the numbers, so a simple method of treatment was established. Only a few blocks showed serious degradation, which needed more time and these were stored on special shelves until a period assigned to their treatment. Some blocks were in such a bad state that no time or materials were available to treat them, for

example those with multiple cracks, or sanding rapidly. These were stored back on the shelves for future treatment.



Block 170590  
Sanding caused by the low quality of the block

In treatment of the paint layer, cleaning was carried out in two ways, mechanical and chemical. Mechanical cleaning consisted of the Egyptian workers removing the dust from all undecorated faces of the block with a medium-size hand brush. A conservator then used smaller brushes (artists' brushes sizes, 8, 9 or 10) to remove dust from the carved surfaces. A scalpel was used to remove bird droppings, cement, plaster and mortar, and sandy encrustations where possible, although most of these cases required another procedure which there was no time to implement. Chemical cleaning consisted of using a solution of distilled water mixed with ethanol 50:50 to remove bird droppings and plaster that could not be removed entirely with the scalpel.



Block 230854  
Earth slide on the decorated side.



Block 250475  
Flakes of paint layer.



Block 250921A  
Cement slide on the decorated side.



Block 250921A  
After removal of the cement slide.

Powdering layers of paint were consolidated with a solution of paraloid B72 (2%) in xylene. The readhesion of flaking layers was carried out with a solution of Acril 33 (10%) in distilled water, then a sheet of melinex with small bags of sand was applied to guarantee adhesion. With regard to the cleaning of the hieratic graffiti, the paint layer was invariably powdering, so after cleaning with a small brush and scalpel when necessary, it was consolidated with a solution of paraloid B72 (2%) in xylene.

With regard to treatment of the stone, there was no time or materials for deep consolidation, so consolidation of the surfaces of sanding areas was done with a solution of paraloid B72 (3%) in xylene with pipettes directly onto the decorated surface. On undecorated surfaces, consolidation was carried out with the same product, but in a solution of acetone/ethanol 50:50. The technique was repeated until the solution was no longer being absorbed by the stone. Two methods were adopted for filling cracks depending on their depth. For structural cracks, an injection of araldite AW 1013 was used, while for less important cracks, the stone was injected with a solution of paraloid B44 (20%), sometimes mixed with a small amount of glass microballoons. The cracks were then filled with mortar made from paraloid B72 (10%), clean sand and glass microballoons.

Readhesion of fragments also depended on their size. Small fragments were joined together with paraloid B44 (40%) in acetone/ethanol 50:50, while araldite AW 1013 was use for larger fragments.



**18. Restoring badly damaged decorated surface**

Gaps were filled with two types of mortar: for small gaps, a mixture of paraloid B72 (10%) in acetone/ethanol 50:50, clean sand and a few glass microballoons was used. For larger gaps, the surface was first isolated with a layer of paraloid B72 at 20% to prevent the build up of humidity, and the gaps were then filled with lime mortar.



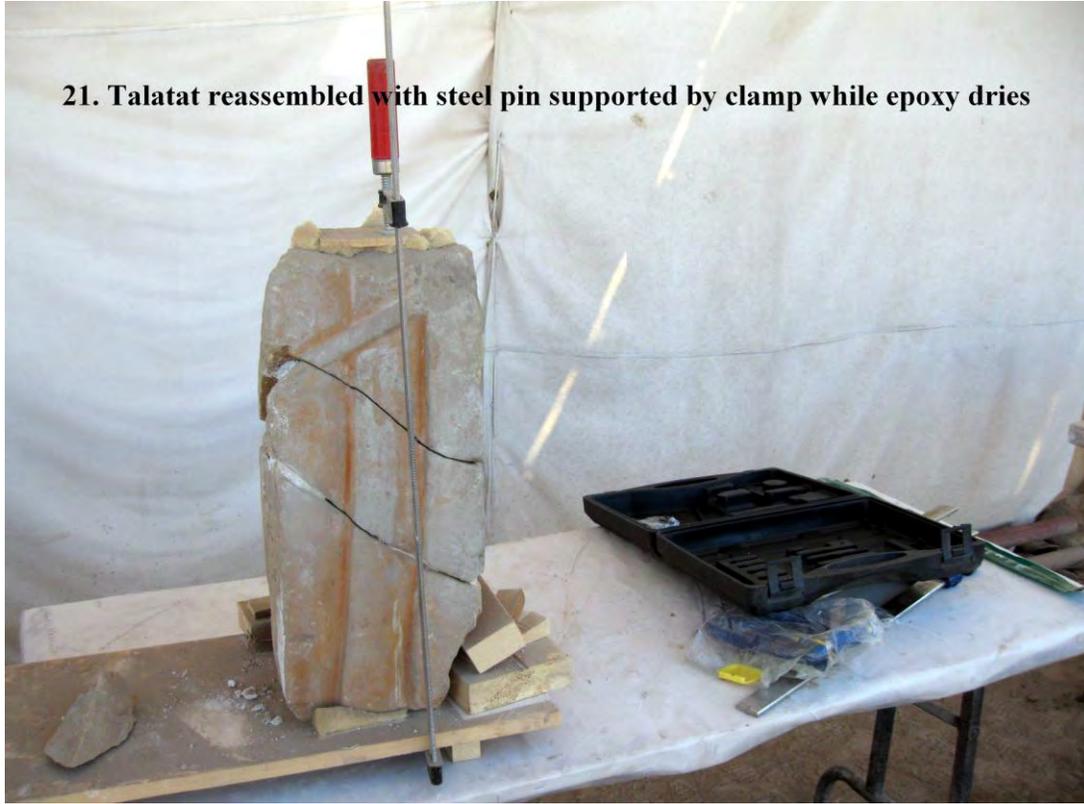
Ten talatat had broken into two or three pieces with almost no contact between faces, and so needed to be pinned together. The pinning method depended on the state of fragmentation: when the block was in two pieces, and there was still some contact between faces, the pieces were first joined with araldite and the gaps were filled with lime mortar. A hole was then drilled through both fragments,



**20. Drilling hole for steel pin to reassemble talatat**

a stainless steel pin, 8-10 cm in diameter, was inserted, and araldite was poured into the hole around it. When the block was in three fragments, the pinning was carried out in two stages. First the fragments were joined with lime mortar, then one fragment was removed, keeping its mortar at the contact point. A hole was drilled through the other two fragments and a pin inserted. The third fragment was then reattached; a hole was drilled through all three fragments, a pin inserted and araldite poured into the hole.

