

APPENDIX A

TOPOGRAPHICAL REPORT

Micheline Kurdy

During the campaign of 2015, Paul Courbon realized the topographical survey of the two sites of Girdi Qala and Logardan and their environments. The implemented system was attached to the UTM38 projection to be integrated into a national Kurdish SIG.

For 2016, work focused on the architectural survey of the excavation sectors in both sites. A three dimensions survey method was applied during this campaign, using photogrammetric technique and linked to the topographic system implemented last year. The target of this work was to realize a three-dimensional geo-referenced documentation of each excavation sectors along the campaign: first, to survey and document in 2D/3D the progress of the excavations of each sector, and second, to provide a high-resolution work support for archaeologists as a base for the site analysis and post-excavation work.

This methodology consisted of series of consecutive photographic shots with a Nikon D80 camera belonging to the mission, accompanied with topographic surveys with a total station LEICA TCR1205 (of the 1200 series), belonging to the archaeological department of Sulaymaniah. The used technique allowed realizing for each excavation sector a set of 3D models geo-referenced in the topographical system with possibilities to produce ortho-images, plans, sections and elevations (Fig. 1).



Fig. 1 - Example of the 3D models realized for sector D, Logardan.

GIRDI QALA:

The topographic points were measured based on the two remaining stations from the previous year and three electric pylons. An additional station was added to reinforce the system and served for surveys of the area north of tell. Along the excavation campaign, the two excavation areas (B and D) were surveyed with photogrammetric method and geo-referenced in the topographical system, 8 documentations for sector B and 4 documentations for sector D. 3D models were created and ortho-image plans were generated (Fig. 2 and 3). The objective of these multiple surveys was to provide the archaeologists with a faithful technical support for analysis and a base for the realization of the architectural plans (Fig. 4).

