

# O Lamps

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Ceramic lamps from the Greek period in the northern Black Sea region remain largely unstudied. Two out of three of the major published collections concern mostly Roman lamps,<sup>1039</sup> and other articles give only an overview and include little material.<sup>1040</sup> Recently, a project was launched with the aim of publishing all the lamps kept in the Kerch Museum. So far, the lamps from the 6th to the 3rd century BC have been published.<sup>1041</sup> Otherwise finds are reported as single finds or as small assemblages.

325 lamps and fragments of lamps were found in Sector NGS and entered into the find lists between 1985 and 2002. The actual number of lamps found is unknown, but it seems that a rather high percentage of the lamps excavated were inventoried. Included in the catalogue are the 94 lamps from the selected deposits plus 16 lamps of types that are not otherwise represented. The lamps and fragments not included in the catalogue are listed according to type at the end of each section.

Oil lamps have been found in all parts of Sector NGS throughout the period of occupation and they seem to have been an integral part of the household equipment. There is, however, a far higher concentration in Houseblocks II (23), IV (32) and VI (37), but this seems mainly to be a result of the bias in the selected contexts.

Generally, the state of preservation is poor and for most of the lamps only smaller fragments have been preserved. This indicates that the lamps were broken during use and discarded. The intact or nearly intact lamps clearly occur among specific groups: Howland type 25 (O-58-O-61), lamps with raised rims (O-72-O-75), mouldmade (O-97-O-101, O-103) and handmade lamps (O-104-O-105). One possible explanation for the preservation of these lamps is that they were lost during catastrophic events such as fires. O-61 was certainly exposed to secondary firing that was stronger than would be expected from an ordinary-use accident.

In contrast to other ceramic groups, none of the lamps show any sign of repair.<sup>1042</sup> This might not be a great surprise since the ability to hold liquids was a crucial feature for lamps. However, handles and, to a lesser extent, rims were prone to breakage, but these seem to have been left unmended or the broken lamps were simply discarded. To judge from the burn marks around the wick holes, a large proportion of the lamps seem to have been used for a considerable period.

The catalogue has been divided into three broad chronological groups: late Archaic, Classical and Hellenistic. Of course, the dates of some lamp types overlap between chronological groups. Howland type 25, for example, were produced from around the middle of the 4th century BC but are placed in the Hellenistic section.

The most extraordinary feature of the chronological distribution is that approximately 40% of the lamps belong to the relatively short late Archaic period. That is, before the main building phases known in Sector NGS, when only scattered earth-dwellings have been identified. Otherwise lamps occur continuously down to the late 2nd century BC, although there are significantly more lamps in the Hellenistic than in the Classical period. Only the handmade lamps of the open type (O-105) can definitely be ascribed to the Roman period.

A significant proportion of the lamps in Sector NGS were imported, but it is often difficult to pinpoint the exact place of production. The most secure identification is the Attic lamps, which are common down to around the middle of the 3rd century BC. Particularly in the Classical and early Hellenistic periods, Attic lamps held a dominant position. In the late Archaic period a large number of lamps seem to derive from the east Aegean, but it is difficult to pinpoint

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<sup>1039</sup> Arsen'eva 1988 (Tanais); Chrzanowski & Zhuravlev 1998 (Chersonesos); Waldhauer 1914 includes Greek material.

<sup>1040</sup> Knipovič 1940a (Olbia); Zabelina 1992 (Pantikapaion); Dupont 2005c.

<sup>1041</sup> Žuravlev, Bykovskaja & Želtikova 2007.

<sup>1042</sup> See the introduction to the finds, pp. 118-119.

production centres precisely. In the later Hellenistic period a number of mouldmade lamps probably derive from Ephesos. Other production centres appear sporadically: two Corinthian lamps have been identified (O-1, O2-453), one seems to come from Sinope (O-106), one from Pergamon (O-92) and at least one lamp was produced in the Bosphoros (O-103).

Local production accounts for approximately half of the lamps found in Sector NGS. These consist for a large part of greyware or, less frequently, red clay imitations or adaptations of Aegean lamps such as “Ionian” lamps (O-12, O-19), Howland 21 (O-43, O-44, O-45-O-47), lamps with broad horizontal rims (O-22-O-30) and lamps with rods (O-34), but also later types such as Howland type 27 were copied (97-34, 99-350). In addition, it is possible that a few of the mouldmade lamps were local products. The most prominent group is, however, that of the lamps with raised rims (O-51-O-54 and O-72-O-91).

## FUEL

Extensive use of oil lamps requires large quantities of fuel.<sup>1043</sup> It is the common opinion that in the Mediterranean the most commonly used fuel was olive oil.<sup>1044</sup> In the northern and eastern Black Sea region, however, the climate does not facilitate cultivation of olives, and olive oil would, therefore, have to be imported, thus making this fuel even more costly. Alternately, other vegetable oils or animal fat could have been used.

Recently, Fossey pondered in an article whether the apparent scarcity of oil lamps in Kolchis in Georgia could have resulted from the lack of locally grown olive oil, and whether readily available resources such as beeswax and dolphin blubber could have been used to generate a light source instead.<sup>1045</sup> According to Xenophon, the Mossynoikoi in north-eastern Anatolia used dolphin blubber in the same way as the Greeks used olive oil.<sup>1046</sup> Likewise, Strabon reports that the Chalybes in the same area caught dolphins and used their abundant fat for all sorts of purposes.<sup>1047</sup> It is quite possible that producing light was one of the purposes the blubber served. That fat in a solid state was used is certainly shown by the pan-like lamps with a wick channel found throughout the northern Black Sea region.<sup>1048</sup> One weakness of the argument is that an abundance of oil lamps has been found in the northern Black Sea region, an area which also did not produce olives. Here too, olive oil would have been imported.

In order to investigate what fuel was used in the lamps found in Sector NGS, nine samples of lamps were taken for chemical analysis at Laboratoire Nicolas Garnier in France.<sup>1049</sup> The results revealed that many of the lamps had contained animal lipids, probably of bovine origin, and one showed signs of beeswax. Although the sample is small and not all the samples yielded results, the analysis clearly suggests that olive oil was not the predominant fuel used in Olbia. Instead, animal fat seems to have been more extensively used. Surprisingly, other vegetable oils did not substitute olive oil as fuel to a large extent, as only one lamp may have shown signs of vegetable fats.

<sup>1043</sup> It has been estimated that a small lamp consumes 1 cl of olive oil per hour, see Radt 1986, 42.

<sup>1044</sup> See, for example, Radt 1986, 40.

<sup>1045</sup> Fossey 2003, 91-95.

<sup>1046</sup> Xen. *An.* 5.4.28

<sup>1047</sup> Strab. 12.3.19.

<sup>1048</sup> Several examples from Tanais, Arsen'eva 1988, 82-130.

<sup>1049</sup> Permission for taking the samples was granted by the Ukrainian National Academy of Sciences and the National Preserve Olbia. Samples were taken from a variety of different types of lamps from different periods. Four were taken from lamps from earlier excavations in NGS (O-18, O-79, O-104, 1997-123) and five were newly-excavated lamps from the year 2005.

## Catalogue

If nothing else is noted, measurements given are: length from nozzle x diameter of body x maximum height. Figures in parenthesis represent incomplete state. Measurements are approximate if no decimal is given. In descriptions, the lamps are viewed with the nozzle pointing forward.

## WHEELMADE LAMPS

## Late Archaic period

The earliest lamps in Sector NGS belong to the second half of the 6th century BC, but not necessarily before the last quarter. From the beginning, lamps are very prolific and around 40% of all the lamps in Sector NGS belong to the late Archaic period. East Aegean lamps, particularly those similar to O-11 and O-16 and their local imitations predominantly in greyware, account for the vast majority, while Attic lamps remain relatively rare until well into the 5th century BC. Other important groups are lamps with broad horizontal rims and lamps with rods. It is difficult to explain why so many lamps belong to this initial phase of activity in Sector NGS, as very few can be connected with structures. Furthermore, the chronological distribution of the lamps is not reflected in other material groups.

*Lamps with overhanging rims*

Howland type 16 with its characteristic rim that overhangs the body is represented by six pieces, none of which belong to the selected contexts. O-1 together with 02-453 are the only lamps in Sector NGS imported from Corinth. The others appear to be Attic.

O-1 92-277, IV-3 eastern part of house. Pl. 318

Nozzle with part of rim, body and floor on the left side. Convex rim that overhangs the body. Slightly concave bottom. (4.8) x 6.5 x 1.8. Fabric: fine with a few small lime inclusions, 5YR 8/3. Dark-brown gloss on floor and on tip of nozzle, where it is largely worn off. Five bands of varying widths on rim alternating dark-brown and brown. No sign of burning around wick hole. Corinthian. 550-500 BC.

Cf. Howland 1958, 30-31, no. 92 (Howland 16A); Bailey 1991, 57, nos. 163-165, no. 165 with very similar profile dated before 480 BC; Hübinger 2003, 177-179, nos. 37-38, with discussion and references.

O-2 91-207, IV-1 stone blocking. Pl. 318

Fr. of body and rim with the inner part of nozzle and trace of wick hole. Wide horizontal rim projecting over the side. (6.3) x 10 x (2.4). Fabric: fine with few small lime inclusions and a few light-reflecting particles, 5YR 7/6. Black gloss around nozzle and on rim except for broad reserved band. Brown to black gloss on floor. Diluted gloss-wash on exterior. Burned on rim near wick hole. Attic. 500-475 BC.

Cf. Howland 1958, 31-33, no. 107 (Howland 16B); Blonde 1983, 61-68, nos. 34-63; Hübinger 2003, 181-188, nos. 43-56, with discussion, 328-330 references to finds.

Not in the catalogue

Numbers in parentheses refer to Howland types. Unless otherwise noted, the fabric appears to be Attic: 02-453 (16A, Corinthian), 94-533 (16B), 95-150 (16B), 00-1425 (16B)

*Lamps with central tubes*

Lamps with central tubes, Howland types 19 and 22, are represented with five lamps from deposits and another five without context, and they are thus among the more frequently encountered lamp types in Sector NGS. Only three examples have the complete profile preserved (O-3, O-7, 92-260), while O-4 has the rim and a small part of the central tube preserved. However, extant examples with this type of rim, with an acute angle between rim and body, are always associated with a central tube. O-7 seemingly had two nozzles placed opposite each other; for the others the number of nozzles can no longer be determined. As is usual for this type, none of the lamps show any sign of a handle. A Rhodian or a north Ionian provenance has been suggested for type 19A.<sup>1050</sup> The variety in fabric colour and gloss for the examples from Sector NGS may suggest that they were produced in different centres. Apart from the Attic example (O-6), they are, however, all characterized by the presence of mica. Howland suggested, on meagre evidence, a date in the last quarter of the 6th to the first quarter of the 5th century BC, but they may have been produced earlier and later as well.<sup>1051</sup>

<sup>1050</sup> Dupont 2005d, 76.

