August 13, 2009
Mr. Brian Hancock   **Sent via E-mail**
U.S. Election Assistance Commission
Voting System Testing and Certification Program
1225 New York Avenue, NW, Suite 110
Washington, DC 20005

Mr. Hancock,
The purpose of this letter is to document the 3% review of the firmware source code for the Unity 3.2.1.0 M100 precinct scanner in accordance with your 4 August 2009 email providing instructions on the reuse of testing for the ES&S certification effort. This letter also provides Beta's recommendation to the EAC regarding the reuse of the source code review conducted by SysTest in Unity 4.0.

Documentation of the Review Process

To conduct the review, iBeta used our PCA Source Code Review Procedure. The source code was delivered from SysTest and configuration managed in the iBeta Source Code Repository. The M100 application is entirely written in C. This coding language had been previously reviewed on other certification test efforts. The previously used interpretation of the generic Voting System Standards 2002 (VSS 2002) requirements to the C review criteria was utilized unmodified. The C review criteria is not attached to this letter but it can be provided if deemed necessary for the EAC determination of reuse. The VSS 2002 requirements applicable to the source code review task are:

Volume	Section(s)
1	4.2.2 through 4.2.7
1	6.2
1	6.4.2
2	2.5.4d
2	5.4.2

To select the 3% for review, iBeta conducted an analysis by first using a static analysis tool to parse each application source code base and provide a list of the files and functions as well as the Lines of Code (LOC) count. (iBeta metrics uses executable LOCs only and does not include comment, blank, or continued lines.)

Once the spreadsheet was populated for the M100 application, a selection of files/functions was made based on the file header information documenting the file purpose. iBeta focused the review by selecting source code files and functions that process vote data, audit logs, and reporting.

During the M100 Source Code Review all requirements were identified as accepted or rejected. Rejection of requirement required further documentation in a discrepancy. A recommendation for reuse would be based upon the discrepancies encountered. Discrepancies dealing with comments, headers, formatting, and style would be deemed non-logic issues and flagged as ==green== with a recommendation for reuse. Any potential logic issues,flagged as ==yellow==, would besubmitted to the EAC for consideration with

iBeta's recommendation. Confirmed logic issues, flagged as <mark style="background-color:red">red</mark>, would result in a recommendation for a 100% source code review.

A peer review of the M100 Source Code Review was conducted by an experienced reviewer who had reviewed source code to the VSS requirements on a minimum of two VSTL test efforts. Based on the instruction in your 4 August 2009 email "*This review will focus on important functional sections of the code in order to determine the depth and focus of source review conducted by SysTest*", the peer reviewer examined the identified results and source code to confirm the accuracy of the review. The matrix of the source code reviewed is provided as Attachment 1.

Summary of 3% Source Code Review Results
Precedence for the iBeta interpretation has been established with testing for other clients and these established interpretations were applied to Unity 3.2.1.0. Zero discrepancies were identified.

Recommendation Regarding the Reuse of the SysTest Source Code Review
In order to provide a recommendation, iBeta evaluated the results of the 3% source code review. As there were zero discrepancies written that potentially impact the source code, iBeta recommends reuse of the results of the SysTest source code.

Sincerely,

Carolyn Coggins
QA Director - Voting

Attachment 1: Matrix of Source Code Reviewed

cc: Steve Pearson, ES&S
         Sue Munguia, ES&S