Author Information

Marcus M. Key, Jr., Associate Professor of Geology, Dickinson College, Carlisle, Pennsylvania.
Tara E. Jones, Geologist, Earth Engineering and Sciences, Baltimore, Maryland, and Carolyn H. Jen, Research Director, Lancaster County History Book Committee, Heathsville, Virginia
DATING THE COLONIAL-ERA DAVIS SITE (44LA46)
IN LANCASTER COUNTY, VIRGINIA

Marcus M. Key, Jr., Tara E. Jones, and Carolyn H. Jett

Abstract

This is the first detailed archaeological analysis of the Davis Site (44LA46), located on the Eastern Branch of the Corrromann River in Lancaster County, Virginia. The goal of the study was to date the site's colonial occupation using historical archeological methods. Flow zone surface collections, which were dominated by clay tobacco pipe fragments, formed the basis of the study. The very complete courthouse records in Lancaster County permitted an integrated historical archeological approach to dating the site. The timing of colonial occupation was determined using five independent approaches. The first three were based on archeological artifacts: (1) pipe stem bore diameters calibrated a mean date of 1674, (2) pipe bowl shapes indicated a mean date of 1696, and (3) pipe makers' marks suggested a mean date of 1675. The last two were based on historical documents: (1) courthouse records and (2) tithable rolls which indicated mean dates of 1686 and 1687, respectively. The historical records indicate the site was occupied by the Thomas Buckley family. The archeological data and the historical data closely matched, resulting in a mean date for the colonial occupation of the Davis Site of 1684, with a maximum range of 1650-1718.

Introduction

The most productive archeological studies of American colonial sites draw upon data sets of both history (i.e., written documents) and archeology (i.e., material culture). The merger of these two complementary disciplines, historical archeology, permits more rigorous hypothesis testing (Deetz 1988, 1993). This approach, utilizing both historical documents and archeological artifacts, was chosen for this study. The ultimate goal was to date the colonial occupation of the previously undescribed Davis Site in Lancaster County, Virginia.

Site Description

The Virginia Department of Historic Resources site number for the Davis Site is 44LA46. The site is in the Northern Neck of Virginia (Figure 1) in the Lower Coastal Plain physiographic province (Wentworth 1930). The Northern Neck is a 225 km (140 mi) long, 32 km (20 mi) wide peninsula in northern Virginia bounded by the Potomac River to the north, the Chesapeake Bay to the east, and the Rappahannock River to the south (Beale 1967; Newton and Siedly 1979). The Northern Neck has extensive navigable estuaries which frequently penetrate the peninsula along its length (Beale 1967).

One of these estuaries is the Corrromann River. The north shore of the Eastern Branch of the Corrromann River is located 65 m (210 ft.) to the southeast of the site (Figure 2). The estuary is still quite navigable at this site (Dickson 1992) and was in the past, as evidenced by the presence of a steam boat landing here in the 1800s. The site is located 6.6 km (4.1 mi) south of Lancaster, Virginia, between the mouths of Hills Creek and Bells Creek. The river here is estuarine and has a mean tidal range of roughly 2 ft. (Wentworth 1930). The shoreline consists of a veneer of sand overlaying impermeable, pre-Holocene, clay-rich sediments (Rosen 1980). This type of shoreline has the highest erosion rates in the Chesapeake Bay region with rates up to 1.1 m/y (3.7 ft/year) (Rosen 1980). The distance to navigable water undoubtedly has changed since the site was last occupied some 300 years ago. Soil erosion due to agricultural practices causes siluation, whereas waves, tides, storm surges, groundwater flow, and relative sea level rise cause erosion (Rosen 1980). The nearest freshwater is a spring which is the surface reflection of the water table of the Northern Neck's aquifer (Newcon and Siedly 1979). The spring, which is located 115 m (375 ft.) to the west (see Figure 2), currently is used for domestic water consumption. The site is located on a relatively level bluff 9 m (30 ft.) above the estuary on the Chowan Terrace, which is 9-14 m (30-45 ft.) above sea level in this area (Elder et al. 1963; Wentworth 1930). The soil developed on the site is the Sassafras loamy fine sand (Elder et al. 1963; Markewich et al. 1987). The site is in actively cultivated farm fields and...
Figure 1. Map of Northern Neck showing the location of Davis Site. Cross-hatched areas indicate freshwater/saline water transition zone. Modified from Egloff and Potter (1982:Figure 1).

