

Excavations at the Prehistoric Sites of Tepe Dehno and Tepe East Dehno, Shahdad, Southeastern Iran

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Dasht-e Lut (Lut Desert) is archaeologically well-known in Near East thanks to the presence, on its western edge, of the Bronze Age urban centre of Shahdad. In 2012, the author launched a three-season field project in the area of Shahdad, with an agenda articulated around three main research points: an extensive archaeological survey along the western edge of the Lut Desert, the stratigraphic excavations of two multi-period prehistoric sites and, lastly, a systematic surface survey and excavations aimed at delimitating the urban centre of Shahdad. This paper presents the results of the second season of this recent project. Recent excavations at Tepe Dehno and Tepe East Dehno in Shahdad plain have revealed levels dating back to a period from the early 5th to the early 3rd millennium BCE based on absolute dates. A total of 10 charcoal samples from the mentioned excavated sites were analysed using Accelerator Mass Spectrometer (AMS) method. Radiocarbon determinations obtained from the two aforementioned sites have questioned the prehistoric chronology of southeastern Iran.

Keywords: Southeastern Iran, Shahdad, Excavations, Absolute Chronology.

Introduction

The Shahdad plain is located between eastern flank of Kerman Mountains and the western fringes of Lut desert (a paleo-lake) to the east, SE Iran (Fig. 1). Due to proximity of the Shahdad area to the Lut desert, it has a desert landscape, experiencing extreme winds which has strongly impacted on the cultural landscape of the region. From a geomorphological point of view, the site of Shahdad was founded on the base of the alluvial fan of Shahdad, where thick alluvial layers are cut by wind and water erosions into yardangs (the local name of yardangs is Kalut which will be used hereafter).

The Bronze Age urban site of Shahdad was excavated for twelve seasons by Ali Hakemi and Mirabedin Kaboli uncovering a large necropolis including many with spectacular grave goods, such as impressive human statuettes, elaborate metal objects such as a bronze standard, numerous stone and ceramic containers and ornamental finds (Hakemi 1997, Kaboli 1997, Salvatori and Tosi

1997). Furthermore, an industrial area and two architectural complexes, which greatly increase our understanding of the layout of the site of Shahdad. Despite several seasons of excavations at the site of Shahdad, no comprehensive survey has been undertaken on the Shahdad plain¹. In spite of the fact that twelve seasons of fieldwork have already been carried out in Shahdad plain, the periods preceding Bronze Age have not yet been investigated. However, although a chronological range spanning the 5th or 4th to the early to mid-2nd millennia BCE was proposed for Shahdad plain (Salvatori & Vidale 1982, Hakemi 1997), there is no stratified occupational sequence or absolute chronology for these prehistoric periods. In this way, a recent project was scheduled to address this lack of evidence for the periods preceding Bronze Age as well as the settlement patterns of the region.

The second season of the recent project in the Dasht-e Lut included stratigraphic excavations of two prehistoric multi-period sites of Tepe

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1- In 1977, a short survey across the site of Shahdad and its surroundings was undertaken with the collaboration of an Italian team which identified 37 points for sampling using aerial photographs (See, Salvatori & Vidale 1982; Hakemi 1997).





Fig. 1: Map showing the location of the study area within the Iranian plateau

Dehno (Shd 051) and Tepe East Dehno (Shd 032) (Eskandari 2013). Both of these sites are located to the east of the excavated urban centre of Shahdad in Shahdad plain (Fig. 2). The main aims for the excavations were: (1) to determine the cultural sequence of the Shahdad plain, in particular the periods before the Bronze Age, (2) to evaluate the reliability of the 2012 regional survey samples and to provide a controlled chronological sequence into which previously unidentified pottery could be placed dated, (3) to provide solid absolute dates for the material through a comprehensive program of radiocarbon analyses of excavated samples, (4) to explore the transition from Late Chalcolithic to Early Bronze Age, (5) to explore the roots of Early Bronze Age urbanism of Lut area by excavating Tepe Dehno as a large regional centre that was occupied from the late fifth into the third millennia BCE.

Excavation Project and Methodology

The excavation campaign at Tepe Dehno together with activities at Tepe East Dehno began

in January and continued until the middle of March 2013. Tepe Dehno was selected for excavations for several reasons. First of all, based on the surface materials it was evident that Tepe Dehno was permanently settled for more than three millennia from the 5th through the 3rd millennium BC. and thus will preserve material culture from that long period. Secondly, on the basis of the survey evidence and theoretical considerations, we thought that Tepe Dehno was the largest fourth millennium BC centre and therefore might have served as a central place. The large site is surrounded by smaller satellite sites which perhaps fulfilled a kind of local service function. Finally, Dehno allows for the exploration of the process of transition from Late Chalcolithic to Early Bronze Age because the site contains both fourth and third millennia occupations.

Excavations at Tepe Dehno were conducted carrying out four stratigraphic trenches (c. 3×3 m) across the site. Although excavations at Tepe Dehno provided a sequence of occupations from late fifth to early third millennia BC., the earliest periods (early-mid 5th millennium BC.) of the district is



not represented at the site. Hence, in addressing the main aim of our excavations, i.e. to determine the complete cultural sequence of the prehistoric period of the region, a site identified as East Tepe Dehno (located 700 m east of Tepe Dehno) was also excavated. Although East Tepe Dehno is a multiple period site that was occupied as early as the 5th millennium into the 3rd millennium BC. only one stratigraphic trench (3×3 m) was opened, on the west slope part of the site. We placed the trench there because it appeared from surface finds to preserve in situ the fifth millennium BC. occupation. Totally, this fieldwork agenda brought to light valuable information to establish a chronological framework for the Shahdad region beginning as early as the early fifth and extending down into the early third millennium BC.

As the first step in our fieldwork, we conducted an intensive surface survey on and collected the diagnostic ceramics found on the mound of Tepe Dehno. The distribution of pottery sherds in different parts of the site guided us in selecting the best places for soundings. Through the surface survey, we recognized that the site covers a very large area, c. 20 ha, and that some parts of the site were occupied during different periods that could influence our strategy. Placement of the trenches was determined by a desire to excavate the complete range of occupation and to correlate the stratigraphic sequence recorded in the trenches. Finally, we excavated four trenches across the site of Dehno - Trench I and II - on the fourth millennium BC. occupation, Trench III was opened on the third millennium BC. occupation and the last one, trench IV, on the earliest occupation of the site in the late fifth millennium BC. As part of the survey, we made a detailed topographic map of the Tepe Dehno and its surrounding isolated small hill-top settlements to show the location of excavations. After finishing excavations at Tepe Dehno, we continued our work at Tepe East Dehno by excavating one trench (3x3 metres) to complete the sequence of Shahdad district.

The system employed to record the excavated deposits was a Locus system. Each locus can be

any type of accumulation, such as pit fill, a wall, collapse, floor surface, hearth, deposit, natural sediments, etc. All of the recognized loci of each trench were numbered from the top down. Each locus was recorded on a separate double-sided data sheet, where the nature of deposit was characterized through a written description. All samples of each locus were collected and retained; these included radiocarbon samples, dirt for flotation, micro-morphology, special finds, pottery, bones, small finds, lithic, etc. Pottery from each locus was registered so that a quantitative categorization of pottery could be developed; diagnostic sherds were selected for drawing. In all five excavated trenches at Tepe Dehno and East Dehno we reached virgin soil. It is worth mentioning that since both sites were hill-top settlements the virgin soil was Kalut.

Tepe Dehno and its Environs

Tepe Dehno is a large site at 4 km east from the modern city of Shahdad (Fig. 3). It is a shallow large mound, surrounded by several small isolated mounds. It is founded on the top of a Kalut/natural hill. The site is approximately 20 hectares in extent and rises 8 m above the level of the surrounding land. Tepe Dehno is located at a kilometer east of the urban archaeological site of Shahdad. It was recorded as unit 04 in the 1977 short survey of the Italian mission (Salvatori and Vidale 1982). The site of Tepe Dehno stands roughly near the center of Shahdad plain at the widest point in the plain, flanked on the west by the Kerman Mountains and by the Lut desert on the east. From a geomorphological point of view, the site was founded on the base of the alluvial fan of Shahdad, where thick alluvial layers are cut by wind and water erosions into Kaluts which were surrounded by the Shahdad River in antiquity as well as by a number of streams flowing eastwards from their headwaters in the western mountains.

