

PHASING THE EASTERN COMPLEX AT WĀDĪ RAMM

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The Wadi Ramm Recovery Project¹ (henceforth WRRP) conducted two three-week field

1. The Wadi Ramm Recovery Project was licensed by the Department of Antiquities of the Hashemite Kingdom of Jordan and accredited by the American Schools of Oriental Research's Committee on Archaeological Policy. The first field season took place from 2 to 23 August 1996. The second season took place from 27 June to 18 July 1997. Project directors were Dennine Dudley and M. Barbara Reeves, both then of the University of Victoria. Luay Mhamadih served as Department of Antiquities representative and draughtsman in both seasons. Vicky Karas served as excavator and assistant in 1997. Khairieh 'Amr analyzed the 1996 ceramics; Sarah Wenner analyzed the 1997 ceramics following preliminary examinations by John Oleson and Andi Shelton. Megan Perry provided an osteological report on the human skull. Luay Mhamadih, Dennine Dudley, M. Barbara Reeves, Sean Fraser, and Michael Huston contributed to the creation of the top plan. This process was facilitated by a surveyed point map created by IFAPO prior to the 1996 season to locate the corners of exposed archaeological remains across Ramm's bay. The 1996 season of the project ran simultaneously with Laurent Tholbecq's investigation of Ramm's Nabataean temple and Western Complex allowing our teams to share resources (Tholbecq 1998). Funding for the WRRP was provided by the University of Victoria Alumni Association (1996, 1997), an American Schools of Oriental Research EBR CAP Grant (1997), the Joukowsky Family Foundation (1997), the Archaeological Society of British Columbia (1996), and the donations of many generous individuals. Barbara Reeves was awarded a Von Rudloff Travel Scholarship and a Graduate Student Travel Grant in 1996 from the University of Victoria and an ASOR Endowment for Biblical Research Travel Grant in 1997. Vicky Karas was awarded a Von Rudloff Travel Scholarship in 1997. We are grateful to Dr. Ghasi Bisheh and the Department of Antiquities for providing salaries for the workmen and supplying a truck for the transportation of finds at the end of the 1996 season. We are also grateful to Drs. Pierre and Patricia Bikai and all the staff at ACOR and also to Dr. John P. Oleson (University of Victoria) for their assistance and to Khairieh 'Amr for suggesting the study of this site.

seasons in the summers of 1996 and 1997 at the Eastern Complex on the sandy hill / alluvial fan abutting the face of Jibāl Ramm, in the bay west of the modern village within Wādī Ramm. The Nabataeans referred to this area as Iram (Savignac and Horsfield 1935: 265-269); the Romans as Aramaua (Ptolemy *Geog* 6.7.27; Graf 1983: 655). The WRRP has previously published a preliminary report on the first season of work (Dudley and Reeves 1997), overviews of the complex (Dudley and Reeves 2007, 2013), and a report on the ceramic building materials (Reeves and Harvey 2016). The final publication is currently underway. The purpose of this paper is to share some interim thoughts about the Eastern Complex's phasing and character.

The Eastern Complex, along with the Nabataean Temple and Western Complex behind it, had been cleared out by the Department of Antiquities in the early 1960s but the records of that work have been lost, except for a few photographs in the Amman office (**Fig. 1**) and some objects deposited in the 'Aqaba Museum (*e.g.* inscriptions: Sartre 1993: 180-181, nos. 147, 148; *tubulus*: Reeves and Harvey 2016: 453). In 1995 Khairieh 'Amr of the Jordanian Department of Antiquities suggested that Dudley and Reeves, two graduate students involved in archaeological work at Al Humaymah, study the ruins of what seemed to be a Nabataean house and bathhouse on the eastern end of the Ramm hill (**Fig. 2**). Thus began the two seasons of the WRRP, with goals to document and analyze the extant ruins, excavate some probes to assist in phasing the complex, and clean up the site prior to planned consolidation by the Department of Antiquities.

Nature of the Eastern Complex

Although our pre-excavation expectations (based on earlier reports) were to find the ruins of a house and bathhouse, it quickly became apparent that all of the ruins at the eastern end of the hill formed part of a single large structure, which we rebranded as the Eastern Complex. It was further apparent that construction details including large quarried blocks, painted wall plaster, column drums, and an internal bathing suite were indicative of an elite structure. The building's placement at the front (*i.e.* eastern end) of the projecting hill is also consistent with Nabataean and contemporary elite structures situated on natural heights which allowed them to both overlook the surrounding landscape and to be seen as a dominating aspect of it (*e.g.* Petra: Kolb 2003; Schmid *et al.* 2012; Al Baydā: Bikai *et al.* 2007; Judaea: Gleason 2014: 82-83, 86).

As the primary goal of our limited project was to document the parts of the structure cleared out in the 1960s, the Complex's plan is still only partially known (**Fig. 3**). What is apparent is that the structure consists of more than 28 rooms grouped in four main suites around a central courtyard (Room G) with corridors and doors controlling access to different areas. Western Rooms A-E and Corridor Θ are hypothesized to have served a private, perhaps domestic, purpose, while northern Rooms H, I, and J with open and easy access into Room G, appear to have had a more public function. Eastern Rooms L, M, N, O, Q, R, W and X are identifiable as part of a bathing suite. Courtyard P is accessible from Room G but has no clear role. Southern Rooms F, K, U, V, and T also served an undetermined function. Given that the hill (currently) falls off to the north and east of the Complex, that the entrance to the bay from Wādī Ramm was to the southeast, and that the village was to the southwest, the entrance to the Complex was probably on its south side.