Most of the archeological sites around the Chesapeake Bay have been altered by farming, but some useful information still is preserved (Riccardi 1988). At other colonial Virginia sites, it has been shown that plowing destroys all stratigraphic information in at least the upper 20 cm (8 in) (Winfrey 1987). Artifact recovery rates in surface plow zones may be as low as 0.1% (Riccardi 1988) and generally are less than 10% of the total plowzone artifact population, with large artifacts being disproportionately represented (Lewarch and O'Brien 1981). The benefits of plowing and discing are that they provide a fresh, largely exposed area for collecting with high visibility (Riccardi 1988). Despite the loss of stratigraphy and the low artifact recovery rate, plow zone collections are still important for 17th century Chesapeake archeology (e.g., King 1988; King and Miller 1987).

All the artifacts in this study are from random, unprovenanced plow zone surface collections made from 1989 to 1996. No systematic excavation has been done as the stratigraphy of the site has been compromised by plowing and erosion. The site has been and is currently plowed two or three times each year depending on the number of crops. The suite of artifacts may be biased toward stratigraphically higher (i.e., younger) material if the plowing is only bringing up shallow material. If this is the case then the estimated dates for the site from the archeological artifacts are maximum dates with the actual dates being older.

Pipe Fragment Dating Methods

English clay tobacco pipes have been demonstrated to be one of the most sensitive temporal archeological indicators available. This is made possible by the rapid systematic reduction in stem bore diameters, rapid evolution of the bowl shape, and the historic records of makers' marks and their dates of manufacturing. Important clay tobacco pipes are the most accurate chronometric tool in colonial American sites as they are often the most numerous artifacts, and they had a short life, thus placing the date of manufacture close to the date of discard (I. Noell Hume 1963; Walker 1977). But not all aspects of the pipes are effective dating tools. Stem length is not useful, as complete stems are too rare (Walker 1977). Stem thickness is not useful, as it varies along the stem (Rippon 1917). Stem curvature is not useful, as almost all pipes from the 1600s were straight (Walker 1977). Stem decorations are not useful, as they are not common on English pipes (Walker 1977). The first and most common approach to using clay tobacco pipes to date sites is based on the stem bore diameter.

Harrington (1951) originally developed the idea of using clay tobacco stem bore diameters as a chronometric tool. During his years as the head archeologist at Jamestown, Virginia, he realized that the average pipe stem bore diameter decreased at a constant rate throughout the 1600s and early 1700s (Harrington 1954, 1955). The rate of decrease was roughly 1984 in per 30 years (Deetz 1988). The decreasing bore diameters coincided with increasing stem lengths (Harrington 1954). From 1600 to 1700 the lengths increased on average from 25 cm (10 in) to 33 cm (12 in) (I. Noell Hume 1969; Walker 1977).

As pipes became longer, the wires to make the stem bores decreased in thickness. The pipe stem bores were held by inserting a wire into the clay before inserting the clay into the pipe mold (Hughes 1961, Oswald 1961). A longer stem required a thinner wire for reaming out the hole (Deetz 1993; Harrington 1955; I. Noell Hume 1969), thus producing smaller holes and thicker stem walls (Hanson 1971). Another factor may have been improved technology which allowed production of wires with smaller diameters (Hanson 1971).

Stem length may have increased simply as a fashion trend (Onwake 1967) or because of a simultaneous increase in bowl size (see discussion of bowl shape typologies, below). Clay pipe bowls became larger throughout the 1600s as tobacco production increased, causing tobacco prices to decrease; tobacco became less of a luxury, and more could be smoked (Calver 1931; Deetz 1983: Fairholt 1859; MacInnes 1926; I. Noell Hume 1963, 1982; Walker 1977). As the bowls increased in size, the tobacco burned longer and made the pipe stem hotter, which made a longer stem more comfortable to hold (Deetz 1993). Mitchell and Mitchell (1982) also argued that the English manufacturers of clay pipes made the stems longer when they realized that the smoker experienced less discomfort if the smoke from the burning tobacco was drawn through a longer stem. Whatever the reason(s), all these factors combined to produce a trend of decreasing stem bore diameters. Obviously not all English pipemakers decreased their bore diameters at the same rate, but there was a significant general trend (Hanson 1971).

Figure 2. Davis Site (44L46), sketch map showing the location of the fresh water spring and the Eastern Branch of Corrotoman River.
eter, there was a general evolutionary progression (Osvald 1969).