Trench I and its Stratigraphy

Trench I was a 3 × 3 metre operation at the eastern part of the site on the highest terrace, which



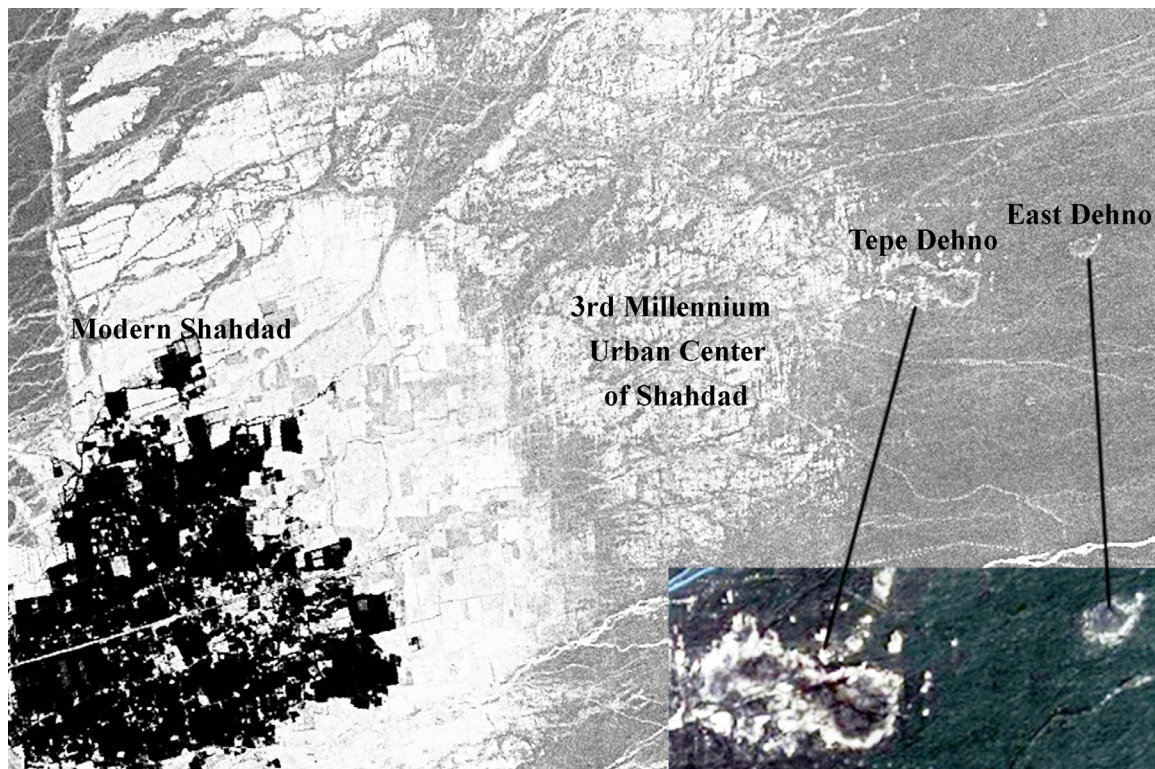


Fig. 2: The location of the excavated sites in Shahdad Plain (After: Google Earth, depicted on 12/10/2015)



Fig. 3: The Landscape around Tepe Dehno at the base of the Shahdad fan



we thought would provide the deepest depositional sequence of the site (Fig. 4). In addition, since the pre-excavation surface survey showed a pattern of westward horizontal growth for the site, the east of the site was chosen for opening this trench in order to reach its earliest occupations. This trench was excavated to a depth of approximately 1.5 metres. Through this excavation, eight loci were exposed, that are numbered from locus 1001 for the uppermost one to locus 1008 for the lowest one (Fig. 5). In this trench no architectural remains were discovered. The main factors which allowed us to distinguish the loci were changes in the colour and texture of the deposits. A total of 761 potsherds were recovered from the exposed loci of this trench (Fig. 6, Table 1). The common pottery from this trench is known as painted fine buff ware of Iblis IV, Aliabad

culture (See Caldwell 1967, Mutin 2013, Vidale and Desset 2013, Soleimani *et al.* 2016). Relative chronology, based on ceramic evidence, combined with two ^{14}C absolute dates establish a span of mid to late fourth millennium BC. for this trench.

Through excavation, six special finds were found which included a copper awl, a fragment of copper, a miniature pottery vessel, a snail shell, a stone pounder and a door pivot stone. Excavations in this trench revealed much about the nature of prehistoric occupations in the Lut area. Before the excavation, we expected to document at least seven meters of accumulated cultural deposit at Tepe Dehno. Our stratigraphic excavations showed that the site is a hill-top settlement that was founded on the top of a Kalut and contains less than a meter of deposit.