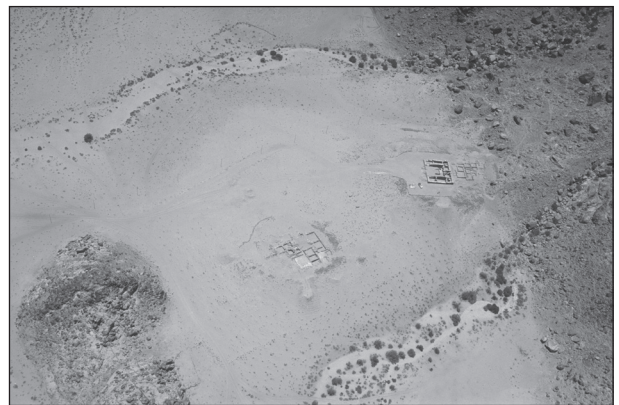
Fieldwork Overview

During the 1996 season most of the ruins exposed during the 1960s excavation were sufficiently cleared of debris (including 1995 earthquake collapse, **Fig. 4**) to allow most of the previously exposed walls and features to be drawn, described, and photographed. In some

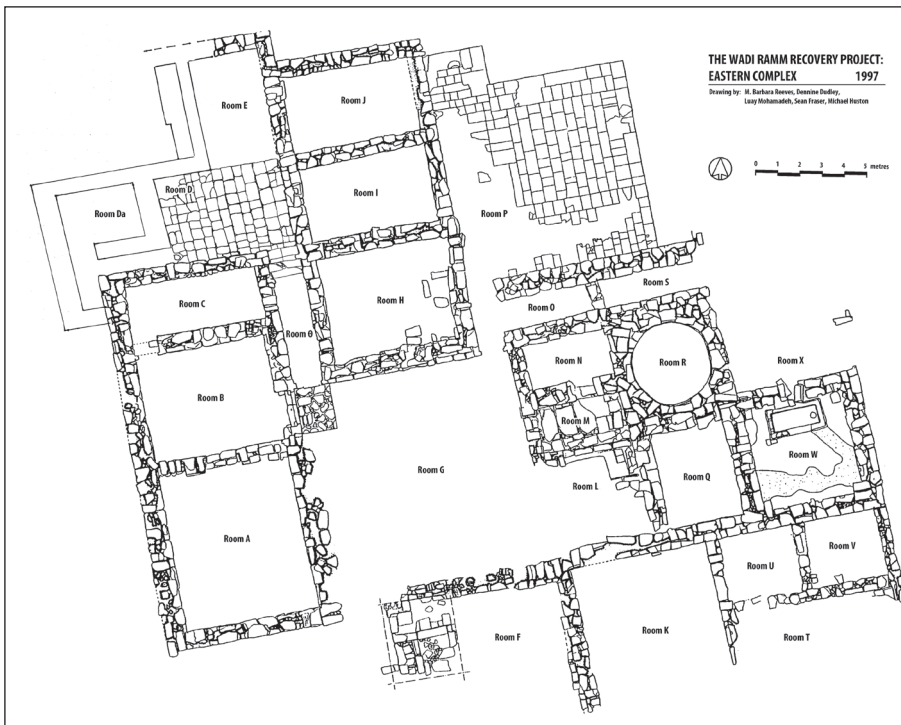
cases we removed soil to ascertain the nature of the flooring (*e.g.* in Rooms G and W); the fill was then replaced for protective purposes. In 1997 the cleared flagstones in the northern courtyards and Room M were deliberately left uncovered to assist in the upcoming consolidation. Probes were also undertaken to investigate the hypocaust in Room W, the floor in Room R, and the intersection of Courtyard G, Room B, and Corridor Θ. Also in 1997, additional probes were carried out beneath the floor of Room Q, across the east side of Rooms M and L, inside the north end of Corridor Θ, and in the deep fill south of Room G where the entrance to the building had been hypothesized. As most of these probed areas had not been cleared out in



1. 1960s clearance of Nabataean Temple and Western Complex (foreground) and Eastern Complex (left rear). (Courtesy of the Department of Antiquities of Jordan, A187).



2. Hill at base of Jebel Ramm with the Eastern Complex (center), Temple and Western Complex (right), and cemetery between. The bottom of the hill's north and south slopes are demarcated by run-off wadis. Photo from 1998, following the WRRP's second season and before consolidation of the Eastern Complex. (APAAME_19980520_RHB-0089. Photograph by Robert Bewley, courtesy of APAAME).



3. Plan of the Eastern Complex. (WRRP 1997).

the 1960s, a major goal was to obtain information that could help in phasing the complex. Finally, work was also carried out in 1997 to define more of the architecture in the northwest corner of the building (Rooms D and E).

Information for Phasing

Information pertinent to phasing the Eastern Complex comes from the physical remains of the structure, the objects found within, and the local and regional context. Analysis of the pottery sherds provided a very general sense of ancient human activity within the Complex. In both 1996 and 1997 sherds ranging in date from the first century AD to fifth century AD were found in rooms throughout the structure. In addition, some possible sixth and seventh century sherds were found in the fill over Courtyard P, a possible Iron Age sherd (a clear outlier) was found in the fill of Room E, and a late first century BC or early first century AD sherd was found in a probe beneath the hypocaust's plaster floor in Room W.

Based on the ceramics, it is likely that this elite structure was constructed in the Nabataean period and then utilized in some fashion during the Roman and Byzantine periods. A Nabataean period build is supported by the construction methods. The walls of the structure were constructed from large quarried ashlar blocks

etched with the typical Nabataean diagonal dressing (Fig. 5). On some wall faces these blocks were tightly fit together; elsewhere chinking stones were used between the blocks. This combination of these two methods of facing within the same structure matches the construction style of first century AD Nabataean structures at Hawara (modern Al Humaymah), the largest settlement in the northern Hisma (Reeves *et al.* 2017: 108-111).

Another important element to dating the building's construction is the use of sandstone *pilae* to support the hanging plaster floor in Room W's hypocaust (Fig. 6). Sandstone does not withstand the heat of a furnace well and thus its use for *pilae* seems to have been restricted to



4. Room Q and corridor to Room R filled with tumbled blocks prior to the WRRP's 1996 cleaning. (WRRP).



5. Room R wall with quarried Nabataean dressed blocks and extant wall plaster. (WRRP).



6. Room W hypocaust with stone pilae, stone pilae-covering slabs, flue vent, and plaster layers of hanging floor. (WRRP).

early hypocausts (Nielsen 1990: I.14). Indeed, already by the late first century BC, the Roman architect Vitruvius included only the use of fired bricks when describing hypocaust construction (*De Arch* 5.10.2). The best regional parallels for sandstone *pilae* come from the baths in Judaea built by Herod the Great, many of which were built between 35 and 15 BC (Netzer 1999). The public bathhouse at Ramat Hanadiv near Caesarea also employed carved sandstone *pilae* and was also constructed in the late first century BC (Hirschfeld 1995: 39-42). Based on these parallels and the fact that Nabataean elites probably knew about these luxurious structures in the neighboring country, a date for the construction of Iram's bathing suite in or soon after the late first century BC is probable. In further support of this date, the stone *pilae* and *pilae*-covering slabs in the hypocaust do not conform to the specific measurements detailed by Vitruvius (*De Arch* 5.10.2), suggesting that this bathing suite may predate his handbook on architecture (or at least the introduction of his ideas to Nabataea).