**21. Talatat reassembled with steel pin supported by clamp while epoxy dries**



**22. Some of the talatat reassembled with steel pins**



Degradation was also caused by salt efflorescence, which, along with salt crusts, formed on surfaces or inside blocks, resulting in sanding and often cracks, leading to fragmentation of the surface of the block. As there was no time to treat blocks affected in this way, where possible gauze strips were applied to the cracked faces to ensure the cohesion of the assembly, and the blocks were stored on the conservation shelves.



Block 230952

Salt crust covers part of bottom side causing cracks, delamination and sanding.



Block 190236

From lowest course with salt efflorescence throughout causing multiple cracks. Gauze strips applied to surfaces to maintain cohesion.

### Processing and storage

Dismantling and processing the large main stacks of talatat, each containing approximately 900 talatat, began on 12 February 2009. As some of the original mastabas were no longer effective protection against rising groundwater, many of the blocks in the lowest course of the major stacks were visibly damp, and had cracked under the weight of the talatat stacked above them. However, the majority of the blocks in the main stacks were in reasonably good condition, and as anticipated, the work proceeded at a faster rate.

Because the original mastabas were only two or three bricks high, in poor condition and no longer water resistant,



as each mastaba became vacant and before talatat were restacked on it, it was built up, then resurfaced with burlap, cement and lime mortar, in order to protect the restacked blocks from the effects of groundwater, and make the stacks more stable.



#### **24. Renovated mastaba and shelves for fragile blocks, south side**

After restacking, each stack was loosely covered with plastic sheeting to try and reduce the accumulation of dust on the decorated surfaces of the talatat. Careful monitoring of the humidity in the magazine during each season, and over the summer break from July to September 2009, revealed that there was no build-up of condensation.



**25. Talatat from stack 3 restacked after processing and covered with plastic sheeting**

Wooden shelving was erected inside the magazine to the left of the door for storing talatat

fragments,



**26. Fragment shelves, west wall, north side**

and more shelving was installed to the right of the door for the badly damaged talatat which could not be restacked, and required further treatment . Some of the most fragile blocks were stored on the shelves on wooden trays, which had been used for moving severely damaged talatat during the documentation process, to avoid handling them any more than necessary. Towards the end of the first season, additional shelving for fragile blocks was erected on brick supports in the second aisle to the left (north side) of the magazine.



**27. Shelving for fragile blocks, second aisle, north side**

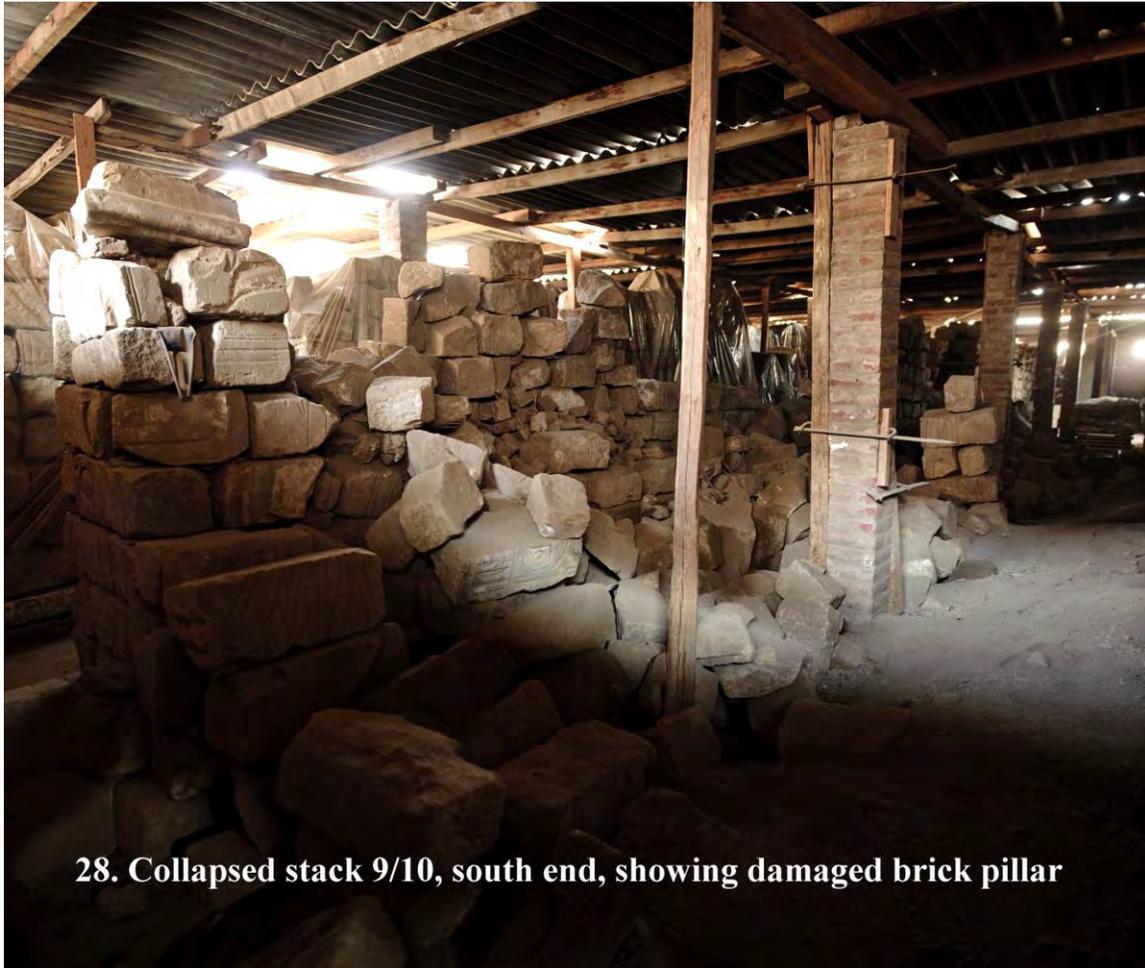
During the first season of work, October 2008 to June 2009, ARCE Talatat Project documented 8915 blocks in the magazine, comprising 8793 talatat and 122 non-talatat blocks (N-blocks, see below), 2289 of which had been lying loose on the floor of the magazine, and the remainder were from seven of the 14 main stacks. This left the other seven main stacks to be documented during the second season