<sup>1051</sup> For a discussion of the date, see Blonde 1983, 56-60, nos. 25-33. Howland (1958) suggested that type 22 with a continuous curve from side to rim was a development from type 19 with the rim at an angle to the side, but it seems more likely that the two forms were more or less contemporary. For a discussion of rim shapes as a chronological indicator, see Hübinger 2003, 198-202, 231-234.

O-3 92-833, IV-3 B 343/208. Pl. 318

Two joining frs. of the body, rim and central tube. No sign of nozzle. Sharp angle between body and rim. (8.7) x 9.4 x 1.9. Fabric: fine with much golden and silver mica and yellow inclusions, 2.5YR 6/8. Gloss red to reddish-brown on rim, floor and central tube. Rhodian or north Ionian(?). Last quarter of 6th to first quarter of 5th century BC.

Cf. Howland 1958, 39-40 (Howland 19A); Blonde 1983, 56-60, nos. 25-33; Dupont 1987, 49-50; Bailey 1991, 59-61, nos. 182-188; Kassab Tezgör & Sezer 1995, 60-61, no. 106; Hübinger 2003, 181-188, nos. 43-56, with discussion, 335-336 references to finds; Dupont 2005d, 76; Žuravlev, Bykovskaja & Želtikova 2007, 31-37, nos. 1-16. Lamps found in Olbia: Levi 1964c, 137; Kozub 1974, 106; Kozub 1979, 20.

O-4 94-609, IV-2 B 302/189. Pl. 318

One quarter of a lamp with one nozzle preserved. The nozzle, which intrudes into the rim, is upturned and the tip is higher than the horizontal rim. Indication of the presence of a central tube on floor. (5.2) x 10 x 2. Fabric: fine with some small lime inclusions and much mica, 7.5YR 7/6. Black gloss with metallic sheen of good quality on rim and on floor. Burned on tip of nozzle. Burnished ext. with an instrument ca. 0.5 cm wide. See O-3 (Howland 19A).

O-5 95-291, V Stove 443/236. Pl. 318

Rim fr. with a small part of the body and floor. The beginning of the nozzle with burn marks preserved. Sharp angle between body and rim. The lamp probably had a central tube. (6.9) x 9 x (1.4). Fabric: fine with some mica, 7.5YR 6/4. Burnished beneath. Brown slip on rim and on floor. See O-3 (Howland 19A).

O-6 95-592, VI-2 B 455/257. Pl. 318

Large fr. of the body, floor and rim. Half of one nozzle preserved. Sharp angle between body and rim. Tip of nozzle is higher than the rim. The lamp probably had a central tube. (8.1) x 9.5 x (2.3). Fabric: fine with a few very large lime inclusions and some light-reflecting particles, 5YR 7/6. Black gloss with metallic sheen on floor and thinly applied on rim. Badly burned around wick hole. Attic. 525-475 BC.

Cf. Howland 1958, 40-41 (Howland 19B); Hübinger 2003, 237, no. 116, 336-337 references to finds.

O-7 89-821, II-6 B 195/58. Pl. 318

Six joining frs. showing the complete profile including central tube. The rim forms a continuous curve from the body. One nozzle intact and on the opposite side probably the beginning of another. This could, however, also be an attachment for a horizontal handle. (10.7) x 9.8 x 2.3. Fabric: fine with very much mica, 7.5YR 5/4. Reddish-brown gloss, 2.5YR 4/6, around nozzle and on rim. Only a very slight trace of burning around wick hole. Secondary burning. East Greek(?). 525-460 BC.

Cf. Howland 1958, 52-53 (Howland 22A). For an Attic example of this type found in Olbia, see Hübinger 1993, 27, no. 27.

Not in the catalogue

Numbers in parentheses refer to Howland types. Unless otherwise noted, the fabric appears similar to O-3 to O-5: 90-266 (19A), 96-28 (19A), 98-174 (19A), 99-608 (19A or 22A), 00-382 (19A or 22A)

### *Lamps with continuous curve from side to rim and lamps with the rim at an angle to the side*

This varied group of lamps belongs to the late 6th to early 4th century BC. The Classical types Howland 21B and C and their imitations are included in the next section. They are characterized by low, open reservoirs with narrow rims that may form a continuous curve from side to rim (O-8-O-15) or may be set at an angle to the side (O-16-O-21). The shape of the rim does not seem to signify a chronological development and some types appear with both types of rim.<sup>1052</sup>

The majority belongs to the group of one-nozzled lamps without handle, so-called "Ionian" lamps, characterized by a restricted use of gloss.<sup>1053</sup> Often only the nozzle (O-11) or the rim and the central part of the floor (O-16) is covered in black or red gloss. O-8, O-10, O-11, O-15-O-17 and O 18 are imports from the east Aegean, while O-19 and possibly O-12 seem, on account of the fabric and slip, to be local imitations. O-13 and possibly O-14 are related to the previous group but have a beak-shaped rim, a very pronounced protrusion on the floor and a nearly flat base. Finally, O-9, O-20 and O-21 seem to be two-nozzled lamps with a horizontal handle imported from the East Aegean.<sup>1054</sup> A variation on this type of lamp was also produced in greyware in Olbia (O-22-O-30).

### *Lamps with continuous curve from side to rim*

O-8 96-501, VI-3 B 474/291. Pl. 318

One quarter of a lamp with an incurved rim. Nozzle missing, but the rim is badly burned where it must have been attached. Slightly raised base. (7.1) x 8 x 2.1. Fabric: very fine with some mica, 5YR 6/6. Thinly applied red to brown to black gloss on floor. Burnished beneath. Two faint light-red bands on rim. East Aegean. Late 6th to early 5th century BC. Bases on this type of lamps are not common, see Žuravlev, Bykovskaja & Želtikova 2007, nos. 27, 57, 63.

O-9 95-361, V Earth-dwelling 445/240. Pl. 318

Fr. of body, floor and inverted rim with horizontal loop handle. (6.1) x 10 x (2.5). Fabric: coarse with sand, lime and yellow inclusions and much fine mica, 10YR 7/4. Brown slip on tip of handle. Lightly burnished beneath. Late 6th to early 5th century BC. Possibly from a two-nozzled lamp with vertical handle, see Dupont 2005d, 75-76.

O-10 97-37, V Pit 490/237. Pl. 318

Half the reservoir of a lamp with incurved rim. No nozzle or handle preserved. (5) x 9.2 x 2.3. Fabric: fine and micaceous, 7.5YR 7/6. Lightly burnished beneath. A few brown spots on the ext. East Aegean. Late 6th to early 5th century BC.

Cf. Hübinger 2003, 207-208, no. 73; Žuravlev, Bykovskaja & Želtikova 2007, no. 66 (Pantikapaion).

O-11 90-104, IV-1 B 257/159. Pl. 318

Short spoon-shaped nozzle and part of body and rim on the left side. (4.4) x 7.8 x 2.1. Fabric: fine, somewhat powdery, with a few lime inclusions and much mica, 5YR 7/6. Gloss: 2.5YR 4/6, around wick hole, which occupies the whole of the nozzle and intrudes into the rim. Light slip outside. Slight trace of burning around the wick hole and on the rim. East Aegean. Late 6th to early 5th century BC.

Cf. Žuravlev, Bykovskaja & Želtikova 2007, no. 42.

<sup>1052</sup> Hübinger 2003, 198-202, 231-234.

<sup>1053</sup> Žuravlev, Bykovskaja & Želtikova 2007, 41-57; Dupont 2005d, 75; Kassab Tezgör & Sezer 1995, 61-62, nos. 107-112, proposing a Rhodian production for the main group (O-16-O-18) on account of the many lamps of this type found in Lindos (Blinkenberg 1931, 614).

<sup>1054</sup> Dupont 2005d, 75-76.

**O-12** 95-367, V Earth-dwelling 445/240. Pl. 318

Fr. of body, rim and floor with short spoon-shaped nozzle preserved. Heavy rounded side. The floor is nearly flat with a low central hump. (6.9) x 8.4 x 2.4. Fabric: coarse with sand and large lime and black inclusions and light-reflecting particles, 5YR 6/1. Badly burned on nozzle and rim. Olbian(?). Late 6th to early 5th century BC. Probably a local imitation of lamps like **O-11**.

**O-13** 94-731a, VI-2 B 395a/266. Pl. 318

Front half of a lamp with a small part of the nozzle preserved. Curving sides with very narrow beak-shaped rim. Nearly flat bottom with a narrow but pronounced central hump inside. (6.5) x 8.1 x 2. Micaceous clay with a few large black and ceramic inclusions, secondarily burnt pink to brown, 7.5YR 7/4 to 10YR 5/3. Brown gloss on rim. Slightly burnished beneath. Badly burned around nozzle and on the right side. East Aegean(?). Late 6th to early 5th century BC. Lamps with a similar protrusion on the floor are common at Gravisca (Boitani 1971, 282-285; Galli 2004, 32-33).

**O-14** 90-103, IV-1 B 257/159. Pl. 319

One quarter of a lamp with narrow beak-shaped rim. (7.3) x 8 x 2.1. Fabric: powdery with black sand and large pozzolana inclusions, as well as fine light-reflecting particles, 10YR 7/3. Dull, black gloss indicates where the nozzle must have been attached. Thin brown to dark-grey slip int. and on rim. Burnished beneath. Wash or slip ext., 10YR 8/2. Possibly similar shape as **O-13**.

**O-15** 89-777, II-6 B 186

Short unevenly made nozzle. L (2.8), H (1.7). Fabric: fine with a few lime inclusions, 5YR 6/6. Dull, black to very dark-brown gloss around nozzle. Badly burned around wick hole. Late 6th to first half of the 5th century BC. Possibly similar to **O-11**.