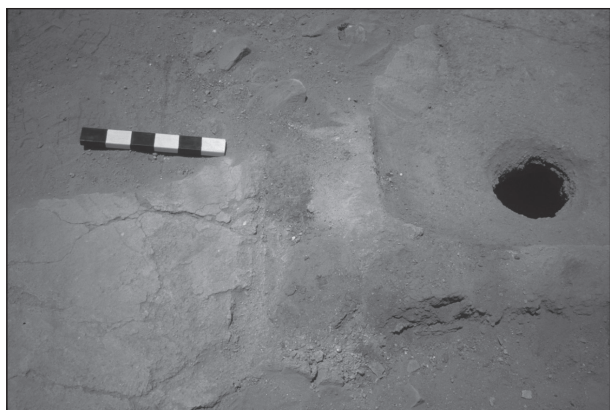
The standards recommended by Vitruvius can, however, be seen in the ceramic building materials (small rectangular bricks, circular *bessales*, *tubuli*, and pipes) found in the fill of Room W (the *calidarium*) and other rooms in the complex. Circular *bessales* and other bricks also remained *in situ* in the rim of the *calidarium*'s basin (Fig. 7) and in a posited repair to a wall in Room M. The dimensions of these ceramic building materials conform to fractions of the Roman foot (Reeves and Harvey 2016: 463, 467) demonstrating knowledge of Roman building standards at the workshops that produced them and shipped them to this site. The fact that good parallels for the fabric and dimensions of the small rectangular bricks and *tubuli* from this complex have been found in a first century AD Nabataean bath in Wādī Mūsā indicates that the ones at Wādī Ramm are likely of Nabataean date (Reeves and Harvey 2016: 463, 467, 470). The *tubuli* must have lined the walls of Room W, as it is the only room in the Eastern Complex found to have been heated by a hypocaust. Bricks were used in Room W's basin, and others were possibly used in the furnace (Room X?). The locations of these ceramic building materials could assist in phasing this complex, but whether some ceramic building materials were used together with the stone hypocaust elements in the original construction of the bathing suite, or whether some or all were added in a later renovation is currently unknown.

The previous evidence all supports the Eastern Complex's construction as a Nabataean elite structure in or by the first century AD. A late first century AD date would make it contemporary with the nearby Rabbel II monument at 'Ayn Ash SHallālah (Savignac 1933: 407-11; 1934: 581-582) and the posited expansion of Iram's temple (Tholbecq 1998: 245-247). A late first century BC to early first century AD date would make it contemporary with the first major phase of Iram's temple (Tholbecq 1998: 243-244, 246). Either of those periods, when there was major construction undertaken in Wādī Ramm, likely under the patronage of a Nabataean king, would be a logical time for a Nabataean elite to take up residence in a prominent location near both the Temple of Allat and the sanctuary at 'Ayn Ash Shallalih.

Probes Beneath Floors

In an attempt to narrow down the building's construction date, three probes were excavated beneath floors in the bathing suite. These probes explored beneath sections of extant floors in Rooms W and Q and beneath the robbed out floor in Room R.

Room W. Room W was the bath's *calidarium* (hot room). It is a square room with square projections in each corner for springing a dome, a large immersion basin on its north side, grooves for flue pipes in its south, east, and north walls, and a (later blocked) door to Room Q (Fig. 8). The walls are made of large quarried blocks with a mortared rubble fill; the rim of the basin is made of a combination of flat cobbles, circular *bessales*, and rectangular or square bricks laid in grey mortar with a facing of grey plaster covered in orange hydraulic plaster (see Fig. 7). The hole in the basin's east end, possibly for drainage, is 0.20m in diameter.



7. Southeast corner of the *calidarium*'s basin showing circular *bessales* used in its rim, grey and orange plaster on the floor and the basin's interior, and the circular hole. (WRRP).



8. Room W (*calidarium*) facing north. Note remnants of the plaster floor and immersion basin, and the square projections in the corners of room. (WRRP).

In 1996 a 0.10m thick fill still remained over the surface of Room W, consisting of sandy light brown soil containing loose blocks and cobbles, fragments of orange and grey floor plaster, mortar, and white wall plaster, hundreds of fragments of *tubuli* and a few brick fragments, and some twentieth century items. Removal of this fill revealed remnants of a plaster floor. It was decided to sink a probe through the floor in the southeast corner of the room in order to document the construction of the floor and the hypocaust beneath, and to look for datable materials. This revealed that the *calidarium*'s (hanging) plaster floor was 0.17m thick and had been laid in six layers. The top layer is orange hydraulic plaster. Beneath this are two layers of light grey plaster with carbon and lime inclusions, another layer of orange plaster with crushed pottery inclusions and thin layer of crushed pottery beneath, then another layer of grey plaster and finally a layer of sandy brown mortar or mud plaster. Below this was a 0.19m thick layer of irregular cobbles set in light grey mortar (Fig. 9). The two different surfaces of orange hydraulic plaster (which should be the upper surface of the floor) suggest an original construction phase and a subsequent renovation phase. Between the hanging plaster floor and the wall was a space of 0.10-0.12m, extending down to the *pilae*-covering slabs, to allow *tubuli* to be attached to the wall. Below the hanging floor, the *pilae*-covering slabs consisted of large flat irregularly-sized sandstone slabs *ca.* 0.14m thick. These stone slabs rested on sandstone hypocaust *pilae* (See Fig. 6) with capitals consisting of either a single rectangular block or a two-block stepped capital with Nabataean dressing. The *pilae* are at least 0.78m high but their bottoms and the subfloor beneath could not be reached from the top of the probe. Two layers of fill were discovered around the *pilae*. The top layer (0.79m thick) seems to consist of the same sandy light brown soil as found above the floor and in the space between the end of the hanging plaster floor and the wall. It contained broken *tubuli* fragments and a single small pottery sherd, dating to the late first century BC to early first century AD, which probably leaked beneath the floor with the soil, through the gap left by the broken *tubuli*. This early sherd is thus out of its original context and cannot be

used to date the operation of this hypocaust. Unfortunately, the ash layer below this soil fill, which accumulated during the hypocaust's operation, produced no finds.

