A DISCUSSION OF STANDARDS FOR METAL-DETECTING (DRAFT)

Chris Espenshade, Terry Powis, Doug Scott, Patrick Severts, Garrett Silliman, and Sheldon Skaggs

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INTRODUCTION TO AMDA

I have the honor today to speak on behalf of the organization Advanced Metal Detecting for the Archaeologist (AMDA). We are a relatively new organization that came together at the October 2011 AMDA conference in Helen, Georgia. Our mission is to educate professional archaeologists in the best practices with regard to metal detecting. My fellow board members are Dr. Terry Powis, Dr. Doug Scott, Patrick Severts, Dr. Sheldon Skaggs, and Garret Silliman. We have recently received certification for our course from the Register of Professional Archaeologists, under their continuing education program.

One of the tangents to our mission is the question of standards. We hope that one of the outcomes of growing knowledge of effective metal detecting is that state and federal agencies will enact standards for metal detecting. Which brings us here today.

Before going any further, we would like to acknowledge that archeologists from several agencies in Georgia encouraged us to move forward with AMDA. Dr. David Crass and Dr. Bryan Tucker at the SHPO, James Pomfret and Pamela Baughman at GDOT, and James Wettstaed at Oconee National Forest were among the catalysts.

NEED FOR STANDARDS

It is not enough anymore to simply metal detect when the client asks for it, or when an agency requires it. In a victory that was slow to arrive, our profession is at the point where most professionals recognize the potential of metal detecting to contribute to archaeological research in many ways. Simply requiring metal detecting is no longer enough. I think back on the early years, when we first starting shovel testing across entire survey tracts. I remember seeing Dan Elliott, I think it was, produce one of the first maps showing the location of every shovel test. Brilliant. The discussion then moved to "what intervals in what settings? Do we need full coverage or just shovel test on the good spots?" Fairly quickly, the standards were defined. We are now at the same threshold for metal detecting. We recognize we need to be metal detecting, but we have not yet defined the parameters.

To clarify before going any further, we are advocating the creation of clear standards, not voluntary guidelines or generalized recommendations. We would like to see the SHPO, state

agencies, and federal agencies explicitly define what they require with regards to metal detecting. We have a situation now where the archaeologist fluent in metal detecting implements one strategy (voluntarily) and those less familiar with metal detecting may do considerably less. Only required standards can address this gap. There are four factors that drive the need for standards:

1) Proper Treatment of Resources. There is extensive literature to demonstrate that when metal detecting is not used, or when metal detecting is poorly executed, sites are missed at Phase I survey and sites are misevaluated during Phase II investigations. For certain classes of resources, their research potential will never be recognized without the use of a metal detector. Proper treatment of resources is what we are all about, it is what Section 106 is all about.

Let's quickly look at a few examples. First, a Civil War camp, picket post, or skirmish field cannot be adequately identified through shovel testing, and cannot be adequately delineated and evaluated without metal detecting. These sites have a broad, low-density scatter of plowzone artifacts, but also often contain larger, data-rich features. If we do not recognize the scatter through metal detecting, we will never do the work to find the features.

This is the Rocky Cove CCC camp. Up to 165 people lived here for a year and a half. This is a blow up of part of the camp, where we used both screened shovel tests on a 15-meter interval and metal detecting in 1.5 meter lanes spaced at 15 meters. None of the tests yielded artifacts, while the detecting yielded many.

Tar kilns and charcoal kilns are an ongoing problem, in terms of determining eligibility. Many sites have been dismissed as not eligible because we do not know their date of use. These kilns were generally accompanied by a small tenders' camp, where the workers resided during the construction and burning of the kiln. These camps leave very small archaeological signatures, and you would have to be very lucky to find one through shovel testing. However, metal detecting can find the camp relatively quickly, thereby providing the temporal control needed to recommend further work at the site.

