National Institute of Standards and Technology
National Voluntary Laboratory Accreditation Program (NVLAP)

SIGNATURE SHEET

Laboratory Name: <u>iBeta</u>

Field(s) of Accreditation: <u>Election (Voting)</u>

NVLAP Assessor(s):

Name	*Signature*
<u>Daniel D. Hoolihan</u>	_____
<u>Steve Freeman</u>	_____
<u> </u>	_____

On-Site Assessment Dates: <u>11-14 December 2006</u>

Type of Assessment (check one):   ⊠ Initial   ☐ Renewal   ☐ Monitoring   ☐ Other

Note: Please list laboratory personnel present at exit briefing on the back of this page.

Instructions for the Laboratory

Respond in writing within 30 days of the date of this report, addressing all nonconformities documented by the assessor(s). All nonconformities must be satisfactorily resolved before accreditation may be granted. See page 2 for guidance and instructions on responding to nonconformities.

The On-Site Assessment Report, the information supplied by you, and the results of any required proficiency testing will be reviewed by NVLAP with the assistance of technical experts as necessary. NVLAP is solely responsible for the content of this report and reserves the right to change the findings of the assessor(s), based on the results of this review. The final evaluation of your laboratory, for the purpose of deciding whether to approve or deny an initial or a renewal accreditation, will be conducted by NVLAP. It is the responsibility of the Authorized Representative to understand and respond with sufficient information within the required timeframe. Failure to respond may result in the suspension of your laboratory's accreditation or, in the case of a new laboratory, may delay an accreditation decision. Questions concerning this response should be directed to NVLAP.

Send your response to: NVLAP
                                              National Institute of Standards and Technology
                                              100 Bureau Drive, Stop 2140
                                              Gaithersburg, MD 20899-2140

Signed Statement

The assessor has discussed the contents of this report with members of the laboratory management who agree to respond in writing to NVLAP, regarding resolution or correction of any nonconformities noted, within 30 days of the date of this report.

Signature of Authorized Representative or designee: _____

Printed Name: <u>   </u>

Guidance and Instructions on Laboratory Responses

Resolving nonconformities: A laboratory's response shall include documentation that the specified nonconformities have been corrected and/or a plan of corrective actions. A corrective action plan must include a list of actions, target completion dates, and names of persons responsible for discharging those actions. All nonconformities must be satisfactorily resolved before accreditation may be granted. For accredited laboratories, this is interpreted to mean that nonconformities adversely affecting the outcome of calibrations or tests must be addressed and corrected immediately (within the 30 days). Evidence must be supplied which clearly demonstrates that actions taken fully resolve the nonconformities, thereby removing any concern as to the quality of results of the calibrations or tests conducted by the laboratory. In those cases where specified nonconformities do not directly affect the results of calibrations or tests, such as those related to record-keeping, NVLAP may accept a plan and a schedule, as previously described, as satisfactory resolution. When this occurs, laboratories are expected to submit sufficient objective evidence demonstrating that the nonconformities have, in fact, been resolved according to the schedule. All responses must be sent directly to the NVLAP office, not to the assessor(s).

Referencing nonconformities: Each nonconformity must be referenced in your response by item number as it is listed in the appropriate checklist. Cite the requirement against which the nonconformity is stated and, where more than one nonconformity was recorded against the same requirement, either restate the specific nonconformity, or indicate to which test/parameter the response is related.

Objective evidence: The laboratory may ask for clarification of a nonconformity either during the closing meeting or from the appropriate NVLAP Program Manager. It is required that objective evidence be submitted as proof that a nonconformity has been effectively resolved. Such evidence includes updated procedures, uncertainty analyses (where appropriate), corrected/updated sections of the quality documents associated with a stated nonconformity, copies of completed records, corrective action reports, etc. NVLAP reviews all responses, with the assistance of appropriate technical experts as necessary, and is solely responsible for the final decision regarding the resolution of a nonconformity and for the granting of initial or renewal accreditation.