Room Q. Room Q is a rectangular room linked by doors to Rooms R, W, and L. Given its placement in the bathing circuit between the *calidarium* (Room W) and the *frigidarium* (Room M) and the lack of furnace grooves in its walls, it was hypothesized that Room Q might have functioned as a semi-heated *tepidarium* or sweat room. To investigate whether or not it contained a hypocaust and to search for any evidence of the room's phasing, a 1.50m wide probe was begun along the room's southern wall in 1997 (Fig. 10). After digging through four layers of soil fill, a mortared cobble layer suggestive of a damaged floor surface was encountered. To investigate this surface and anything beneath, a 1.50×1.40m sub-probe was excavated in the southeast corner of the room (Fig. 11).

These probes revealed that the room had been constructed on top of sterile coarse orange

sand (at least 0.18m thick). On top of this sand was a 0.40m thick mixture of sandy light brown soil full of pebbles and cobbles which seems to have formed a packing for two thick large sandstone slabs, resembling the slabs over the hypocaust in Room W (Fig. 11). These slabs possibly formed part of a floor which was later robbed out. Two parallel blocks fell, or were set, 0.15m apart on top of these slabs. Between, around, and over these two parallel blocks was light brown soil containing fragments of orange hydraulic plaster with one smoothed face, the original context of which is unknown. Pottery sherds found in this soil do not date later than the first or early second century AD. Above this soil layer was a ca. 0.12m thick layer of irregularly shaped and tightly packed cobbles set in grey mortar with some flat cobbles on top. As the upper surface was very patchy, it is not clear whether this layer is indicative of a cobble floor or simply a mortared cobble foundation. None of the 10 diagnostic pottery sherds found in the mortared cobbles could be dated later than the early second century. The fill over this



9. Cobble layer beneath plaster layers in Room W's hanging floor. (WRRP).



10. Probe along south wall of Room Q with cobble concentration and flat stones. (WRRP).

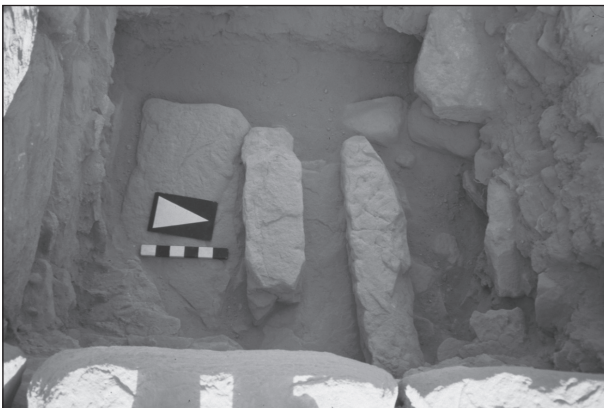
feature constituted four layers of soil (0.34m thick) containing displaced third to mid-fourth century AD pottery sherds and some bone fragments. There was also a high concentration of wall plaster, some of which was found in broken sheets suggesting it had fallen directly from the walls. This plaster had either white or grey faces and in some cases, there was white-faced layer from a renovation overlying an earlier grey-faced layer, hypothesized to be soot accumulation.

The stratigraphy from these probes suggests a sequence of construction, damage, and rebuilding. In the earliest phase, corresponding to the construction of the Eastern Complex's bathing suite, a floor of stone slabs set in a foundation of soil, cobbles, and pebbles was laid over sterile orange sand. First to early second century AD pottery sherds, orange hydraulic plaster fragments, and stone blocks subsequently were dumped or fell onto this floor and other floor blocks were removed. This damage might be associated with an earthquake or disruption around the time of the Roman annexation (*cf.* Parker 2009; Reeves *et al.* 2017: 108-111, 139). This damage was followed by a renovation in which a foundation level of cobbles (and early second century pottery sherds) set in grey mortar was laid over the previous debris. Based on the pottery sherds this renovation dates to a late Nabataean or Roman phase in the Eastern Complex's use. The floor over this cobble foundation was later robbed out. After that layers of soil, third to mid-fourth century AD pottery sherds, bone fragments, and fallen wall plaster filled the abandoned room, but it is impossible to know to what extent the

fill present in 1997 accumulated before or after the 1960s clearance. These probes revealed that this bathing room had not contained a hypocaust. It is, however, possible that this room could have functioned as a *tepidarium*, if the soot staining on early phase wall plaster was due to a brazier located inside the room.

Room R. Room R is a circular room situated in the bathing circuit between Rooms N (the *apodyterium*) and Q. Its internal walls are constructed from large tightly fitting blocks with a concave interior face and diagonal Nabataean dressing (see **Figs. 5 and 12**). The blocks were laid in level courses over a circular rim which extends 0.05m towards the center of the room. The rim-stones at the base of the wall also serve as part of the flooring in the corridors linking Rooms N and Q, indicating cohesiveness in plan and construction. This design feature and the presence of a disturbed convex-sided flagstone in the fill of Room R led us to hypothesize that this room once had a flagstone floor at the level of the rim. This theory was later confirmed by a local man who had worked on the 1960s clearance. In an informal interview in 1997, he noted that the flagstone floor had been extant at the time of the earlier excavation and that the 1960s team had lifted a flagstone. Subsequent looting presumably resulted in the removal of the remaining stones.

In order to determine what remained beneath the robbed-out flagstones, a small probe (1.20×0.75m) was excavated beside Room R's east wall and the corridor to Room Q (**Fig. 12**). This probe revealed a packing for the floor consisting of unworked cobbles and large stones in firm light brown soil. This foundation was



11. Room Q sub-probe with blocks on top of sandstone slabs. (WRRP).



12. Room R, corridor to Room Q, and location of probe beneath robbed out floor. (WRRP).

deepest next to the wall (*ca.* 0.66m thick) and sill (0.50 thick) and thinner towards the center of the room (0.28m thick) (**Fig. 13**). Fragments of wall plaster and mortar were found in the foundation's soil, along with a glass bead, and 23 pottery sherds, all non-diagnostic, but, given the robbed out floor above, it is likely that this foundation layer has been disturbed during the twentieth century. A probe beneath this foundation revealed that it rested on sterile orange-brown sand.