A Supreme Council of Antiquities (SCA) inspector was assigned to the Talatat Project at Karnak every two months, and an additional SCA conservator worked with the project each month. The SCA inspectors assigned to the Talatat Project during the first season Mona Fathy Sayed, Osama Abdel Mogood Abdallah, Abdel Satar Badri, and Fawzy Helmy Okail. The SCA conservators assigned to the project were Mohamed Abdallah Ahmed, Safaa Abdel Azeem Amien, Mohamed Fathy El-Hayk Moosa, Wafaa Hassan Mohamed, Magda Kamel, Fathy Fares Abader, Nahla Shawkey Habib and Fayez Shaker Maximus. SCA conservator Saadi Zaki Abdallah obtained permission to work with the project throughout both seasons in the magazine. The resurfacing of the mastabas in the magazine was carried out by Reis Mohamed Abdo and his assistant.

**Second Season, September 2009 - May 2010**

The ARCE Talatat Project resumed documenting the Akhenaten talatat in the 'Pennsylvania' magazine at Karnak for a second season on 28 September 2009, and continued until 6 May 2010, with a two week break from 18 December 2009 to 2 January 2010 for Christmas and New Year, during which the magazine was closed, and processing the talatat was suspended for two working weeks.. The project members consisted of Project Director Jocelyn Gohary, Assistant to the Director Andrew Bednarski, Conservation Supervisor Claire d'Izarny, Egyptologists Lindsay Vosburg and Jacquelyn Williamson, and Photographers Sara Lafleur and Owen Murray. SCA Conservator Saadi Zaki Abdallah continued to work with the Talatat Project throughout the season. Assistant Director Rawya Ismail continued the detailed documentation of the talatat database in Cairo.

During the second season, the remaining seven main stacks of blocks were documented, including Stacks 9 and 11, which had collapsed eastwards because of extensive burrowing underneath them by foxes. Several sizeable fox holes were discovered, where the animals had been able to burrow because of gaps in the cement floor. These two mastabas were extensively repaired; the southern half of the one under Stack 9 was completely rebuilt, and the whole of the mastaba under Stack 11 was reconstructed. Two brick pillars which had cracked when these two stacks collapsed, one beside Stack 9 and the other beside Stack 11, were considered unsafe. They were dismantled and replaced by a number of wooden uprights and roof supports. The large gaps in the floor were also cemented over.



**28. Collapsed stack 9/10, south end, showing damaged brick pillar**



29. Fox holes under stack 9



30. Collapsed stack 2, central section, showing damaged brick pillar



**31. Deep fox holes under collapsed stack 11/12**



**32. Reconstructing mastaba under stack 11/12**

Work continued in the magazine until 29 April 2010, when the last blocks were processed. The following week the conservators treated a number of the fragile talatat which had been set aside during the earlier processing of the stacks, and limited repairs were carried out in the magazine. These included erecting additional wooden supports for the roof,



**33. New roof supports, north side of magazine**



**34. New roof supports, south side of magazine**

installing a new piece of sheeting over a large gap in the roof near the magazine entrance,



**35. Installing new piece of roof sheeting, May 2010**

covering smaller gaps in the roof with wire netting to prevent birds and foxes from entering, putting stronger fine wire mesh on the windows to prevent insects, particularly hornets,