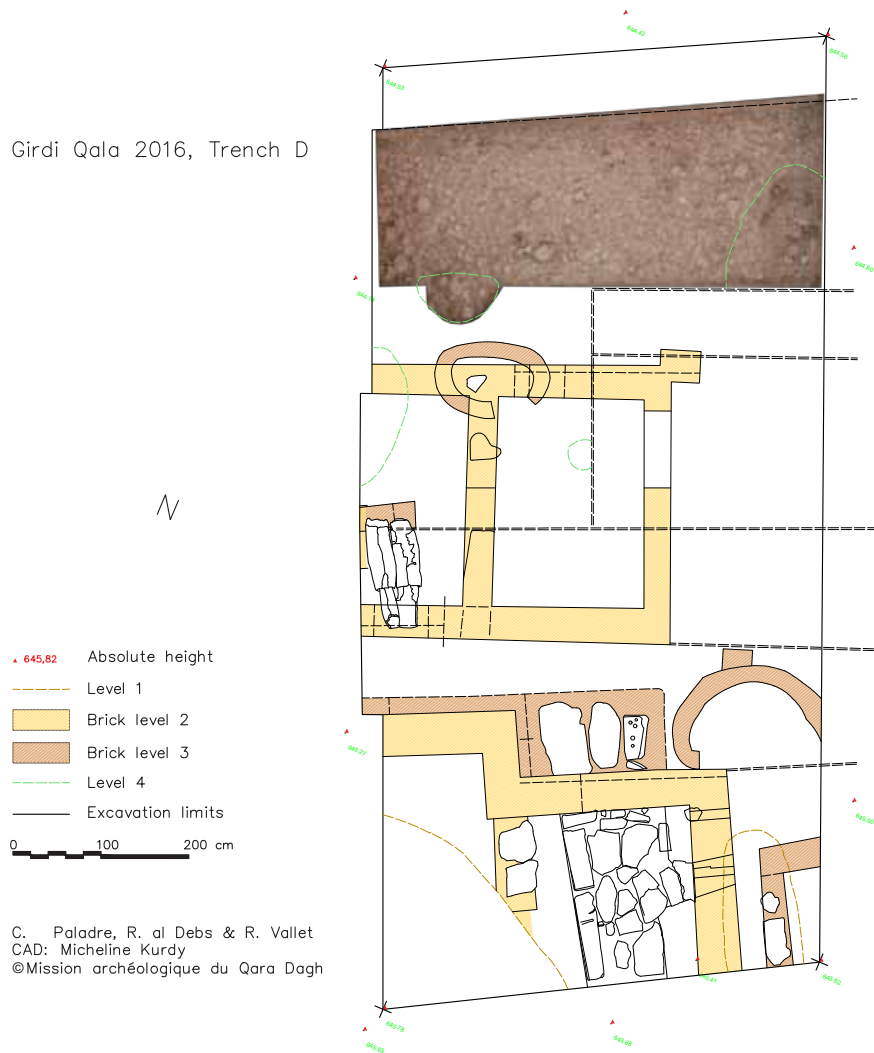


Fig. 2 - Girdi Qala, ortho-image of sector B at the end of the excavations, in plan.



Fig. 3 - Girdi Qala, ortho image of sector D at the end of the excavations, in plan.

Girdi Qala 2016, Trench D

**Fig. 4 -** Girdi Qala, plan of sector D.

At the same time, a grid has been set up, allowing the geo-location of the geomagnetic survey of the zone at the west of the site. Later, this grid was integrated into the field survey to obtain a correlation between the geomagnetic images and the general study of the region.

LOGARDAN:

The topographic points were measured based on the stations set up the previous year. The two sectors (D and E) were surveyed with photogrammetric method and geo-referenced in the topographical system. Along the excavation campaign, 10 documentations for sector D and 8 documentations for sector E were created, 3D models and ortho-image plans were generated (Fig. 5 and 6). Here again, the objective of these multiple surveys was to provide the archaeologists with a technical support faithful to reality for analysis and a base for the realization of the architectural plans (Fig. 7 and 8).

At the same time, a grid has been set up, allowing the geo-location of the geomagnetic survey west and south of the site. Later, this grid was integrated into the field survey to obtain a correlation between the geomagnetic images and the general study of the region.

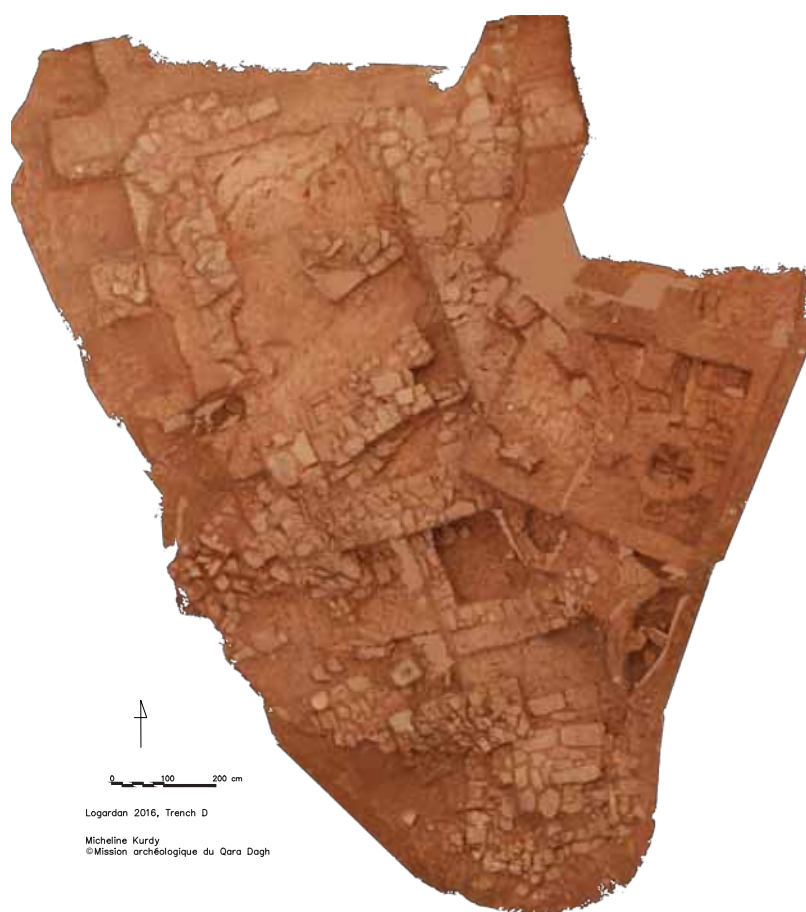


Fig. 5 - Logardan, ortho-image of sector D at the end of the campaign.