Probes in the Fill

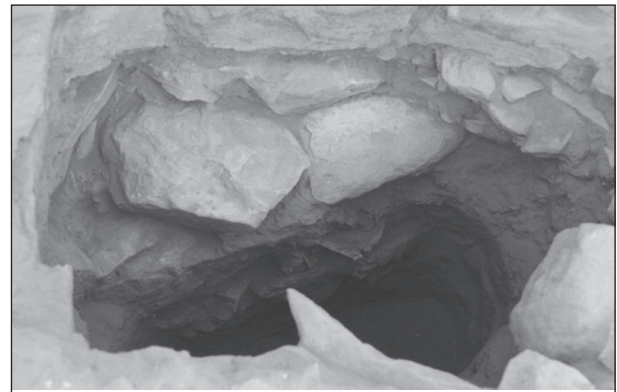
All rooms in the complex were covered in fill when our examination began in 1996. In most cases this fill had accumulated since the 1960s clearance, although it is not known whether that clearance had always extended down to the ancient floor levels. Clearance may not have extended to the floor in Room W (the *calidarium*), for example, where hundreds of flue pipe fragments were found in the overlying fill. The fill over the *frigidarium*'s floor north of the basin (Room M) may also not have been fully cleared—as a local resident who participated in the 1960s work told us that the ash dug through then resembled the ash layer that we encountered. Yet, Room W's fill also produced modern glass and a World War 1 Belgian military button, which are a good reminder that the fill in cleared out rooms represent a context disturbed both by the clearance and more than thirty years of subsequent activity. Wall sections collapsed over fill, some from the November 1995 earthquake, were another record of recent disturbance (See **Fig. 4**); another was clandestine digging before, during, and between the WRRP's excavation seasons (**Fig. 14**). Thus, although all the fill throughout the complex contains objects related to this site's history, only the objects beneath intact floors, or in areas not cleared out in the 1960s, can provide secure evidence of the Complex's phases.

To investigate these contexts, a few probes were excavated in 1997 in areas that, based on their deep fill, did not appear to have been cleared out in the 1960s (the *frigidarium*'s basin; Room L; the north end of Corridor Θ; Area G01). Some of the phasing information obtained from these probes is discussed below. A caveat to

interpreting all of this information is that even the areas not completely cleared out in the 1960s must have had surface tumble removed at that time (see **Fig. 1**) or before (*e.g.* Savignac and Horsfield 1935, 245). Thus, the material from roofs, ceilings, and the upper courses of walls was no longer available for study.

Rooms L and M

At the end of the 1996 season it had been hypothesized that Rooms L and M might form a single room comprising the bath's *frigidarium* (Dudley and Reeves 1997: 102-103). This theory was based on two factors. First, what appeared to be the edge of a large basin (*ca.* 2.55m long×1.90m wide) whose northern rim was uncovered in cleaning the southern edge of the 1960s clearance in Room M (**Fig. 15**). Second, a doorway between Rooms Q and L which, if M and L constituted the *frigidarium*, would confirm a ring-style organization for the bathing suite. The 1997 excavation over the floor north of the basin and probes along the east wall were unable to either prove or disprove the single



13. Room R probe bottom. (WRRP).



14. Room L vandalism: removal of floor stones and digging into the missing lower section of the wall between Rooms L and K. (WRRP).

room hypothesis. Thus, until further excavation is conducted in the deep fill over the southwest quadrant of this area, “Room M” will be used to denote the *frigidarium*’s floor and basin whereas “Room L” will be used for the area to their south.

Room M North of the Basin

In 1997 the ashy fill remaining to the north of the basin was cleared, revealing a flagstone floor composed of large blocks and cobbles set in grey mortar, which was disturbed by a robber’s pit. The clearance also revealed a bench (2.70m long \times ca. 0.39m wide \times 0.28m high) (Fig. 16). Traces of white wall plaster remained on the side of the bench, on the walls of the room, and inside the door to Room G. The walls and features in the room are made almost exclusively of mortared stone blocks, whereas occasional bricks are likely from repairs. Stones placed on top of the flagstone floor, especially two stones abutting the north wall, one of which is an inverted water channel block, may have served as platforms in a post-bathing phase of the room’s use. The robber’s pit also corresponds to a later use. If the remaining 0.17m thick layer of ashy soil filling the room (including a dense charcoal layer directly over the floor) is ancient, then the platforms and ash, in conjunction with finds of burnt and unburnt animal bone, *tabun* fragments, and a grinding stone, may indicate a later domestic phase. Other finds from the fill included second to early fourth century pottery sherds and a coin of the Roman Emperor Gallienus (r. 253-268 AD).

Room M Basin

In contrast to the shallow fill north of the *frigidarium*’s basin, the fill inside the feature was much thicker (0.90-1.00m), suggesting it had not been cleared out in the 1960s (see Fig. 15). To investigate the nature of the basin’s construction and the fill within it, a probe was laid in 1997, spanning the basin from its northern to southern edges and extending 1.5m back from its eastern wall (Fig. 17). This probe revealed that the basin’s walls are composed of large Nabataean-dressed blocks fit tightly together with small chinking stones between. Interior dimensions (not including plaster) are 1.24m wide \times ca. 2.59m long \times 0.94m deep.

Entry was facilitated with two interior steps in its northeast corner (0.25-0.34m long \times 0.36-0.37m wide \times 0.25-0.30m high). The rim was 0.38m wide on the north/front, 0.36m wide on the east, and 0.17m wide on the south where it abutted a poorly preserved wall (possibly a partition wall) 0.63m wide. The basin’s rim and its interior walls, floor, and two steps were coated in layers of grey and orange plaster. Two layers of plaster (orange on top of grey) are extant on the rim and three successive layers (grey, orange, grey) are also extant on the south and east interior



15. Room M after cleaning in 1996 revealed the edge of the *frigidarium*’s basin. (WRRP).



16. Three areas excavated in Rooms M and L in 1997. (WRRP).



17. Probe inside the *frigidarium*’s basin in Room M. (WRRP).



18. Objects found inside the frigidarium's basin. (WRRP).

walls. The application of grey plaster over the orange hydraulic (presumed) surface layer probably represents a renovation associated with a second bathing phase, post-dating the basin's original construction.