All relatively complete pipe bowls from the Davis Site were analyzed to determine the approximate date of manufacture using all published typologies, with Osvald (1975) and Walker’s (1977) being the most widely accepted. Each bowl’s stem bore diameter was also measured when possible. Friedelich’s (1970) alternative dating technique based on pipe bowl diameters for Dutch pipes was not used, as it is not applicable to English pipes. Bowl dimensions are an effective way to quantify bowl shape (Emerson 1988:Figure 8) and Emerson’s (1988) pipe bowl terminology was used. The following attributes were measured on the bowls: bowl lip thickness, bowl height, and mouth diameter. The bowl lip thickness was measured at the mouth of the bowl. In order to account for any variation in lip thickness around the mouth, the thickness reported is the mean of four thicknesses: two measured parallel to the stem of the pipe on opposite sides of the mouth, and two perpendicular, also on opposite sides of the mouth. Bowl height was measured as the distance inside the bowl from the bottom of the bowl in the stem bore to the center of the mouth. The mouth diameter was measured inside the mouth in the plane of the lip. In order to account for any non-circularity in the mouth shape, the diameter reported is the mean of two diameters, one measured parallel to the stem of the pipe and the other perpendicular. All three parameters were measured with calipers to the nearest 0.1 mm with a measurement error of 6.7%. The colors of the bowls were also determined using the Munsell color chart. A systematic approach to using clay tobacco pipes as a chronometric tool involves makers’ marks. Makers’ marks usually consist of the manufacturer’s initials stamped on the pipe’s heel, spine, or both (Gorger 1965; Covell 1984; Cross 1986). The first appearance of the marking is usually the date (or year). After the soil became exhausted and tobacco production declined, corn was widely planted. Because of the planting methods used, which included cross plowing, growing corn proved to be even more conducive to soil erosion (Emerson 1988). This was a significant event, with its pattern of soil exhaustion and land abandonment, that led to the settlement of the Northern Neck. As the settlers fanned out from Jamestown looking for new land, significant pressure was put on the government to open up the Northern Neck for settlement (Billsing et al. 1986; Wheeler 1972). In the 1630s, the Northern Neck was still native American territory, practically outside the jurisdiction of the Virginia (Harrison 1964). After what followed, the rapid displacement of Native Americans by English settlers. The Northern American communities in tidewater Virginia declined rapidly following contact with English settlers due to forced and/or voluntary relocation to the west, as well as death from disease, warfare, and malnutrition from loss of habitat (Beale 1967; Dobbs 1966, 1983; Fauzi 1987; Harrison 1964; Hodges 1995; Jennings 1955; McCann 1985; Ramsey 1983). Limited is known about the Native Americans in the Northern Neck until the General Assembly of the Virginia burgesses at Jamestown passed two acts (1641 and 1642) restricting settlement in that area for the next hundred years. In one act, for the Northern Neck (1645). Beale (1967) argued that the 1642 act prohibiting settlement north of the Rappahannock River, was enacted because of the instability of the Northern Neck due to the presence of Native Americans. The first English settlements in Northern Neck were along the south shore of the Potomac River at Chiecawgon on Smith’s 1612 map. These settlements were not from Virginia, but from Maryland (Harrison 1964; Haynes 1959; Warner 1965). The estimated arrival date ranges from 1640 (Freeman 1948; Jett 1997; McCann 1993) to 1642 (Hening 1809-1822; Nugent 1983; Potter and Laalov 1994) to 1644 (Harrison 1964). The first patent in the Northern Neck was in the Corrotoman River area (now Lancaster County) and was made to John Carter (Nugent 1985; Warner 1965). Most land grants in this period were made under the headright system, which allowed 50 acres for every person for which one paid the cost of transportation to the colony (Robinson 1957). As defined in 1666, “settle” meant building a dwelling and keeping stock for one continuous year, whereas “plant” meant clearing, tending, and planting one acre of land in any crop (Robinson 1957). If patented tracts of land was not settled or planted within three years, the land reverted to the Crown (Free- man 1964). The establishment of the government on its lands by English colonists led Native Americans, under the leadership of Opechancanough, to retaliate in the massacre of 1644. It was not known whether the Northern Neck tribes participated, but they displaced up to 300 (Robinson 1990). Warner 1965; Wheeler 1972). Although permission had not yet been given for the colonists to settle in the Northern Neck, an act passed by the General Assembly of 1645 confirmed their presence and ordered them to raise funds for war (Hening 1809-1822). It was not until 1648, however, that Northumberland County was established officially by the assembly (Hening 1809-1822). In the meantime, a treaty made with the Powhatan in 1646 gave all the land between the York and James rivers to the English and reserved the land north of the York River for the Native Americans (Harrison 1964; Wheeler 1972). The colonists were forbidden to settle there for the time being. The treaty was an integral part of Governor Berkeley’s newly formulated Indian Policy to reduce conflict with the Native Americans (Billing et al. 1986). But within the same act, confirmation was given to all previous claims to lands north of the York River, and patroons of those claims were assured that the three year requirement for establishing permanent settlement would be extended to 1653. The patent would then be granted to settlers by the assembly (Rountree 1990). The ban was officially repealed in 1649, and an order was issued for the Native American lands to be defined and marked. This was not done in the area that became Northumberland County until 1653 (Warner 1965). The lifting of the ban on settlement of the Northern Neck was likely precipitated by increasing demand for more land for settlers (Horn 1994; McCann 1993; Stanard 2000). After 1649, the granting of land was swift and settlement followed, though somewhat more slowly, possibly because of the continued presence of Native Americans in the Northern Neck (Wheeler 1972). There were still English/Native American conflicts with the Northern Neck as evidenced by several shooting incidents at this time (Wheeler 1972). In England, events were occurring that eventually would affect the Northern Neck colonists. In 1649, as an outcome of Cromwell’s victory in the British Civil War, Charles I was deposed and beheaded. His son, Charles II, fled to France. There he made a gift of proprietorship of Virginia’s Northern Neck to seven of his father’s Royalist supporters, even though he was not in a position to enforce it (Freeman 1948; Haynes 1959; Smith 1969). England became a commonwealth under the leadership of Cromwell, Virginia (along with Ireland and Scot- land) attempted to throw off English rule. This situation had only been restored to Charles II (Harrison 1964). This resulted in increased immigration of loyalists (called Cavaliers) to the Royalist-dominated Northern Neck in general (Beale 1967; Freeman 1948; Warner 1965) and Lancaster County in particular (Haxton 1984). In 1652, the colony was forced to submit and give allegiance to Cromwell and the Commonwealth of England (Harrison 1964; Warner 1965). But in 1660, following Cromwell’s death, Charles II was restored as monarch. The following year he officially validated the Northern Neck Proprietary (Billing et al. 1986; Freeman 1948; Gray 1987; Haynes 1959). Under its terms, land in the Northern Neck would be granted only through the proprietors or other owners of Virginia (Harrison 1964). Any current payments to the proprietors then would be required of the grantees (Freeman 1948).
By 1651, 576 headright patents had been made in the Northern Neck, granted not through the proprietary, but by the governor of the colony (Freeman 1948; Haynie 1959). When news of the proprietary reached Virginia, there was great confusion among these property owners as to the validity of their titles (Freeman 1948; Haynie 1959). In 1669, after protests were made to Charles II, he issued a revised charter for the proprietary which stated that all patents made prior to 1661 would be valid, provided the grants were in actual possession of the land by 1669 (Freeman 1948).