Not in the catalogue

Numbers in parentheses refer to Howland types or to comparable catalogue numbers: 00-1340 (21, Attic), 00-1041 (21A, Attic), 90-473 (as **O-13**), 91-361, 95-63 (as **O-11**), 96-409 (as **O-11**), 97-200 (as **O-11**), 97-351 (as **O-8**), 97-460, 97-477 (as **O-10**), 99-547, 99-697, 99-698 (as **O-11**), 99-699, 99-737, 99-738, 00-593 (as **O-13** but red clay), 00-608, 00-1042 (as **O-11**), 00-1166 (as **O-9**), 00-1214, 00-1371 (as **O-11**), 00-1598 (as **O-12**), 00-1799, 01-46 (as **O-13**)

### *Lamps with the rim at an angle to the side*

**O-16** 95-583, VI-2 B 455/257. Pl. 319

Two joining frs. of the floor, body and rim. Curving side with a narrow sloping rim at an acute angle to the body. Concave bottom rising to a cone inside. (6.4) x 6.5 x 1.7. Fabric: fine with some mica, 5YR 6/8. Gloss black with metallic sheen on central convex part of floor surrounded by thin band of weak red. Two bands on rim in weak-red and dark-brown gloss. Burnished beneath. East Aegean. 525-475 BC.

Cf. Kassab Tezgör & Sezer 1995, 61-62, nos. 107-112; Solov'ev 2005, 104, no. 178 (Berezan); Žuravlev, Bykovskaja & Želtikova 2007, 41-57, especially no. 70 (Pantikapaion).

**O-17** 87-716, II-3 B 89/12

Short spoon-shaped nozzle with part of body and rim on the left side. Curving side with a narrow sloping rim at an acute angle to the body.

(5) x 10 x (2.4). Fabric: fine with some light-reflecting particles, 5YR 7/6. Red to black gloss on nozzle and rim. Trace of burning on nozzle. See **O-16**.

**O-18** 91-1, IV-2 B 280/165. Pl. 319

Three joining frs. constituting three quarters of the reservoir with a small part of the nozzle preserved. (8) x 7.7 x (2.2). Fabric: many small and large lime inclusions, 10YR 5/2. The grey colour of the clay may have been caused by secondary burning. Very dark-grey gloss with metallic sheen on rim and in a circle on central part of convex floor. Burnished beneath. See **O-16**.

**O-19** 94-780, VI-2 B 395a/267. Pl. 319

Fr. of body, floor and rim. (6.8) x 8 x (2.3). Fabric: powdery with sand and large black and lime inclusions and some light-reflecting particles, 5YR 7/8. Covered with a pink slip, 7.5YR 8/4, that has worn off in large parts. Traces of red gloss on the side where the nozzle must have been attached. Burned on part of the rim. See **O-16**. Probably a local imitation.

**O-20** 90-276, IV-2 B 287/170. Pl. 319

Three joining frs. of slightly over one half of the rim and body of a lamp with two short nozzles and a horizontal loop handle. Floor missing. 13.5 x 9.3 x 2.2. Fabric: fine and very micaceous, 7.5YR 6/6. Dull, black gloss on nozzles and on outer part of handle. On rim alternating bands of black and white. Black gloss on floor. Burn marks on both nozzles although significantly more on one than on the other. Burnished beneath. East Aegean(?). Late 6th to early 5th century BC.

Cf. Dupont 2005d, 75-76. For a similar lamp from Pantikapaion, see Žuravlev, Bykovskaja & Želtikova 2007, 39, no. 20.

**O-21** 95-213, VI-2 B 410/255. Pl. 319

Fr. of body with broad, slightly sloping rim and part of floor. (6.6) x 9.5 x (2.1). Fabric: micaceous with a few large lime inclusions, 10YR 7/3. Brown slip on floor and on rim. Burnished beneath. Burned on rim. Late 6th to 5th century BC.

Not in the catalogue

Similar to or variants of **O 16** unless otherwise noted: 89-935, 90-435, 91-575, 93-472 (as **O-20**), 94-370, 97-201, 97-462, 97-497, 98-215, 98-367, 99-68, 99-341, 99-458, 99-534, 99-566 (as **O-20**), 99-600, 99-601, 99-602, 99-671, 99-719, 99-720, 00-460, 00-518, 00-651, 00-976, 00-1051, 00-1113, 00-1224, 00-1361 (with strokes of white on rim and floor), 01-223, 01-983, 02-556, 02-912 (as **O-20**)

### *Lamps with broad horizontal rims*

This group of lamps is characterised by a shallow, broad (9-12 cm), open reservoir and broad horizontal or slightly sloping rim. All the well-preserved lamps show two nozzles placed opposite each other and a triangular horizontal handle. The nozzles are very short and rounded, with large round or oval wick holes that intrude into the rim. In one instance, the tip of the nozzle is higher than the rim (97-527). The clay is typically grey or, less often, brown, and coarse with many voids. The examples may have a grey or greyish-brown, occasionally red (99-400), slip on parts, typically the rim and nozzle or the entire body. The lamps are always burnished beneath.

This type is frequently encountered in the northern Black Sea area, both as imported pieces and local imitations.<sup>1055</sup> Most of the 37 lamps

<sup>1055</sup> For the type and local imitations, see Dupont 2005d, 75-76; Kozub 1979, 20 (Olbia); Solov'ev 2005, 103, no. 175 (Berezan); Zabelina 1992, 302, fig. 1.1 (Pantikapaion). The type is very frequent among the lamps in the Kerch Museum, but these tend to be higher and have a narrower rim, Žuravlev, Bykovskaja & Želtikova 2007, 148-164.

from Sector NGS were probably produced in Olbia or the surrounding territory, but **O-29**, in a yellowish-red, micaceous clay, and a few others not in the catalogue may be imports. The shape is typical of the late 6th to early 5th century BC,<sup>1056</sup> but may have continued into the later 5th century BC or even later.<sup>1057</sup>

**O-22** 92-828, IV-3 B 343/208. Pl. 319

Eight joining frs. of a lamp with two nozzles and attachments for a horizontal handle. The wick hole fills the whole nozzle and intrudes slightly into the rim. (14) x 10.8 x 2.3, Øfill 6.9. Fabric: coarse with voids and some sand, lime inclusions and some light-reflecting particles, 7.5YR 5/2. Grey slip mottled brown on rim, the int. and on part of the ext. Lightly burnished beneath. Badly burned around wick hole and on the rim near the wick hole.

**O-23** 87-821, II-1 R 156/7. Pl. 319

Two joining frs. of the body and broad horizontal rim with a horizontal triangular handle and beginning of nozzle. (8) x 12 x (2). Fabric: coarse with voids and some very large lime to yellow inclusions, some black inclusions and many fine light-reflecting particles, 2.5YR 5/1. Burnished outside.

**O-24** 91-160, IV-2 B 307/169. Pl. 319

Short spoon-shaped nozzle with part of body and rim on both sides. Rim turns slightly upwards. (4.1) x 9.5 x (2.1), Øfill 5.4. Fabric: powdery with voids and a few lime inclusions and light-reflecting particles, 7.5YR 5/4. Trace of brown slip on outer part of nozzle and in a splash beneath. Lightly burnished beneath. Burned on the tip of the wick hole. The lamp was found with late Archaic material, but the type apparently had a long duration since an unpublished lamp with an identical profile from Panskoe I, Building U7 belongs to a 4th or early 3rd century BC context.

**O-25** 91-638, IV-1 B 315/141. Pl. 320

Nozzle with part of body and broad horizontal rim on right side. Spoon-shaped nozzle with elongated wick hole which intrudes into the rim. (6.9) x 9 x (2.1), Øfill 5. Fabric: with voids and a few lime inclusions and some fine light-reflecting particles, 10YR 6/1. Grey slip, 10YR 5/1, on the rim and on the nozzle. Burnished outside. Burned on the tip of the nozzle.

**O-26** 94-731, VI-2 B 395a/266. Pl. 320

Large fr. of the body and broad horizontal rim. Attachment for horizontal handle. (8.3) x 9 x (1.6), Øfill 5.2. Fabric: coarse with voids, a few lime inclusions and some fine light-reflecting particles, 10YR 4/2. Dark-grey slip but reserved under handle. Burnished beneath.

**O-27** 95-366, V Earth-dwelling 445/240

Fr. of body of a greyware lamp with part of nozzle. (5.9) x 9 x (2.1) Fabric: coarse with many voids, medium to large lime inclusions and

many light-reflecting particles, 5YR 5/1. Greyish-brown slip under nozzle which also has burn marks. Burnished ext. and underneath.

**O-28** 01-652, VI-3 B 641/298. Pl. 320

Spoon-shaped nozzle with one quarter of the body and broad horizontal rim on the left side. No handle preserved. (6.7) x 10 x (1.9), Øfill 5. Fabric: coarse with voids, specs of yellow, a few large lime inclusions and light-reflecting particles, 10YR 6/1. Burnished beneath. Burned around wick hole.

**O-29** 01-1075, VI-3 B 661/301. Pl. 320

Two joining frs. of body, part of floor and broad, slightly sloping rim. Attachments for horizontal loop handle. Beginning of bridged nozzle. (10.4) x 10 x 2.4, Øfill 6. Fabric: coarse with voids, many small and large lime inclusions and much fine mica, 5YR 5/6. Greyish-brown slip, 10YR 5/2, unevenly applied. Highly burnished beneath. Lightly burned around wick hole and on rim.

**O-30** 91-704, IV-1 B 315/142. Pl. 320

Two joining frs. of a very large, broad, bridged nozzle with part of body and rim on both sides. Narrow, slightly upwards rolled rim. (10) x 23 x (4.3), Øfill 19. Clay coarse with many voids and flaws, small to large ceramic, lime and black inclusions and few light-reflecting particles. Clay (core): 7.5YR 5/4, but 1 mm near the surface has turned dark-grey. Dark-grey slip covers the entire lamp. Burnished beneath. Burned on tip of nozzle. Olbian. Late 6th to early 5th century BC. The lamp has clear affinities with the group of lamps with broad, horizontal rims, but is distinguished from these by its far greater size and different rim.

Not in the catalogue

91-463, 91-464, 91-465, 94-530, 96-25, 97-137, 97-476, 97-527, 98-85, 98-272, 99-400, 99-568, 99-658, 99-659a, 99-666, 99-744, 00-23, 00-254, 00-501, 00-507, 00-607, 00-767, 00-926, 00-957, 00-1599, 01-1079

### *Lamps with rods*

This group has as its characteristic feature a tall rod rising from the floor and ending in an oval handle. A nearly complete profile is offered by **O-31**. It has a shallow, wide reservoir, rounded sides and a narrow sloping rim set at an angle to the side, quite similar to **O-16**.<sup>1058</sup> The floor has no base, but at the centre a thick hollow rod rises far above the reservoir. On none of the lamps are the nozzles preserved. More than half of the examples only have the handle with part of the rod preserved (**O-32-O-34**). The fabric and the restricted use of gloss suggest an origin in the east Aegean for **O-31-O-33**. **O-35** is a greyware imitation, probably local; a type which has been attested previously in Olbia.<sup>1059</sup> Generally, this type of lamp is quite rare,<sup>1060</sup> but the seven examples from Sector NGS and the fact that they were copied locally attest their popularity in Olbia. Elsewhere, the lamps have generally been

<sup>1056</sup> For a discussion of their date, see Zabelina 1992, 302. The lamps in Sector NGS are with few exceptions found in Archaic (**O-24**, **O-27** and **O-30**) or mixed Archaic and Classical contexts (**O-22**, **O-26** and **O-28**). Furthermore the examples from NGS generally have the short broad nozzles typical of the late Archaic period.