The top 0.30m of fill within the basin contained sandstone blocks, cobbles, wall plaster, bone fragments, and fourth century pottery sherds in soft light brown soil. The next 0.35m contained a layer of ash lenses and burnt cobbles overtop soft brown soil surrounded by cobbles and some large blocks with a black ash pocket in its center. This layer contained fragments of wall and basin plaster, glass vessel fragments, animal bones, third century AD pottery sherds, lumps of iron and copper alloy, two almost intact pottery vessels, hand-sized basalt disks, a hand-sized quartz ovoid with a flat end, and a copper alloy cosmetic stick (Fig. 18). The lowest layer (0.25m thick, extending from the top of the lowest step to the bottom of the basin) consisted of soft light brown soil with many cobbles and blocks. This layer contained fragments of wall and basin plaster, animal bone fragments, early to mid-second century AD pottery sherds, and human remains (a detached human skull resting vertically on the floor of the basin with some finger bones beside and friable long bones visible in the western baulk) (Fig. 19).

Based on a preliminary analysis of ceramic sherds in the layers of the basin's fill, we had previously postulated that the deceased was the victim of an early second century earthquake that marked the end of the bath's operation (Dudley

and Reeves 2007: 407; cf. 2013: 301-302). The hypothesis needs to be revised now given that the pottery sherds in the lowest layer of fill could date into the mid-second century. It is still possible that the deceased was a victim of a later earthquake that brought down the walls in the basin and Room L (see below) and resulted in this person's head becoming detached. Given the third and fourth century pottery around the large blocks in the upper layer of fill, the 363 earthquake is a possibility. In that case the excellent level of preservation of the skull (but not the long bones) might be due to the arid conditions and surrounding tumble arresting its deterioration.

As Fig. 17 illustrates, the surrounding rocks and soil would have provided enough protection to slow down decay, but not a shield that would completely eliminate deterioration from insects or rain. Although Wādī Ramm is in a very arid zone, there are at least five rainstorms a year



19. Skull in situ at the bottom of the frigidarium's basin. (WRRP).

(Oleson 2010: 33). The rainfall run-off from the adjacent Jibāl was mostly channeled beneath the northern and southern edges of the hill (see Fig. 2), but rain landing on the Eastern Complex would have sunk into its soil. In the case of the water-proof basin, this meant some water would have pooled around the human remains at its bottom. This was especially likely in the three decades between the clearance of the archaeological site and the body's discovery.

Given the excellent preservation of the skull, it is therefore possible that these remains represent either a burial pre-dating the creation of the archaeological site or the re-interment of excavated human remains. A cemetery predating the earliest archaeological work in Wādī Ramm was documented on Barrois' 1934 plan of the bay (Savignac 1934: pl. 35). Thus that cemetery is many decades older than both the clearance of the ruins in the 1960s and the establishment of the modern village in the 1970s (Chatelard 2003: 140). Although that cemetery's edge is currently more than 25m to the west of where this body was found (see Fig. 2), it is possible that these remains might be associated with it. Alternatively, the re-interment of excavated human remains is also possible. Reports indicate that archaeologists opened nearby tombs in the 1930s, 1950s, and 1960s (Glueck 1934: 54; Hayajneh 2006: 112; Perry and Jones 2006: 157, 166). If any of the human remains found in those ancient tombs were subsequently re-interred in Wādī Ramm, the unexcavated ruins next to the cemetery might have seemed a suitable location. Such a re-interment might explain why the skull was detached from its body. All of these theories will require further study.

Room L

In 1996 it was noted that Room L still contained deep fill - up to the exposed top of its east and south walls and completely covering its west and north walls and any features within the room. Like the Room M basin, most of Room G, and the areas south of Room G, this area does not appear to have been dug out in the 1960s. In 1997 a 1.5m wide probe was excavated along the east side of the room (Fig. 20). This revealed that Room L is 1.68m wide. Based on the common wall line shared by Rooms O, N, M, and K, it is probably 3.65m long. There is a doorway (later blocked) from Room Q at the southern end of its east wall, and a rough wall (perhaps not original) between it

and the basin in Room M. The wall between it and Room K, which features a water channel running around its northwest corner (Dudley and Reeves 1997: 104-105), was disturbed at some point in the past and crudely repaired with stones re-laid along the wall line (See Fig. 14). As a result, the eastern stones in Room L's south wall that are visible on the surface are only two courses deep and resting on soil. A partially intact sandstone floor was encountered 1.20m below the top of the fill (Fig. 20). The floor is composed of rectangular sandstone slabs set in light grey mortar. It runs from the room's north wall to the (missing) south wall and extends 0.90m west from the base of the east wall. A 0.60m wide sub-probe in the soil alongside the extant western edge of the floor and extending 0.50m from the north wall found a concentration of cobbles, likely the foundation for the floor's now missing continuance.

Five *loci* were excavated in Room L, three over the floor level and two in the sub-probe west of the extant floor stones. The top two *loci* (1.04m thick) contained within their light brown soil a concentration of large Nabataean-dressed blocks (0.68-0.78m long×0.25-0.38m wide×0.20-0.33m thick) from the building's collapse (Fig. 21), a great deal of very hard sandy white mortar probably from a vault, some wall plaster, animal bone fragments, and a few mid-second to possibly third century AD pottery sherds. If these stones and mortar are *in situ* where they fell, their tumble supports the theory that they are contemporaneous with the death of the body in the adjacent *frigidarium* basin. The 0.16m thick soil *locus* over the floor contained many bone fragments, seven corroded iron fragments, a 0.018 thick flat-faced fragment of alabaster, two ceramic pipe fragments,



20. Room L probe showing floor stones and crude wall between Rooms L and M. (WRRP).

and first to second century pottery AD sherds. The top 0.12m thick *locus* next to the extant floor stones consisted of light brown soil with ash and dark soil lenses containing a few bone fragments and late first or early second century pottery AD sherds. The 0.08m thick *locus* below that contained no finds except for a significant concentration of cobbles in a hard-packed matrix suggestive of a floor foundation.

Room L's robbed out floor stones, missing and crudely re-laid south wall, crudely constructed north wall, blocked door to Room Q, and wall stones fallen on top a 0.16m level of soil fill are all records of the long and multi-phase history of both this room and the Eastern Complex as a whole. This history was further complicated when, at the end of the 1997 probes (and before the floor could be drawn), looters pulled up floor stones and bored into the south (missing) wall (see Fig. 14). It does not appear that these looters found anything archaeologically significant, as no deep holes were dug and no bones or pottery fragments were discarded, but this cannot be confirmed.