2) Scheduling and budgeting. Without standards, there is the potential for an uneven playing field. A vague scope that says "metal detecting as appropriate to augment shovel testing" may mean several days of intensive metal detecting to Garrett Silliman, and a half-hour with a Radio Shack special to somebody else. Consultants cannot price or schedule efforts if they do not know the standards that all bidders must follow. Especially in today's highly competitive CRM market, a lack of standards invites undercutting. Likewise, government archaeologists cannot create meaningful government estimates if there are not firm standards.

3) Consistency of Reviews. Compliance officers cannot review scopes and reports unless they have a set of standards against which to measure. Standards provide a frame of reference, and prevent each agency re-creating guidelines for each project. On the flip side, standards let the consultants know what is expected of them. I know that, in years past, I could count on 20-page reviews from one compliance officer (Savannah postmark), often second-guessing my decisions. When there are standards, everybody is speaking the same language.

4) Challenges under Section 106. It is difficult to challenge the adequacy of a typical Phase I survey if the consultant goes out and follows the state guidelines. Shovel tests at 30-meter intervals are what was required and what was done. Case closed. With metal detecting, there are no guidelines. The recent Advisory Council on Historic Preservation guidance on defining a reasonable, good faith effort in identification surveys is germane here. The ACHP states (emphasis added) "the identification effort is reasonable when it is **logically designed** to identify eligible properties that may be affected by the undertaking." If there is the potential for sites that can only be found through metal detecting, the logical design of your survey needs to include metal detecting. If you do not include the proper site discovery technique, you open the door to a challenge that you did not complete a reasonable effort (i.e., the agency you are serving may not have complied with Section 106). Section 106 challenges from interveners (NIMBYs and such) can be costly and time-consuming. Standards help re-assure government agencies, the ACHP, and attorneys for possible interveners that a reasonable and good faith effort was indeed made to identify resources.

CHALLENGES TO CREATING STANDARDS

Metal-detecting is somewhat unique as a method in archaeology, and the development of standards has its special challenges.

Metal detecting is generally not taught at traditional field schools and university courses. However, solid instruction, experience, and supervision are important determinants of the effectiveness of an operator. The common issue with most professional standards is how do you measure proficiency? The RPA and the Secretary of Interior standards use a combination of graduate degrees and experience. How could we do that for metal detecting?

Not everybody is good at metal detecting. I can look at two people digging shovel tests, and quickly know who is better, who is more efficient. However, both will be throwing the requisite dirt through the screen. Shovel and screen are fairly straightforward to master. Metal detectors are not. There are individuals who lack the interest, the patience, the incentive, or the personality to become good detectorists (my wife says it is the German in me that let's me metal detect day after day). This is not a simple process of exposing people to instruction, with everybody magically absorbing the information, learning at the same rate, and finishing as equally adept detectorists. A small fraction of archaeologists just are never going to get it.

Metal detecting involves a device much more complex than a shovel, and the quality of the device has a direct effect on the productivity of a project. We do not need standards to tell people which shovel to use for excavating a shovel test. With metal detecting, though, we need to take some steps to assure that an appropriate device is being used. Appropriate is in turn defined by the goals of the project, the local conditions, and the expertise of the operator. A basic detector (maybe $250) is fine for finding nail scatters in the Piedmont or for sampling a CCC camp in the mountains. The same device, though, may not be appropriate on a heavily collected battlefield. Can we tell CRM companies what types of devices and how many devices are appropriate?

Metal detecting has many different uses and many different phases of investigation. We cannot simply say "always use this device, in this manner, and you better have X years of experience." In some cases, a quick, selective survey may be adequate to verify the presence of a site during Phase I investigations. We are only beginning to recognize and quantify what seems to be an adequate level of effort for various purposes, and consultants and compliance officers are struggling to get a handle on the schedule and budget ramifications of requiring metal detecting.