**36. New hornet's nest on documented block**

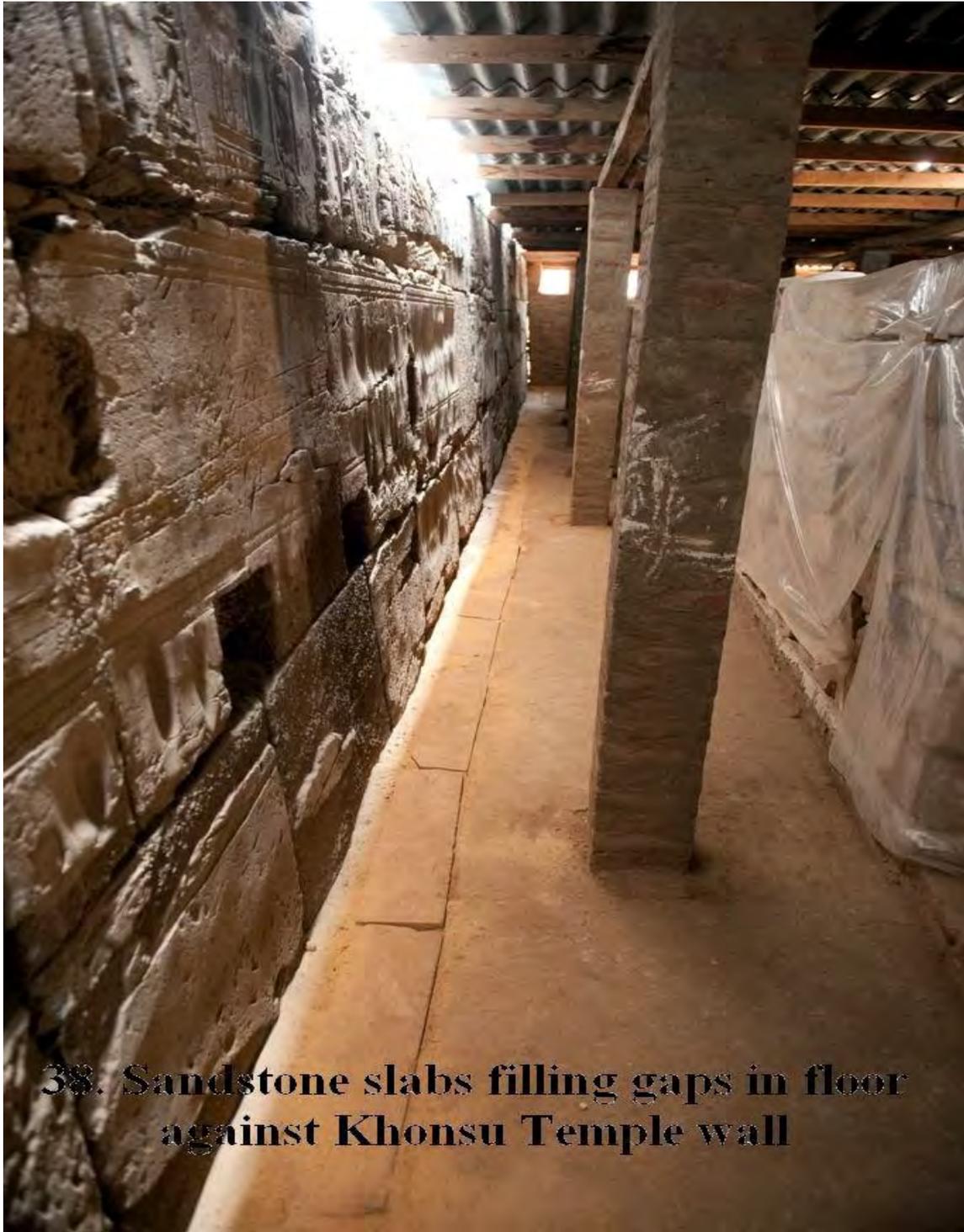
as well as birds from entering,



**37. New wire mesh on magazine windows**

filling any remaining gaps in the cement floor, and laying sandstone slabs where

necessary against the base of the Khonsu Temple west wall at the back of the magazine



to prevent burrowing by foxes, as well as general cleaning. The large tent, which had covered the project work area in front of the magazine, was dismantled.

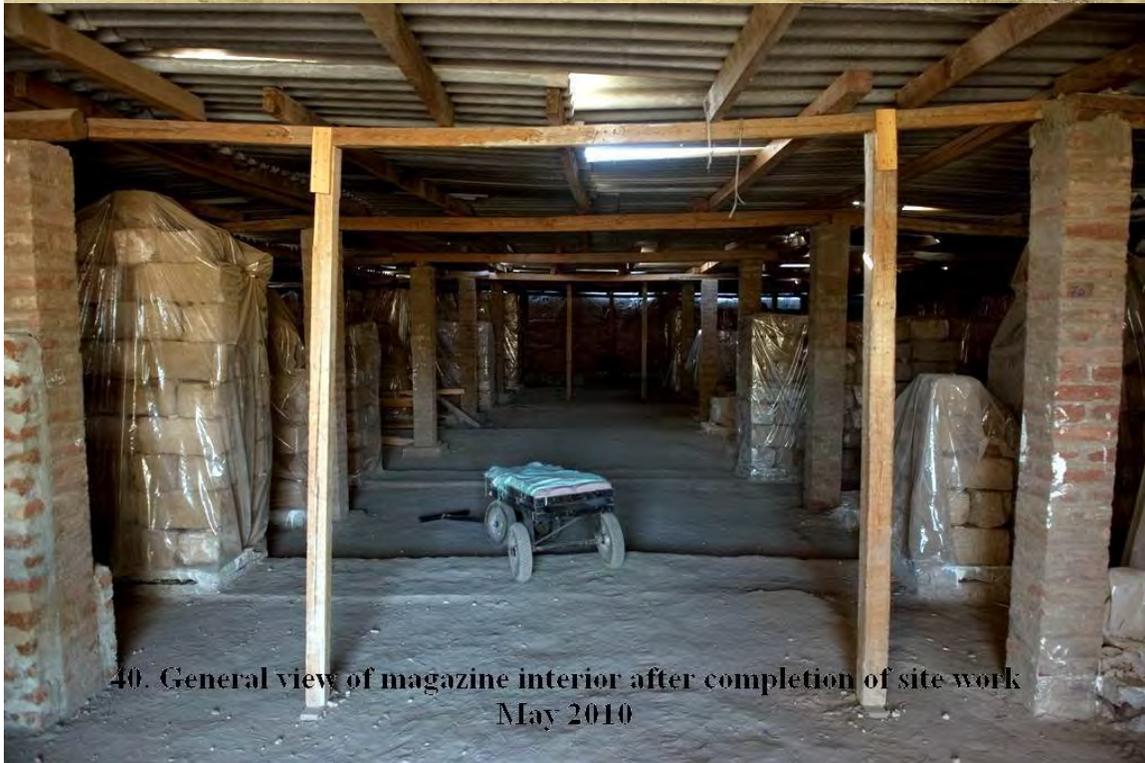


**39. Dismantling the tent around the project work area**

With the completion of the documentation of the talatat and the repairs, the magazine was finally closed on 6 May 2010.