Fig. 6 - Logardan, ortho-image of sector E at the end of the campaign .

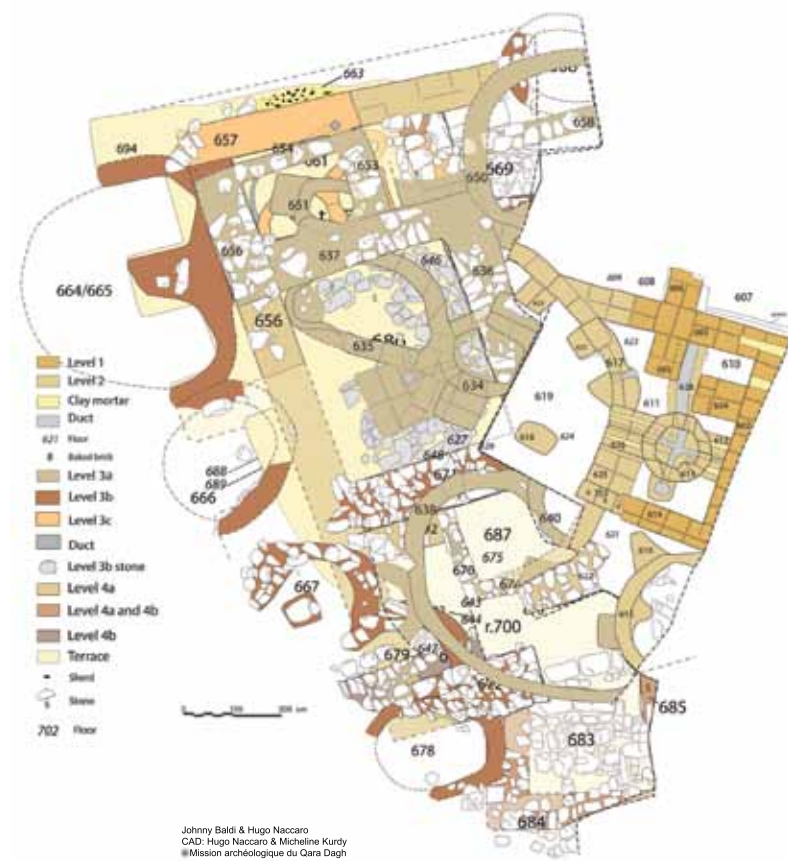


Fig. 7 - Logardan, plan of sector D.

Logardan 2016, Trench E

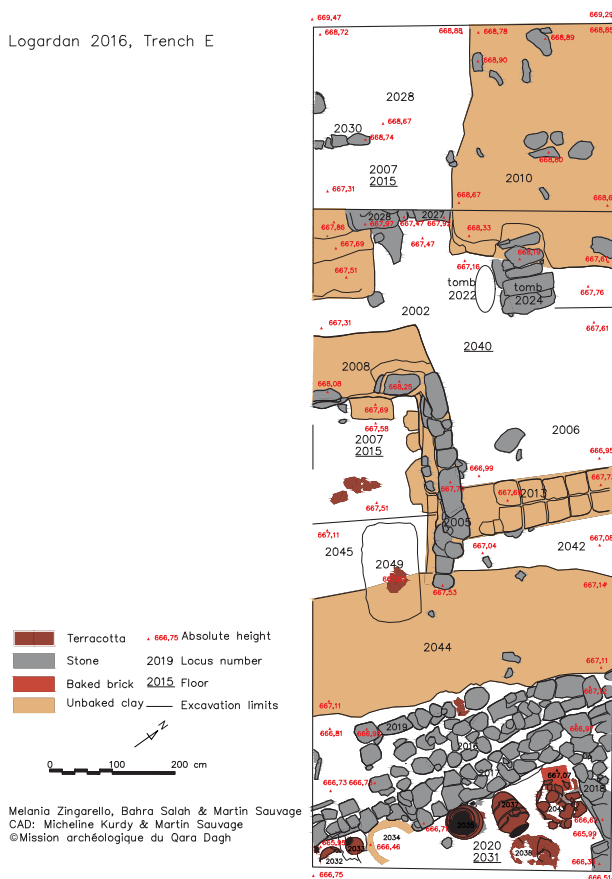


Fig. 8 - Logardan, plan of sector E.