<sup>1057</sup> See **O-24** and Žuravlev, Bykovskaja & Želtikova 2007, 148-149.

<sup>1058</sup> This distinguishes them from the later late Classical and Hellenistic lamps with rods with loop handles (Robinson 1952, 378-381, nos. 123-133 (Olynthos); Howland 1958, 89-90 (Howland 27D)), which have taller and more closed reservoirs. At Kyme, somewhat similar lamps with multiple nozzles, designated cult lamps, have been dated to the Hellenistic period (Haken & Marsa 1974, 165-166, nos. 1, 2, 4).

<sup>1059</sup> Rusjaeva 1986, 508, fig. 190.

<sup>1060</sup> Specimens are published from Istros (Dupont 2005c, 442, no. 21), Pantikapaion (Zabelina 1992, 299), Gravisca (Boitani 1971, 283) and Olbia.

dated to the late 6th to early 5th century BC, but the type may have continued later. In Sector NGS, the local imitation **O-35** was found with other late Archaic lamps (**O-3** and **O-22**).

**O-31** 87-751, II-6 P 127. Pl. 320

Two joining frs. of the body, floor, rim and part of central rod. Nozzle broken off at body. Badly burned on rim above wick tube and in a small patch on the rod towards the nozzle. (7.2) x 9.5 x (5.6). Fabric: fine with many fine light-reflecting particles and a few small lime inclusions, 5YR 6/8. A light slip covers the entire body. Gloss: 10R 4/6, on floor, red to light-orange on rim and in four bands on rod. Burnished beneath. East Aegean.

**O-32** 96-279, VI-3 R 474/287. Pl. 320

Oval handle and part of the hollow rod. L (2.9), H (5.9). Fabric: fine with many lime inclusions and some light-reflecting particles, 5YR 6/8. Red gloss, 10R 5/8, on extremity of handle and in two bands on the rod. East Aegean.

**O-33** 87-788, II-1 R 156/6

Oval handle and part of the hollow rod. L (3.2), H (7.6). Fabric: fine with many light-reflecting particles, 5YR 6/5. Red gloss, 2.5R 4/8, on outer part of handle and in three bands on the rod. East Aegean.

**O-34** 96-256, VI-1 B 479/243. Pl. 320

Oval handle (section 1.7 x 1.1) with a small part of the rod preserved. Indentation in break; probably the end of hollow tube. L (3.4), H (5.4). Fabric: fine, somewhat powdery with voids, many light-reflecting particles and a few small lime inclusions, 5YR 7/6. Possibly Olbian.

**O-35** 92-827, IV-3 B 343/208. Pl. 321

Two joining frs. of a large hollow rod with an oval handle on top. A small part of the floor preserved. Many fingerprints on shaft. (8.4) x (8.4) x (14.1). Fabric: with some lime and black inclusions and few light-reflecting particles, 5YR 5/1. Dark-grey slip. Olbian.

Not in the catalogue  
01-634

## Classical period

During the Classical period the vast majority of the imported lamps are of Attic origin,<sup>1061</sup> mostly of Howland type 21B and C (**O-38-O-42**) and Howland 23C (**O-48-O-50**). While the first two types have many local imitations in both grey and red clay (**O-43-O-47**), this is never the case with the latter. In the 4th century BC a new local type of greyware lamps with raised rims and open reservoirs also appears (**O-51-O-54**), which towards the end of the century evolves into the common Hellenistic type with raised rim (**O-72-O-91**).

Even if some of the Archaic types may have continued into the early Classical period and some of the Howland type 25 lamps treated in the next section actually belong in the late Classical period, it is still safe to say that there are relatively few lamps in Sector NGS in the Classical period. Nearly all the lamps belong in mixed Archaic and Classical contexts, but a few, notably the local imitation of Howland type 21 with beak-shaped rims (**O-45** and **O-47**), turn up in the late 3rd century BC abandonment phase, which could indicate continued production into the 3rd century.

## Black-glossed lamps and related shapes

### *Lamps with central tubes*

**O-36** 94-737, VI-2 B 395a/266. Pl. 321

Four joining frs. of the body, rim and floor with central tube. The rim has a raised band around the filling hole with a reserved circle at its outer side. Contrary to the other lamps of this type from the Athenian Agora, this lamp does not have a raised base. (6.4) x 8 x 2.1. Fabric: fine with some light-reflecting particles, 7.5YR 7/6. Black to brown gloss with metallic sheen on rim, shoulder and on floor and tube. Otherwise covered with a diluted wash. Attic. 475-425 BC.

Cf. Howland 1958, 54-55 (Howland 22C).

### *Lamps with raised band around filling hole*

**O-37** 93-588, VI-1 west of Wall 379. Pl. 321

Body, floor and small part of rim. Raised band around filling hole. Slightly concave bottom with a scratched circle. (5.8) x 7.6 x 2.2. Fabric: very fine with few light-reflecting particles, 5YR 7/8. Good quality black gloss on floor and on rim except for a reserved band at outer edge of raised band. Wash, 5YR 6/6, ext. below rim. Light burn on body indicates where nozzle must have been. Graffito "E" beneath near centre (**S-106**). Attic. 500-450 BC.

Cf. Howland 1958, 43-44 (Howland 20); Blonde 1983, 72-74, nos. 68-71; Hübinger 2003, 278-280, nos. 171-173.

### *Lamps with continuous curve from side to rim*

**O-38** 96-357, VI-2. Pl. 321

Short nozzle and front part of a lamp on a broad slightly raised flat

<sup>1061</sup> For the dominance of Attic lamps, see the brief discussion by Bailey (1975, 30-31). This clear dominance of Attic products is not paralleled among the black-glossed tableware from Sector NGS.

base, curving sides. (6.9) x 7.8 x 1.8. Fabric: very fine with some fine light-reflecting particles, 5YR 6/6. Gloss black and lustrous, of good quality; inside with metallic sheen and peeling off. Reserved beneath base. Attic. 475-425 BC.

Cf. Howland 1958, 46-47 (Howland 21B); Scheibler 1976, 22-24, no. 60; Blonde 1983, 75-87.

**O-39** 97-22, VI-3 B 489/292. Pl. 321

Short nozzle with part of body and floor on both sides, curving sides. No rim preserved. (3.8) x 7 x 2.1. Fabric: fine with some light-reflecting particles, 5YR 7/6. Gloss black and lustrous, of good quality. Reserved under slightly raised base. Burned around tip of wick hole. See **O-38** (Howland 21B).

**O-40** 96-472, VI-3 B 474/290. Pl. 321

Fr. of floor, body and a small part of the rim. Slightly raised flat base with a groove around outer edge. (5.6) x 7 x (2.1), Øfill 5.1. Fabric: very fine with some fine light-reflecting particles, 5YR 6/6. Very dark-brown lustrous gloss with metallic sheen. Reserved beneath base. Since the nozzle is missing, it is impossible to determine whether the lamp belongs to Howland 21B (see **O-38**) or Howland 21C (see **O-41**).

**O-41** 00-727, VI-2 west of blocking 543. Pl. 321

Half a nozzle and part of the body and rim on the right side. Indentation on top of the nozzle going half way through, made with a pointed tool. (3) x 6 x (2.1), Øfill 4. Fabric: fine with a few lime inclusions and very few light-reflecting particles, 5YR 5/6. Gloss black of good quality, but somewhat dull, possibly due to secondary burning. Heavily burned around wick hole. Attic. 450-375 BC. The length of the nozzle indicates that the lamp belongs to type Howland 21C (Howland 1958, 48, no. 171); Blonde 1983, 75-87.

**O-42** 95-449, VI-2 B 410/254. Pl. 321

More than half of the reservoir of a lamp with curving sides. Both attachments for a horizontal handle preserved. Nozzle not preserved. Broad, raised, slightly concave base. White incrustations inside. (5.8) x 6.3 x (2.2), Øfill 3.8. Fabric: fine with a few light-reflecting particles, 7.5YR 6/6. Gloss dull-black except for reserved lower body and beneath. Attic. 475-400 BC. The profile closely resembles lamps of Howland type 21C, but the missing nozzle renders secure identification impossible, see **O-41**.

**O-43** 00-606, VI-2 west of blocking 543. Pl. 321

Part of body, floor and rim. Beginning of horizontal band handle. Curving sides with inverted beak-shaped rim. Heavy floor. (6.1) x 8 x 2.6. Fabric: micaceous with very large lime inclusions, 5YR 5/1. Lightly burnished beneath. Olbian(?). Mid-5th to 4th century BC. This shape, which seems to be a greyware imitation of Howland type 21, is common in Olbia (Knipovič 1940, 144-145).

**O-44** 95-572, VI-2 B 410/256. Pl. 321

Fr. of curving side. No part of rim preserved. (5.1) x 8 x (2.1). Fabric: with many lime inclusions and a few light-reflecting particles, 7.5YR 7/6. Light-brown slip on shoulder. Mid-5th to 4th century BC. Possibly a local imitation of Howland type 21, see **O-43**.

Not in the catalogue

Numbers in parentheses refer to Howland types or to comparable catalogue numbers: 00-1087 (21A or B, Attic), 99-700 (21B, Attic), 92-344 (21B), 02-923 (21B or C, Attic), 02-779 (21D, Attic), 96-116 (24A, Attic), 88-47 (as **O-43**), 87-480, 95-64 (as **O-43**)

### *Lamps with the rim at an angle to the side*

The lamps in this section, which seem to be grey and redware imitations of Howland type 21C but with narrow beak-shaped rims, are very common in Olbia.<sup>1062</sup> Like **O-45**, they tend to have higher reservoirs than the imported pieces, a feature that is also noticeable among the lamps from the Bosporan Kingdom.<sup>1063</sup> As noted above, production may have continued into the 3rd century BC.

**O-45** 89-47, II-6 B 195/55. Pl. 322

Intact lamp apart from handle and chips outside. Short nozzle with wick hole filling the top entirely. Curving sides with a very narrow beak-shaped rim at an angle to the body. Slightly raised, straight base with groove around it. Both attachments for horizontal band handle preserved. (9.9) x 7.6 x 3.1. Clay light yellowish-grey near surface and reddish-brown in core, with much mica and yellow porous inclusions. Grey slip, 2.5YR 4/0, covers the entire surface. Burned around wick hole. Olbian. 4th century BC.

