

**NOTE FROM THE DEPARTMENT OF HOMELAND SECURITY, US-VISIT**

The final policy decisions of the agency on the RFID land border test and its related data are reflected in public documents, such as system of records notices, privacy impact assessments, and other public notices. 70 Fed. Reg. 38,699 (July 5, 2005), id. at 39,300 (July 7, 2005), id. at 44,934 (August 4, 2005). See also Department of Homeland Security, Finding of No Significant Impact (FONSI), US-VISIT Increment 2C Proof of Concept at Select Land Ports of Entry, available at {[http://www.dhs.gov/interweb/assetlibrary/US-VISIT\\_FONSI\\_Decision\\_4-13-05-EN.pdf](http://www.dhs.gov/interweb/assetlibrary/US-VISIT_FONSI_Decision_4-13-05-EN.pdf)} (April 18, 2005) (visited April 28, 2006). This document, which we are providing as a matter of discretion, was prepared by a DHS contractor and presents an analysis of alternatives and recommendations. The document was considered in making a decision to explore, through "proof of concept" testing, whether and how RFID enabled to I-94 and I-94W Forms would work in practice at a limited number of land POEs. DHS deemed it wise to place the test records and related data in system of records that could also be used if the agency decides to deploy RFID-enabled I-94 and I-94W in a more expanded fashion.

# US-VISIT Increment 2C Operational Alternatives Assessment - FINAL

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Submitted by:  
Smart Border Alliance  
1616 N. Fort Myer Drive  
Rosslyn, VA 22209

Submitted to:  
Department of Homeland Security  
US-VISIT Program Office  
1616 N. Fort Myer Drive  
Rosslyn, VA 22209



## Executive Summary

The mission<sup>1</sup> of the United States Visitor and Immigrant Status Indicator Technology (US-VISIT) Program, within the Department of Homeland Security (DHS), is to enhance the security of United States (U.S.) citizens and travelers, to facilitate legitimate trade and travel, to ensure the integrity of the U.S. immigration system, and to protect the privacy of travelers.

The US-VISIT Increment 2C Statement of Objectives defined the Increment 2C capability as:

*“Enhancement of the initial operating capability provided at land ports of entry as implemented, through the issuance of a unique identifier that is capable of being read automatically, passively, and remotely during subsequent exit and reentry by US-VISIT enrolled travelers.”*

The initial operating capability was developed in Increment 2B. Increment 2B redesigned the I-94 issuance process to enable the electronic capture of biographic, biometric (unless exempt) and related travel data for arriving in-scope travelers. Increment 2B was deployed to meet the legislative mandate to record alien arrival information at the busiest 50 U.S. land border Ports of Entry (POEs) by December 31, 2004<sup>2</sup>.

This assessment begins the process of enhancing the initial operating capability developed in Increment 2B by identifying and assessing alternatives that could meet the Increment 2C capability and objectives.

The methodology used to delimit possible Increment 2C solutions and to subsequently assess their feasibility was as follows:

1. Identify the operational capabilities required for Increment 2C
2. Identify potential solutions that could provide the required Increment 2C operational capabilities
3. Identify the criteria used to assess each potential solution
4. Assess potential solutions based on identified criteria

The US-VISIT Increment 2C Statement of Objectives identifies the need to provide a unique identifier for each traveler. This requirement serves as a basis to determine the following potential Increment 2C solutions:

1. Biometric Facial Recognition
2. Biometric Voice Recognition
3. Biometric Iris Scans
4. Biometric Retinal Scans
5. Biometric Hand Geometry
6. Biometric Finger Scans
7. Radio Frequency Identification (RFID)
  - a. Active

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<sup>1</sup> Executive Summary, Mission Needs Statement v3.0, November 2003

<sup>2</sup> See Attachment B, Increment 2B Implementation at the 50 Busiest Land Border Ports of Entry (POEs) by December 31, 2004.