After 1649, as indicated by the number of land patents, the population of the Northern Neck increased rapidly, spreading out the estuaries (Harrison 1964; Hodges 1993; Horn 1994). By 1650 more than 70 patents totaling 55,000 acres had been issued in the area that was to become Lancaster County (Wheeler 1972). As English settlement spread throughout the Northern Neck toward the fall line, the Northumberland County government could not function logistically over such distances, and the creation of a new county was required (Beale 1967; Wheeler 1972). In 1651 Lancaster County was formed from portions of Northumberland and York counties (Gong 1976; Henin 1809–1823; Hiden 1957; Nugent 1983; Peirce 1951; Robinson 1916; Vogi 1965; Warner 1965). By then, more than half of its land had been patented (Horn 1994).

The early phase of Lancaster County's history involved the formation of a rudimentary society as settlers moved into the area, tobacco was planted, the economy boomed, and the population grew (Wheeler 1972). The most densely populated part of the Rappahannock River's north shore, with at least 200 inhabitants by 1650, was the Corrotoman River region (Frits 1940; Warner 1965). This can be seen through study of the many land grants made in this period (Nugent 1983) and by the 1653 tithables list, which show 20 households reporting 83 tithables in the area (Horn 1994).

By 1652 a total of 123,000 acres had been patented throughout Lancaster County (Horn 1994:Figure 12; Wheeler 1972). From 1653 to 1656, a great influx of settlers is shown by an increase in the total number of households, from 93 to 165 (Wheeler 1972). During this time, 64% of the households had more than two tithables, indicating the presence of indentured servants and/or slaves (Wheeler 1972).

It was inevitable that the increasing numbers of English would lead to land conflicts with the Native Americans. A 1652 act passed by the assembly required that land be set aside for the Native Americans, with 50 acres to be allocated to each "bowman" (Billings 1975). In the lower Northern Neck, 4,400 acres between Dividing Creek and what is now Indian Creek was surveyed for the Native Americans of Northumberland and Lancaster counties (Potter 1976). In addition, Lancaster County's problems with Native Americans were lessened by a 1653 treaty with the Rappahannock tribe (Wheeler 1972). Nevertheless, in 1654 there were still Native American troubles in Lancaster County as the assembly ordered a militia to be formed from local residents for defense of settlers in the county (Beale 1967; Haynie 1959). In 1655 there were about 552 Native Americans living on the land that had been assigned to them in the county (Potter 1976). Although there is archaeological evidence of Native American occupation of the Davis Site, the fact that it was patented by an Englishman in 1655 is good indication that it had been abounded by the Native Americans by that time.