Cf. Knipovič 1940, 144-145, tab. XXXIII, 4.

**O-46** 96-433, VI-3 B 474/289

Short, broad nozzle with a small part of body and inverted beak-shaped rim. L (3.5), H (2.5). Fabric: coarse with a few lime inclusions and light-reflecting particles, 10YR 5/1. Burned on tip of nozzle. See **O-45**.

**O-47** 94-639, VI-2 R 410/251. Pl. 322

Nozzle with small part of the body and beak-shaped rim on the left side. Elongated wick hole which intrudes into the rim. L (3.8), H (1.9). Fabric: powdery with some dark-brown inclusions, 5Y 8/3. See **O-45**.

Not in the catalogue

Similar to **O-32** unless otherwise noted: 87-299, 87-329, 87-330, 87-331, 88-551 (red clay), 95-152, 97-186 (red clay), 97-461 (red clay), 99-182, 99-565, 99-695, 00-920 (red clay)

### *Howland types 23 and 24*

**O-48** 87-395, II-7 R 116. Pl. 322

Inner part of a nozzle with part of the wall and rim on the right side. Tall body with curving sides. Broad, sloping rim. Tiny, elongated wick hole. (5) x 6 x (2.3). Fabric: very fine with few small lime inclusions, 5YR 7/6. Gloss black and lustrous, of good quality with a few spots of olive. Reserved patch under nozzle. Attic. 400-350 BC.

Cf. Howland 1958, 59-60 (Howland 23C).

**O-49** 90-346, IV-2 B 280/161. Pl. 322

Two joining frs. of nearly half the body and rim with the nozzle fully preserved. Attachment for a very wide, horizontal band handle. Rim slants slightly towards filling hole. (8) x 5.7 x (3.1). Fabric: very fine with few light-reflecting particles, 5YR 7/6. Gloss black and lustrous, of very high quality. Attic. Ca. 350 BC.

This lamp seems to be a transitional form between Howland 23C and D. It has the tall, nearly straight sides of Howland 23D, but the horizontal handle is absent on this type. Furthermore it lacks the two concentric grooves on the perimeter of the rim.

Cf. Howland 1958, 61, no. 236 (Howland 23C); cf. Rotroff 1997a, 494, for the introduction of 23D.

**O-50** 94-672, IV-2 B 302/192

Elongated nozzle of a lamp. Tube not centred. L (4.1), H (2.7). Fabric:

<sup>1062</sup> Knipovič 1940a, 144-145, tab. XXXIII, 4.

<sup>1063</sup> Žuravlev, Bykovskaja & Želtikova 2007, 115-148, nos. 198-286.

very fine without visible inclusions, 5YR 7/6. Black, lustrous gloss of good quality. Only a faint trace of burning at the tip of the nozzle. The shape of the nozzle is very much similar to O-49 and is likely to belong to a Howland type 23C lamp, but other 4th and early 3rd century BC types are a possibility. Attic. Date: 400-275(?) BC.

Cf. Howland 1958, 61-62 (Howland 23C?); Rotroff 1997a, 494.

Not in the catalogue

Numbers in parentheses refer to Howland types. Unless otherwise noted, the fabric appears to be Attic: 00-37 (23?), 02-829 (23?), 88-467 (23C), 88-599 (23C), 97-409 (23C), 00-1548 (23C), 00-1841 (23C), 99-644 (related to Howland 24C, not Attic)

### *Local lamps, with raised rims, open type*

In the 4th century BC a new type of locally produced lamp occurs.<sup>1064</sup> This appears somewhat like previous local imitations of Howland type 21, but breaks with tradition by having a raised rim around a very open reservoir. These lamps also introduce a vertical loop handle instead of a horizontal band handle.<sup>1065</sup> O-51 and O-52 have nearly vertical sides, while O-53 and O-54 have very pronounced shoulders. The type develops into the very popular type with raised rim around a more closed reservoir towards the end of the century (O-72-O-91). All six lamps are in grey clay, contrary to its later development, when examples appear much more frequently in red clay.

## Hellenistic period

Around 40% of the lamps in Sector NGS belong to the Hellenistic period. Nearly half of these are of the local type with raised rims (O-72-O-91). Attic lamps of Howland type 25 (O-55-O-67) dominate in the late 4th and early 3rd century BC, but turned imported lamps become scarce in the later 3rd century BC and Attic lamps almost disappear. Instead, we see a number of mouldmade lamps, probably of east Aegean origin, towards the end of the occupation in Sector NGS around the middle of the 2nd century BC.

### *Turned black-glossed lamps and related shapes*

By far the most common type of black-glossed lamp found in Sector NGS is Howland type 25 (O-55-O-67), beginning shortly before the middle of the 4th century BC and continuing to shortly before the middle of the 3rd century BC.<sup>1066</sup> Nearly all of these seem to be Attic, but a few examples from other production centres, possibly in the east Aegean, also occur. The two lamps of Howland type 25D (O-66, O-67), for example, both lack the heavy bases characteristic of the Attic examples and are glossed, unlike their Attic counterparts. A very high proportion of these (11 of 22) come from the selected contexts. Most are associated with early Hellenistic construction or are found with material of the late 3rd century abandonment period.

After the middle of the 3rd century BC, a sharp decline in the number of imported lamps sets in, although there are still a number of Howland type 32 from the later 3rd to early 2nd century BC not included in the selected contexts (O-69). These are no longer predominantly of Attic origin. Howland type 27, with a central tube, is repre-

O-51 94-656, IV-2 B 302/190. Pl. 322

Nearly half a lamp with lower attachment for a vertical loop handle. Nozzle not preserved. Flat base, curving sides and an oblique rim around open reservoir. (3.4) x 7.3 x (2.5), Øfill 5.1. Fabric: coarse with large black and a few large lime inclusions, 5Y 7/1. 4th century BC.

Cf. Zabelina 1992, 299, tab. 1.3-4.

O-52 94-782, VI-2 B 395a/267. Pl. 322

Two joining frs. of the body, floor and rim with beginning of nozzle. (7.1) x 7 x (2.7), Øfill 4.6. Fabric: coarse with a few large lime inclusions and many voids, 5Y 5/1. See O-51.

O-53 87-715, II-3 B 89/12. Pl. 322

Two joining frs. of nozzle and one quarter of the body and rim on the left side. Sharply offset shoulder and vertical rim. (8.5) x 10 x (3.2), Øfill 6. Fabric: coarse with sand and some fine light-reflecting particles, 10YR 6/1. 4th century BC.

Cf. Zabelina 1992, 306, tab. 1.5.

O-54 91-239, IV-2 B 301/175. Pl. 322

Half the body with part of the rim and a small vertical loop handle. Sharply offset shoulder and flaring rim. (4.8) x 7.3 x (3.3), Øfill 5.2. Clay (core): 10YR 6/1, dark-grey near surface, powdery with many dark-brown inclusions and few light-reflecting particles. See O-53.

Not in the catalogue

01-365, 01-1035

sented by five lamps (O-68), two of which are local imitations in grey clay.

O-55 92-319, IV-3 B 343/201. Pl. 322

Large fr. of the raised, concave base, curving body and inner part of nozzle. No handle or rim preserved, but a small trace of a groove near the shoulder can be seen. (5.9) x 5.9 x 3.6. Fabric: fine with many very fine light-reflecting particles, 5YR 6/6. Gloss dull, black and peeling off on the ext. White incrustations int. Attic. 370-275 BC.

Cf. Howland 1958, 67-69 (Howland 25A); Rotroff 1997a, 494-495.

O-56 95-456, VI-2 B 410/258. Pl. 322

Nozzle with part of body and rim on both sides. Tiny wick hole badly burned with burned stripe towards filling hole. Groove around filling hole. (5.1) x 5.5 x (2.7). Fabric: fine with many fine light-reflecting particles, 5YR 6/6. Patches of red slip int. and in one spot ext., 2.5YR

<sup>1064</sup> The four lamps in contexts were found with mixed Archaic and Classical material.

<sup>1065</sup> Bailey 1975, 75, no. 120; Zabelina 1992, 306, tab. 1.5.

<sup>1066</sup> For the date of Howland type 25 lamps, see Rotroff 1997a, 494-498.

4/8. Burnished ext. Many scratches where nozzle is joined to body. Attic(?). 370-260 BC.

Cf. Howland 1958, 70-71 (Howland 25A Prime); Rotroff 1997a, 495.

**O-57** 89-463. Pl. 322

Three joining frs., the nozzle with part of the body and rim on the left side. Nozzle broken off at the very tip. Small part of attachment for horizontal handle on left side. Deep groove on rim. Two shallow grooves on shoulder. (7.5) x 6 x (3). Fabric: fine with a few light-reflecting particles, 7.5YR 7/6. Gloss reddish-brown on int. Clay turned grey on the nozzle and on part of the body from heat produced from the wick hole. Burned black around wick hole. Graffito "BA" on upper side of nozzle (S-4).

See **O-56** (Howland 25A Prime).

**O-58** 96-74, II-5 B 390/38. Pl. 322

Seen in the showcase in the museum in Olbia. Fully preserved. Burned around wick hole. Light-brown gloss int. which has spilled over part of the nozzle when poured through the tube, unglazed ext. See **O-56** (Howland 25A Prime) and **O-61**.

**O-59** 93-514, VI-2 R 395/259. Pl. 323

A photograph and a drawing appear in the annual site report from 1993, but the lamp was not found in the storeroom in Olbia. Complete except for tip of nozzle. Curving body on raised, concave base without a convex hump inside. The rim slopes sharply inwards and has a deep groove at its perimeter. H 3.4, D 5.4. 340-275 BC, see, however, **O-61**. The shape clearly relates to Howland 25A, but it lacks the heavy base typical of the Attic examples. The sloping rim is found on lamps from the east Aegean, cf. Bailey 1975, 131, no. 254 (Knidos), 187, no. 430 (Kalyrna).

**O-60** 87-558, II-3 B 89/10

A photograph is included in the annual site report from 1987, but the lamp was not found in the storeroom in Olbia. Fully preserved. Pierced lug handle on right side. Unglazed ext. Burned around wick hole. 340-250 BC.

Cf. Howland 1958, 74-77 (Howland 25B Prime); Rotroff 1997a, 96-97.