Metal detecting is closely linked to research at a variety of sites that cannot be adequately addressed without a metal detector. If metal detecting is not done correctly, we will lose a lot of data, and we will write-off a lot of important sites. This is not a grey area. There is no room for a personal opinion. On certain sites, you have to metal detect or you will not do justice to the resource. It is not practical to hand-excavate 86 acres of plow zone to interpret a portion of the Resaca battlefield. We all have to be good at metal detecting. And, I will not accept the excuse "well, I am not a military archaeologist." The broad utility of metal detecting demands that any supervisory archaeologist doing Phase I/II studies in Georgia needs to know how to metal detect.

Metal detecting is closely linked with military sites of great public interest. The sites upon which we metal detect tend to be high visibility. These tend to be sites of great public interest and concern. We do not want to see professional archaeologists screw up when they are in the spotlight.

Metal detecting involves a technology that is understood and has been mastered by local relic hunters. If a professional archaeologist does a poor job with metal detecting, the locals are likely to recognize this and scream to the press. If the relic hunters feel we have not done justice to a resource, they will not be bashful to embarrass the responsible parties (Jolley 2007, 2008, 2009). If we are going to continue to ask collectors to contribute knowledge to our research efforts, we must maintain our credibility by doing good work. When a professional archaeologist goes out and does a "half-ass" evaluation of a camp at Petersburg, for example, the local collectors know almost immediately.

STARTING POINTS

Our organization offers the following talking points. We do not intend to dictate what any agency does in terms of standards, but we feel that our experience allows us to at least define some starting points. You all have a copy of these **starting points**. I want to be clear that AMDA is not saying "these standards or none." We are here to discuss the issue with our peers.

EXPERIENCE

The field supervisor should have extensive metal detector experience, personally. By personally, I mean that they should have been actively in the field, not serving as office-bound or part-time PI. I do not know how to put a number on extensive experience, but we do not want PIs learning on the job. Military archaeologist Jo Balicki suggested that archaeologists should have at least 100 hours of actual metal detecting before taking a supervisory role on a project that relies heavily on metal detecting. We concur that is a reasonable minimum to set for supervisors.

If inexperienced operators are used, the ratio of novices to well-experienced should not exceed 2 to 1. It is crucial that the supervisor have sufficient time to instruct, observe, and fine-tune the performance of the novices. The supervisor cannot be working under a budget that requires them to be conducting their own sweeping full-time. The research of Alyson Wood at James Madison University suggests that the performance gap between experienced detectorists and absolute beginners closes quickly when there is mindful teaching and observation in the field. The supervisor should be monitoring the performance of novices versus those more experienced. If there remains a significant gap in recovery rates, further instruction will be necessary. There must be sufficient experienced detectorists on a crew to serve as a yardstick for the performance of the novices.

If non-professional detectorists are used, there should be no more than three detectorist per professional supervisor. It may be appropriate at this juncture to discuss the possible role of the relic hunter in professional archaeological research. There are those who feel the use of avocational detectorists in professional fieldwork somehow sanctions their non-professional activities (e.g., Michael Barber, State Archaeologist of Virginia). With the arrival of the TV shows *Diggers* (now canceled) and *American Diggers*, we can expect to hear renewed outrage against the participation of avocational detectorists in archaeological research. Balicki and Epenshade (2011) noted that the use of avocational detectorists began because there were not sufficient professional archaeologists with the requisite skills and equipment. However, given recent data on how quickly basic metal detecting skills can be acquired, given the dramatic increase in the number and quality of devices owned by CRM firms, given the increased user-friendliness of the devices, and given that many supervisors have developed strong skills in metal detecting, it is no longer necessary to use avocational detectorists. That said, the involvement of avocational detectorists can be an opportunity to educate them and perhaps change their avocational activities. If avocational detectorists are used instead of professionals, the report should document a legitimate reason (other than cost savings) that this was done.

Whether or not avocational detectorists are used actively in the fieldwork, they should be interviewed regarding their knowledge of the local archaeological record.