- b. Passive
- c. Ultra Wide Band
- 8. Global Positioning System (GPS)
- 9. Self Service Kiosk
- 10. Facilitated Border Crossing

The Increment 2C Statement of Objectives served as the primary source of criteria used to assess each potential alternative. Additional criteria were developed to provide a comprehensive assessment of the alternatives. The assessment criteria were applied in a three-phased approach:

1. **Core Capability Criteria** – These criteria limit the assessment of alternatives to only those that could support the capabilities required for Increment 2C.
  - Passive
  - Remote
2. **US-VISIT-Identified Criteria** – These criteria, specified by the US-VISIT Program Office, identify further constraints for Increment 2C.
  - No increase in wait times as a result of implementation
  - No degradation in level of service (LOS) for exit lanes
  - No significant degradation in traffic patterns
3. **Guiding Criteria** – These criteria examine key considerations related to the viability of the potential solution and its potential affects on the personal privacy of travelers.
  - Commercial Availability
  - Impacts to Traveler
  - Privacy Impacts

Table E-1 summarizes the assessment of alternatives against the criteria mentioned above.



INCREMENT 2C ALTERNATIVES ASSESSMENT SUMMARY								
Alternative Solution	Assessment Criteria							
	Core Capability		US-VISIT Identified			Guiding		
	Passive	Remote	No Increase in Wait Times	No Degradation in LOS for Exit Lanes	No Degradation in Traffic Patterns	Commercial Availability	Minimize Impacts To Traveler	Minimize Privacy Impacts
Biometric Facial Recognition	-	+						
Biometric Voice Recognition	-	+						
Biometric Iris Scans	-	+						
Biometric Retinal Scans	-	+						
Biometric Hand Geometry	-	+						
Biometric Finger Scans	-	+						
Active Radio Frequency Identification	+	+	+	+	+	+	-	-
Passive Radio Frequency Identification	+	+	+	+	+	+	+	+
Ultra Wide Band Radio Frequency Identification	+	+	+	+	+	+	-	-
Global Positioning System	+	+	+	+	+	+	-	-
Self Service Kiosk	-	+						
Facilitated Border Crossing	-	-						
+ Supports criteria - Does not support criteria Note: An alternative must have met both Passive and Remote in order to be evaluated past the Core Capability.								

**Figure E-1: Alternatives Assessment Summary**

As the table indicates, the Passive RFID solution best satisfies the all the assessment criteria. Based upon this preliminary assessment, more rigorous qualitative and quantitative analysis of specific Passive RFID solutions should be considered for Increment 2C.



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## Revision History

Version No.	Date	Brief Description of Change	A=Add M=Modify D=Delete	Source
V0.1	1/31/2005	Document creation	A	Increment 2C Business Architecture Team



## 1.0 Introduction

The mission<sup>3</sup> of the United States Visitor and Immigrant Status Indicator Technology (US-VISIT) Program, within the Department of Homeland Security (DHS), is to enhance the security of United States (U.S.) citizens and travelers, to facilitate legitimate trade and travel, to ensure the integrity of the U.S. immigration system, and to protect the privacy of travelers.

The US-VISIT Increment 2C Statement of Objectives defines the Increment 2C capability as:

*“Enhancement of the initial operating capability provided at land ports of entry as implemented, through the issuance of a unique identifier that is capable of being read automatically, passively, and remotely during subsequent exit and reentry by US-VISIT enrolled travelers.”*

The initial operating capability was developed in Increment 2B. Increment 2B redesigned the I-94 issuance process to enable the electronic capture of biographic, biometric (unless exempt) and related travel data for arriving non-immigrants. Increment 2B is currently being deployed to meet the legislative mandate to record alien arrival information at the busiest 50 U.S. land border Ports of Entry (POEs) by December 31, 2004<sup>4</sup>.

This assessment supports the process of enhancing the initial operating capability developed in Increment 2B by identifying and assessing alternatives that could meet the Increment 2C capability and objectives.

### 1.1 Purpose of Document

The purpose of the Increment 2C Operational Alternatives Assessment is to illustrate the methodology employed to inform the Increment 2C concept selection.

In addition, this document provides input to the Increment 2C Environmental Assessment and identifies an area of focus for identifying three Increment 2C solution alternatives, which will be evaluated in the Increment 2C Cost Benefit Analysis and Privacy Impact Assessment.

### 1.2 US-VISIT Background

The US-VISIT Program was chartered within the DHS to enhance national security and the integrity of the immigration system, facilitate legitimate travel and trade, and safeguard in-scope travelers' personal privacy. Through a dynamic and interoperable program, US-VISIT will collect, maintain, and share information including biometrics and photographs on individuals who:

- Should be prohibited from entering the U.S.
- Extend or adjust their immigrations status
- Have overstayed or otherwise violated the terms of their admission
- Should be apprehended or detained for law enforcement purposes
- Need special protection/attention

Table 1-1 provides a high-level summary of the initial Increments in the US-VISIT program.