41. 'Pennsylvania' Magazine after completion of site work, May 2010

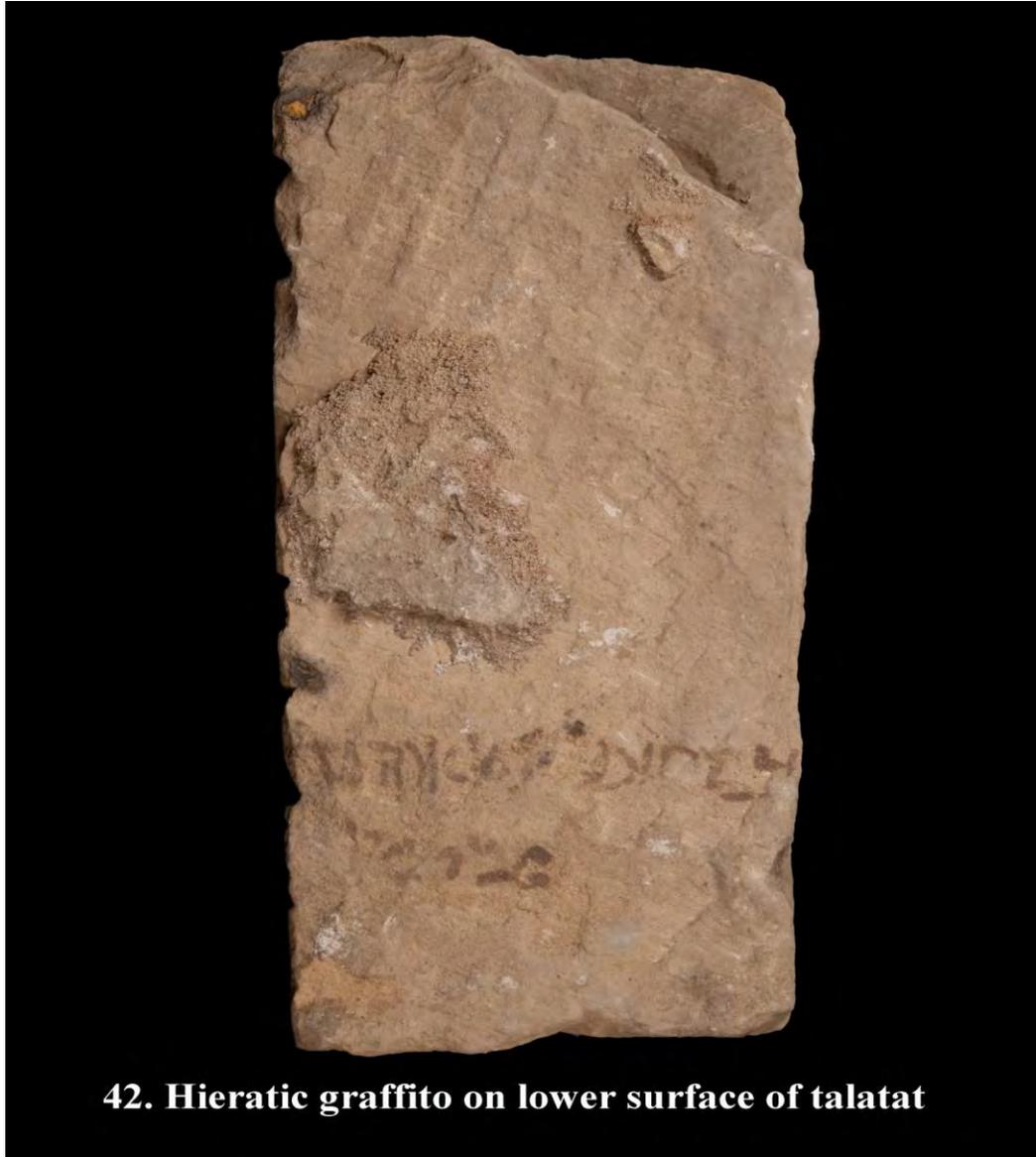


40. General view of magazine interior after completion of site work  
May 2010

A new SCA inspector was assigned to the Talatat Project every two months during the season, and an SCA conservator worked with the project each month. The SCA inspectors assigned to the project during the second season were El-Zahra Ragab, Abdel Satar Badri, Ahmed Araby Younis, and Wafaa Gomaa Amin. The SCA conservators assigned to the project during the same season were Mohamed Fathy El-

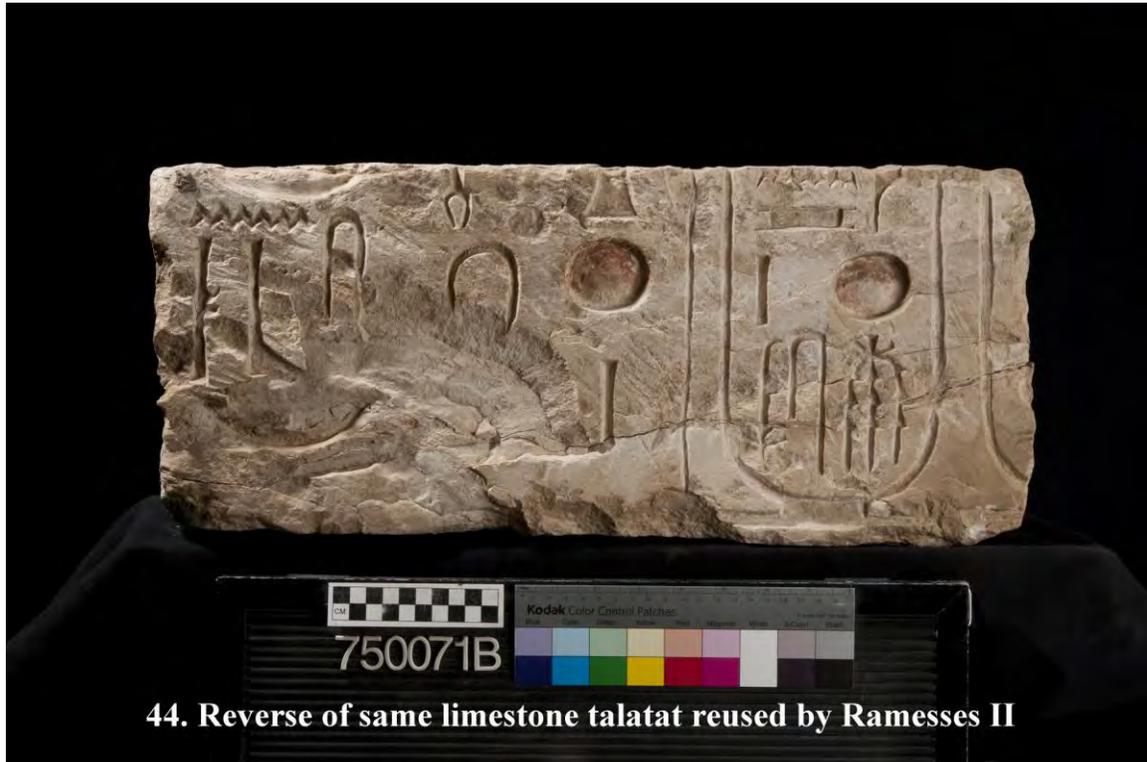
Hayk Moosa, Mohamed Abdel Satar Abeid, Mohamed Abdallah Ahmed, Saleh Saleem Adel Salaam, Safaa Abdel Azeem Amien, and Fathy Fares Abader.