As Lancaster County's population continued to grow, it was subdivided in 1655 into two parishes for the establishment of churches (Beale 1967). By 1656, its westward growth warranted the formation of a new county, old Rappahannock, which was split off of Lancaster County (Beale 1967; Gong 1976; Henin 1809–1823; Peirce 1951; Robinson 1916; Vogi 1965; Warner 1965). The Corotoman River area continued to be the center of settlement in Lancaster County. It was the site of the county's first courthouse and jail, built in 1655–1657 (McCarty 1993). It was on the Corotoman, near the Millbrook plantation, that a fort was to be built in 1667 for protection from Dutch ships (Warner 1965). It was on John Carter's Corotoman plantation that the first Christ Church was built in 1669 (Wilson 1984). Herrmann's (1967) map of 1670, which is quite accurate when compared to known archaeological sites (Smolek et al. 1984), indicates the Corotoman River area was densely settled by this time (Figure 3). Queenstown was laid out on the Corotoman in the 1670s, to be Lancaster County's "Port of Entry and Exit" and its first urban center. Based on the number of tithables (Greene and Harrington 1932), this area of Lancaster County had at least 400 inhabitants by 1675 and 1,400 by 1700 (Fritts 1946). Other areas of Lancaster also expanded rapidly, though not as rapidly as the Corotoman area. The number of tithables in all of Lancaster increased from 380 in 1635 to 945 by 1663 (Horn 1994).

From 1657 to 1669, 284,000 acres were patented or exchanged in Lancaster, the number of households increased by 19%, and the number of tithables increased by 25% (Wheeler 1972). As most of the land in Lancaster County had been taken up by 1669 (Freeman 1948; Nugent 1983), new patents accounted for only 13% of this total (Wheeler 1972). But from 1669 to 1680, the county's growth slowed because of Native American problems to the northwest, Bacon's rebellion, and depressed tobacco prices (Wheeler 1972). By 1675, all of Virginia east of the fall line was to some degree dotted with English settlements (Billings et al. 1986).

As for the Native American population of Lancaster during this time, there is only circumstantial evidence that by the 1660s most of them had either died, were living on the designated land, or had moved further westward. A census taken in 1669 revealed that no Native Americans then lived in Lancaster County (Wheeler 1972). This is supported by the lack of references to them in the Lancaster court records (Fleet 1988). In all of the lower Northern Neck, by 1675, there were probably only a few Native Americans left on the plantations as semi-slaves (Dalton 1974b), and in a few small tribal units near Rappahannock (Warner 1965). By 1700, the Native Americans had retreated west of the Blue Ridge (Haynie 1959), and there may then have been as few as 612 in the entire Chesapeake area (Emerson 1988). Those who remained were acculturated into English colonial society as slaves, servants, indentured servants, or freedmen (Hodges 1995; Potter 1972). The Owings Site in the Northern Neck is interpreted as one place

---

**Figure 3.** Herrmann's 1670 map of the southeastern part of the Northern Neck showing the location of Davis Site relative to the colonial settlements. Modified from Herrmann (1975).

**Results from the Historical Records Research**

Tracing the ownership of the Davis Site indicated the property was first owned by John Davis in 1669. The second owners were the Fenns, and they sold it to Thomas Buckley by 1674. The site probably was not occupied by Mangeo or the Fenns, as their names do not appear in the tithables lists for Lancaster County during those years (Jones n.d.). This was not uncommon as roughly a third of the early patents in Lancaster County were vacant (Wheeler 1972).

Historical records indicate that Buckley was in Lancaster County in 1675, but no patent is recorded for 1670. Roughly one third of Lancaster County's early settlers came from other parts of Virginia, and two thirds came directly from England, especially from the southern counties (Horn 1994). Buckley fits this pattern well as he probably emigrated from the Isle of Wight county in Hampshire, England. Most settlers came to Lancaster County because it was the last place to obtain prime tobacco growing land and because they had a family
length of over 100 cm. Pipe lengths at this time were typically only 30 cm (11-12 in.) (L. Noell Hume 1969). In Williamsburg the ratio of stem fragments to bowls indicates each pipe on average broke into roughly 15 pieces (L. Noell Hume 1969). Assuming this ratio, the 594 stem fragments represent 40 complete pipes. Undoubtedly, there are several orders of magnitude more pipes than this as the collecting was restricted to the surface.

The bore diameters of the 594 pipe stem fragments ranged from 4/64 to 9/64 in. (mean = 6.8/64 in., s.d. = 0.77) (Figure 6 and Table 1). There was no significant correlation between stem bore diameter and stem fragment length (R² = 0.0029, P > 0.05). This suggests there was no systematic bias in the stem fragment sample due to pipes with certain bore diameters having a greater tendency to fragment, thereby increasing the representation of that bore diameter in the sample.