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<sup>3</sup> Executive Summary, Mission Needs Statement v3.0, November 2003

<sup>4</sup> See Attachment B, Increment 2B Implementation at the 50 Busiest Land Border Ports of Entry (POEs) by December 31, 2004.

US-VISIT Program Increments			
Increment	Process Scope	Schedule	Functionality
1A	Entry at Air and Sea Ports	January 5, 2004	Delivered the initial operating capability of using biometrics for identity verification to 115 air and 15 sea ports
1B	Exit Pilot at Air and Sea Ports	August – December 2004	Evaluates the exit pilot alternatives at air and sea ports
2A	Entry at Air/Land/Sea Ports	October 26, 2005*	Delivers the initial operating capability to read biometrically enabled travel documents at all POEs
2B	Entry at 50 busiest land Ports	December 31, 2004*	Electronically captures arrival and biometric data in the Passport Control Area and automates the Form I-94 issuance process
2C	Entry and exit at land POEs	July 31, 2005 (POC Phase 1), March 31, 2006 (POC Phase 2), December 31, 2007 (Busiest 50 POEs)	Automates recording of in-scope traveler entry and exit
3	Remaining land POEs	December 31, 2005*	Provides Increment 2B capability at remaining land POEs

\* Indicates a legislative mandate

**Table 1-1: US-VISIT Program Increments**

The first increment of US-VISIT was launched on January 5, 2004 with the deployment of biometric capture capabilities at 115 airports and 15 seaports (Increment 1A). An evaluation of exit pilot alternatives at air and seaports is ongoing (Increment 1B). By December 31, 2004, US-VISIT had introduced the collection of biometrics into the issuance of Form I-94 and Form I-94W in the Passport Control area and automates the Form I-94 issuance process at the 50 busiest land POEs (Increment 2B).

By July 31, 2005, US-VISIT will automate the recording of in-scope traveler entry and record exit events through the issuance of a unique identifier (Increment 2C). By October 26, 2005, US-VISIT will deliver the capability to read biometrically enabled travel documents at all POEs (Increment 2A). By December 31, 2005, US-VISIT will introduce the collection of biometrics into the issuance of Form I-94 and Form I-94W in the secondary area of the remaining land POEs (Increment 3).

### 1.3 Increment 2C Leadership

Key personnel involved with the Increment 2C initiative include, but are not limited to, the

individuals identified in Table 1-2.

US-VISIT Increment 2C Leadership			
Organization	Title	Name	Role
DHS	Secretary	Tom Ridge	Business Sponsor
BTS	Undersecretary	Asa Hutchinson	Business Sponsor
CBP	Commissioner	Robert Bonner	Business Owner
CBP	Assistant Commissioner	Jason Ahern	Deputy Business Owner
US-VISIT	Director	Jim Williams	Approving Authority
US-VISIT	Deputy Director	Bob Mocny	Approving Authority
DOS	Department Representative	John Cook	IPT member
DOT	Department Representative	Jim Zok	IPT member
ICE	Agency Representative	Kevin Merkel	IPT member
TSA	Agency Representative	Tom Freed	IPT member
CBP	Agency Representative	Elizabeth Tritt	IPT member
US-VISIT	Implementation Management	Shonnie Lyon	Approving Director
US-VISIT	Implementation Management	Colleen Manaher	Project Manager
US-VISIT	Office of Facilities Management	Manny Rodriguez	Approving Director
US-VISIT	Office of Chief Strategist	Patty Cogswell	Approving Director
US-VISIT	Mission Operations Management	P.T. Wright	Approving Director
US-VISIT	Outreach Management	Anna Hinken	Approving Director
US-VISIT	Budget & Financial Management	Keith Roemeling	Approving Director
US-VISIT	Information Technology Management	Scott Hastings	Approving Director
US-VISIT	Acquisition & Program Management	Dana Schmitt	Approving Director
US-VISIT	Administration and Training	JaNelle East	Approving Director
SBA	Increment 2C	Kimberly Deshong	Project Manager
SBA	Business Solution	Lauren D'alessio	Team Lead
SBA	Systems Development	Paul Smith	Team Lead
SBA	Systems Engineering	Todd Elliott	Team Lead
SBA	Program Control	Abe Sachs	Team Lead

