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AN EARLY IMPERIAL SHIPWRECK IN THE DEEP SEA OFF SKERKI BANK

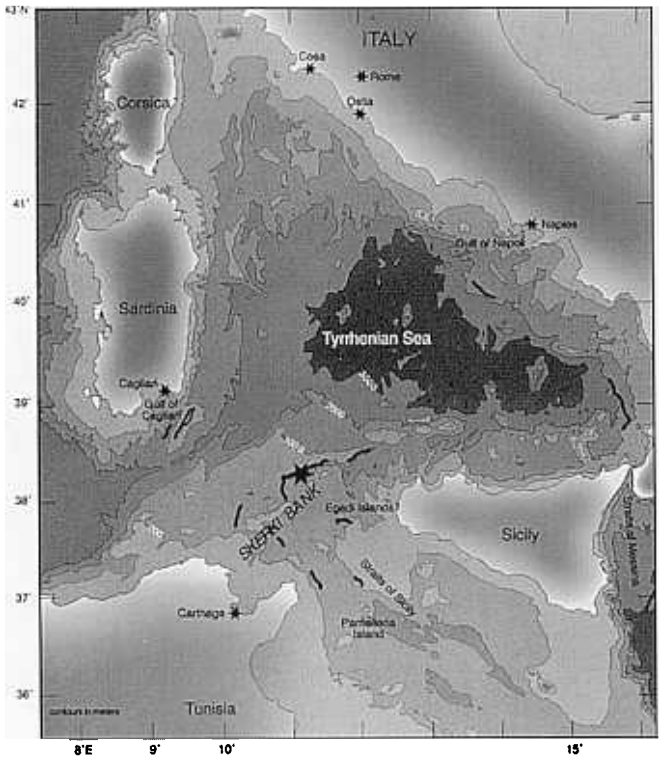

Fig. 1: Location of Skerki Bank Deep Sea Archaeological Project. Black lines indicate original exploration in 1988 by the R/V *Starella*. Depth is in meters.

The archaeological discoveries in the deep sea in the international waters off Skerki Bank document a new ancient trade route over the open seas between ancient Carthage and Rome (**fig. 1**). At a depth of about 800 m, eight individual shipwreck sites, ranging in date from the first century BC to the nineteenth century AD were discovered in 1989[1] and 1997[2]. They were studied and mapped with selected material recovered from all but the modern wrecks. Five of the wrecks are Roman, the earliest, Skerki Wreck D[3], dating in the first half of the first century BC and the latest, named by this author, the *ISIS*, dating in the last quarter of the fourth century AD[4]. The other three merchantmen all date in the earlier imperial period. The largest and heaviest laden of these, designated Skerki Wreck F (**fig. 2**), is selected for discussion here with focus upon the amphora finds which suggest a date for the wreck around the mid-first century AD.[5]

[1] R. D. Ballard/R. Archbold/A. M. McCann, The Lost Wreck of the *ISIS* (Toronto 1990). — McCann/Freed 1994. — McCann 2000. — A. M. McCann, Lamps and the Dating of Roman Ports and Ships. In: N. W. Goldman (ed.), New Light from Ancient Cosa. Classical Mediterranean Studies in Honor of Cleo Rickman Fitch. Hermeneutics of Art 10 (New York NY 2001) 25–34.

[2] Ballard/McCann *et al.* 2000.

[3] Ballard/McCann *et al.* 2000, 1608–1612. — McCann 2000, 446–448.

[4] McCann/Freed 1994, 3–58.

[5] Ballard/McCann *et al.* 2000, 1612–1614, with John P. Oleson. — In the study of the amphoras I am particularly grateful to Elizabeth Lyding Will, Joann Freed, Archer Martin and Clementina Panella for their generous help. I am also grateful to David F. Williams for his petrological analyses of the material as well as many helpful suggestions.