Based on the location and age of the Davis Site, as well as bowl shape (as no Dutch bowls were found), the use of the Harrington technique is justified. Results of the various age equations are listed in Table 2. Harrington's original histograms suggest a range of occupation from 1650-1680. The standard deviation of pipe stem bore diameters is a rough measure of the duration of the site's occupation (Binfordon 1962; Pogue 1991). This is the approach used in Binfordon's (1972) calculation, which yields a range of 1657-1687. A precipitous decrease in the frequency of bore diameters away from the mean suggests a rapid occupation and abandonment of the site. A wide range of pipe bore diameters suggests an extended period of deposition/accumulation and a longer occupation for a site. Based on previously published pipe stem bore diameter frequency histograms like Figure 6, our distribution indicates a multiyear occupation of the site. A skewed distribution of pipe stem bore diameters may indicate an uneven temporal distribution of the site's population. If a site had a larger population during certain years of its entire occupation, the pipe collection could be dominated by a proportionally larger sample from that time. As Binfordon (1962) warned, this would skew the mean age of the entire site in the direction of the larger population. Our sample had a skewness of -0.36 indicating slightly more stems with smaller bore diameters. This could be caused by an increasing rate of deposition of pipe stems over the life of the site due to increasing population. The number of tithables (see Figure 4), however, indicates a slight decrease in the population at the site over time, but it was insignificant statistically (R² = 0.04, P > 0.05).

Based on the calculated ages of occupation (see Table 2), the site has a mean occupation date from 1671 (Cresswell 1972's equation, Hamon 1971:1550-1800 equation) to 1688 (Heigenton and Dangon 1972). Thus, the pipe stem bore diameters indicate a maximum range of occupation from 1650-1688 with a mean of 1674 (see Table 2).

### Pipe Bowl Results

The colors, dimensions, and stem bore diameters of the 19 relatively complete pipe bowls are reported in Table 3. The colors included white (n = 13, 68% of total), pink (n = 2, 11%), pale yellow (n = 2, 11%), light yellowish brown (n = 1, 5%), and light gray white (n = 1, 5%). Two terra cotta pipes were found (Figures 7.1-7.2). These represent the two basic types of locally made terra cotta pipes (i.e., mold-made and hand-made, respectively). The two types are difficult to distinguish, and many presumed handmade pipes probably were mold-made (Deetz 1993). The mold-made terra cotta pipes (e.g., Figure 7.1) were presumably made with molds imported from Europe using indigenous clays (Deetz 1993; Emerson 1988, 1994; Kelso 1984; Mitchell 1983).

These pipes have a distinctive European bowl shape (Henry 1979; Miller 1983) and relatively consistent, symmetrical dimensions (Emerson 1980). It was suggested originally that the mold-made terra cotta pipes were manufactured by Native Americans or European colonists (Henry 1979; Miller 1983, 1991; Pogue 1991). But Emerson (1988, 1994) argued that pipe making was not a stable livelihood for American colonists in the 1650s. In fact, only one English pipemaker has been documented as practicing in the Chesapeake region during the colonial period (Emerson 1988, 1994).

The hand-made terra cotta pipes (e.g., Figure 7.2) often have distinctive design elements consisting of patterned indentations in the form of a horse, quadrupedal animal. This pattern is often referred to as the Running Deer motif (e.g., Emerson 1994:Figures 3.2c, 3.5a). Once again it was originally attributed to the Native Americans or European Americans that were making pipes in the Native American style for trade (Harrington 1951; Henry 1979; Kelso 1984; Miller 1983; Mitchell 1983; Mitchell and Mitchell 1982; Pownall 1969; Pogue 1991; Schmitt 1965; Smolak et al. 1984; Stewart 1954). Native Americans were making clay tobacco pipes before and during English contact (Emerson 1994), but the Running Deer motif has most recently been attributed to African-Americans (Deetz 1993; Emerson 1988, 1994) or a unique Creole culture of Native Americans, Europeans, and African-Americans (Moer 1993).