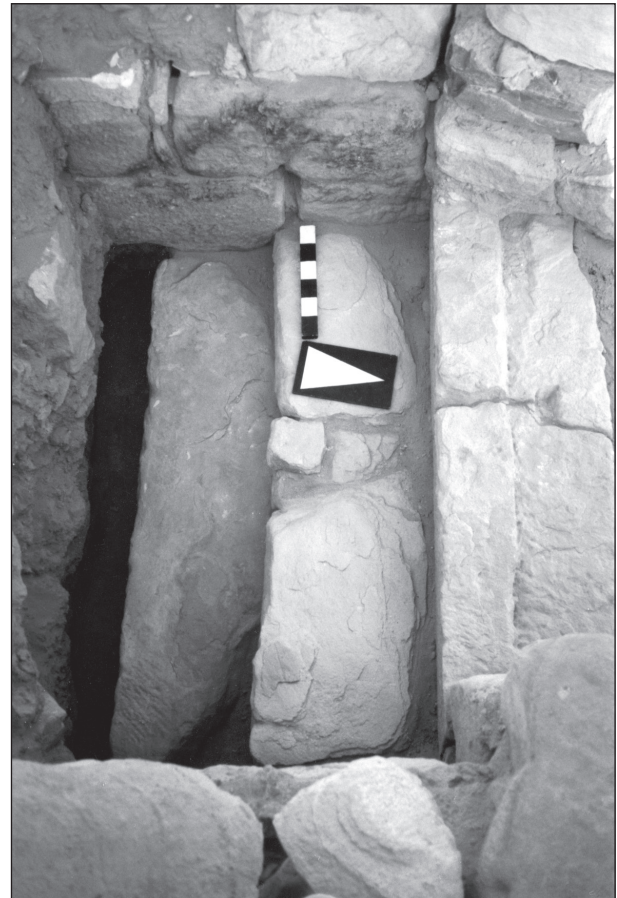


21. Collapsed stones at top of the probes in Room L and the Room M basin. Facing north. (WRRP).

Corridor Θ

Corridor Θ provides access from the central courtyard (Room G) to the courtyard in Room D and the rest of the northwestern corner of the complex, as well as an entrance to Room C that bypasses Room B. As best we can determine, this corridor had not been cleared in the 1960s. In 1997 we probed the north end of the corridor, 0.40m down into the compact sand and large stone tumble. We were unable to extend this probe very far to the south, as the stability of the walls was in doubt, but we were able to reveal the entirety of a short flight of stairs which descended from the corridor's doorway to a floor of cobbles set in sand (Fig. 22). In the short distance between the bottom step and the baulk, we discovered an ash layer immediately over the floor. This contained fragments of bone and coarse-ware ceramics, some of which were burned. The only diagnostic pottery sherd found on the floor dated from the late first to early second century AD; ceramics higher in the fill dated from the fourth to early fifth century AD.

Area G01. At the end of the 1996 season



22. Probe in north end of Corridor Θ with stairs to Room D. (WRRP).

the area south of Room H and west of Room K remained unexplored, except for the small probe in the shallower fill of its northwest corner. A better understanding of this area was one of our priorities, and in 1997 we traced a continuance of the northern wall line extending west of Room K into Room F. We also excavated a 3×3.5m probe through the fill which, based on its thickness of up to 1.34m, was not disturbed in the 1960s. This probe (Figs. 23, 24) revealed a further continuation of the north wall, a west wall with a doorway in the northwest corner of the probe, a staircase in the southeast, and a paved landing or corridor in the north which provided access to the western door, the southern staircase, and Room F to the east. The north western doorway leads to an unexcavated space between this probe and Room A, where the southern entrance to Room G is now thought to be located. The staircase, which rises to the south, provided access to some undetermined part of the complex. The probe also provided ample evidence of several later phases in the Eastern Complex's lifespan: through two large blocks inserted over the doorway's threshold, through the partially robbed out paved floor and staircase, through robbed out or tumbled blocks in the walls and doorway, through the mass of tumbled stones that filled the probe and Room F, and through ash pockets in the soil. Pottery found in the probe's fill dated from the late second century to the fourth century AD suggesting this area was abandoned in or after the fourth century.

Eastern Complex Phasing

Based on the results of our excavations and analyses presented above, the following



23. Area G01 (facing east) with robbed out floor in landing, tumble-filled entrance to Room F, north and west walls, and robbed out staircase. (WRRP).

tentative phasing is proposed for Iram's Eastern Complex.

Construction of an Elite Nabataean Structure.

The Eastern Complex's architecture and context, and the pottery found within it all support its construction partially (or entirely) on sterile sand in the Nabataean period (*cf.* temple: Tholbecq 1998: 243, fn. 8). Based on the pottery, a construction date in the first century AD seems most likely, with a date early in that century supported by the use of sandstone pilae and pilae-covering slabs in its hypocaust. This would make the construction of this elite structure contemporary with either the hypothesized building of Iram's Nabataean temple in the late first century BC to early first century AD or to its major renovation in the late first century AD (Tholbecq 1998: 246-247). The latter date would make it contemporary with the Rabbel II monument at 'Ayn Ash SHallālah (Savignac 1933: 408-11; 1934: 581-582).

The Eastern Complex's construction out of quarried ashlar blocks and the sophisticated engineering skills required to build its hypocaust and the aqueduct supplying it with water (Dudley and Reeves 1997: 105-106) also suggest that skilled construction workers were sent out on one or more occasions from Petra, perhaps under royal patronage (*cf.* Hawara's foundation and water supply: Oleson 2010: 50-53, 57). It is likely that these craftsmen worked on Iram's Eastern Complex, Temple of Allat, Rabbel II monument, and the hydraulic system, perhaps at the same time. Masons, sculptors, and plasterers who were likely involved in these construction projects carved remembrances in the Nabataean language at the 'Ayn Ash SHallālah sanctuary



24. Area G01 (facing southwest) with robbed out floor in landing, blocked doorway to west (after its upper stone was removed), and robbed out staircase. (WRRP).

(Savignac 1933: 415-418, 421; 1934: 577-578). A Greek inscription for the remembrance of builders found in the 1960s temple clearance (Sartre 1993: 181, no. 148) could also date to a Nabataean construction or to a later renovation.

Renovation and Reuse of the Elite Structure in the Nabataean and Roman Period.