*Table 1-2. US-VISIT Increment 2C Key Personnel*

#### 1.4 Operational Alternatives Assessment Methodology

In order to enhance the security and the integrity of the immigration system, a managed entry and exit process that can determine when and where a traveler enters and exits the United States is necessary. The Integrated Land Border Solution (ILBS) team, comprised of representatives from US-VISIT, the Smart Border Alliance, other DHS agencies, and other Federal agencies convened to discuss potential Increment 2C solutions. When considering the land border, the ILBS team identified the Vehicle and Pedestrian Exit as the most challenging aspect of Increment 2C. Currently, travelers exiting the United States on foot do not typically undergo any CBP processing. For travelers departing the United States in a vehicle, a record of the departing license plate is stored and a watchlist query is automatically conducted. In both instances, travelers in possession of a single entry Form I-94 are required to surrender the forms upon exit. The ILBS team came up with the following three potential strategies for facilitating an improved exit process:

- Stop and identify the traveler at exit
- Stop and identify the traveler after exit
- Identify a traveler at speed on exit

Stopping the traveler at the exit envisions a process similar to the inbound Primary process. The CBP Officer would identify the departing traveler. The ILBS team found this to be an infeasible alternative for numerous reasons, including but not limited to the additional staffing demands, new infrastructure requirements, and potential trade and commerce impacts.

The second option would have the traveler stop after having exited the U.S. to confirm their exit. The location of the exit capture would be either Canada or Mexico. A kiosk would be used to identify the location of the traveler and a biometric verification technique would be used to confirm the identity of the traveler. This alternative was deemed infeasible by the US-VISIT Chief Strategist due to various political, coordination, and timing challenges of implementing the Increment 2C solution in another country.

The third option would provide a capability to identify the traveler at speed on exit. The location for the exit capture would be a vehicle or pedestrian exit lane at the land Port of Entry and identity would be determined through either a biographic token associated to information previously gathered from the traveler or via a biometric mechanism that confirmed the traveler's identity.

The biometric identification of travelers would provide a means to confirm the identity of the traveler at speed as the traveler crossed the land borders. Though limitations in technology preclude this option from being a viable Increment 2C solution at this time, this method supports the long-term vision of the US-VISIT program. As technology evolves, mobile biometric solutions should be considered for future implementation.

The biographic token method employs the use of a device such as an electronic token that is associated with the biographic and/or biometric information provided by a traveler. As the traveler crosses the border, the token is read and the crossing is recorded. Given that a mobile biographic solution showed the most promise for addressing the Increment 2C objectives, a more rigorous assessment of this technology was warranted. For the reasoning identified in this

document and due to the time constraints for Increment 2C, the RFID Feasibility Study was conducted simultaneous to the documentation of the alternatives assessment presented herein. Figure 1-1 summarizes the Initial Land Border Solution evaluation process.