Summary of catalogued finds from Skerki Wreck F:

Number	*Type*	*Fabric*	*Origin*	*Date*
SK97.081	Amphora, Dressel 2 (wine)	Ceramic	Tarraconensis	*c.* AD 50
SK97.082	Amphora, Dressel 7–11 (garum)	Ceramic	Baetica	*c.* AD 50
SK97.083	Lid/plate	Ceramic	C1 AD	
SK97.084	Lid/plate	Ceramic	C1 AD	
SK97.085	Lid/plate	Ceramic	C1 AD	
SK97.086	Lid/plate	Ceramic	C1 AD	
SK97.087	Amphora, Neo-Punic (garum)	Ceramic	Tunisia	150 BC – C1 AD
SK97.088	Amphora (wine)	Ceramic	Naxos, Sicily	30–100 AD
SK97.089	Jug	Ceramic		
SK97.089A	Nail, with wood	Bronze, wood		
SK97.090	Nail	Bronze		
SK97.091	Nail, in wood	Bronze		
SK97.097	Amphora, flat base (*lomentum*?)	Ceramic	North Africa?	50–75 AD
SK97.098	Pan, round bottomed	Ceramic	North Africa?	C1 AD
SK97.099	Lid/plate	Ceramic		
SK97.100	Pan, round bottomed	Ceramic	North Africa?	C1 AD
SK97.101	Casserole Hayes Form 194	Ceramic	North Africa	50–100 AD
SK97.102	Pan, flat bottomed	Ceramic	Pompeii?	C1 AD
SK97.103	Amphora, flat base (*lomentum*?)	Ceramic	North Africa?	50–75 AD
SK97.104	Amphora, flat base (*lomentum*?)	Ceramic	North Africa?	50–75 AD
SK97.105	Basin	Ceramic	Spain?	C1 AD
SK97.107	Lid	Ceramic	North Africa?	C1 AD
SK97.109	Lid	Ceramic	North Africa?	C1 AD
SK97.110	Casserole Hayes Form 194	Ceramic	North Africa	50–100 AD
SK97.111	Lid	Ceramic	North Africa?	C1 AD