If the decision is made to involve avocational detectorists, close supervision is required. It must be recalled that avocational detectorists may not be comfortable with intensive, controlled survey, especially when others are finding more elsewhere. Avocational detectorists may also have strong feelings about what is and is not a productive area. If your research design calls for full and even coverage, you will need some personnel management skills to comply with that design.

At the risk of sounding self-serving, we might also suggest that agencies could require PIs to have completed an AMDA course or its equivalent. Those of you with GDOT contracts know that your staff is required to have continuing education in a variety of topics to qualify for GDOT work. We see AMDA as a natural addition to this list. The AMDA has been certified by Register of Professional Archaeologists' continuing education program, and our next class will be August 22 and 23 at Charlestowne Landing. The course requires only two days to complete, and registration costs are reasonable. It is also possible for agencies to underwrite the training, such that there will be no registration cost for the participants. Our course is designed to assure that archaeologists

have the training, the knowledge, and the resources to optimize their metal detecting efforts. We also provide ample opportunity for hands-on trials with a variety of devices by diverse manufacturers. We send each participant home with sample reports from successful metal detecting projects. The requirement for completion of AMDA or similar course would assure that supervisors have baseline knowledge.

DEVICES

We suggest that there are two parameters available to assure an appropriate instrument is being used; price point and age. Although there is some variability between manufacturers' lines, metal detectors are a market-driven industry, and shared price points have developed. That is, a $200-400 device from one manufacturer will have similar capabilities and features as the $200-400 device from another.

Based on the cumulative experience of the AMDA board, we propose the following standards for devices. For general outbuilding chases and such, minimally a price point of $200-400 is recommended. This same range is appropriate for seeking shallowly buried or surface scatters, as might be expected at tar kiln camps, whiskey stills, or CCC camps. Likewise, the most basic metal detector will help you distinguish between a road bed and a former rail line. Examples in the $200-400 range might include: Fisher F2, Fisher F4, MP3 Multi Power, MP3 Pro, MP5 Pro, MPX, Bounty Hunter Pioneer 501, Bounty Hunter Pioneer 503, Bounty Hunter Pioneer 505, Garrett ACE 150, Garrett ACE 250, Garrett Ace 350, Tesoro Silver uMax, Tesoro Cibola, Teknetics Delta 4000, Minelab X-Terra 305. Please note that we do not endorse any specific model or manufacturer, and we do not feel that standards should dictate specific models.

For intensive metal detector survey of battlefields and similar sites, minimally a $500-700 machine is recommended. These machines generally allow fine-tuning to local conditions, as well as masking of background signals. Some examples in this price range would include: Fisher F-5, Fisher 1270, Fisher F70, Garrett AT Pro, Garrett GTP 1350, Minelab X-Terra 505, Tesoro Deleón, Tesoro Tiger Shark, White's Sierra Madre, White's Matrix 6, and Teknetics Omega 8000.

When the need to approach 100 percent collection through multiple passes, especially in a site with low artifact density, we probably need to look at a device in the $1000-1300 range. Patrick Severt's (Severts 2011) work at the site of the Moore's Ford Lynching is an example of such a project. Examples in this price range would include: Garrett GTP 1350, White's Spectra VX3, White's DFX 300, Garrett Infinium LS, Fisher CZ-21, Minelab Explorer SE Pro, White's Spectra V3i, and Fisher F75.

It should be clear that we do not think that the standards should impose any ceiling on metal detector costs and capabilities. For example, pulse induction detectors costing considerably more than $1300 have tremendous capabilities, but also require highly trained operators. When special situations require the absolute best – beyond any consideration of cost and training – the archaeologists should be at least knowledgeable of the high-end devices and what they can do.

The second parameter is age of the machine (or interval since manufacturer's upgrade). The technology of metal detecting is changing so quickly that age becomes an indicator of the

performance. A $200-400 device of today will significantly outperform a $200-400 device of 10 years ago. We want archaeologists to be using the current technology. AMDA is somewhat divided over the age threshold. Some of us feel that no device over five years old should be used, while others feel that 10 years should be the cut-off.