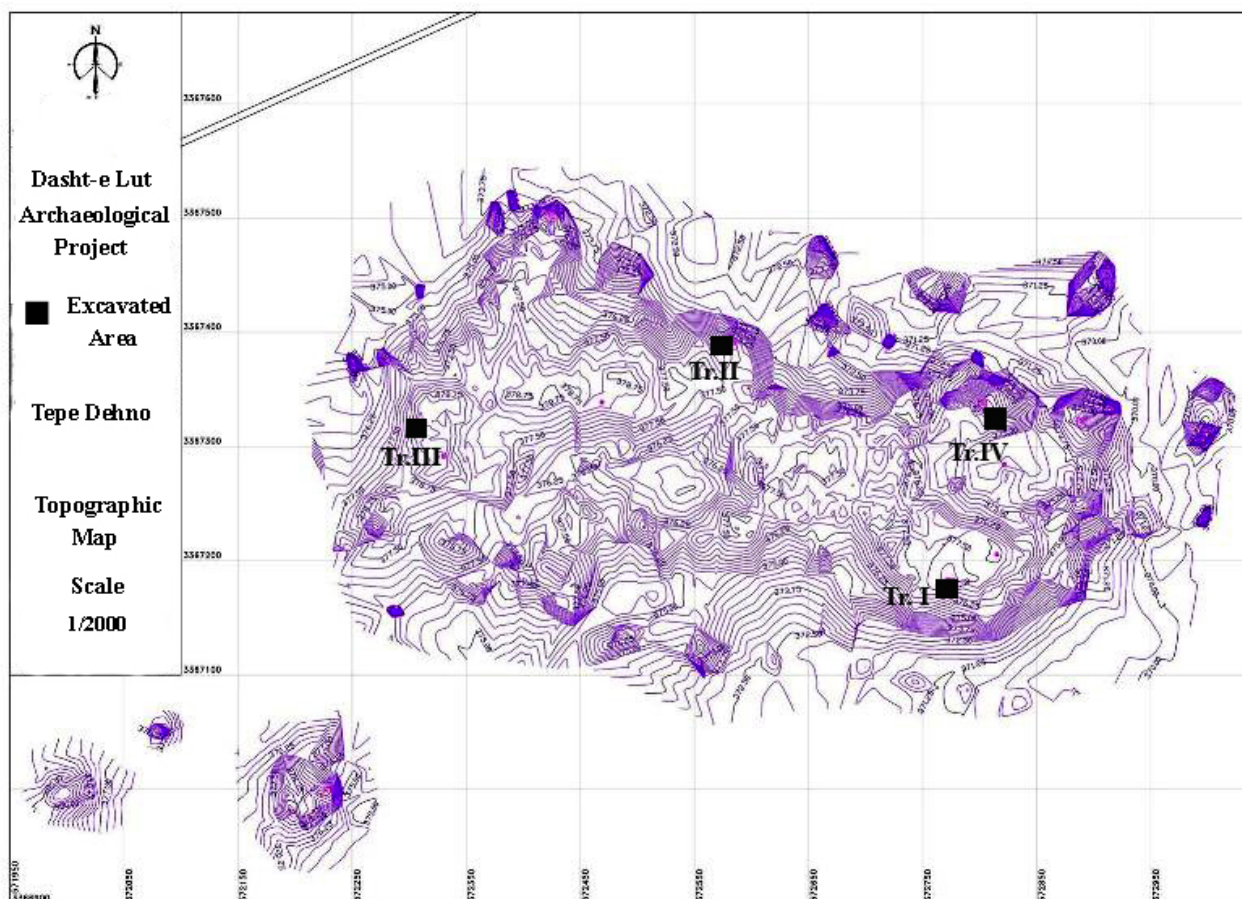


Fig. 4: Topographic map of Tepe Dehno showing the position of the Trenches



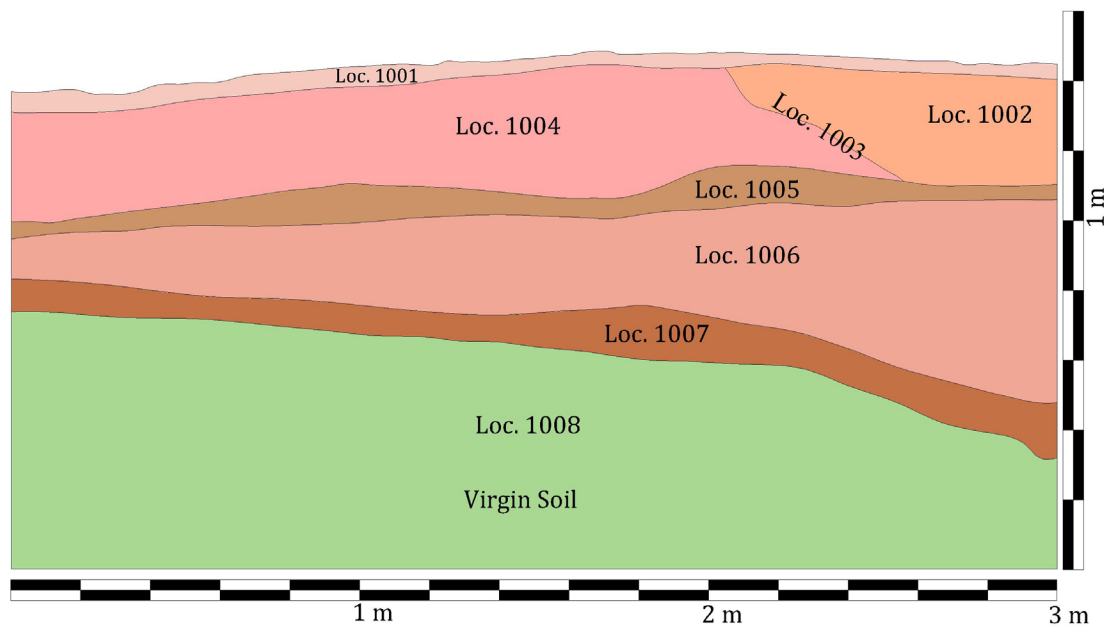


Fig. 5: Stratigraphy and the deflation of cultural deposits at Trench I, Tepe Dehno

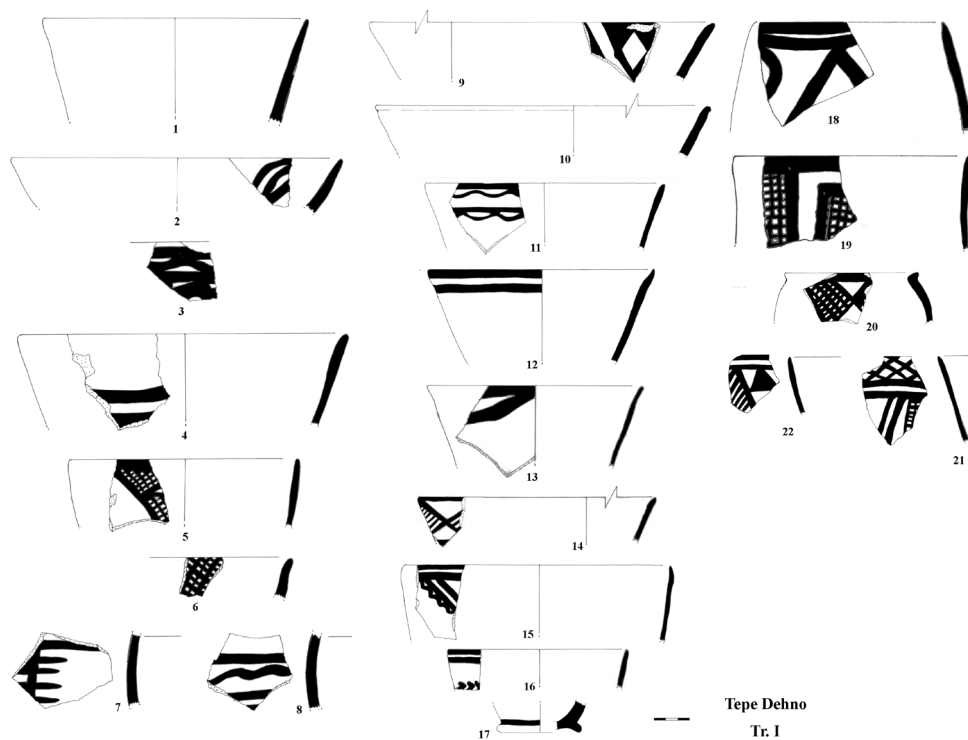


Fig. 6: A selection of the ceramics from Trench I, Tepe Dehno



Table 1: Tepe Dehno, Characteristic of the recovered ceramics from Trench I (Locus 1001 (1-3), Locus 1004(4-8), Locus 1006 (9-17), Locus 2004 (18-22))

Pottery No.	Locus	Description 1. Type 2. Fabric Color (ext./int./core.) 3. Inclusions 4. Firing 5. Treatment 6. Decoration 7. Painting Color	Absolute Date BC.
1	1001	1. Fine Buff Ware 2. Buff. Buff. Buff 3. Grit- Medium 4. Well Fired 5. Slip	3700-3300
2	1001	1. Fine Buff Ware 2. Buff. Buff. Buff 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Inside: Black	3700-3300
3	1001	1. Fine Buff Ware 2. Buff. Buff. Buff 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Inside: Black	3700-3300
4	1004	1. Fine Buff Ware 2. Buff. Orange. Orange 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
5	1004	1. Fine Buff Ware 2. Buff. Buff. Orange 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
6	1004	1. Fine Buff Ware 2. Buff. Buff. Buff 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Inside: Black	3700-3300
7	1004	1. Fine Buff Ware 2. Buff. Buff. Buff 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
8	1004	1. Fine Buff Ware 2. Buff. Brown. Brown 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Brownish Green	3700-3300
9	1006	1. Fine Buff Ware 2. Buff. Buff. Buff 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Inside: Black	3700-3300
10	1006	1. Fine Buff Ware 2. Buff. Buff. Buff 3. Grit- Medium 4. Well Fired 5. Slip	3700-3300
11	1006	1. Fine Buff Ware 2. Buff. Buff. Brown 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
12	1006	1. Fine Buff Ware 2. Buff. Buff. Orange 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
13	2003	1. Fine Buff Ware 2. Buff. Buff. Buff 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
14	1006	1. Fine Buff Ware 2. Buff. Buff. Buff 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
15	1006	1. Fine Buff Ware 2. Buff. Buff. Orange 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
16	1006	1. Fine Buff Ware 2. Buff. Buff. Buff 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
17	1006	1. Fine Buff Ware 2. Buff. Buff. Orange 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
18	1007	1. Fine Buff Ware 2. Buff. Buff. Buff 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
19	1007	1. Fine Buff Ware 2. Buff. Buff. Buff 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
20	1007	1. Fine Buff Ware 2. Buff. Buff. Buff 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
21	1007	1. Fine Red Ware 2. Red. Red. Red 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300
22	1007	1. Fine Buff Ware 2. Buff. Buff. Orange 3. Grit- Medium 4. Well Fired 5. Slip 6. Painting 7. Outside: Black	3700-3300



Trench II and its Stratigraphy

This 3 × 3 metres trench was located near the central part of the site. It appeared from the surface ceramics to be related to Aliabad culture (Iblis IV) occupation. Trench II was excavated to a depth of approximately 60 centimetres. The excavation showed that this part of the hill-top settlement consists of approximately half a meter of cultural deposit. In this trench, seven loci were exposed within the sounding, numbered from locus 2001 (surface) to locus 2007 (Fig. 7). None of the exposed

deposits contained any associated structural features. The main factors that allow us to distinguish the loci are changing colours and textures of the deposits. A total of 724 potsherds were recovered from these loci that indicate one period belonging to Aliabad culture (Fig. 8, Table. 2). The common pottery of this trench is the fine painted buff ware which is already well known from the Aliabad site, in Bardsir plain. Other finds include seven fragments of copper/bronze, a stone animal figurine, a piece of marble vessel, a snail shell, a bronze seal, a bronze pinhead and a copper/bronze awl.