During the second season, a further 7052 blocks were processed, comprising 6753 talatat and 299 non-talatat blocks. In total the Project has documented 15, 546 talatat and 421 non-talatat blocks in the ‘Pennsylvania’ magazine. A total of 476 talatat were recorded with hieratic graffiti on an undecorated surface,



although it is possible that there were originally more, but they are difficult to detect because the paint has faded. The graffiti were apparently written by overseers of the ancient quarrymen when the Aten temple was being built, and similar examples were found on

talatat recovered from the Ninth Pylon by the CFEETK in the 1980s. Although the majority of the talatat at Karnak are sandstone, from the quarries at Silsileh, 167 limestone talatat, some of them reused during the Ramesside period, were recorded in the 'Pennsylvania' magazine.



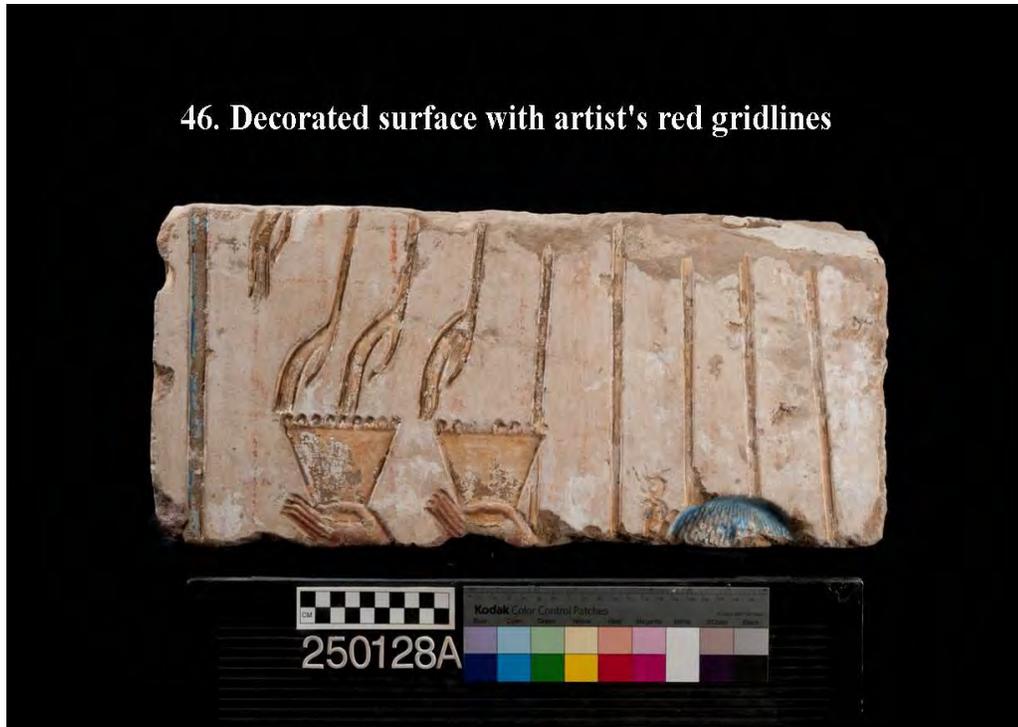


Talatat from the reign of Akhenaten are almost all decorated in sunk relief, but in this magazine there are also a number of sandstone talatat (114) with raised relief, which were apparently reused in a building at Karnak dating to the reigns of Tutankhamun and his successor, Ay.



Many blocks retain traces of red gridlines on their decorated surfaces. These were guidelines for the scale and positioning of figures and objects, which were marked on the plaster background by the ancient artists.

#### 46. Decorated surface with artist's red gridlines



These lines would normally have been painted over once the carving and painting of the decorated surface was complete, and their survival is a possible indication of the haste with which the first Aten temple was constructed and decorated. Other signs of such haste can be seen in the sketchy nature of some of the carving.

#### **Non-talatat blocks**

Blocks stored with the talatat, but which are not of the regular talatat dimensions, or are clearly not decorated in the same style of relief, and therefore belong to another building or period,