All of the white clay pipes found at the site (Figure 8.9-8.15; see Figure 7.3-7.8) were interpreted to be English in origin. None were identified as Dutch as they lacked the Dutch "bobby bowl" or "funnel bowl" shapes (McCauslin 1979; Miller 1979). One pipe (see Figure 7.1) had a "bobby bowl"-like shape, but its terra cotta color suggests a local source, not a Dutch import. Dutch pipes were more common in Colonial sites during the British civil wars (1640s and 1650s), as the Dutch increased trade with the colonies to fill the void in shipping manufactured goods into the Chesapeake region and tobacco out (Bruce 1895; Craven 1970; Menard 1975). Dutch trade in the colonies was greatly reduced by the Navigation Acts of 1650 and 1651 (Kelso 1984; Menard 1975) as well as the second (1664-1667) and third (1672-1674) Anglo-Dutch wars (Kelso 1984; Riedman 1991). The absence of Dutch pipes suggests a date for the Davis Site before, or more likely, after these dates. A similar trend occurred in Maryland where Dutch pipes became rare after 1660-1670 (King 1991; Miller 1983; Pogue 1991; Riedman 1991).

All but one of the white clay pipes were from Bristol manufactures. The one non-Bristol pipe (see Figure 7.4)
at our site as at many colonial sites. The use of makers' marks was most common in the first half of the 1600s (Walker 1966). As the Davis Site has few makers' marks, it suggests an occupation date in the later 1600s.

Three identifiable makers' marks were found: IP, IF, and LE. The IP mark occurred on three stem fragments (e.g., Figure 9:21) and is similar to that figured by Hurry and Keeler (1993:Figure 12). The IP mark is not useful in dating sites as there were more than 100 manufacturers in 27 English cities using that mark from 1632 to 1700 (Osvald 1960, 1975; Walker 1977).

One IP makers' mark was found on a stem fragment (Figure 9:22) similar to that figured by Hurry and Keeler (1991:Figure 12). The IF makers' mark is attributed to James Fox of Bristol, England. All pipes under that mark from 1651 through at least 1696 (Osvald 1975; Walker 1977). The IF mark has been found at other colonial sites in Virginia (Kelso 1966).

The LE mark has been found on pipes from other colonial sites in New Brunswick, Maine, Massachusetts, Rhode Island, New York, New Jersey, Delaware, Maryland, Virginia, and Arkansas (Walker 1977). In Maryland, LE marks have been found at the Abell's Wharf Site (Humphries 1991), the Buck Site (Ornance 1997), the Mattapan-Sewall Site (Pogue 1991; Smolek et al. 1984), the S. St. Iagoos Manot Site (King 1991), and St. Mary's City (Miller 1953). In Virginia, they have been found at the Green Spring Plantation (Caywood 1955; Crass 1988), Hallowes Site (Buchanan and Hare 1972), Jamestown (Peck 1967), and the Nominy Plantation (Mitchell 1976; 1983).

The datable marks (Table 5) indicate an age range for the site of 1651–1696 with a weighted mean of 1672. All of the identifiable makers' marks were from Bristol.
<table>
<thead>
<tr>
<th>GENERAL DATA SOURCE</th>
<th>SPECIFIC DATA SOURCE</th>
<th>RANGE OF DATES</th>
<th>MEAN DATE</th>
<th>MEAN DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical documents</td>
<td>Tithable records</td>
<td>1670-1702</td>
<td>1687</td>
<td>1686</td>
</tr>
<tr>
<td>Historical documents</td>
<td>Courthouse records</td>
<td>1669-1703</td>
<td>1686</td>
<td>1686</td>
</tr>
<tr>
<td>Archeological artifacts</td>
<td>Pipe stems</td>
<td>1650-1688</td>
<td>1674</td>
<td>1674</td>
</tr>
<tr>
<td>Archeological artifacts</td>
<td>Bowl shapes</td>
<td>1659-1718</td>
<td>1696</td>
<td>1682</td>
</tr>
<tr>
<td>Archeological artifacts</td>
<td>Makers’ marks</td>
<td>1651-1696</td>
<td>1675</td>
<td>1675</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>1650-1718</td>
<td>1683</td>
<td>1684</td>
</tr>
</tbody>
</table>

Table 6. Davis Site (44AI46), summary of estimated dates of occupation based on all data sources.

the results are as follows. Pipe stem bowl diameters cal-
culated a mean date of 1674. Pipe bowl shapes indi-
cated a mean date of 1696. Pipe makers’ marks suggested a mean date of 1675. Thus, the archeological data indi-
cate a mean date of 1682 (Table 6). The two approaches based on historical documents yielded mean dates of 1686 and 1687 (see Table 6). Thus, the archeological data and the historical data closely matched, giving a mean date for the colonial occupation of the Davis Site of 1684 (with a maximum range of 1650-1718).

Why was there a 21 year difference in the estimated age of the site, as based on the makers’ marks (i.e., 1675) and the bowl shapes (i.e., 1696)? There are two possible explanations. First, perhaps this is within the normal variation of these dating techniques. Second, perhaps the older bowls were more fragile, and therefore under-
represented in the bowl sample.