The best evidence for these renovations and the continued functioning of the bathing suite is the laying of a new surface layer of orange hydraulic plaster in the bath's *calidarium* (Room W) and a new layer of grey plaster over orange in the *frigidarium* basin (Room M). New layers of wall plaster (including a new white layer overtop grey-faced plaster in Room Q) are also probably remnants of these renovations.

Whether or not this renovation (or renovations) occurred in the Nabataean or Roman period, it is likely that the Eastern Complex was occupied after the Roman annexation of the Nabataean Kingdom in 106 AD and into the third century as suggested by mid- to late second and third century AD pottery and a coin of the Emperor Gallienus found in the Complex. Roman activity (and the interest of Roman authorities) in the nearby temple is indicated by an altar with partially preserved Latin dedication from the first half of the third century AD set up by the provincial governor (Sartre 1993: 179-180, no. 146; Bauzou 1996: 32; Savignac and Horsfield 1935: 258-261; Tholbecq 1998: 246), a coin of Emperor Marcus Aurelius (Savignac and Horsfield 1935: 259-261) and a Nabataean graffito dated to the Roman province's 41st year (147 AD; Savignac and Horsfield 1935: 265-268; Starcky 1964: col. 979-980). The later graffito was painted onto a wall in the temple. On the same wall was another painted graffito, in both Greek and Nabataean, which was set up by an architect (Sartre 1993: 176-178, no. 141). Based on its location, it is thought to date to the mid-second century AD. This architect, and the builders mentioned in the Greek inscription above, might have been involved in renovations. Across the bay at 'Ayn Ash SHallālah a Greek remembrance graffito was set up to the goddess by a *δοφλικάρης* (Roman *duplicarius*, i.e. a soldier on double pay) described as "the overseer of the work" (ὁ ἐπιστάθης τοῦ ἔργου) (Kennedy 2004: 204; Sartre 1993: 175-176, no. 139). It is likely that this *duplicarius* and other Roman soldiers were based at Iram (Roman Aramaia) to watch over

the passing trade route, springs, and religious sites (Graf 1992: 260; Kennedy 2004: 204; Sartre 1993: 175).

As no Roman fort has ever been detected in or near Iram's bay, it is likely that Roman soldiers overseeing this site were based inside a pre-existing structure. It was common practice in the Near East for Roman soldiers to be garrisoned within existing settlements and to take over and repurpose earlier structures (Kennedy 2004: 28). From a Roman military perspective, the Eastern Complex would have been a strategic choice for a *duplicarius* and small detachment. The building's location at the eastern end of the hill provided an excellent vantage point from which to monitor access into this important bay with its springs, reservoir, village, temple, and open-air sanctuary. As an elite structure, the building also conveyed a sense of authority which was reinforced by its basic similarity to a *praetorium* (the elite house with central courtyard at the center of a Roman fort that was occupied by its commanding officer). The *praetorium* in the early second century AD fort at Al Humaymah (Nabataean Hawara, Roman Hauarra) is a similarly arranged elite structure (Oleson 2019: 397-399), a point that would not have been lost on soldiers who were probably detached from that fort, the largest in southern Arabia (Oleson and Reeves forthcoming). Finally, from a practical perspective, the Eastern Complex's ample size, numerous rooms, internal bathing suite, and piped water made it a great choice for a detachment. A parallel can be noted at Dura-Europos where a military unit took up residence in a large elite house with a similar arrangement of rooms including a central courtyard and internal bathing suite (James 2019, 103-109).

Crude Reuse and Collapse in the Structure.

This phase is found throughout the Complex and is associated with doors being blocked or their thresholds being built up and rooms being reused for non-elite activity. The installation of tabuns and other cooking debris in the former *frigidarium* provide an example. Pottery found throughout the complex dating to the fourth and fifth century (and in one place possibly the sixth and seventh centuries) can be associated with this broad phase. Within this long period of reuse, there is also evidence of considerable damage to the structure, as exemplified by the missing stairs and deep layer of tumble filling

the corridor in Area G01. Further evidence of this cruder reuse of the structures on the hill was found in the temple, where a brick wall associated with domestic reuse is posited to have collapsed in the fourth century (Kirkbride 1960b: 87, 92). As bricks were not used in earlier phases of the temple, it is very likely that these bricks were recycled from the Eastern Complex's bathing suite after it went out of use. Mid-fifth century surface sherds found at the Western Complex also point to later occupation on the hill (Tholbecq 1998: 247).

Twentieth Century Disturbance.

Prior to our study in 1996 and 1997, the Eastern Complex had been heavily disturbed. Already in the early twentieth century this disruption included the shifting of interesting blocks from the ruins to the cemetery between the temple and Eastern Complex, as noted by Savignac and Horsfield in the case of a Greek inscription (1935, 263, fig. 17) and by our own team in the 1990s, in the case of aqueduct and architectural blocks. It is also possible that a burial or re-internment was made into the Eastern Complex. Savignac and Horsfield also reported on the extensive quarrying of Ramm's ruins for the construction of the 1933 police post (1935, 245). Given the increased definition of the Eastern Complex's ruins between Savignac's 1932 and 1934 site plans (1932, fig. 1; 1934 Planche XXXV), it is likely that blocks used in the police post had been removed from the tumble overlying this site. In 1959 there was possibly a sounding into the Eastern Complex's ruins (Kirkbride 1960a, 230). Then in the early 1960s the ruins on the Ramm's hill were cleared and left open to enhance tourism. A visitor centre was also built below Ramm's hill and enclosed in a wall of ancient blocks that a local resident reported were taken from the Eastern Complex (Dudley and Reeves 2013, 310). The next thirty years saw erosion to the site as a result of tourist traffic, looting, and natural processes. The November 1995 earthquake, which occurred between our preliminary examination of the Eastern Complex and our first excavation season, was especially destructive for exposed walls. As previously mentioned, clandestine digging has also taken place. And of course, our own fieldwork as well as the subsequent consolidation of the exposed walls, have changed the nature of the Complex.

But as indicated, there are areas apparently still untouched, and more information yet to be revealed.

Conclusion

A full discussion of all components of this Complex and the finds from the 1996 and 1997 fieldwork will be presented in our upcoming final report. In the meantime, it is hoped that these interim thoughts on the phasing can assist in contextualizing this elite complex within Ramm, the Nabataean Kingdom, and the Roman Empire.

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