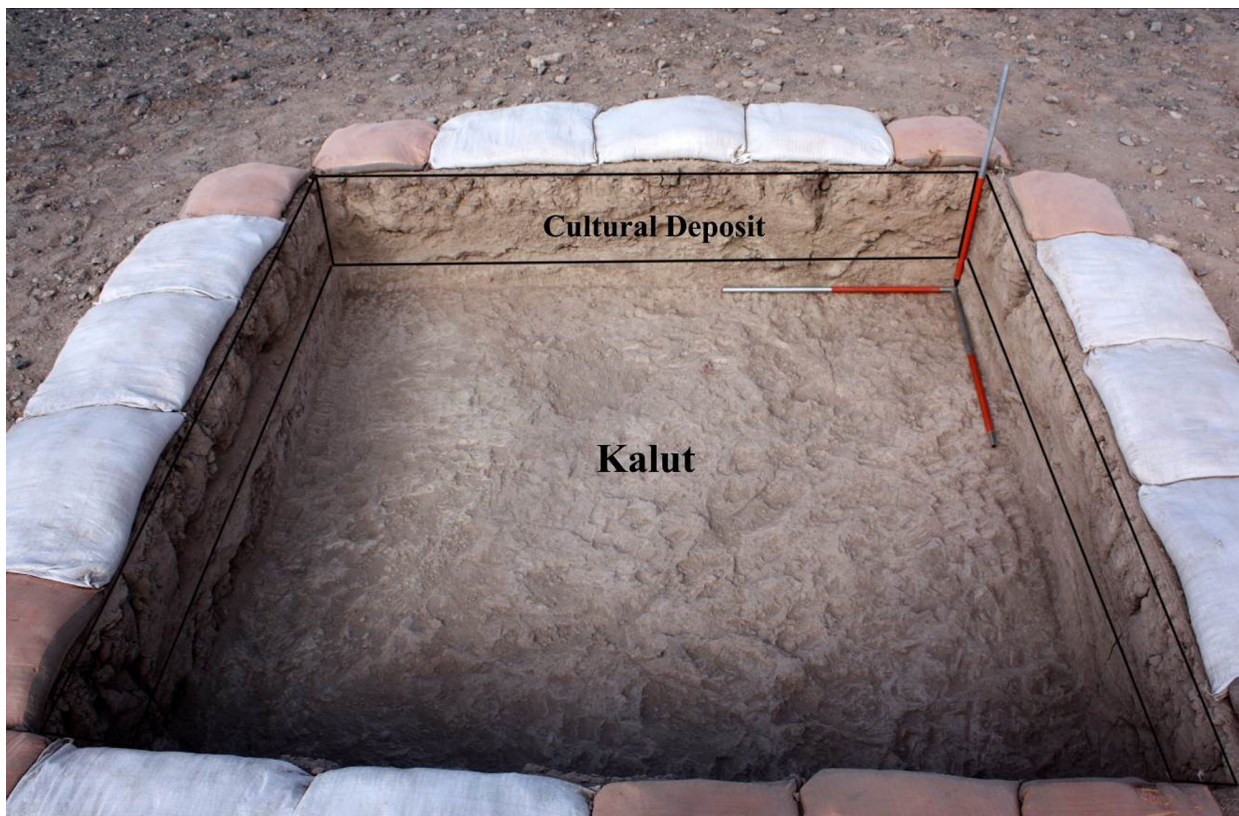


Fig. 7: Deflation of Cultural deposits at Trench II, Tepe Dehno

Trench III and its Stratigraphy

Trench III (always with a size of 3 × 3 m) was opened at the westernmost part of Tepe Dehno. The ceramic evidence on the surface is of Early Bronze Age date, indicating that the western part of the site was settled later than the eastern one. In fact, in addressing the main aim of our excavation to define the chronological sequence of the plain, this place

was intentionally chosen for the third operation because of its late date. The trench was excavated to a depth of approximately 55 centimetres and six loci were exposed (Fig. 9). The loci are numbered from locus 3001 for the uppermost one to locus 3006 for the lowest one. In this trench, as in those discussed above, no architectural remains were discovered. The excavations at the west of the site showed the extreme deflation of cultural deposits of



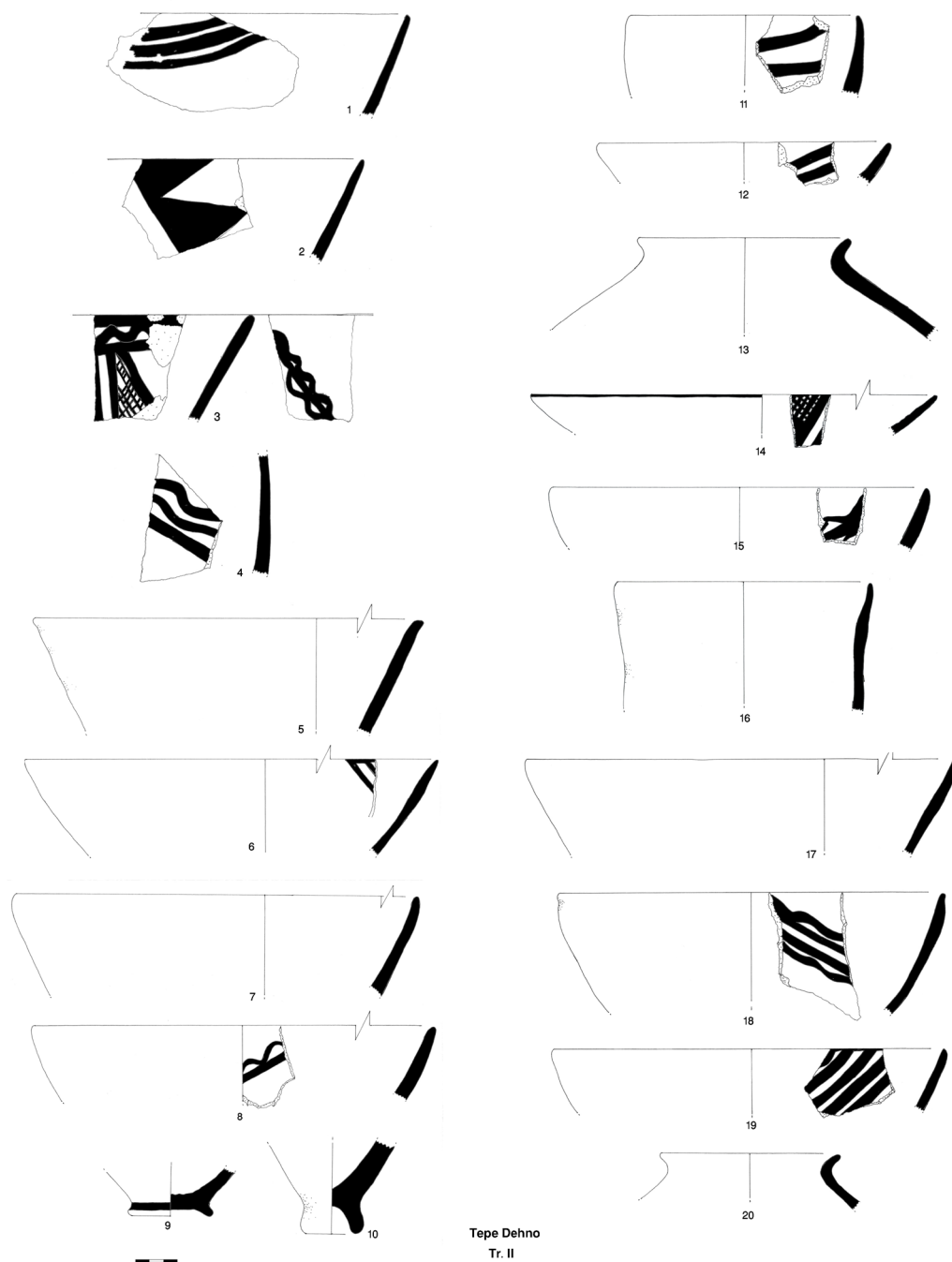


Fig. 8: A selection of the ceramics from Trench II, Tepe Dehno



Table 2: Tepe Dehno, Characteristic of the recovered ceramics from Trench II (Locus 2001 (1-4), Locus 2002 (5-10), Locus 2003 (11-13), Locus 2004 (14-16), Locus 2005 (17-20))