ON-SITE ASSESSMENT NARRATIVE SUMMARY

CHANGES TO CURRENT OR REQUESTED SCOPE OF ACCREDITATION
(Additions, Deletions, Modifications)

This was a first-time assessment of iBeta for voting criteria.

The entire voting/election sector is under development and the Scope of Tests will be against two "standards"; those being:

FEC Voting System Standards, 15 May 2002
EAC Voluntary Voting System Guidelines, 13 December 2005

The areas of the test methods/test procedures which were reviewed in the form of the Test Cases or Test Templates available and the appropriate observations are:

1. Technical Data Package Review.
    a. Identification of deliverable to include specifying user manuals which are validated and used a part of the testing procedures.
    b. Software test tools (150-22, 5.5 Equipment) need to be identified and verified operational. Instructions for the pre-testing setup and readiness needs to be developed (NETNIX is only tool identified currently)
    c. Operational Readiness Test validation. Description is generic; need to witness in a later review.
2. Software Source Code Review
    a. Assess Manpower Requirement. Assessment was based on Resume and training log. No reference record that the selected test personnel were qualified and when.
    b. Malicious Code item practice includes specifying specific threats and the ability to add to it as threats are identified. (Good)
    c. Witnessed Build. New EAC published Voting System Test and Certification Program Manual provides a new procedure.
        i. Interpretation needs to be requested from EAC to resolve timing issue.
        ii. Requires VSTL to purchase COTS application software for installation. Need to develop procedures to include process if application is no longer commercially available.
        iii. Need to identify digital signature tool.
3. Physical Configuration Audit
    a. Configuration Management Plan
    b. Assessibility tests.
        i. This should be identified as Test Method.
    c. Hardware tests
4. Functional Configuration Audit
    a. Verifying Functional requirements against various sources
    b. Include HAVA into VSS _2002 requirements.
5. System Integration Tests
    a. Accuracy/Reliability
        i. Identification of qualified environmental chambers
    b. Volume
        i. Need to identify volume tests
    c. Security.
        i. Missing Vol II 6.4.1 required test method
        ii. Define as a formal Test Method for audit and visibility reporting
        iii. Good attention to security testing in system integration and source code review.
    d. CryptoGrafic
    e. Telecommunications
        i. Instructions for use of NETNIX
    f. System end-to-end test
6. Qualification Test Report
    a. Reformat table for Test Equipment
    b. Need to add technology of system. Drafted on site
    c. Categories of deficiencies. Added to draft

4.1 ORGANIZATION

The lab is a small organization whose legal title is iBeta, LLC and they do business as iBeta Quality Assurance.

They have a clearly defined organization chart and separate functions with clear lines of authority.

4.1.6 -Top Management has not addressed the top-level communications of the quality policy to the employees.

4.2 MANAGEMENT SYSTEM

The Management System is organized around ISO/IEC 17025 and is summarized in the iBeta Quality Policies of the iBeta Qality Management System (iBeta Quality Policy).

 4.2.2 e) - No words in the quality policy statement nor the employee handbook to address this at the top level

4.2.3 - Not addressed in the "ibeta Quality Policy"

4.2.5 a) - Business vertical procedures need to be added to 2.3 of the Quality Policy which is referenced in 4.2.5 of the Quality Policy

4.3 DOCUMENT CONTROL

Covered in the iBeta Quality Policy and the iBeta Procedure "Document Control."

All documents are under electronic control with sufficient backup procedures in place.

4.4 REVIEW OF REQUESTS, TENDERS AND CONTRACTS

Covered in the iBeta Quality Policy (Paragraph 4.4 – Review of Contracts) and the iBeta Procedure called "Review of Contracts."

4.5 SUBCONTRACTING OF TESTS AND CALIBRATIONS

The iBeta Quality Policy covers this in paragraph 4.5 (Subcontracting) and in iBeta procedure "Subcontracting."

4.5.1 - Clause 6.1.2 of the iBeta procedure "Subcontracting" states the term "independent subcontractor or contractor" where subcontractor is not consistent with 17025/150. The term "contractor" is defined in the iBeta procedure "Subcontracting" and is appropriate for clause 6.1.2 but "subcontractor" is defined as an "accredited lab' and is not appropriate for clause 6.1.2.