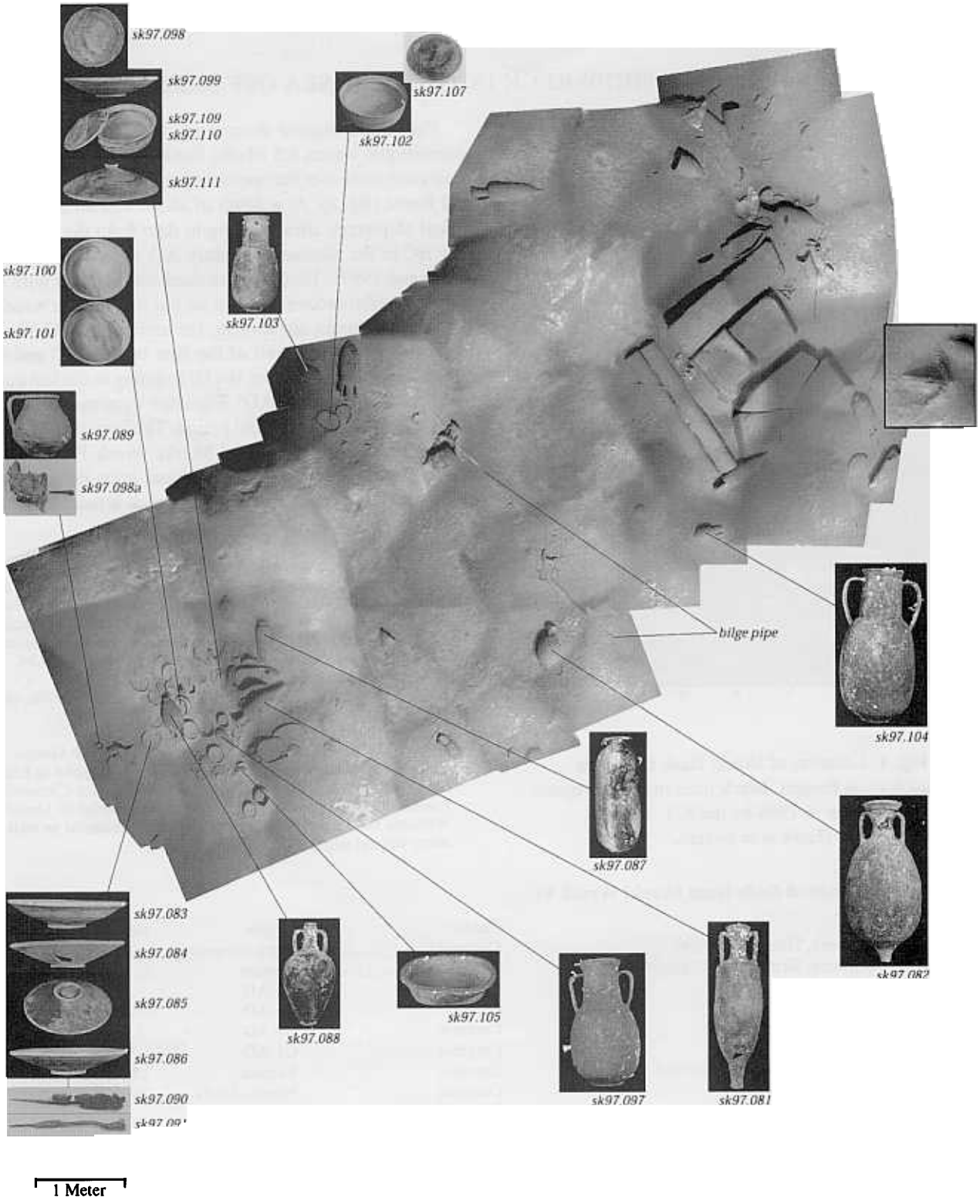

Fig. 2: Photomosaic of Skerki Wreck F found at depth of *c.*800 m, looking north. Roman cargo ship of mid-first century AD, showing location of individual artifacts recovered as well as objects identified but not recovered (i.e. bilge pipe, iron anchor). (*Photo: Institute for Exploration/Woods Hole Oceanographic Institution*).

The wreck site measures 20 m overall, suggesting that Skerki F was a medium-sized freighter measuring about 19–20 m in length with a beam of 7–8 m.[6] The sailing vessel was loaded with a remarkably varied cargo: high quality building stone roughed out for columns and blocks, wine, oil and fish sauce amphoras in addition to numerous sets of virtually every shape of cooking and coarse ware needed

[6] For size and tonnage of ancient freighters see L. Casson, Ships and Seamanship in the Ancient World (Baltimore MD, London 1995) 170–190.

for a fully-equipped Roman kitchen. An iron anchor probably indicates the bow. An isolated amphora and several cooking ware vessels lie near it. The cargo of stone which was carefully packed in at least two layers is visible 6 m to the SE: six large, irregular polygons and two roughed-out, monolithic column blanks *c.*2.6 m long. For loading purposes, the irregular shapes were carefully arranged to form an efficient rectangular mass *c.*2.6 m side to side and *c.*3.3 m fore and aft. Three other tumbled blocks appear in the mud to the NW. Samples could not be taken of the blocks with the equipment available, but the slightly rounded polygonal shapes and dull color look more like quarry-fractured granite than roughly trimmed marble. The stone probably was loaded before the rest of the cargo.[7] If they are granite, the blocks most likely came from the quarries in Aswan, shipped down the Nile to Alexandria on barges to be loaded on seagoing ships there. A deep-bellied cargo ship such as one pictured on a sarcophagus from the second half of the first century AD in the National Museum, Beirut, Skerki Wreck F probably had a weight aboard of at least 250 tons and may well have carried both cargo and passengers (**fig. 3**).

An empty space now seems to separate the stone from the cargo of pottery to the SE. Two bilge pump discharge pipes can be seen in this area, oriented perpendicular to the restored line of the keel. Organic cargo may have been stored in this section of the hold such as grain or lentils in sacks.

The shipment of Roman kitchen ware was stowed 8 m to the SE, on line with the anchor and stone blocks: basins, saucepans, casseroles, frying pans, bowls, lid-plates, jars, jugs and pitchers. Many of the vessels were still stacked as they were shipped, lids and lid-plates nestled one into another, and casseroles nested one on top of another, according to size.[8] No remains of packing materials were observed, but the mud between the packed vessels had a more yellow-brown color than the usual gray clay of the sea floor. Samples were taken of the mud around the pottery, and microscopic examination may reveal remains of packing material, or crates or baskets into which the pottery may have been stacked. While a few amphoras lay around and on top of the stacked kitchen ware shipment, this portion of the cargo is very well defined and probably was packed separately as a unit.