Pottery No.	Locus	Description			Absolute Date BC.				
		1. Type	2. Fabric Color (ext./int./core.)	3. Inclusions		4. Firing	5. Treatment	6. Decoration	7. Painting Color
1	2001	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Inside: Green	3700-3300
2	2001	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Outside: Black	3700-3300
3	2001	1. Fine Buff Ware	2. Buff. Buff. Orange	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Outside: Black	3700-3300
4	2001	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Outside: Black	3700-3300
5	2002	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			3700-3300
6	2002	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Inside: Black	3700-3300
7	2002	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			3700-3300
8	2002	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Inside: Black	3700-3300
9	2002	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Inside: Black	3700-3300
10	2002	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Inside: Black	3700-3300
11	2003	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Inside: Black	3700-3300
12	2003	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Inside: Black	3700-3300
13	2003	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			3700-3300
14	2004	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Inside: Black	3700-3300
15	2004	1. Fine Buff Ware	2. Buff. Buff. Orange	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Inside: Black	3700-3300
16	2004	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			3700-3300
17	2005	1. Fine Brown Ware	2. Brown. Brown. Brown	3. Grit- Medium	4. Well Fired	5. Slip			3700-3300
18	2005	1. Fine buff Ware	2. Buff. Buff. Orange	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Inside: Green	3700-3300
19	2005	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Inside: Black	3700-3300
20	2005	1. Fine Red Ware	2. Red. Red. Red	3. Grit- Medium	4. Well Fired	5. Slip			3700-3300



later occupations too. Excavations also revealed an important, enigmatic and hitherto unknown phase of Shahdad plain. Absolute dates from this trench showed a late fourth and early third millennia BC range for this phase. The common pottery of this trench is a coarse red ware. A total of 380 potsherds were recovered from the exposed loci of this trench (Fig. 10, Table. 3). Although this phase is in the

following of Aliabad culture (Iblis IV), its ceramic tradition is completely different and is much closer to the ceramic pattern of the later urban phase of Shahdad. Apart from ceramics, various other finds were found from this trench mostly from surface layer. They include stone beads, a potsherd with potter's mark, a stone pendant, bronze fragments, a shell, pieces of stone vessels, bronze objects, and textiles.



Fig. 9: Deflation of Cultural deposits at Trench III, Tepe Dehno

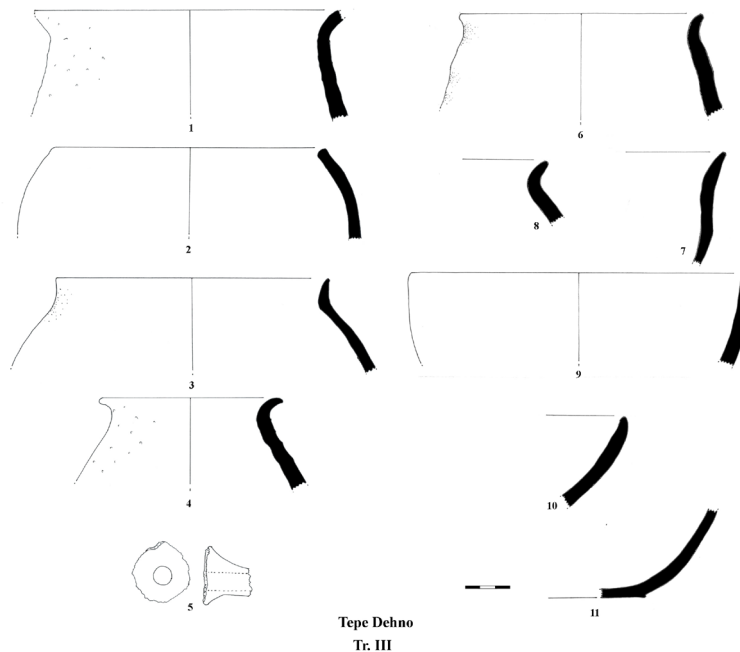


Fig. 10: A selection of the ceramics from Trench III, Tepe Dehno



Table 3: Tepe Dehno, Characteristic of the recovered ceramics from Trench III (Locus 3001 (1-5), Locus 3002 (6-13))

Pottery No.	Locus	Description						
		1. Type	2. Fabric Color (ext./int./core.)	3. Inclusions	4. Firing	5. Treatment	6. Decoration	7. Painting Color
1	3001	1. Medium/Coarse Red Ware	2.Red. Red. Red	3. Grit- Medium/Coarse	4. Well Fired	5. Slip		3100-2900
2	3001	1. Medium/Coarse Red Ware	2.Red. Red. Red	3. Grit- Medium/Coarse	4. Well Fired	5. Slip		3100-2900
3	3001	1. Medium/Coarse Red Ware	2.Red. Red. Red	3. Grit- Medium/Coarse	4. Well Fired	5. Slip		3100-2900
4	3001	1. Medium/Coarse Red Ware	2.Red. Red. Red	3. Grit- Medium/Coarse	4. Well Fired	5. Slip		3100-2900
5	3001	1. Medium/Coarse Red Ware	2.Red. Red. Red	3. Grit- Medium/Coarse	4. Well Fired	5. Slip		3100-2900
6	3002	1. Medium/Coarse Red Ware	2.Black. Black. Red	3. Grit- Medium/Coarse	4. Over Fired	5. Slip		3100-2900
7	3002	1. Medium/Coarse Red Ware	2.Red. Red. Red	3. Grit- Medium/Coarse	4. Well Fired	5. Slip		3100-2900
8	3002	1. Medium/Coarse Red Ware	2.Red. Red. Red	3. Grit- Medium/Coarse	4. Well Fired	5. Slip		3100-2900
9	3002	1. Medium/Coarse Red Ware	2.Red. Red. Red	3. Grit- Medium/Coarse	4. Well Fired	5. Slip		3100-2900
10	3002	1. Medium/Coarse Red Ware	2.Red. Red. Red	3. Grit- Medium/Coarse	4. Well Fired	5. Slip		3100-2900
11	3002	1. Medium/Coarse Red Ware	2.Red. Red. Red	3. Grit- Medium/Coarse	4. Well Fired	5. Slip		3100-2900

Trench IV and its Stratigraphy

Trench IV, with a size of 3 × 3 m, was opened on the eastern part of the site. From the surface ceramic evidence, this operation seemed to belong to the preceding Iblis IV (fourth millennium BC.) occupation. Two main aims determined the choice of the location: firstly, we were trying to reveal the earliest occupations of the site, earlier than Aliabad culture, which had not been reached in the other excavated trenches I-III. Secondly, we were hoping to expose a deeper accumulation of cultural deposits. Since this place was a depression surrounded by mounds, we thought this part of the site might have been protected from the extreme wind erosion. However, the cultural deposit was deeper than in other trenches, the depth of deposit was also less than one meter thick. In this trench, seven loci were

exposed within the sounding which are numbered from locus 4001 (surface) to locus 4007 (Fig. 11). None of the exposed deposits revealed any associated structural features and the main factors for distinguishing the loci was, as in the other cases, changes in the colour and texture of the deposits. A total of 139 potsherds were recovered from the exposed loci, that belong to an enigmatic period that can be placed during the last two centuries of the fifth millennium BC. (Fig. 12, Table. 4). This date came from two ¹⁴C dating samples from Loci 4002 and 4004. Besides ceramics, the other finds include lithic, small pottery wheel-like objects, worked potsherd, pieces of marble vessels, stone and metal beads and metal pin. The excavated deposits are described below and their stratigraphic relations are illustrated as well.



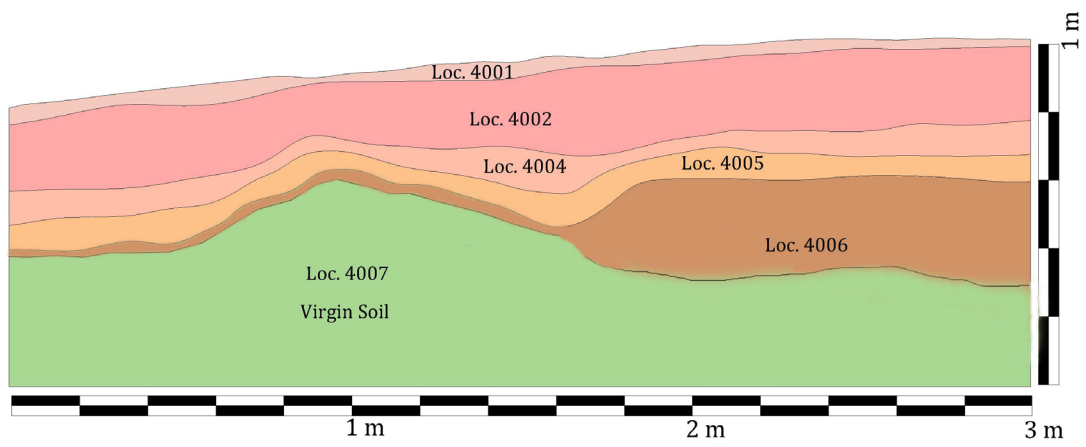


Fig. 11: Stratigraphy and the deflation of cultural deposits at Trench IV, Tepe Dehno