**48. Smallest non-talatat block (N-block),  
part of a small alabaster statue base**

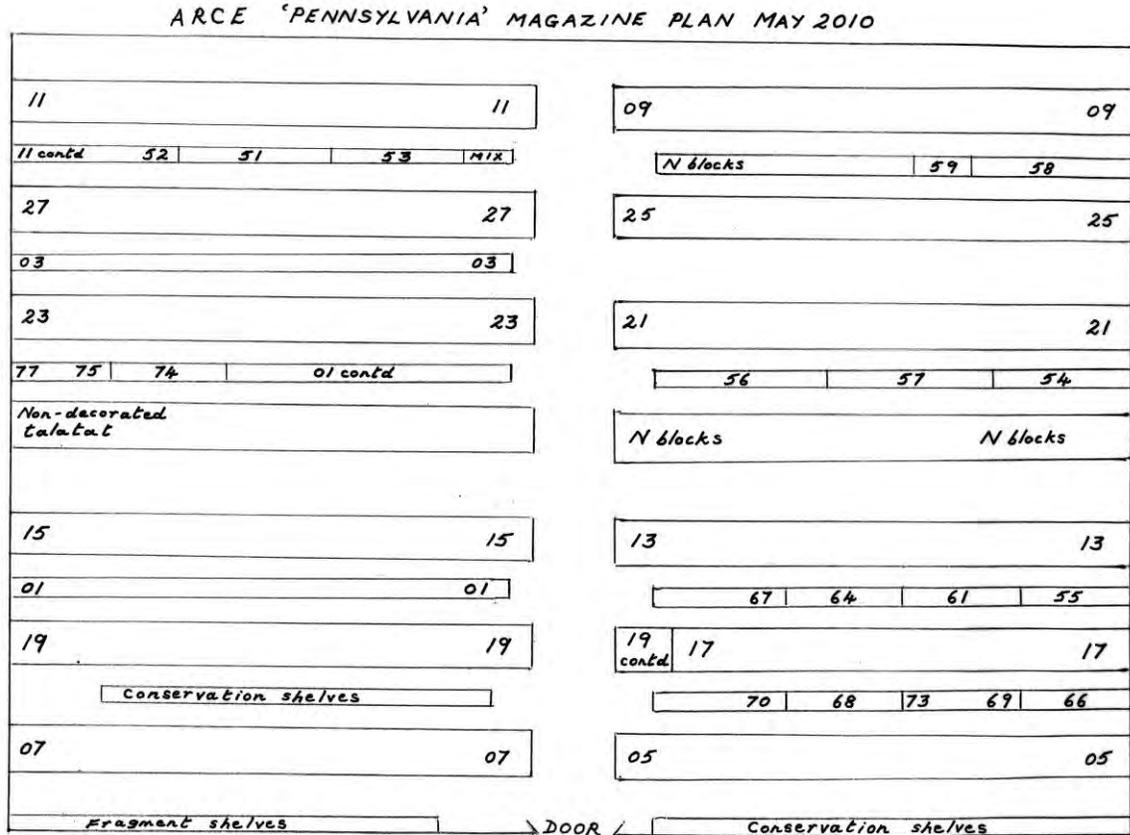


**47. Largest non-talatat block (N-block)**



have been stored separately in the magazine, and the data on them has been entered in a separate non-talatat database. These have been designated as 'N-blocks' by the ARCE Talatat Project, i.e. non-talatat blocks. A total of 421 of these non-talatat blocks were recorded in the 'Pennsylvania' magazine.

Before the magazine was closed on completion of the site work, a new plan showing the location of each of the stacks of documented blocks, included the N-blocks, was attached to the inner side of the magazine door beside the old ATP plan.



49. Plan of 'Pennsylvania' Magazine, ARCE Talatat Project, May 2010

### The talatat database

While the talatat database was in use during the two years that the ARCE Talatat Project team was working on site at Karnak, the data entered on a daily basis was only basic information for the identification of each of the 15,546 talatat documented, including the new ID number, measurements, material (sandstone or limestone), subjects depicted in the relief carving, and any surviving colours. The image for each block was also inserted in the database on the day it was taken, as a way of checking that all the talatat recorded that day had been photographed, and none had inadvertently been missed. After the site documentation was completed, entering detailed data in the ARCE talatat database continued for a further one and a half seasons. Project Director Jocelyn Gohary, and Assistant Director Rawya Ismail, spent the third season, October 2010–June 2011,

entering more detailed information into the database. Work slowed down from the end of June 2011 until the beginning of April 2012 due to lack of funding, after which further archive entries and revision were carried out by Project Director Jocelyn Gohary over a six-month period.

The database includes fields such as the crowns and regalia worn by Akhenaten and Nefertiti, measurements of the angles and dimensions of the sunrays radiating from the Aten disk, the content of inscriptions, types of objects, tools, and ritual items, parts of buildings, information on published talatat, and many other details. Individual processing of the talatat has enabled more detailed information on them to be recorded, particularly with regard to the colours of the pigments used, and the painted details on figures, jewellery, hieroglyphs, buildings, offerings, etc.

57. Aviary and storage area beside the royal palace



270028



50. Akhenaten, head and shoulders, with sunrays and fans



030017



**51. Nefertiti offering a sphinx statue, head and arms. with sunrays**



**52. Part of queen's dress, floral collar and wig**



53. Huge royal hand



170381



54. Sundisk with Aten cartouches and titles



150550



**55. Offering jars with garland, large scale**



230737

**56. King offering in jubilee festival scene, with priests**



010788

Some blocks have more than one decorated surface, either both ends, or one long side and one end, i.e. a corner block,

**58b. Corner with torus, queen's cartouche, Nefertiti pillar**



**58a. Corner with torus, queen's cartouche and sunray, Nefertiti pillar**



and many cornice blocks have been recorded.

59. Striped cornice with broken horizontal torus above sky sign (pt)



These types of talatat may eventually throw some light on the possible architecture of the different parts of the Karnak Aten Temple. Numerous blocks from the so-called ‘Nefertiti pillars’ have also been processed. An unexpected discovery in the magazine was the lower part of a kneeling statue of Akhenaten, slightly smaller than life-size, with his throne name clearly inscribed on the dorsal pillar.



**60b. Akhenaten statue, king's prenomen on dorsal pillar**

**60a. Kneeling statue of Akhenaten, king's foot**



700149B

The extended work on the talatat database has been carried out in order to make it as comprehensive as possible, and so to facilitate any further research on this valuable source material for the early years of Akhenaten's reign.

American Research Center in Egypt Talatat Project

Comment1

**Treatment**

Surface

Structure

Comment2

RECOMMENDATION

Storage

Create By   
Review By

American Research Center in Egypt Talatat Project

ID

Measurements l x h x d

Material

Type

Decorated Surfaces

Architectural Blocks

Relief

Subject

Original Location

**Archive**

Atp Stone No



**American Research Center in Egypt** **Talatat Project**

Arce.070255.tm.041409\_slv0741.jpg

<p><b>Registers</b> <input type="text" value="one"/></p> <p><b>Sun Disk</b> <input type="text" value="with rim, anx-sign suspended from disk"/></p> <p><b>Sunrays</b> <input type="text" value="angle at left 88 degrees, angle at right"/></p> <p><b>Sunray Hands</b> <input type="text"/></p> <p><b>Inscription</b> <input type="text" value="vertical, facing right, scale/ medium"/></p> <p><b>Temple Names</b> <input type="text" value="rwd mnw"/></p> <p><b>Aten Names</b> <input type="text" value="titulary"/></p> <p><b>King's Names</b> <input type="text"/></p> <p><b>Queen Names</b> <input type="text"/></p> <p><b>Princess Names</b> <input type="text"/></p> <p><b>Officials Titles</b> <input type="text"/></p> <p><b>Priests Titles</b> <input type="text"/></p>	 <p>070255</p> <p><input type="button" value="Insert Picture"/> <input type="button" value="Actual Size"/></p>
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**American Research Center in Egypt** **Talatat Project**