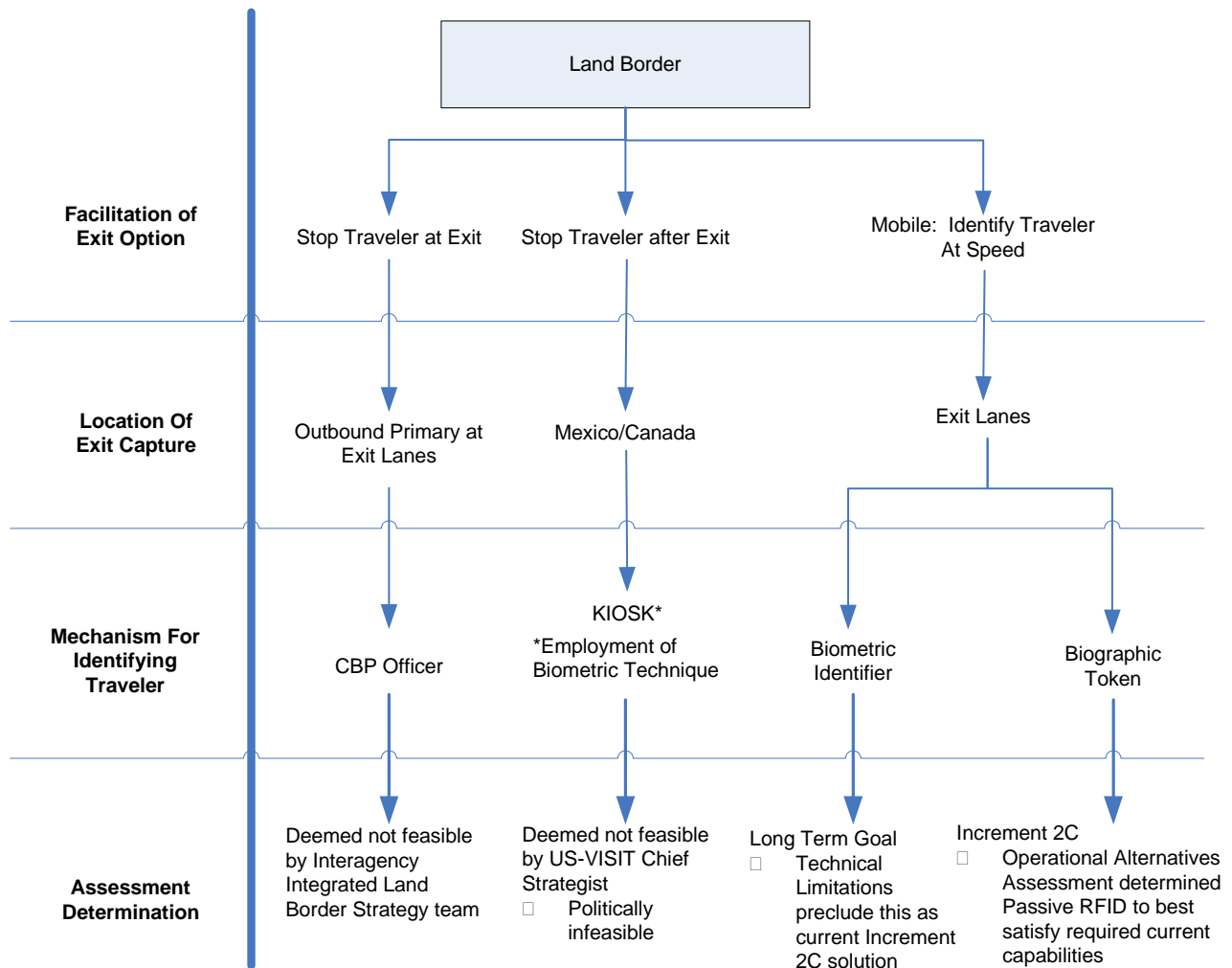


Figure 1-1: ILBS Decision Tree

The following methodology was utilized to delimit all possible Increment 2C alternative solutions and determine the optimal solution.

1. Identify the Increment 2C capabilities and objectives that the solution must fulfill
2. Identify potential solutions that could satisfy the defined Increment 2C capabilities and objectives
3. Identify the criteria used to assess each alternative with respect to the following:
  - a. Increment 2C required capability
  - b. US-VISIT defined program constraints
  - c. Availability, traveler impacts, and privacy impacts of the proposed solution
4. Assess alternatives based on identified criteria

This assessment assumes a standard Increment 2C solution for both vehicle and pedestrian entry and exit.

#### 1.4.1 Increment 2C Capabilities

The capability definition for the US-VISIT program is defined by the *US-VISIT Strategic Plan Immigration and Border Management Business Vision* and is applied specifically to Increment 2C by the Increment 2C Statement of Objectives.

As defined by the *US-VISIT Strategic Plan Immigration and Border Management Business Vision*, the Immigration and Border Management Enterprise mission is to “protect the nation, its citizens, and visitors from those who wish to do it harm and facilitate travel, trade, and immigration.”

Of the eight core capabilities to be developed by the Enterprise in support of this vision, Increment 2C directly supports the following four:

- **Identify Person** - The capability to establish a person’s identity, connect it to available information, and verify it upon subsequent interactions.
- **Assess Risk and Eligibility** - The capability to determine if an individual is eligible to enter the U.S. or receive benefits.
- **Record Entry, Exit, and Status** - The capability to capture when and where an individual entered or exited the country, and to note any changes in status.
- **Manage Knowledge, Information, and Intelligence** - The capability to gather, analyze, evaluate, and share data, information, and knowledge.