**O-61** 94-449, VI-2 B 395a/261. Pl. 323

Complete except for a large chip on the right side. Highly concave, raised base with a thin raised disc which has more the appearance of a ring foot with resting surface. Angular scraping instead of a groove at transition between body and rim. Pierced lug handle on right side. Burned around wick hole. 8.1 x 6 x 3.9. Fabric: fine with much mica but very crumbly, probably due to secondary burning, 7.5YR 7/6. Unglazed. East Aegean(?). 3rd century BC. Related to Howland 25B Prime, but the fabric, the ring foot and the lack of a heavy base are clearly not Attic traits. The unusual profile on the rim may be a development towards later types with a ridge around a sunken filling-hole area.

**O-62** 96-23, II-5 B 390/36. Pl. 323

Nearly complete nozzle and part of body on the left side with a very small part of the rim. Deep groove around filling hole. (8.6) x 6.5 x (3.4). Fabric: fine with some light-reflecting particles and a few small lime inclusions, 5YR 7/6. Gloss red, 2.5YR 4/8, int. and on part of the ext., otherwise black and dull. Slightly burned around wick hole. Attic. 370-275 BC.

Cf. Howland 1958, 67-74 (Howland 25A or B); Rotroff 1997a, 494-496.

**O-63** 95-115, II-5 B 390/33. Pl. 323

Nozzle and part of body and rim on the left side. Groove at perimeter of rim. (6) x 6 x (2.4). Fabric: fine with fine light-reflecting particles,

7.5YR 7/6. Slip inside on the lower part, which seems to have been poured through the wick hole, where it spilled over and ran down the outside of the nozzle. Pinkish white coat ext., which has worn off around the rim. Burned around wick hole. Attic. 370-250 BC.

Cf. Howland 1958, 70-76 (Howland 25A or B Prime); Rotroff 1997a, 495-497.

**O-64** 95-549, II-5 R 451/42. Pl. 323

Fr. of the body with a small part of the rim and the attachment for the nozzle. (3.3) x 8 x (3.4). Fabric: fine with a few tiny lime inclusions, 7.5YR 7/6. Gloss black and lustrous, of good quality. Reserved groove at perimeter of rim. Attic. Second half of 4th century BC. The tall, nearly straight sides in combination with a narrow, straight rim is unusual. Possibly an early variant of 23D (Howland 1958, 61, no. 236).

**O-65** 92-382, III-3 R 359/113. Pl. 323

Intact lamp, apart from front part of nozzle. Tall, nearly vertical sides with a broad, slightly sloping rim. Raised base, concave beneath with raised disc. Pierced lug handle on right side. (9.2) x 7.6 x 4.6. Fabric: fine with some fine light-reflecting particles, 5YR 7/6. Gloss black to grey-olive and lustrous, of good quality. Reserved beneath base and groove at perimeter of rim. Attic. 350-270 BC. This is a glossed example of Howland type 25D Prime (Howland 1958, 79-80).

**O-66** 94-725, VI-2 R 410/251. Pl. 323

Nearly complete body with unpierced lug handle on the right side. Nozzle broken off but part of the tube is preserved. Broad, horizontal rim around small filling hole with a deep groove at its perimeter. Nearly straight sides. Raised base with disc beneath and narrow reserved resting surface. (5.2) x 5.4 x 3.1. Fabric: fine with much mica and a few large lime inclusions, 5YR 6/6. Trace after one very large inclusion (1.3 cm) that probably caused the nozzle to break off. Gloss red, 10R 4/8, and peeling, brown around nozzle. Burned on rim and on body near nozzle. East Aegean. 325-275 BC.

Cf. Howland 1958, 79-80 (variant of Howland 25D); similar to Tezgör & Sezer 1995, 81, no. 170.

**O-67** 95-39, VI-2 B 410/249. Pl. 323

A photograph and a drawing appear in the annual site report from 1995, but the lamp was not seen in the storeroom in Olbia. Base and front half of a lamp with the nozzle fully intact. Broad, slightly sloping rim with two grooves at the perimeter. Curving sides. Raised base that is highly concave beneath. D 5.5, H 2.8. Burned around wick hole. 335-270 BC.

Cf. Howland 1958, 79-80 (variant of Howland 25D); Rotroff 1997a, 498.

**O-68** 02-235. Pl. 323

Small lamp with central tube rising above the rim. A fragment of the body broken off, otherwise complete. Raised base with narrow resting surface. Curving sides with two grooves under everted rim. Another groove on its upper flat part. (5.8) x 4.6 x 3.4. Fabric: fine, slightly micaceous with few lime and red inclusions, 7.5YR 7/4. Gloss black to brown, of poor quality. Burned on the tip of the nozzle. East Aegean. 3rd to 2nd century BC. Everted rims on Howland type 27 are common in the east Aegean (cf. Barr 1996, 170-171). For an identical lamp found in the Agora in Olbia, see Levi 1964b, 256-257.

**O-69** 91-76, II-5 north of R 294. Pl. 323

Two joining frs. constituting three quarters of a lamp. Nozzle missing. Pierced lug handle on right side. Sharp angle between upper and lower part of body. Raised base, highly concave beneath. Sloping rim with angular groove at its perimeter. (6.4) x 7.5 x 3.9. Fabric: fine, micaceous with some voids and a few lime inclusions, 7.5YR 7/4. Gloss red, 2.5YR 4/6 to 10R 5/8. Rhodian(?). 3rd century BC.

Cf. Howland 1958, 99-101 (Howland 32). Very close parallels at Rhodes (Bailey 1975, 173, no. Q383) dated to the first half of the

3rd century BC or a little later. Cf. Rotroff 1997a, 501 for the date of Howland 32 at Athens (220-180 BC).

**O-70** 96-285, VI-3 R 474/287

Nozzle rounded on top with a small part of the body left and right. L (6.6), H (3.5). Fabric: fine with a few large voids and a few small lime inclusions, 7.5YR 7/6. Dull black to greenish gloss on the ext., lustrous, red, 2.5YR 4/4, on the int. Attic(?). 220-140 BC(?).

Cf. Howland 1958, 101-108 (Howland 33 or 34); Rotroff 1997a, 501-502.

**O-71** 99-492+99-493+99-498, VI R 591/241. Pl. 323

Three joining frs. of the upper part of a lamp with nozzle preserved. Pierced lug handle on right side. High, added collar around filling hole. The nozzle is long and rounded on top. (11.9) x 7.1 x (6). Fabric: fine with a few small lime inclusions and few light-reflecting particles, 7.5YR 7/4. Gloss dull, dark-grey, 10YR 4/1, with a brown tinge ext., lustrous metallic int. Attic(?). 150-90 BC. The fact that the lamp was found in late Hellenistic fill from the final abandonment phase of Sector NGS suggests that the "Kragenlampen" were produced before the last quarter of the 2nd century BC, as proposed by Scheibler (1976, 57-59).

Cf. Howland 1958, 117-118 (Howland 37A); Rotroff 1997a, 504, suggesting a later date.

Not in the catalogue

Numbers in parentheses refer to Howland shapes. Unless otherwise noted, the fabric appears to be Attic: 89-324 (25?), 00-1686 (25?), 87-60 (25A or B), 92-276 (25A or B), 99-457 (25A or B), 00-1629 (25A or B), 88-506 (25B), 01-953 (25B), 02-381 (25B prime), 00-35, 00-36, 91-297 (27, Attic?), 97-34 (27, local greyware), 99-350 (27, local greyware), 02-737 (27, western Asia Minor), 86-1002 (32), 88-131 (32,?), 89-106 (32,?), 89-166 (32, Rhodian?), 92-729 (32,?), 98-342 (32?, not Attic), 99-320 (32, not Attic), 99-607 (32,?), 93-158 (33A,?), 01-892 (33A), 99-411 (34A?, Attic?), 01-729 (34A?), 92-723 (35A, not Attic), 90-189 (35B?, not Attic), 02-641 (37A)

### *Lamps with raised rims*

This large and homogenous group of Hellenistic lamps has as its characteristic feature a rim that is turned upwards to form a vertical or nearly vertical collar around the filling hole. The bottoms are normally rounded, but in a few instances they are slightly flattened to secure stability. The nozzles are short and rounded, and the round wick hole normally occupies the width of the nozzle. Opposite the nozzle they have a vertical band handle attached at the shoulder and the rim. Only a few lamps show variations: **O-79** has two nozzles opposite each other

and **O-80** a broad, flat base. The shape remains remarkably consistent throughout the period of production. One chronological marker may be the width of the filling hole, which seems to decrease in the later examples following the general trend among Hellenistic lamps.<sup>1067</sup> Lamps where the diameter of the filling hole is larger than 50% of the diameter of the body (**O-72**, **O-76**, **O-77**, **O-83**, **O-85-O-87**) are generally associated with early Hellenistic floors or the late 3rd century BC abandonment, while lamps with smaller filling holes (**O-73-O-75**, **O-80-O-81**) are the most common in the late Hellenistic fill.

The lamps can be divided into two distinct groups: a red clay group and a grey clay group, but the distinction between them seems entirely to be a result of the firing process. The red clay version is by far the most numerous, with 41 pieces, while only nine belong to the grey clay group.<sup>1068</sup> Both groups can have a light, grey or red slip either internally or externally or both, that tends to wear off.

The type seems to have developed from the open type with raised rims (**O-51-O-54**) at the very end of the 4th century BC.<sup>1069</sup> In Olbia, they have been found with mixed 4th to 3rd century BC material,<sup>1070</sup> and in Myrmekion, in early 3rd century BC layers.<sup>1071</sup> At Panskoe I it is the most commonly occurring shape before the destruction of the site around 270 BC.<sup>1072</sup> All the lamps in Sector NGS are found in Hellenistic contexts. It remained popular down to at least the middle of the 2nd century BC and may have continued even longer.<sup>1073</sup> The more developed form of the type with a flaring rim, common in Pantikapaion from the 2nd century BC and continuing into the Roman period, has not been found in Sector NGS.<sup>1074</sup>

Lamps with raised rims are common in the whole northern part of the Black Sea and it is highly likely that Olbia was one of the production centres, but whether both the red and grey clay lamps found in Sector NGS are Olbian products is difficult to determine with certainty. However, the clay of the red clay lamps seems very similar to Fabric group 6 of the black gloss pottery, which is suggested as a local product.<sup>1075</sup>

**O-72** 86-386, II-5 R 62. Pl. 324

Complete lamp, except for vertical loop handle and chips at rim. Long thin indentation under nozzle. Very slight indication of a raised base. 9.2 x 7.4 x (3.2), Øfill 4. Fabric: coarse with much sand and a few lime inclusions of varying size, 5YR 6/8. Light slip on entire lamp. Burned around wick hole and on rim.

**O-73** 88-411, II-4 R 176/15. Pl. 324

Complete reservoir. Nozzle broken off at body. Traces of attachments of now lost vertical loop handle. (6.9) x 6.9 x (3.5), Øfill 2.4. Fabric: powdery with many large brick-red ceramic inclusions, sand and many fine light-reflecting particles, 5YR 7/8. Slightly burnished beneath but with many scratches.