4.6 PURCHASING SERVICES AND SUPPLIES

The iBeta Quality Policy covers this in paragraph 4.6 (Purchasing Services and Supplies) and the iBeta procedure "Equipment."

4.6.4 b) - No evidence of an approved vendor list was available

4.7 SERVICE TO THE CUSTOMER

Covered in 4.7 of the iBeta Quality Policy and the iBeta Procedures "Handling Complaints" and "Contract Review."

A Customer Satisfaction Guarantee is part of the service to the customer; this guarantees the customer will be satisfied or iBeta will make it right.

.4.7.1 - The procedure called "Review of Contracts" covers this issue as well as Paragraph 4.7.1 in the Quality Policy. The 2005 version of ISO/IEC 17025 changed the word "client" to "customer " and this is consistent with NIST Handbook 150 (2006 version) where the term customer is defined but client is not defined.

4.8 COMPLAINTS

Paragraph 4.8 of the iBeta Quality Policy covers this area as well as the iBeta procedure "Handling Complaints."

4.9 CONTROL OF NONCONFORMING TESTING WORK

This is covered under Paragraph 4.9 of the iBeta Quality Policy and the iBeta procedures "Action Plans, Corrective, Improvement and Proactive", "Audit and Management Reviews", "Handling Complaints," and peer review.

4.10 IMPROVEMENT

Covered in Paragraph 4.10 of the iBeta Quality Policy plus the iBeta procedures "Action Plans, Corrective, Improvement and Proactive", "Audit and Management Reviews", and peer review.

4.11 CORRECTIVE ACTION

Paragraph 4.11 in the iBeta Quality Policy covers this plus "Action Plans, Corrective, Improvement and Proactive", "Handling Complaints," and peer review.

4.12 PREVENTIVE ACTION

Covered in Paragraph 4.12 in the iBeta Quality Policy and the iBeta procedures "Action Plans, Corrective, Improvement and Proactive" and "Audit and Management Reviews."

4.13 CONTROL OF RECORDS

Paragraph 4.13 of the iBeta Quality Policy and the iBeta procedures "Document Control", "Personnel", and test planning.

4.14 INTERNAL AUDITS

Covered in Paragraph 4.14 of the iBeta Quality Policy and the iBeta procedure on "Audits and Management Review."

4.15 MANAGEMENT REVIEWS

Paragraph 4.15 of the iBeta Quality Policy and the iBeta procedure on "Audits and Management Reviews."

The list of Action Plans from the September 2006 Internal Audit Findings is:
   Audit Findings Creating or Modifying a Procedure
   Audit Findings Test Project Management
   Audit Findings Test Planning, Execution and Recording of Results
   Audit Findings Subcontracting
   Audit Findings Review of Contracts
   Audit Findings Reporting of Results
   Audit Findings Personnel and Training Records
   Audit Findings Management of Quality Policies
   Audit Findings Handling Complaints
   Audit Findings Equipment Procuring, Handling, and Validation
   Audit Findings Document Control
   Audit Findings Audit and Management Review
   Audit Findings Action Plans

5.1 GENERAL

The lab is a software lab and has no testing equipment that needs to be calibrated so there are no traceability concerns.

5.2 PERSONNEL

Interviewed Sean Irvine about his knowledge of Election Standards; he had some trouble with VSS and VVSG (couldn't define them off the top of his head). He eventually found the Power Point Presentation that defined the terms. He had access to the iBeta internal computer system and could find some standards and documentation on-line but couldn't find the VVSG document. He discussed his internal training.

Gail Audette gave a demonstration of a sample voting system analysis which included observations by Sean Irving and Kevin Fowler from iBeta. The exact version of source code must be verified and the origin must also be checked. Commercial Off The Shelf (COTS) software must also be checked and verified. Vendor source code is checked. An internal procedure is used called "Source Code Analysis." The test standard the software was compared to was VVSG.