Acknowledgments

We would like to thank the following people. Tina Marasco helped with literature searches, Catherine Jinet drafted the figures, Christopher Conte, Brendan and Clare O’Grady loaned us their pipe bowl and stem col-
lections from the Davis Site, and historical archives re-
search support was provided by Marcus Key, Jr., at the
Foundation for Historic Christ Church library, Suzanne
Durham at the Virginia Department of Historic Re-
sources, and John Kneebone at the Library of Virginia.
This research was made possible by grants from
Dickinson College’s Research and Development Com-
mittee.

References Cited

Alexander, L. T.
1955 Introduction to Tobacco Pipe Stem Hole Sizing: Fac-
s of Proof and Certitude. Bulletin of the Archaeo-

1979 Clay Pipes from the Buck Site in Maryland. In The
Archaeology of the Clay Tobacco Pipe. II: The
United States of America, edited by P. Davy, pp. 57-
61. BAR International Series 60. British Archaeo-
logical Reports, Oxford.

1983 More Light on the Theory of Dating Clay Pipes by
Measuring Stem Bore Dimensions. In The Archaeo-
logy of the Clay Tobacco Pipe. VIII: America, edited
by P. Davy, pp. 255-264. BAR International Se-
ties 175. British Archaeological Reports, Oxford.

1965 Makers’ Marks on Clay Tobacco Pipes Found in


1966 Kadin Pipe Stems, an Analysis of their Value to
Local Archeology. Museum Service May-June 88-
93.

1967 Annals of the Northern Neck of Virginia. Northern
Neck of Virginia Historical Magazine 17:625-657.

1975 Some Acts not in Henning’s Statutes: The Acts As-
sembled, April 1562, November 1652, and July 1663.
Virginia Magazine of History and Biography 83:22-
76.

1982 Colonial Virginia: A History. KTO Press, White
Plains, New York.

1981 In the Binford Pipe Stem Formulas: A Return to
the Grave. The Conference on Historic Site Archa-
ological Papers 6:230-255.

1983 Pipe as Tools. In Archaeological Hammers and The-
ories, edited by J. A. Moore and A. S. Kent, pp. 107-

1989 European History of Virginia in the Seventeenth

1984 Boatright Site Trsh Pit. Quarterly Bulletin of the

1970 The Otting Site, Northumberland County, Virginia.
Quarterly Bulletin of the Archaeological Society of

1974 Transcribed Oral History Interview of Vernon
Dinwedy, Manuscript on File, Geology Department,
Dickinson College, Carlisle, Pennsylvania.

1960 Excavations at the Joseph Howland Site (C3)
Rocky Nook, King, Massachusetts 1959: A Preliminary
Report. Supplement to the Howland Quarterly 24:
3-11 pages, no pagination.

1987 Harrington Histories Versus Binford Mean Dates
as a Technique for Establishing the Occupational
Sequence of Sites at Floward Hundred, Virginia.

1988 American Historical Archaeology: Methods and

1993 Floward Hundred: The Archaeology of a Virginia
Plantation. University Press of Virginia, Charlot-
tesville, Virginia.

Credible Press, Wexford, Virginia.

1966 An Appraisal of Techniques for Estimating Abori-
ginal Population with a New Hemisphere Estimate.
Current Anthropology 7:395-416.

1985 Their Numbers Become Thinned: Native American
University of Tennessee Press, Knoxville, Tennes-
see.

1962 Pipe Stem Dating and the Date for Silver Bluff, S.C.
Florida Anthropologist 15:57-62.

1993 Seventeenth-Century Chesapeake Settlement Pat-
tern: A Current Perspective from Tidewater Vir-
ginia. In The Archaeology of 17th-Century Virginia,
edited by T. R. Reinhardt and D. J. Pogue, pp. 285-

1982 Ancestral Origins from the Coastal Plain of Virginia.
Archaeology of Eastern North America 105:11-17.

1982 Soil Survey. Northumberland and Lancaster Coun-
ties, Virginia. U.S. Dept. of Agriculture Soil Con-
tainment Service. Series 1939, Number 22.
Rippon, A.

Robinson, M. P.

Robinson, W. S., Jr.

Ross, P. S.

Rounsaville, H. C.

Schartt, K., Jr.

Shepherd, T.

Smith, S. P.

Smolec, M. A., D. Pogue, and W. Clark

South, S.

Stanard, W. G.

Stewart, T. D.

Sutro, B.

Thurfield, R.

Thurfield, T. H.

Vogt, J.
1965  *Formation of Virginia Counties from 1634.* Bemlan, Athens, Georgia.

Walker, J. C.


Warner, T. H.

Westworth, C. K.

Wheeler, R. A.

Whitehouse, D. B.

Wilson, J. C.

Winfrey, R. W.