From Skerki F, 26 artifacts were recovered: seven amphoras, eight lids/plates, six casseroles, two jugs, one large washing basin, and three nails. The amphoras are of five different types. The petrological analyses of their fabrics by David F. Williams indicates that they come from North Africa, Spain, Sicily and Pompeii. Of particular interest are three amphoras of the same form (SK97.097, SK97.103, SK97.104), but in graduated sizes, suggesting that their contents were for a diverse and varied market (**figs. 4–7**). This flat-bottomed shape is known to me only from an example in Pompeii[9], and one in Padua[10]. A *dipinto* on the vessel from Pompeii identifies the contents as *lomentum*. *Lomentum* is described by Pliny the Elder[11] as both a blue pigment and a powder made from bean meal used as a cosmetic, detergent and medicine. The fabric, however, of SK97.103, which is very similar to both SK97.097 and SK97.104, Williams indicates is not Campanian but suggests an origin in North

Fig. 3: Cargo vessel under full sail on sarcophagus (second half of first century AD) in National Museum, Beirut. (*Photo: Archives Photographics, Paris*).

Africa. On the basis of the Pompeiian example, however, it seems reasonable to date the Skerki flat bottomed jars in the third quarter of the first century AD, before the destruction of Pompeii in AD 79. They appear to be the first evidence for the export of this product.

Also represented on Skerki Wreck F is a flat-bottomed wine jar from Sicily (SK97.088), a very popular type from the first through the fourth centuries AD (**fig. 8**).[12] Originating in Naxos, Sicily, typical features are the narrow neck with round handles with a deep central groove, ovoid body with a high shoulder and a flat ring base. This form is also found at Pompeii and Ostia, dated by Clementina Panella between 30 and 100 AD.[13]

Two other amphoras from Skerki F come from Spain: SK97.081 and SK97.082. Williams identifies the fabric of

[7] H. von Hesberg, Die Architekturteile. In: Hellenkemper Salies 1994, 175–183.

[8] M.-F. Giacobbi-Lequément, La céramique de l'épave *Fos 1*. Archaeonautica 7, 1987, 167–191.

[9] For shape see: C. Panella, Per uno studio delle anfore di Pompeii. Le forme VIII e X della tipologia di R. Schoene. In: In memoria di C. Becatti. Stud. Miscellanei 22 (Roma 1976) 151–162 fig. 1,II. — *CIL* IV, 2597 with dipinto naming *lomentum*. — I am grateful to Elizabeth Lyding Will for this identification and references.

[10] P. Pastore, Anfore da varie località di Padova. In: S. Pesavento Mattioli (ed.), Anfore romane a Padova: ritrovamenti dalla città. Mat. Arch. 1 (Modena 1992) 149 no. 284 fig. 135, mistakenly identified as Dressel 21–22. I am grateful to A. Opaiţ for this last reference.

[11] Plin. nat. 18,117; 33,89; 33,162.

[12] See R. J. A. Wilson, Sicily under the Roman empire. The archaeology of a Roman province, 36 BC – AD 535 (Warminster, Wiltshire 1990) 264–265 fig. 224, from El Djem, but produced in Naxos, Sicily with distribution map of the type, fig. 225. He identifies this form with Riley's Middle Roman Amphora I: J. A. Riley, The Coarse Pottery from Berenice. In: J. A. Lloyd (ed.), Excavations at Sidi Khrebish Benghazi (Berenice) II. Suppl. Libya Ant. V.II (Tripoli 1979) 177–180.

[13] Personal discussion and see: C. Panella, Anfore. In: A. Carandini/C. Panella (eds.), Ostia III. Le terme del Nuotatore. Scavo degli ambienti III, VI, VII. Scavo dell'ambiente V e di un saggio nel'area SO. Stud. Miscellanei 21 (Roma 1973) 632 no. 43. — AA.VV., Le terme del Nuotatore. Scavo dell'ambiente I. Ostia II. Stud. Miscellanei 16 (Roma 1970) 105 pl. 29 no. 523.

Fig. 4: Flat-bottomed amphoras from Skerki Wreck F: SK97.104, SK97.097, SK97.103. Institute for Exploration, Mystic, Conn. (*Photo M. Hamilton*).