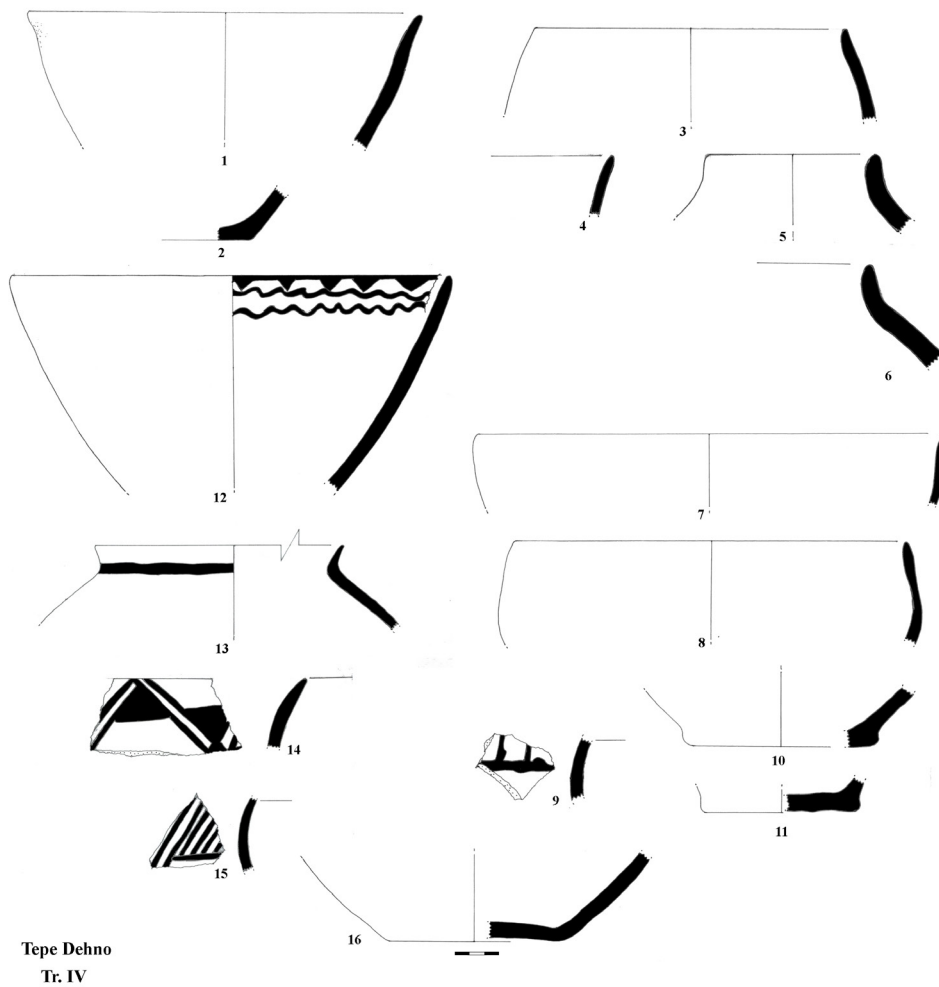


Fig. 12: A selection of the ceramics from Trench IV, Tepe Dehno



Table 4: *Tepe Dehno, characteristic of the recovered ceramics from Trench IV (Locus 4001 (1-2), Locus 4002 (3-6), Locus 4004 (7-11), Locus 4006 (11-16))*

Pottery No.	Locus	Description			Absolute Date BC.				
		1. Type	2. Fabric Color (ext./int./core.)	3. Inclusions		4. Firing	5. Treatment	6. Decoration	7. Painting Color
1	4001	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			4250-4000
2	4001	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			4250-4000
3	4002	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			4250-4000
4	4002	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			4250-4000
5	4002	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			4250-4000
6	4002	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			4250-4000
7	4004	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			4250-4000
8	4004	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			4250-4000
9	4004	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Outside: Black	4250-4000
10	4004	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			4250-4000
11	4004	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			4250-4000
12	4006	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Inside: Red	4250-4000
13	4006	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Outside: Black	4250-4000
14	4006	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Outside: Brownish Red	4250-4000
15	4006	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip	6. Painting	7. Outside: Brownish Red	4250-4000
16	4006	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit- Medium	4. Well Fired	5. Slip			4250-4000

Tepe East Dehno and its Environs

Tepe East Dehno is a prehistoric site located 700m east of the site of Tepe Dehno. It lies 3 km northeast of the cemetery A at Shahdad. It is a multiple period site that was occupied as early as the 5th and continued to be occupied into the 3rd millennium BC. Tepe East Dehno is about 4.5 ha in extent (250 × 180 square metres) and it rises 8 m above the level of the surrounding land (Fig. 13). The site was already recorded as unit 02 in the 1977 visit of Italian mission (Salvatori and Vidale 1997). From a geomorphological point of view, the site was formed on a Kalut/natural hill on the base of the alluvial fan of Shahdad, where all the prehistoric sites of Shahdad plain have been founded on a geological platform that seems to

be a geological part of the Lut, separated from it because of tectonic activities in the past. Since we could not reach the earliest periods of Shahdad area through our excavations at Tepe Dehno, we selected the site of East Dehno for small scale excavations in order to fulfil this purpose. In fact, to address the primary goals of the excavation project, only one stratigraphic 3×3 m trench was opened in this small mound, which, according to surface finds, appeared to preserve in situ the fifth millennium BC. occupation. The trench was located in the west slope of the site and was labelled trench I. There is one phase of fifth millennium BC. occupation attested at East Tepe Dehno; the cultural deposit is approximately 40 cm deep and it does not show any preserved architectural remains. Of course, the excavations gave us precise information about



the chronological relationship between the straw-tempered coarse ware (Iblis 0) and fine painted ware (Iblis I) that are known from Shahdad. The strong stylistic and typological parallels between Iblis I materials from Shahdad and Bardsir valley suggest that in the 5th millennium BC these two regions were closely linked culturally and it is highly probable that the ceramic parallels reflect a parallel development within the entire region. Two ¹⁴C radiocarbon dates from this trench indicate that the occupation of Tepe Dehno falls into the first half of the fifth millennium BCE.

potsherds were recovered from the exposed loci of the trench. The pottery of the trench can be classified into three main groups including fine red ware, fine buff ware and straw-tempered coarse ware (Fig. 15, Table. 5); the last two groups were already known through excavations at Tal-i Iblis (Caldwell 1967) and Tepe Yahya (Lamberg-Karlovsky 1970, Lamberg-Karlovsky and Beale 1986). Similar to the results from Tepe Dehno, excavations at this trench also proved the extreme deflation of cultural deposits in the Shahdad area. Furthermore, it also confirmed that the prehistoric sites of Shahdad plain



Fig. 13: General view of Tepe East Dehno

Trench I and its Stratigraphy

The single trench excavated at Tepe East Dehno was a 3 × 3 meter square in the west slope part of site. The main aim in choosing this area was to possibly identify the fifth millennium occupation of the site. Surface ceramic evidence and the high density of lithic (mostly core and blade) suggested that this part of the site preserved the early fifth millennium BC. occupation, that was instead absent at Tepe Dehno. This trench was excavated to a depth of approximately 45 cm and included approximately 35 cm depth of cultural deposit (Fig. 14). In this trench, five loci were exposed, that are numbered locus 1001 for the uppermost to locus 1005 for the lowest. No architectural remains were discovered and as at Tepe East Dehno, the main factors for distinguishing the loci were changes in the color and texture of the deposits. A total of 48

were founded on the top of Kaluts, in other words in response to environmental impact the sites are hill-top settlements rather than *Tell* sites.

The absolute chronology of Tepe Dehno and Tepe East Dehno

The excavations of Tepe Dehno and Eastern Dehno revealed a cultural sequence from the early 5th millennium BC to the beginning of the 3rd millennium BC. The presented dates are based on the results of carbon 14 dating on 10 samples of charcoal found from 5 trenches of Tepe Dehno and eastern Dehno. All the radiocarbon samples were dated using Accelerator Mass Spectrometry (AMS). There are 2 absolute dating samples from each trench. Except for one dating sample which was examined at the University of Belfast in



Ireland, all samples were analysed at the University of Lyon in France. The excavation of East Dehno led to the identification of Iblis culture (Iblis I), which according to carbon 14 dating of 2 samples, dates back to the 2nd quarter of the 5th millennium (4700-4500 BCE). These 2 charcoal samples were

examined in 2 different laboratories and they both revealed the same result (Figs. 16-17). One sample was analysed at the University of Lyon in France and another sample at the University of Belfast in Ireland.