No matter what detector is applied, we strongly recommend the use of pinpointers. As their name indicates, the devices help pin point the target and minimize the area that needs to be excavated to retrieve the target. Think auger holes rather than shovel tests.

COVERAGE

There should be some agreement as to what "intensive survey" means. I think this should be complete sweeping in one direction. Double-intensive should refer to full coverage through sweeping in two directions.

If sampling is used, the type (e.g., every fourth transect is swept, or only the high probability locations are swept) of sampling should be justified. Non-replicable, unmapped sampling ("I just did what I could in three hours") should be avoided.

The research design for each project should balance research needs against the conservation and curation demands that may come with recovering a large number of metal artifacts. In many instances, reasonable strategies may include: excavating only a sample of the targets; field analysis and reburial (i.e., non-collection strategy); and selective collection (culling of modern or generic historic/agricultural items). The research design should also address how potential features will be addressed.

If metal detecting is done only when specific conditions apply (e.g., when a house site or a tar kiln is found during Phase I survey), the sampling should be defended based on what we know of the site types in question. In other words, we have a pretty good feeling for the distances of farmyard structures from the residence. Likewise, we know that the tenders of charcoal and tar kilns needed to be close (but not too close) to the kilns. We know that the artifact scatter around a whiskey still furnace will be quite small if the still was moved and significantly larger if the still was destroyed by law enforcement.

WHEN TO REQUIRE METAL DETECTING

The guidelines should mandate the use of metal detectors as one element of survey when military camps/battlefields/entrenchments/picket posts are likely. Their use should be required during the delineation of house sites, tar and charcoal kilns, and whiskey still sites. They should be required during the evaluation of any site with the potential for Contact period or Historic Indian remains.

In any instance that background research indicates potential for such resources, metal detecting should be included. For areas of known military activity, the required background research should include interviews with local avocational detectorists.

Likewise, it is a reasonable expectation that a professional archaeologist will add metal detecting whenever they come upon a field situation (predicted or not) that would benefit from the application of metal detecting. We would like to see a metal detector become standard equipment for all Phase I surveys; it should at least be on hand in the vehicle.

Metal detectors should also be required at all historic grave removals. The sweeping of the completed floor and walls of the grave will assure that no hardware or personal goods have been missed. Root action can move artifacts into the floor and walls of the grave shaft, so it should be standard practice to sweep the completed grave excavation.

During the removal of historic graves, it is common practice to machine excavate the grave shaft until a coffin stain is encountered. There is some risk with such an approach (especially when the coffin has collapsed and compressed), in that you may hit human bones at the same time that a distinguishable coffin stain appears. A safer approach is to alternate sweeps with a metal detector and machine removal of layers that do not exceed the effective range of the detector. If your detector reaches 10 inches, you sweep and then machine-remove eight inches. Once metallic targets are identified, hand excavation proceeds. This approach is useful in reassuring clients and descendants that human remains are not going to be disturbed during the machine-assisted excavation.

A metal detector should be present during any Phase II work. Even if you are working on a prehistoric site, a metal detector can quickly be used to cull any historic or modern features containing metal. Is that a prehistoric house wall or part of a historic fence line? The metal detector can provide a fast answer.

REPORTING

As a profession, we are still learning how to write metal-detecting reports, and the implementation of standards will help. Each report should be clear on who did the detecting, using what instrument (age and model), in what mode, covering how much area, and expending how many hours sweeping/how many hours digging targets. The experience of each detectorist should be specified in the report.

A justification for the instrument selection should be included in the report.

The report should include how the surveyed areas and finds were mapped. It is important that the full search area is known, as negative evidence is also valuable.

The report should present the goal of the metal detecting, and should address any instances where recovery was less than expected.

If steps were taken to improve recovery rates (e.g., replowing, removing sod, partially removing the plowzone), these should be reported.