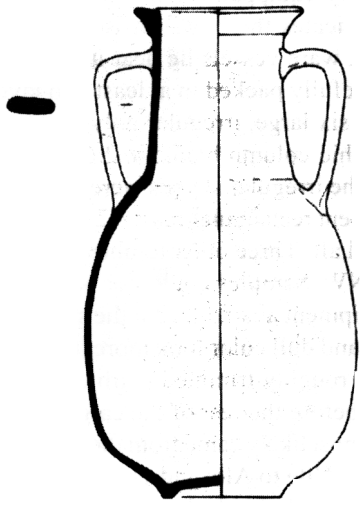

Fig. 5: Flat-bottomed amphora from Skerki Wreck F, SK97.097. MPH: 0.32. Scale: 1:5. (*C. Alexander*).

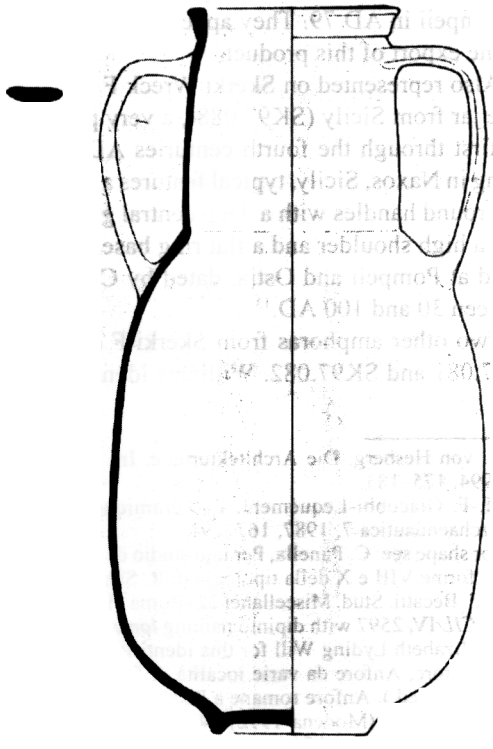

Fig. 6: Flat-bottomed amphora from Skerki Wreck F, SK97.104. MPH: 0.47. Scale 1:5. (*C. Alexander*).

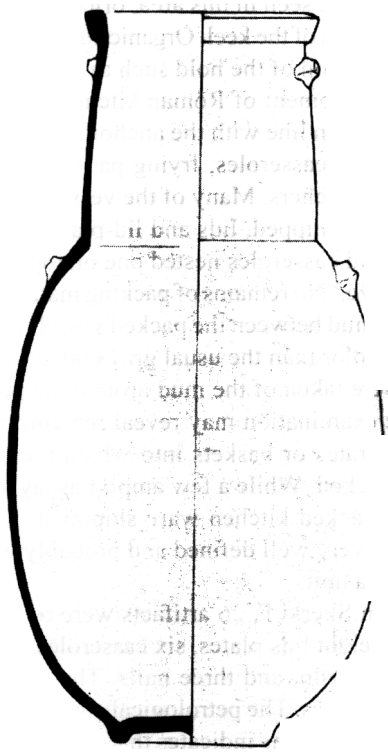

Fig. 7: Flat-bottomed amphora from Skerki Wreck F, SK97.103. MPH: 0.49. Scale: 1:5. (*C. Alexander*).

SK97.081, a Dressel Form 2 wine jar, with Tarraconensis (**fig. 9**).[14] This general class of amphoras, frequently referred to as Dressel 2–4, includes many variants of form and fabric and is based on the famous Greek Koan wine amphoras with double rolled handles made on the island of Kos.[15] The Italian pseudo-Koan amphoras are amongst the most common wine amphoras in use during the period from the latter

[14] For analysis of the Tarraonensian clay see D. F. Williams, A Petrological Note on Amphora Fabrics from the Survey and Along the Eastern Spanish Coast. In: J. M. Carreté/S. Keay/M. Millet *et al.*, A Roman Provincial Capital and its Hinterland. The Survey of the Territory of Tarragona, Spain, 1985–1990. Journal Roman Arch. Suppl. 15 (Ann Arbor MI 1995) 304–310.