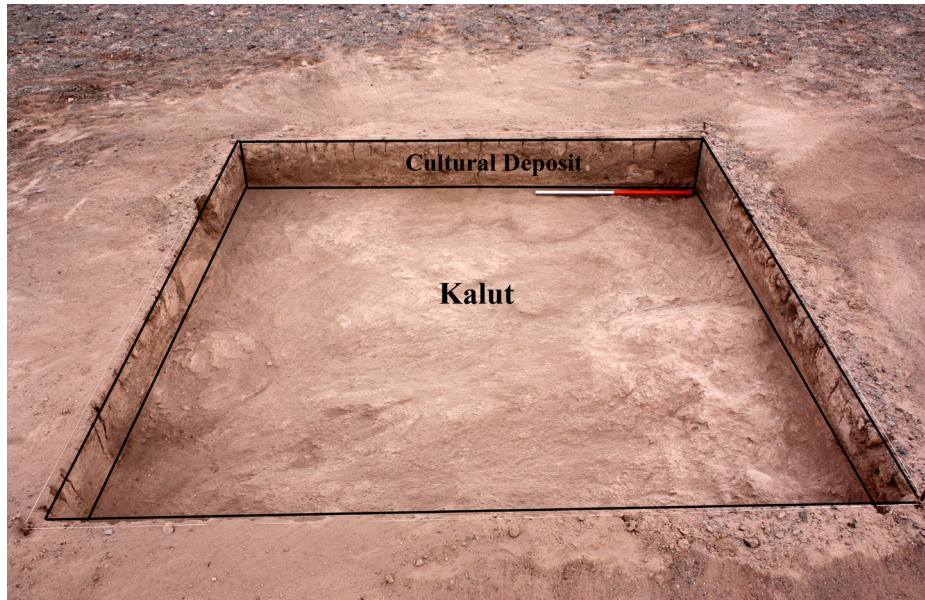


Fig. 14: Deflation of Cultural deposits at Trench I, Tepe East Dehno

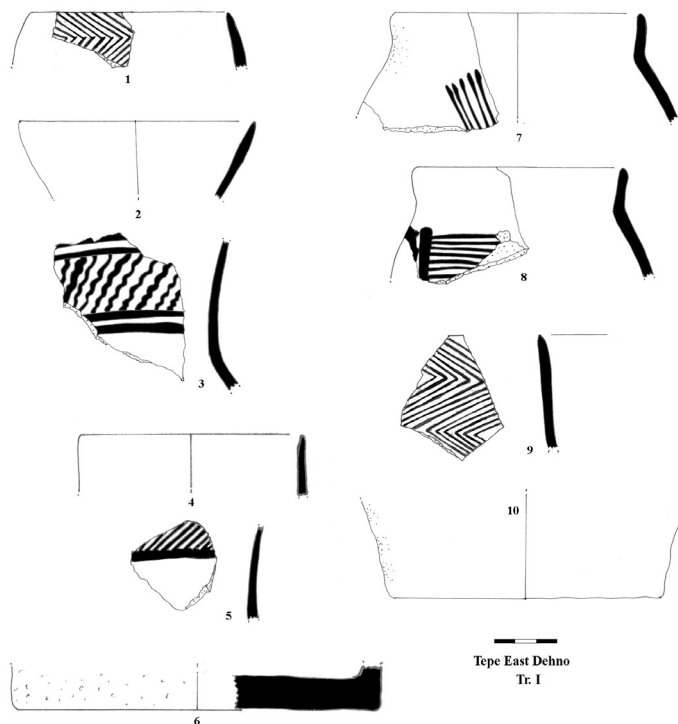


Fig. 15: A selection of the ceramics from Trench I, Tepe East Dehno



Table 5: Tepe East Dehno, characteristic of the recovered ceramics from Trench I (Locus 1001 (1-3), Locus 1002 (4-6), Locus 1003 (7-10))

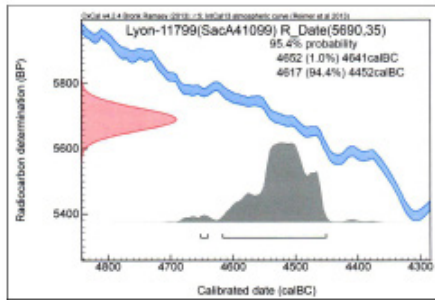
Pottery No.	Locus	Description			Absolute Date BC.
		1. Type Inclusions	2. Fabric	3. Color (ext./int./core.)	
1	1001	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit-Medium	4700-4500
2	1001	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit-Medium	
3	1001	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit-Medium	
4	1002	1. Fine Buff Ware	2. Buff. Buff. Buff	3. Grit-Medium	4700-4500
5	1002	1. Fine Red Ware	2. Red. Red. Red	3. Grit-Medium	
6	1002	1. Coarse Brown Ware	2. Brown. Brown. Brown	3. Grit- Coarse & Chaff	4700-4500
7	1003	1. Fine Red Ware	2. Red. Red. Red	3. Grit-Medium	
8	1003	1. Fine Red Ware	2. Red. Red. Red	3. Grit-Medium	
9	1003	1. Fine Red Ware	2. Red. Red. Red	3. Grit-Medium	4700-4500
10	1003	1. Coarse Brown Ware	2. Brown. Brown. Brown	3. Grit- Coarse & Chaff	

In term of occupational sequence, excavation at Tepe Dehno established three main occupation periods so far which they are labeled from the oldest to the youngest Dehno I-III. These periods were distinguished based on the ceramic evidence and absolute dates. Dehno I period as the earliest occupation corresponds to the late fifth millennium BC. (4250-4000 BC.) was identified in trench IV (Figs. 18-19). The second period was documented through excavations at trenches I (Figs. 20-21) & II (Figs. 22-23); Dehno II period is related to the mid to the late fourth millennium BC. (3700-3300 BC.), known as Aliabad (Iblis IV) culture. Dehno

III period (3200-2900/2800 BC.) is a hitherto unknown period highlighted by 2 charcoal samples from Trench III (Figs. 24-25).

These absolute dates are of great value in interpreting the material record from Tepe Dehno and Tepe East Dehno. Recent excavations at these two sites in Shahdad area have revealed new information which has made us to question the chronology of the 5th millennium and finally to establish an updated chronological table of the region. It also brought to light data to present a revised chronology for the old chronological table of Southeast Iran.





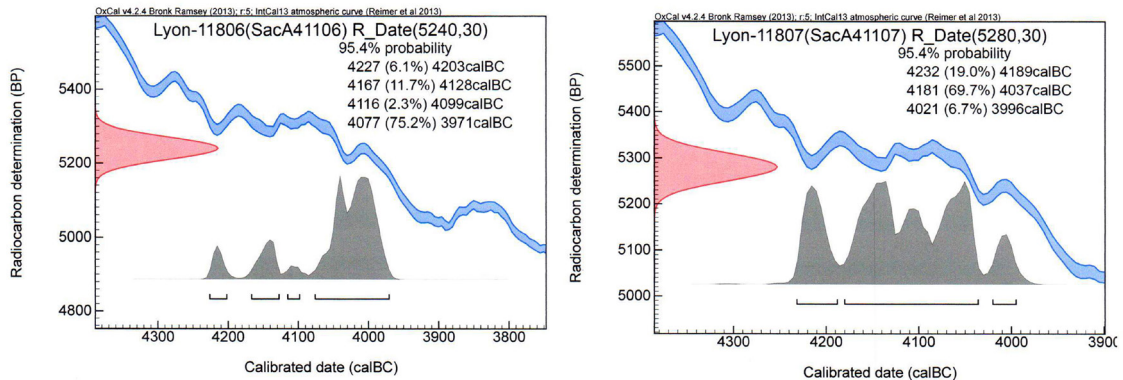
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TDN Tr I L
UBA-22828
Radiocarbon Age BP 5753 +/- 34
Calibration data set: intcal09.14c
% area enclosed      cal AD age ranges      # Reimer et al. 2009
                                     relative area under
                                     probability distribution

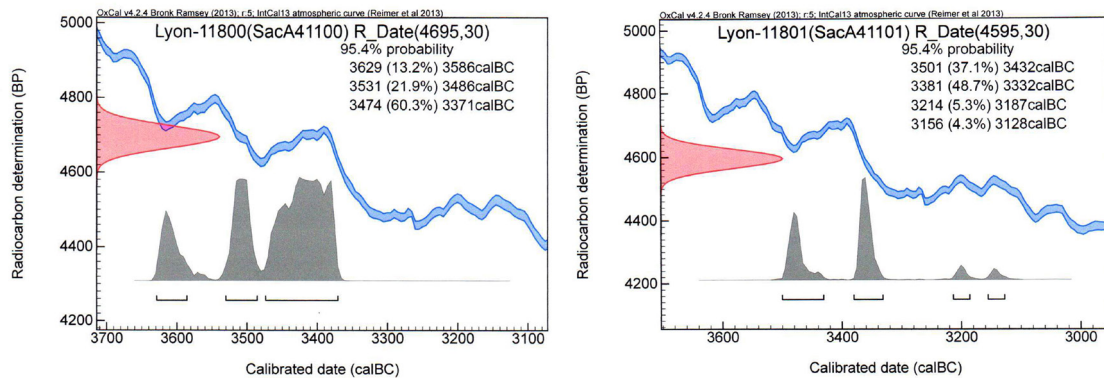
68.3 (1 sigma)      cal BC 4678- 4674      0.032
                   4670- 4658      0.091
                   4655- 4637      0.152
                   4618- 4547      0.724
95.4 (2 sigma)      cal BC 4701- 4700      0.001
                   4694- 4515      0.991
                   4509- 4504      0.007