The Increment 2C Statement of Objectives defines the requirement for the following operational capabilities:

1. Enhancement of the initial operating capability provided at land ports of entry as implemented, through the issuance of a unique identifier that is capable of being read automatically, passively, and remotely during subsequent exit and reentry by US-VISIT enrolled travelers.
2. Improved identification for all US-VISIT eligible aliens, including commercial, pedestrian, and vehicular traffic, by providing the capability to read the unique identifier issued at enrollment in US-VISIT and displaying information to enable inspectors to make appropriate decisions concerning the admissibility of the applicant. The required capability will be integrated with the vehicle watch list query currently being performed at all land borders.
3. The solution will be integrated with currently deployed systems supporting the US-VISIT program, including but not limited to TECS, IDENT, and ADIS.
4. The capabilities provided shall not constrain the future operating vision identified in the US-VISIT Strategic Plan, IT Strategic Plan and Facilities Strategic Plan.

The first operational capabilities noted provide the distinguishing elements used to deselect

potential Increment 2C solutions.

### 1.5 Document References

The following materials were also reviewed during the development of this document:

- Accenture Initial Land Border Solution, August 4, 2004
- Enhanced Border Security and Visa Entry Reform Act of 2002 Pub. L No. 107-173 (“Border Security Act”)
- National Commission on Terrorist Attacks Upon the United States, The 9/11 Commission Report
- Office of Homeland Security, Executive Summary, Mission Needs Statement v3.0, November 2003
- US-VISIT Increment 2C Proof of Concept - Concept of Operations Phase 1, January 2005
- United States Department of Homeland Security Increment 2C Statement of Objectives, August 12, 2004
- Woodward, Jr., J., Orleans, N., & Higgins, P. (2003). *Biometrics*. New York: McGraw-Hill/Osborne.
- US-VISIT Strategic Plan Immigration and Border Management Business Vision, DRAFT, December 30, 2004.



## 2.0 Legislative Mandates

The DHS has established the US-VISIT program in accordance with several Congressional mandates requiring that the Department create an integrated, automated entry exit system that records and matches the arrivals and departures of aliens. In support of this system, DHS is required to deploy equipment at all POEs allowing for the biometric verification of the identity of covered aliens and the authentication of their travel documents through the comparison of biometric identifiers.

The DHS requirements are included in various provisions of The DMIA, The VWPPA, The NIRTPA, USA PATRIOT Act, and the Enhanced Border Security and Visa Entry Reform Act (“EBSVRA”). See Attachment A, Legislative Mandates.

- **Electronic, Automated and Integrated Arrival/Departure System.** DHS is required to implement an integrated entry and exit system at air and sea POEs by December 31, 2003, at the 50 busiest land border POEs by December 31, 2004, and at remaining land POEs by December 31, 2005. This system must contain all arrival/departure data that exists on aliens in any of the former Department of Justice (DOJ) systems that have been transferred to DHS or Department of State (DOS) systems or databases.
- **High-Traffic Land Border POEs.** Not later than December 31, 2004, the Secretary, Department of Homeland Security shall implement the integrated entry and exit data system using the data described in paragraph (1) and available alien arrival and departure data described in subsection (b) (1) pertaining to aliens arriving in, or departing from, the U.S. at the 50 land border POEs determined by the Secretary to serve the highest numbers of arriving and departing aliens. Such implementation shall include ensuring that such data, when collected or created by a CBP Officer at such a port of entry, are entered into the system and can be accessed by CBP Officers at airports, seaports, and land border POEs.
- **Reporting Requirements.** DHS is required to provide a detailed, annual report to Congress by December 31 each year containing the specific information on arriving and departing aliens, including VWP aliens. The reports are to include the numbers of departing aliens with their nationalities; successful arrival/departure matches; classifications by immigrant or nonimmigrant, VWP and other non-immigrants. The reports are also required to identify aliens for whom no departure data is available at end of their authorized period of stay.
- **Document Authentication Requirements.** In parallel to the deployment of Increment 2C, US-VISIT must meet the legislative mandates requiring the installation of equipment and software at all POEs that allows biometric comparison and authentication of US visas and other travel and entry documents, and machine-readable, biometric passports required to be issued to VWP nationals. Under the extension granted by Congress, this requirement must be met by October 26, 2005 (Increment 2A). Although these requirements are distinct, US-VISIT’s efforts to meet both legislative timelines and ensure system interoperability will require close coordination between the respective initiatives. Consequently, the rollout of Increment 2A will impact the same POEs at which Increment 2C will be deployed.