[15] V. R. Grace, Amphoras and the Ancient Wine Trade. Excav. Athenian Agora Picture Book 6 (Princeton, NJ 1961, rev. 1979) figs. 56–57. — V. R. Grace, The Commercial Amphoras from the

Fig. 8: Wine amphora from Sicily, Skerki Wreck F, SK97.088. MPH: 0.587. Institute for Exploration, Mystic, Conn. (*Photo M. Hamilton*).

Fig. 9: Wine amphora from Tarraconensis, Skerki Wreck F, SK97.081. MPH: 0.98. Institute for Exploration, Mystic, Conn. (*Photo M. Hamilton*).

Fig. 10: Amphora for fish products from Baetica, Skerki Wreck F, SK97.082. MPH: 0.81. Institute for Exploration, Mystic, Conn. (*Photo M. Hamilton*).

Fig. 11: Neo-Punic amphora from Tunisia, Skerki Wreck F, SK97.087. MPH: 0.55. Institute for Exploration, Mystic, Conn. (*Photo M. Hamilton*).

part of the first century BC and the first century AD.[16] They were produced in great numbers at many places both in the eastern and western Mediterranean.[17] More than 350 Dressel 2–4 amphoras from Spain and Italy have recently been documented by Joann Freed from the excavations at Carthage.[18] That they made their way as far east as India has been shown by Elizabeth Lyding Will in her recent studies of the amphoras from Arikamedu.[19]

The Skerki Wreck F amphora, SK97.081, with its long, tapering body with a height of 98 cm and diameter of 29 cm corresponds closely to the Dressel 2 amphoras from Tarraco in the Second Amphora Wall at Carthage documented by Freed and dated *c.* AD 50.[20] From among the many Spanish shipwrecks found carrying Tarraconensian amphoras, a close parallel in size and fabric to the Skerki amphora are those from the wreck of the *Petit-Congloué* also dated around the mid first century AD.[21] The Dressel 2–4 amphoras from this wreck vary in height from 97.5 to 105.5 cm with diameters between 29 and 30.5 cm,[22] measurements that closely correspond to those of SK97.081. The Dressel 2 form differs from the earlier Dressel 3 type which is both shorter and more ovoid in shape.[23] Dressel 3 is mainly known in Campania but was also produced in northeastern Spain.[24]

The petrological analysis of the second amphora from Spain, SK97.082 (**fig. 10**), suggests an origin along the coastal area of Baetica. This jar belongs to a widespread class of amphoras, Dressel Forms 7–11, commonly associated with garum or other fish products. This general type of vessel is commonly found on many Roman sites, especially military ones.[25] The main floruit for the export of this class of amphora is from the late first century BC to the first AD. The Skerki example appears closest to forms dating around the mid first century. For example, compare the jar from the *Dramont D* wreck grouped with Dressel 9 amphoras in M. Sciallano and P. Sibella.[26] The Skerki jar with its heavy, projecting collar rim with concave sides and ovoid body appears closest in shape to this Dressel 9 group.

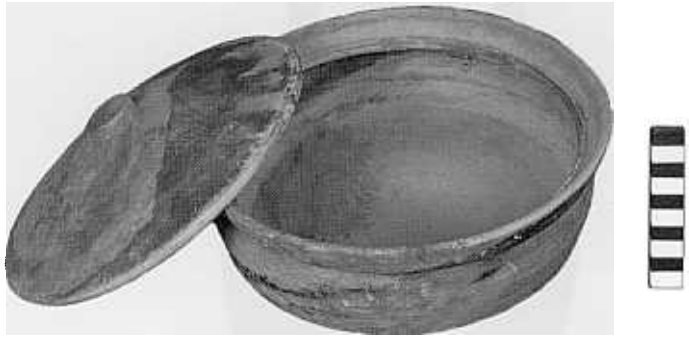

Fig. 12: Casserole, African Red Slip Ware, Hayes Form 194. Skerki Wreck F, SK97.110; lid, SK97.109. Institute for Exploration, Mystic, Conn. (*Photo M. Hamilton*).