The demonstration was turned over to Sean Irving, as a Code Reviewer. He modified the demonstration. The code is CPP. Written resumes for Kevin Fowler and Sean Irving were both reviewed and found acceptable. Kevin and Sean were re-interviewed after a two-hour review session on their assignment. Kevin reviewed 12 functions and found 60 discrepancies.

None of the modules were labeled and there were 25 exceptions found in 5 functions. Every discrepancy was indicated as to where it was.

Interviewed Todd Prebynski; he has six years experience with iBelta. His resume was reviewed and he has a computer science degree from Colorado School of Mines. He started doing performance loading and is now involved with manual tests; test plan design and defect tracking. He does FCA work.

5.2.5 c) – 150-22 – 5.2.6 - The competency review program is not documented fully in the Voting Training Procedure. Noted that the determination of qualified technician prior to testing requires a review of resume and training record but there is no record that technician is qualified for that test method/test plan area and when he/she was qualified.

5.3 ACCOMMODATION AND ENVIRONMENTAL CONDITIONS

The lab is a software lab and has very tight security. The building the lab is located in has locked doors after-hours; it has a locked (cipher-lock) door to the offices at all times, it has a special area that is accessible only through a biometric lock. In addition, there are sensors and camera locations throughout the iBeta laboratory.

The lab is temperature controlled and is kept at an office-operational temperature.

There are at least 12 separate lab sub-areas (rooms with doors and walls) that can be used for privacy of program development or checking of proprietary programs. These rooms can be quickly modified for one customer or another. Since two or more competitors may be present in the lab at the same time, this isolation is important for privacy and security and confidentiality of the software programs being actively checked.

5.4 TEST AND CALIBRATION METHODS AND METHOD VALIDATION

iBeta uses a Functional System concept which is based on an option permitted under the Voting System Standards/Voluntary Voting System Guidelines to organize and plan for the testing and have not developed their procedures in terms of Test Method definitions. The method is robust and more thorough than a pure Test Method technique but make it hard to audit identifiable test requirement areas such as Security or Accessibility. The use of test area templates to set up large testing suites comes close to meeting the requirement but merges, for efficiency of testing, test requirements into a single test activity such as the end-to-end system integration test. It does not readily support being able to review the test method and the use of the method in test plans to see that required by ISO/IEC 17025 requirements such as 5.2, 5.5-5.10 are considered within the testing or support comparisons from test campaign to test campaign that the test is being applied, within design limits, consistently between customers. They use 'proof of concept' to validate whether a test method is appropriate for a requirement in the test method selection process but do not have, at this time, established methods or procedures for validating the test methods that they do use, partially because the test procedures are only defined at a high generic level and generated from the vendor data in the actual test campaign. This is in contrast to have a standard, testable procedure defined that may be validated by various techniques.

Non-conforming: identification of test methods and their documented validation.

5.5 EQUIPMENT

Personal computers and software programs are the primary equipment used by iBeta to test software/voting systems.

5.6 MEASUREMENT TRACEABILITY

Not applicable to iBeta/VSTL at this time.

5.7 SAMPLING

Sampling is not commonly recognized with in current VSTL practices.

5.8 HANDLING OF TEST AND CALIBRATION ITEMS

This was well covered in the policy and procedures.   Requirement to specifically

5.9 ASSURING THE QUALITY OF TEST AND CALIBRATION RESULTS

Covered in the policy and procedures.

5.10 REPORTING THE RESULTS

The test report is covered in the policy and procedures and a Qualification Test Report Template developed supporting specific detail.. The test report is requirement specifiel in the Voting System Standards/Voluntary Voting System Guidelines, App B but is supplemented with additional requirements under this program. The following were noted but draft revisions clearing most of them were written during the assessment:

a. Unique report id. The exiting template intended to the use the EAC certification number but the number is assigned after the report is distributed and used in the technical review and certification approval process. A unique number is needed to identify the report before and, if the certification is not granted, to identify the archive record copy of the report.

b. I

ANNEX A.
REFERENCING NVLAP ACCREDITATION

ANNEX B.
IMPLEMENTATION OF TRACEABILITY POLICY IN ACCREDITED LABORATORIES