<sup>1067</sup> This change was noted also by Knipovič (1940a, 145). There are too few examples of fully preserved lamps in Sector NGS to verify his observation that the nozzles become longer. Compare, however, **O-72**, with a wide filling hole and a short nozzle, and **O-74**, with a narrow filling hole and a longer nozzle.

<sup>1068</sup> Knipovič (1940a, 145) made a similar distinction and also noted that lamps in red clay were the most common.

<sup>1069</sup> Zabelina 1992, 306.

<sup>1070</sup> Knipovič 1940a, 144-145.

<sup>1071</sup> Gajdukavič 1987, 78.

<sup>1072</sup> Hannestad 2002a, 201-202.

<sup>1073</sup> Similar lamps with raised rims were also produced at a number of localities throughout the Mediterranean during the Roman period (Bailey 1975, 196-197, nos. Q 460-462 (examples from Kalymnos) with references to lamps from Syracuse, Aigina and Cyprus; Bailey 1988, 170, no. Q 1633 (Gau)).

<sup>1074</sup> Zabelina 1992, 306.

<sup>1075</sup> P. 200 above (D black-glossed).

**O-74** 89-815, IV-1 B 257/157. Pl. 324

Intact, except for vertical handle and chips on the rim. Badly burned around wick hole and on rim. Scrapings and many small indentations beneath. 8.8 x 6.5 x (3.3), Øfill 2.4. Fabric: coarse with sand, lime and quartz, 7.5YR 5/6.

**O-75** 89-839, IV-1 B 253/146. Pl. 324

Intact, apart from lower section of vertical handle. Burned around wick hole and clear signs of secondary burning on entire right side. Many holes and scratches beneath. 8.6 x 7 x 5.5, Øfill 2.1. Fabric: coarse with many sand inclusions and few light-reflecting particles, 2.5YR 5/8. Light slip nearly completely worn off.

**O-76** 91-490, II-5 B 311/24. Pl. 324

Large fr. of the left side of a lamp. Inner part of nozzle preserved. (6.4) x 7.5 x (3.1), Øfill 3.8. Fabric: coarse with small and a few very large lime inclusions, 5YR 6/8. Slightly burnished beneath.

**O-77** 91-491, II-5 B 311/24. Pl. 324

Fr. of the body and rim with a small part of the wick hole preserved. Burned on rim near nozzle. (5.4) x 7.5 x (4), Øfill 4. Fabric: coarse with lime, quartz, black inclusions and light-reflecting particles, 2.5YR 5/8. Slip: 10YR 6/4, on int., 5YR 6/6, on ext.

**O-78** 91-607, III-1 Stove 329/71. Pl. 324

Nozzle with part of the body and rim. (4.3) x 8 x (4), Øfill 3.4. Fabric: powdery with some light-reflecting particles and many small quartz and brown inclusions, 5YR 7/8. Brown slip int. Burned on the tip of the nozzle.

**O-79** 92-5, IV-1 B 315. Pl. 324

Half a lamp with two nozzles placed opposite each other (half of one preserved). (10.5) x 9 x 4.5, Øfill 4. Fabric: very coarse and with many lime inclusions, 5YR 6/8. Badly burnt around the preserved wick hole, on rim and inside nozzles.

For a similar lamp from Olbia, see Waldhauer 1914, no. 86.

**O-80** 92-402, IV-3 B 343/202. Pl. 325

Two joining frs. forming half a lamp. Indication of beginning of nozzle. Flat base. If there was a handle it must have been on the missing left side as there are no attachments for one opposite the nozzle. (4.6) x 6.1 x 3.7, Øfill 2.6. Fabric: powdery with a few light-reflecting particles and some sand, lime and black inclusions, 5YR 7/8. Burnt on nozzle and on rim.

**O-81** 92-403, IV-3 B 343/202. Pl. 325

Fr. of body, floor and rim with inner part of nozzle. Small part of wick hole preserved. (5.1) x 7.5 x 3.5, Øfill 2.4. Fabric: with very few light-reflecting particles, 5YR 7/6. Burnt inside and at the sides of the rim. White incrustations on int. and ext.

**O-82** 94-23, II-5 B 390/28. Pl. 325

Half a lamp with vertical handle preserved. Attachment for nozzle with fingerprints preserved. (8) x 7.6 x 4.9, Øfill 3. Fabric: coarse with sand, lime, brown and black inclusions and some light-reflecting particles, 2.5YR 6/8. Light slip ext. and on handle.

**O-83** 94-200, II-5 B 390/29. Pl. 325

Half a lamp with inner part of nozzle preserved. Entirely covered with a light slip. Very slight indication of a flattened base. (8.9) x 8.5 x (3.3), Øfill 4.5. Fabric: coarse with large black and lime inclusions, sand and some light-reflecting particles, 5YR 5/6.

**O-84** 94-436, VI-2 B 395a/261

Three joining frs. of the reservoir. No part of nozzle, rim or handle preserved. (7.2) x (6.8) x (2.8). Fabric: somewhat coarse with large black and lime inclusions, 5YR 6/8. Burned on rim and shoulder int. and ext.

**O-85** 94-613, VI-2 B 395a/263. Pl. 325

Half a lamp with beginning of nozzle preserved. Faint trace of attachments for vertical handle. (7.8) x 7.2 x (3.3), Øfill 3.5. Fabric: powdery with medium to large lime inclusions and small black sand, 7.5YR 7/6. Burned on rim near nozzle. White incrustations int.

**O-86** 94-703, II-5 B 390/31. Pl. 325

Complete, except for vertical handle and outer part of nozzle. Chipped outside. Flat base. (8) x 7.8 x 3.7, Øfill 4.1. Fabric: coarse with some lime inclusions and light-reflecting particles, 7.5YR 7/6. Badly burned on remaining part of nozzle and rim.

**O-87** 94-730, VI-2 B 395a/266. Pl. 325

Left side of a lamp with a small part of the nozzle preserved. (7.6) x 8 x (4.5), Øfill 3.5. Fabric: coarse with sand, many black and ceramic inclusions and few light-reflecting particles, 7.5YR 7/4 to 7.5YR 7/6. Entirely covered in a light slip, 10YR 8/2. Burned around wick hole.

**O-88** 99-631, VI R 591/241. Pl. 325

Two joining frs. forming half a lamp. Outer part of nozzle missing. No part of handle preserved. (6.8) x 7 x (4.1), Øfill 3.2. Fabric: very powdery with much sand and a few fine light-reflecting particles, 7.5YR 5/4. Burned on nozzle and on rim.

**O-89** 91-494, II-5 B 311/24. Pl. 325

Half of the body and rim with vertical loop handle. Fine groove around raised rim just above the shoulder. (7.1) x 6.8 x (4.2), Øfill 3.5. Fabric: powdery with large black and lime inclusions and few light-reflecting particles, 10YR 5/2. Grey slip, 10YR 8/2, ext. which has largely worn off.

**O-90** 94-301, VI-2 R 410/246. Pl. 325

Large fr. of the right side of a lamp with part of the nozzle and wick hole preserved. (7.8) x 8 x (3.8), Øfill 3.6. Fabric: powdery with black inclusions, 2.5YR 6/1. Light-grey slip. Slightly burned around wick hole and int.

**O-91** 94-676, VI-2 R 410/251. Pl. 325

Fr. of the body and rim of a large lamp. Part of attachment for nozzle preserved. (10.8) x 14 x (5.7). Fabric: with many fine light-reflecting particles, much sand and a few very large lime, ceramic and quartz inclusions (up to 4 mm), 5YR 6/8. Thick red slip, 2.5YR 5/8, on ext. The 14 cm Ø of this lamp far exceeds all other lamps with raised rim, which consistently fall in the narrow range between 6 cm and 9 cm. Furthermore, it is the only lamp with a red slip.

Not in the catalogue

Red clay unless otherwise noted: 86-910, 88-79, 88-135, 88-435, 89-794, 90-518, 94-368, 96-66, 96-67, 96-122, 96-305, 96-364, 97-463, 99-113, 99-358, 99-366 (light-grey clay), 00-212 (light-grey clay), 00-264 (light-grey clay), 00-1156, 00-1456 (light-grey clay), 00-1722, 01-235, 01-616, 01-712, 01-715 (light-grey clay), 01-778, 01-779, 01-842, 01-886 (light-grey clay), 02-162

## MOULDMADE LAMPS

22 mouldmade lamps have been found in Sector NGS. All seem to have been relief-decorated. With the exception of O-92, O-95, O-98, O-102 and O-103, all the lamps seen are of an oxidized, highly micaceous fabric, which suggests western Asia Minor and probably Ephesos as the production centre. It can, however, not be ruled out that lamps in a similar fabric were produced in Olbia.<sup>1076</sup> Most of the lamps from contexts are of Bruneau types I and II, but there is also an example of type VII (O-97).<sup>1077</sup> Furthermore, lamps of Bruneau types V (86-13) and IX (98-225) are represented among the lamps not from contexts. None of the frequently encountered Knidos lamps have been found in Sector NGS. The eight lamps found in contexts are found in the late Hellenistic fill, which suggests that they were made before the last quarter of the 2nd century BC.

**O-92** 86-815, I-1 R 10/1. Pl. 325

Half of upper part of a mouldmade lamp with upper part of nozzle. A small part of the wick hole with a broad band around it preserved. Burned around wick hole and inside nozzle. A broad band encircles the discus, which is decorated with circle of alternating four- and five-leaved flowers. Two holes have been punched through the discus before firing; a third hole was drilled later. Very small filling hole. Part of a flat handle with two grooves on left side. (8.4) x 6 x (1.8). Fabric: fine with a few small black and lime inclusions and very many fine light-reflecting particles, 5YR 6/6. Dull, peeling, black gloss outside, reddish-brown inside. Pergamene(?). 2nd century BC.

For a very similar lamp produced in Pergamon, see Kassab Tezgör & Sezer 1995, 145, no. 376.

**O-93** 90-219, IV-2 B 280/160. Pl. 326

Two joining frs. of half of the top of a mouldmade lamp with indication of the beginning of the nozzle. Decorated around filling hole with garlands with a pair of heart-shaped leaves and four-leaved flowers in high relief. (6.2) x 6 x (1.2). Fabric: fine with much silver mica, 10YR 6/2. Dull, dark-brown to black, peeling gloss ext., reserved int. Western Asia Minor, possibly Pergamene(?). Mid-2nd to beginning of the 1st century BC. Garlands with heart-shaped leaves are rare on lamps from Ephesos, but do occur on lamps from Pergamon (Schäfer 1968, 136-139). Although the clay is highly micaceous, a local workshop cannot be ruled out, see above.