References for calibration datasets:
PJ Reimer, MGL Baillie, E Bard, A Bayliss, JW Beck, PG Blackwell,
C Bronk Ramsey, CE Buck, GS Burr, RL Edwards, M Friedrich, FM Grootes,
TP Guilderson, I Hajdas, TJ Heaton, AG Hogg, KA Hughen, KF Kaiser, B Kromer,
FG McCormac, SW Manning, RW Reimer, DA Richards, JR Southon, S Talamo,
CSM Turney, J van der Plicht, CE Weyhenmeyer (2009) Radiocarbon 51:1111-1150.
    
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Figs. 16&17: The result of ¹⁴C dating analysis from East Dehno showing the second quarter of 5th Mil. BCE

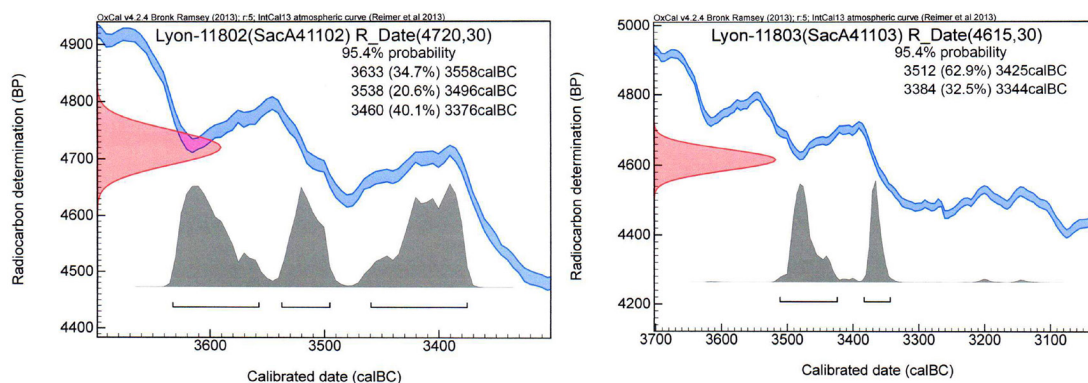


Figs. 18&19: The result of ¹⁴C dates from Trench IV, Tepe Dehno, Locus 4002 (left) and Locus 4004 (right)

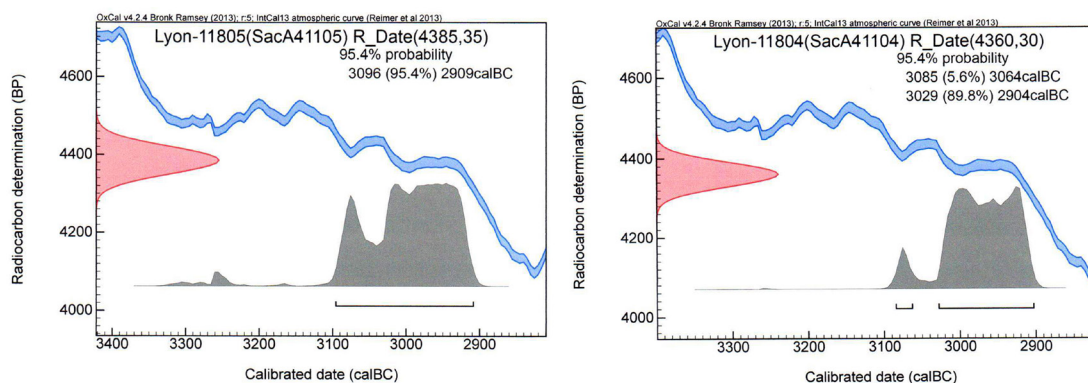


Figs. 20&21: The result of ¹⁴C dates from Trench I, Tepe Dehno, Locus 1006 (left) and Locus 1007 (right)





Figs 22&23: The result of ^{14}C dates from Trench II, Tepe Dehno, Locus 2002 (left) and Locus 2003 (right)



Figs 24&25: The result of ^{14}C dates from Trench III, Tepe Dehno, Locus 3002

Concluding Remarks

Based on the results of the first season of excavations at Tepe Dehno and East Dehno of Shahdad, it was determined that they possessed cultural material from Chalcolithic period and Early Bronze Age.

The fieldwork agenda provides a stratified occupational ceramic sequence for the prehistory of Shahdad area. On the basis of the stratified remains exposed in the four soundings, it appears that Tepe Dehno was occupied from the late fifth to the early third millennium BC. Excavations in trenches I and II brought to light valuable information on Aliabad culture that based on four ^{14}C dating dated back to mid to late fourth millennium BC. It is the time that the Dehno reached to its largest extent over 15 hectares. In fact, the site of Tepe Dehno provided an almost unique opportunity to investigate a large Aliabad/Iblis IV town. It can tell us about the broader Aliabad culture. Trench III was

excavated at the western part of Tepe Dehno where it has settled a small occupation (c. 3 ha) related to Early Bronze Age I. Excavations at this trench revealed an important, enigmatic and hitherto unknown phase of Shahdad plain which based on two ^{14}C radiocarbon dates falls in the late fourth and the early third millennium BCE (3200-2900 BC). The Aliabad (Iblis IV) culture in Tepe Dehno was replaced by this previously unrecognized phase at the end of the fourth millennium BC, which has presented completely different ceramic assemblage. Excavation in trench IV revealed the earliest occupation of Tepe Dehno related to the late fifth millennium BC. Excavations in all operations across the Tepe Dehno showed that this hill-top settlement rarely were preserved more than half a meter deep of cultural deposit. Moreover, it brought to light that the architectural features probably were not preserved due to taphonomic processes. However, more discoveries are required to confirm this hypothesis.



In term of occupational sequence, the first season of excavation at Tepe Dehno established three main occupation periods, so far labelled Dehno I-III from the oldest to the youngest one. These periods were distinguished based on ceramic evidence and absolute dates. Dehno I period as the earliest occupation corresponds to the late fifth millennium (4250-4000 BC.) and was identified in trench IV. The second period was documented through excavations at trenches I & II; Dehno II period is related to the mid to the late fourth millennium (3700-3300 BC.), known as Aliabad (Iblis IV) culture. Dehno III period (3200-2900 BC) is a hitherto unknown period. The most interesting discovery was the fact that this period was directly preceded by Aliabad culture. Although excavations at Tepe Dehno determined a sequence of occupation from the late fifth to the early third millennia BC, it did not produce the earliest period (early-mid 5th millennium BC.) known in the district. Hence, Tepe East Dehno was excavated in order to reveal these earliest periods of the region. The limited excavation at this site identified the earliest periods in Shahdad plain, known as Iblis I culture, that according two ¹⁴C radiocarbon dates, falls it in the first half of the fifth millennium BC.

Excavations at Tepe East Dehno also confirmed the fact that the sites in the region are typically hill-top settlements that have cultural deposits less than half a meter thick. Excavations at Tepe Dehno and East Dehno brought to light the fact that the prehistoric settlements in Shahdad plain which all are founded on a fan have been highly affected by the Shahdad fan environment. Indeed, the natural landscape caused the formation of hill-top settlement rather than Tell site in this part of the Iranian plateau. Moreover, it showed that the prehistoric settlements have a pattern of horizontal rather than vertical growth. Without doubt environmental features caused the ancient inhabitants to move settlement rather than to build on top of earlier occupation.

In term of cultural landscape' condition, the prehistoric sites of Shahdad plain are in danger because of the highly extreme wind erosion. In this case, 1970s and 1990s excavations at site of Shahdad and my recent excavations showed that prehistoric cultural deposits are less than 1m thick.

I assume that extreme wind erosion must be one of the main reasons why there is such deflation of the cultural deposits. Although, here the sites have a horizontal growth but it may not be that there was no depositional build-up over time, but rather that there was constant deflation leaving deposits less than 1 m thick.

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