Arce.070255.tm.041409\_slv0741.jpg

<p><b>Queen Headdress</b> <input type="text"/></p> <p><b>Flora</b> <input type="text"/></p> <p><b>Fauna</b> <input type="text"/></p> <p><b>Furniture Secular</b> <input type="text"/></p> <p><b>Furniture Religious</b> <input type="text"/></p> <p><b>Objects</b> <input type="text"/></p> <p><b>Ships</b> <input type="text"/></p> <p><b>Direction</b> <input type="text"/></p> <p><b>Scale</b> <input type="text"/></p> <p><b>Figure Scale</b> <input type="text"/></p> <p><b>Figures Cut-off Point</b> <input type="text"/></p> <p><b>Animals Cut-off Point</b> <input type="text"/></p> <p><b>Paint Colour</b> <input type="text" value="white, red, yellow, blue"/></p> <p><b>Paint Locations</b> <input type="text" value="white background; dark red outlines on sundisk, rays and cobra details; light red on sundisk; yellow sunrays and rim, blue"/></p>	 <p>070255</p> <p><input type="button" value="Insert Picture"/> <input type="button" value="Actual Size"/></p>
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**American Research Center in Egypt**
**Talatat Project**

New
 Find
Show All Records
Sort Records
Print Current Record

Basic information
Decoration Page 1
Decoration Page 2
Conservation Condition
Arce.070255.tm.041409\_slv0741.jpg

**Id** 070255

**Date** 4/14/2009

**Surveyor** SZA

---

**Condition**

**Overall :**

**Surface**

**Stone** Stable

**Paint Layer** yes; unstable

**Preparatory Layer** yes; unstable

**Salt Efflorescence** no

**Ancient Fill Or Restoration On Inscribed Face** no

**Structure**

**Crack(s)** no

**Delamination** no

**Fragmentation(s)** no

Pigment and preparatory layer are flaking



Insert Picture

Actual Size

Sincere thanks are extended to the representatives of the Supreme Council of Antiquities, (now the Ministry of State for Antiquities), especially Zahi Hawass, ex-Secretary General, Mansour Boraik, Director General of Luxor Antiquities, and Ibrahim Soliman, Director of the Temples of Karnak, for their support in facilitating the project's endeavours, and providing continuous assistance and encouragement at all stages of the work.

Jocelyn Gohary  
 Director, ARCE Talatat Project, Karnak

**ARCE Talatat Project On site record: Basic information****ID:****Measurements: l x h x d****Material:**

- sandstone
- limestone

**Type:**

- header
- header, broken at back
- stretcher
- broken header
- broken stretcher
- fragment

**Paint:**

- white
- black
- red
- yellow
- blue
- green
- orange

**Decorated surfaces:**

- 1
- 2
- 3

**Sunray details:**

- angle at left                      degrees
- angle at right                    degrees
- width of rays                    cm
- apart at top                      cm
- apart at bottom                 cm

**Architectural blocks:**

corner:

- (a) external with vertical torus
- (b) external with broken vertical torus
- (c) external with horizontal torus
- (d) external without torus
- (e) internal
- cornice
- torus, vertical, broken from back
- torus, horizontal

**Architectural blocks contd.:**

- part of a doorway
- probably from internal wall

**Relief:**

- raised
- sunk
- smooth undecorated surface
- painted

**Subject:**

- heb-sed
- chariot and horses
- cattle: herding
- palace
- dais
- sunray hands
- military
- unidentified
- royal figures
- offerings
- Nefertiti pillar
- cattle: slaughtering
- frieze
- sunrays
- sundisk
- marine
- inscription
- non-royal figures

**ATP stone number (if visible):**

**ARCE TALATAT PROJECT: On Site Conservation Survey**

ID Number:  
Surveyor:

Date:

**CONDITION**

**SURFACE**

**Side A**

**(Side B)**

Stone:	<input type="checkbox"/> sanding, decorated face	<input type="checkbox"/> sanding, dec. face
	<input type="checkbox"/> sanding, undecorated face	<input type="checkbox"/> sanding, undec. Face
	<input type="checkbox"/> stable	<input type="checkbox"/> stable
Paint layer:	<input type="checkbox"/> yes, stable	<input type="checkbox"/> yes, stable
	<input type="checkbox"/> yes, unstable	<input type="checkbox"/> yes, unstable
	<input type="checkbox"/> no	<input type="checkbox"/> no
Preparatory Layer:	<input type="checkbox"/> yes, stable	<input type="checkbox"/> yes, stable
	<input type="checkbox"/> yes, unstable	<input type="checkbox"/> yes, unstable
	<input type="checkbox"/> no	<input type="checkbox"/> no
Salt Efflorescence:	<input type="checkbox"/> yes	<input type="checkbox"/> yes
	<input type="checkbox"/> no	<input type="checkbox"/> no
Ancient Fill/Restoration on Inscribed Surface:	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no

**STRUCTURE**

Crack(s):	<input type="checkbox"/> yes, dec. face, structural	<input type="checkbox"/> yes, dec., struct.
	<input type="checkbox"/> yes, dec. face, nonstructural	<input type="checkbox"/> yes, dec., nonstruct.
	<input type="checkbox"/> yes, undec. face, structural	<input type="checkbox"/> yes, undec., struct.
	<input type="checkbox"/> yes, undec. face, nonstructural	<input type="checkbox"/> yes, undec, nonstruct
	<input type="checkbox"/> no	<input type="checkbox"/> no
Delamination:	<input type="checkbox"/> yes, decorated surface	<input type="checkbox"/> yes, dec. surface
	<input type="checkbox"/> yes, undecorated surface	<input type="checkbox"/> yes, undec. surface
	<input type="checkbox"/> no	<input type="checkbox"/> no
Breaks:	<input type="checkbox"/> yes, decorated surface	<input type="checkbox"/> yes, dec. surface
	<input type="checkbox"/> yes, undecorated surface	<input type="checkbox"/> yes, undec. surface
	<input type="checkbox"/> no	<input type="checkbox"/> no

**Comments on Condition Structure:**

**TREATMENT**

Surface:	<input type="checkbox"/> surface cleaning	<input type="checkbox"/> surface cleaning
	<input type="checkbox"/> paint layer consolidation	<input type="checkbox"/> paint layer consolidation
Structure:	<input type="checkbox"/> readhesion of fragments	<input type="checkbox"/> readhesion of fragments
	<input type="checkbox"/> crack stabilization	<input type="checkbox"/> crack stabilization
	<input type="checkbox"/> filling	<input type="checkbox"/> filling
	<input type="checkbox"/> stone consolidation	<input type="checkbox"/> stone consolidation

**Comments on Treatment:**

**RECOMMENDATION**

Storage:  support (tray, shelf, etc)  
 no stacking (may be placed at top of mastaba)