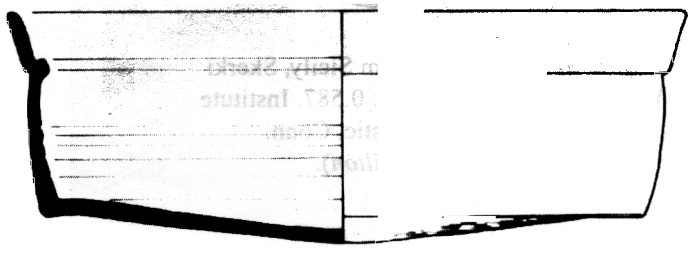

Fig. 13: Casserole, African Red Slip Ware, Hayes Form 194. Skerki Wreck F, SK97.110. Scale: 1:3. (*C. Alexander*).

Antikythera Shipwreck. In: G. D. Weinberg (ed.), The Antikythera Shipwreck Reconsidered. Transact. Am. Phil. Soc. 55.3, 1965, 10–17 figs. 4,6–10; 5,12.H (top center). — A. Hesnard, Imitations et raisonnement archéologique: à propos des amphores de Rhodes et de Cos. In: J.-Y. Empereur/Y. Garlan (eds.), Recherches sur les amphores grecques. Bull. Corr. Hellénique Suppl. 13 (Paris 1986) 75–79. — For further discussion and bibliography on Koan amphoras see Will 1991, especially note 3. — For history of Koan wine trade and types of Koan wine see: S. M. Sherwin-White, Ancient Cos. Hypomnemata 51 (Göttingen 1978) 236–241.

[16] F. Zevi, Appunti sulle anfore romane. I-La tavola tipologica del Dressel. Arch. Class. 18, 1966, 214–215, who cites consular dates for Dressel 2–4 from the beginning of the Augustan era. — Panella/Fano 1977. — E. L. Will in A. M. McCann *et al.*, The Roman Port and Fishery of Cosa. A Center of Ancient Trade (Princeton NJ 1987) 205–207 Type 12b. — Freed in McCann/Freed 1994, 68–69. — A. Tchernia, Le vin de l'Italie romaine. Bibl. Écoles Françaises Athènes et Rome 261 (Rome 1986) 230–232.

[17] Peacock/Williams 1986, Class 10, 105–106.

[18] Freed 2000, 459–466.

[19] Will 1991. — E. L. Will, The Mediterranean Shipping Amphoras from the 1989–92 Excavations. In: V. Begley (ed.), The Ancient Port of Arikamedu, 2. (École Française d'Extrême Orient, forthcoming). Will has kindly shared her unpublished manuscript with me.

[20] Freed 2000, 461 fig. 5,2 with wider button end.

[21] Corsi-Sciallano/Liou 1985, 26–43 figs. 17–19. — Parker 1992, 309, also dates the wreck 40–60 AD(?).

[22] Corsi-Sciallano/Liou 1985, 31; 43.

[23] Freed 2000, 461 fig. 2,1. For contrast between earlier and later forms see illustration in Corsi Sciallano/Liou 1985, 169 fig. 126.

[24] Panella/Fano 1977, 133–177. — E. L. Will, Relazioni mutue tra le anfore romane. In: M. Lenoir/D. Mancorda/C. Panella (eds.), Amphores romaines et histoire économique: dix ans de recherche. Actes Coll. Sienne, 22–24 mai 1986. Collect. École Française Rome 114 (Rome 1989) 306–309, Will Type 12a. — For Spanish shipwrecks carrying Tarraconensian amphoras, for example, see the *Chrétienne H* wreck, Corsi-Sciallano/Liou 1985, 78–94 figs. 64–65 and the *Sud-Lavezzi 3* wreck, ibid., 130–144, NE 118, figs. 106–107, both dated in the first quarter of the first century AD.

[25] Peacock/Williams 1986, Class 16A, 117–119. — S. Martin-Kilcher, Fischsaucen und Fischkonserven aus dem römischen Gallien. Arch. Schweiz 13, 1990, 37–44. — R. I. Curtis, Garum and Salsamenta. In: J. Scarborough (ed.), Studies in Ancient Medicine 3 (Leiden, New York 1991) especially 38–107, for production and commerce in the western Mediterranean. — T. Bezeczky, Gari flos Hispanici. Ptujski Arh. Zbornik 10, 1993, 241–250. — For map showing location of Dressel 7–11 cargoes see Parker 1992 fig. 9.