**O-94** 91-345, IV-1 B 315/138. Pl. 326

Fragment of the upper part of the nozzle with part of the filling hole preserved. Decorated with *caduceus* on nozzle and five-leaved flower on shoulder. Low ridge around filling hole. Many fingerprints inside. (5.3) x (3.1) x (1.3). Fabric: fine with much silver mica, 7.5YR 5/1. Dull, black gloss of medium quality ext. Ephesian. Mid-2nd to early 1st century BC.

A lamp found on Delos (Bruneau 1965, no. 2644) has a similar *caduceus* on the nozzle.

**O-95** 97-412, VI-2 near staircase. Pl. 326

Fr. of the top of a mouldmade lamp with the filling hole and a small part of the wick hole preserved. Ridge around filling hole. Dull, black gloss ext. and in a broad line inside upper part of nozzle. Decorated on the nozzle with a mask of a male figure with a long beard, broad nose, pronounced eyebrows and pointed ears. Garland(?) on shoulder, of which only one heart-shaped leaf is preserved. (7.1) x (4.1) x (2).

Fabric: with many medium to large lime and red inclusions, 7.5YR 4/2. Ephesian(?). Second half of 2nd century BC.

Best parallel: Bruneau 1965, no. 2437, which also has a leaf above the right ear of the mask.

**O-96** 93-699, IV-4 Stair 385/228

Fr. of a nozzle and part of the body. Small part of tiny filling hole preserved. Trace of knotted garland on shoulder. Poorly joined upper and lower parts. (3.6) x (4) x (2.8). Fabric: fine with small white (shells?) and black inclusions and some light-reflecting particles, 5Y 6/1. Dark-grey gloss on upper part and a splash inside. Sign of burning on nozzle. Olbian(?).

**O-97** 92-320, IV-3 B 343/201

A photograph is included in the annual site report from 1992, but the lamp was not found in the storeroom in Olbia. Complete, except for handle. Bi-convex body, elongated nozzle rounded at tip with flukes. Edge around sunken filling-hole area. Canal on top between wick hole and filling hole. Elongated lozenges terminating in a circle on shoulder. Mid-2nd to early 1st century BC.

Cf. Dietrich & Dietrich 1966, 11-12, no. 32; Bailey 1975, 83, no. Q 141; Kassab Tezgör & Sezer 1995, 154-155, no. 408. For a similar lamp from the necropolis of Olbia, see Parovič-Pešikan 1974, 115-116.

**O-98** 92-321, IV-3 B 343/201

Seen in the showcase in the museum in Olbia. Complete, except for vertical handle. Bi-convex body. Ridge around filling-hole area. Long nozzle that widens around a very large, oval wick hole. Unglossed. Heavily burned around wick hole. Mid-2nd to early 1st century BC.

Similar to Waldhauer 1914, 24, no. 60.

**O-99** 92-675, IV-4 B 351/218

A photograph is included in the annual site report from 1992, but the lamp was not found in the storeroom in Olbia. Complete, except for outer part of the nozzle. Bi-convex body with tongue ornament on shoulder. Ridge around filling hole. Plain, vertical loop handle opposite nozzle. Delos type I. Second quarter of the 2nd to early 1st century BC.

**O-100** 93-28, III-3 R 278/96

A photograph is included in the annual site report from 1993, but the lamp was not found in the storeroom in Olbia. Complete, except for a small part of the nozzle. Bi-convex body. Ridge around filling hole. Lotus-palmette decoration on shoulder. Mid-2nd to early 1st century BC. Delos type I.

<sup>1076</sup> Moulds for lamps are known from Olbia. See above p. 271, Table 1 (mouldmade bowls). Note also that the majority of the mouldmade bowls were also produced in Ephesos.

<sup>1077</sup> Bruneau 1965.

Appears to be very much like a mould found in Ephesos (Mitsopoulos-Leon 2007, 95, no. L. 68; see also Bruneau 1965, no. 2478).

**O-101** 89-122, III-2 R 164. Pl. 326

Bird-shaped lamp on a stand. Broken at back, and lower part of stand is missing. Attached wing-shaped handles on both sides, each with two rows of dots. On upper part of nozzle a single line of dots across, made with a pointed instrument. (8.3) x 6.5 x (4.4). Fabric: fine with much fine mica, 2.5YR 6/1. Gloss dark-grey with a light-brown streak beneath nozzle. Burned around wick hole. Ephesos or western Asia Minor. Second half of the 2nd to beginning of the 1st century BC.

Cf. Bruneau 1965, no. 137; Heres 1969, 36, no. 92.

**O-102** 92-26+93-168+92-920, IV-4 B 353/224. Pl. 326

Seven frs., several joining, of the upper and lower part of a large lamp with a ring foot. One attachment for a handle preserved. Garland with one large and two smaller heart-shaped leaves. Part of inscription in relief

around edge: ΚΑ or ΚΑ (leaf) ΣΙΚΑ. (9) x 12 x (2). Fabric: fine with sand and some very fine light-reflecting particles, 2.5YR 6/8. Slip ext. weak-red, 10R 4/4, peeling off, int. red, 10R 5/8. 2nd to 1st century BC.

**O-103** 01-17. Pl. 326

Complete mouldmade two-nozzled volute lamp. The nozzles with triangular tips are set at an 80° angle. Poorly made with large irregularities in the form. Sketchy volutes. L 6.9, B 8.4, H 2.7. Fabric: fine with large lime inclusions and silver mica, 5YR 7/6. Gloss light-red, 2.5YR 6/8 to reddish-brown, 2.5YR 4/4. Slightly burned around wick holes. Bosporan. 1st century BC to 1st century AD.

Cf. Kobylina 1956, 75, fig. 22.5; Zabelina 1992, 318-319, pl. 7.5, 7.10; Zhuravlev & Zhuravleva 2002, 1.

Not in the catalogue

86-13, 90-537, 91-85, 98-225, 00-405, 00-921, 01-134, 01-519, 02-69, 02-296

## HANDMADE LAMPS

Relatively few handmade lamps have been found in Sector NGS and only one belongs to the selected contexts. Two distinct types are represented: a closed and an open. The unusual open type (**O-105**) has a round or oval open reservoir with the sides pressed slightly inwards to form one or more wick channels. The reservoir is placed on a high stem with a conical base that is concave beneath. The three examples from Sector NGS are quite similar but variations of the form have been found at several localities in the northern Black Sea region.<sup>1078</sup> The only lamps from Sector NGS definitely belonging to the Roman period are the limited number of handmade lamps of open type (**O-105**). This strongly suggests that Sector NGS had ceased to function as a residential area at this time.

**O-104** 02-286, VI-3 B 661/305. Pl. 326

Two joining frs. constituting three quarters of a handmade lamp. Left side of nozzle with part of body and rim missing. Nearly flat base and tall sides that curve inwards near the top forming a fairly small filling hole. Long, broad nozzle. Heavy, vertical band handle opposite nozzle. (11.2) x (5) x 5.5, Øfill 2.6. Clay brown to black and very crumbly, with stones and vegetal temper and many fine light-reflecting particles. Layers of white and yellow in the clay. Light-brown to grey slip, 7.5YR 6/4, covering much of the ext. Slightly burned around wick hole. Olbian. Similar lamps found elsewhere are dated to the 1st to 2nd century AD (Arsen'eva 1988, 86, tab. 29.2 (Tanais); Gavriljuk & Sokolova 2007, 286, 336, no. 214 (Nymphaion)), but this lamp came from late Hellenistic fill.

**O-105** 96-313, V R 469. Pl. 326

Handmade lamp of open type with one wick channel. Complete, except for three breaks on the rim and half of the base. 9.4 x 6.3 x 10.5. Clay (core): 7.5YR 5/1, surface: 7.5YR 7/6, very coarse and crumbly with vegetal temper and very large black, lime and shell inclusions and much fine mica. Badly burnt around wick channel. Olbian. 1st to 2nd century AD.

Cf. Gudkova & Brujako 1997, 73-74, fig. 1.9-10 (Nikonion).

Not in the catalogue

Closed type: 85-54, 97-432, 00-832; open type: 89-29, 97-123

## MISCELLANEOUS LAMPS

**O-106** 94-404, VI-2 R 410/247. Pl. 326

Fr. of the body, rim and raised concave base of a miniature lamp; complete profile. No nozzle or handle preserved. Curving body with horizontal rim with a low ridge around the filling hole. (3.5) x 3.6 x 2.2, Øfill 1.7. Fabric: somewhat porous with very much black pyroxene,

some lime inclusions and few light-reflecting particles, 5YR 6/6. The similarity of the fabric to south Pontic amphoras suggests an origin in this region, possibly Sinope. First half of 3rd century BC(?).

Similar to Kassab Tezgör & Sezer 1995, no. 217, but without the

<sup>1078</sup> Kastanajan 1981, 84, nos. 58-59 (Tyritake), 99, nos. 54-55 (Iluraton); Arsen'eva 1988, 104, tab. 34.1 (Tanais); Gudkova & Brujako 1997, 73-74, fig. 1.9-10 (Nikonion, with longer stems); Zaginailo & Sekerskaya 1997, 24, fig. 7 (Nikonion, with multiple reservoirs on the same base); Zaitsev 2002, 43, fig. 8.3 (Ust'-Alma); Zubarev & Krajneva 2004, 202-203, nos. 20-21 (Belinskoe).

internal cavity in the floor. A seemingly similar lamp was found in Anapa (Waldhauer 1914, no. 35).

**O-107** 94-446, VI-2 B 395a/261. Pl. 326

Fr. of the body of a large lamp with beginning of nozzle and a large solid knob handle immediately to the left of the nozzle. L (4.9), B (8.7),

H (5.4). Fabric: powdery with light-reflecting particles and small lime inclusions, 5YR 6/6. Light slip on int. Olbian(?). Possibly 3rd century BC according to the context.

Not in the catalogue  
87-307

## NOT SEEN

The following items referred to as lamps in the find lists could not be found in the storeroom or the museum in Olbia, and they do not figure among the material taken to Kiev. No photographs or drawings were included in the reports.

**O-108** 88-600, II-6 B 195/53

Referred to as a black-glossed lamp in the find list.

**O-109** 93-1144, IV-4 R 392/221

**O-110** 93-1150, IV-4 R 392/221

Referred to as a black-glossed lamp in the find list.

Not from deposits

85-21, 85-76, 87-105, 87-126, 87-296, 93-290, 95-314, 00-1215, 00-1457, 01-534, 02-316, 02-815