[26] M. Sciallano/P. Sibella, Amphores: comment les identifier? (Aix-en-Provence 1991). — Parker 1992, 167–168, who suggests a date for the *Dramont D* wreck between AD 40–50. — J.-P. Joncheray, Étude de l'épave Dramont D, dite «des pelves». Cahiers Arch.

Finally, a small neo-Punic amphora was recovered, SK97.087 (**fig.11**). These thin walled amphoras with wide mouths are not found in large quantities on ancient shipwrecks, indicating that they were probably taken on board as ship's supplies rather than cargo. Their contents are uncertain but olives have been found in a neo-Punic jar from the *Dramont A* wreck[27] and oil, garum and grain have also been suggested. Petrological analysis of SK97.087 indicates a Tunisian origin. The cylindrical body with two small ring handles on the upper shoulder and wide flaring mouth with overhanging rim is very similar to van der Werff Form 2.[28] He dates Form 2 from the second half of the second century BC until the end of the first century AD. A close comparison in form may be found with the neo-Punic amphora on the *Chrétienne H* wreck dated in the first quarter of the first century AD.[29] In conclusion, the seven amphoras recovered from Skerki Wreck F can all be dated in the second or third quarter of the first century AD. Thus, on the basis of the evidence of the amphoras, it is reasonable to date Wreck F around the middle of the first century AD.

Further support for a mid first century date for Skerki Wreck F are some of the kitchen ware now being studied by John P. Oleson. Several of the casserole shapes (SK97.101, SK97.110) with their brick red fabric are a standard form of African Red Slip Ware and can be identified with Hayes Form 194 found at Carthage and dated in the second half of first century AD (**figs. 12–13**).[30]

Where was Skerki F loaded and where was its destination? Given the exigencies of weight and balance, it is likely that the stone was loaded first, probably at Alexandria. The ship may then have picked up the large shipment of kitchen ware and amphoras in Carthage or another coastal city along the North African coast, to head on to Sicily and southern Italy. Of course, amphoras from Spain, Sicily and Pompeii could have been loaded at any of the large entrepots like Carthage, Tarraconensis or Puteoli. The visible cargo reinforces the picture of lively trade between the eastern and western Mediterranean in the early Empire and the use of direct trading routes over the open seas.

It is clear from the archaeological material documented so far that the Skerki Bank route across the open ocean, despite its dangers, was active throughout Rome's long maritime history. Since each shipwreck is a precious 'capsule in time', study of the material from the five Roman merchantmen who met their fate off Skerki Bank is providing new information about ancient trade routes, ceramic forms and their chronology, the loading of ships and their cargoes, as well as the ships themselves.

We now have the technology to search the depths for new knowledge about our maritime past. Continued successful collaborative efforts between engineers who can provide the technology and archaeologists who can identify and interpret the discoveries, as exemplified by the pioneering Skerki Bank Projects, is essential for the future of deep water archaeology. And amphoras are the key — as this short study illustrates — for dating and interpreting these ancient wrecks from the depths of the Mediterranean and their still undiscovered trading routes.[31]

Subaquatique 3, 1974, 21–48, especially 24 for identification as Dressel 9.

27 S. I. Rotroff, The Pottery. In: Hellenkemper Salies 1994, 143, n. 64, identified as a Mana C–2 amphora type. Also note example on Mahdia wreck discussed by Rotroff on 142 and fig. 18 and notes 59–60. On the basis of the pottery, Rotroff suggests date for the Mahdia shipwreck between 80 and 50 BC.

28 J. H. van der Werff, Amphores de tradition punique à Uzita. Bull. Ant. Beschaving 52/53, 1977/78, 172; 178–179 fig. 4,2; for wide overhanging lip see fig. 10,6.

29 Corsi-Sciallano/Liou 1985, 92 fig. 74,30. — Parker 1992, 143, dates wreck between AD 15–20.

30 J. W. Hayes, Late Roman Pottery (London 1972) 207 fig. 36.

31 For recent discussion of deep water trading routes see: W. Broad, In an Ancient Wreck, Clues to Seafaring Lives. New York Times March 27, 2001, F1,6.

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