The DHS strategy to satisfy the legislative requirements at the 50 busiest land border POEs is to

provide for the biometric collection of in-scope travelers seeking entry via the land border POEs by December 31, 2004, using the Form I-94 and Form I-94W issuance process (Increment 2B). It is the intention of US-VISIT to provide the Increment 2B functionality at the remaining land border POEs (Increment 3) based on the same strategy used for satisfying the mandates for the remaining land border POEs by December 31, 2005.

Increment 2C POC expands upon the functionality provided by Increment 2B through the deployment of an automated system to record both entry and exit events. Specifically, Increment 2C POC will introduce new technology to automatically record in-scope traveler's arrivals and departures through the issuance of an a-ID that retrieves the associated traveler's biographic and biometric data. The Increment 2C POC will serve as the first step towards satisfying the legislative mandate to collect departure data.

### 3.0 Increment 2C Alternatives

The following sections identify possible alternative solutions for Increment 2C and provide descriptions for each alternative.

#### 3.1 Alternative Identification

In identifying possible Increment 2C solution alternatives, consideration was given to the Increment 2C capabilities defined in the US-VISIT Increment 2C Statement of Objectives. As a basis for identifying possible alternatives, it was imperative to consider that the solution must account for a means to uniquely identify a traveler. This unique identifier would then be used to enhance the initial operating capability (capture of biometric and biographic data) by connecting a traveler to his or her biometric and biographic information collected at land ports of entry (POE) as introduced by Increment 2B.

Detailed descriptions of vehicle and pedestrian entry and exit processes can be found in the US-VISIT Increment 2C Concept of Operations document.

Table 3.1 summarizes all of the Increment 2C Alternatives considered.

INCREMENT 2C ALTERNATIVES	
Alternative Solution	Unique Identifier
Biometric Facial Recognition	Traveler's Face
Biometric Voice Recognition	Traveler's Voice Signature
Biometric Iris Scans	Traveler's Iris Signature
Biometric Retinal Scans	Traveler's Retinal Signature
Biometric Hand Geometry	Traveler's Hand Geometry
Biometric Finger Scans	Traveler's Finger Scan
Active RFID	Issued RFID token
Passive RFID	Issued RFID token
Ultra Wide Band RFID	Issued RFID token
Global Positioning System	Issued GPS device
Self Service Kiosk	Biometric Technique, MRTD Swipe, Biographic Info Entry
Facilitated Border Crossing	Presence of traveler

*Table 3-1: Increment 2C Alternatives*

#### 3.2 Alternatives Descriptions

The following sections provide a more detailed description of each operational alternative and present possible business scenarios depicting how each alternative may fit into the current land border entry and exit process.

### 3.2.1 Biometrics – Facial Recognition

This operational alternative relies on the use of Biometric Facial Recognition technology to record and manage traveler entries and exits at land POEs. Facial recognition analyzes the characteristics of facial images captured by a digital video camera. Facial recognition software compares the digital photographs and determines a probable match. It measures the overall facial structure, including distances between eyes, nose, mouth, and jaw edges. These measurements are retained in a database and used as a comparison when a user stands before the camera.

Facial images of the travelers would be collected along with biographic information and finger scans during enrollment. During re-entry, a camera located prior to Primary would collect a facial image of the traveler. The image collected would then be compared against images of the registered US-VISIT in-scope travelers. After a match is found, the traveler's information would be securely retrieved from US-VISIT databases. This information would be queued for the time of presentation with the CBP Officer.

On exit it is assumed that a digital camera will be placed at every exit lane and positioned in a way to capture the photograph of the exiting traveler. A digital photograph of the traveler would be taken as the traveler exits thorough a pedestrian or a vehicle exit lane. The traveler's digital photograph would be automatically matched to a digital photograph database using facial recognition technology. If a match is found, the traveler's identity would be confirmed and the exit event recorded.

### 3.2.2 Biometrics – Voice Recognition

This operational alternative relies on the use of Biometric Voice Recognition technology to record and manage traveler entries and exits at land POEs. Voice recognition technology utilizes the distinctive aspects of the voice to verify the identity of individuals. It measures multiple characteristics to create a voice print such as frequency, amplitude, harmonics, and rhythm. There are differences between peoples' voice signature due to vocal tract differences in length, shape of mouth, and nasal cavities. These differences are used in comparison. Voice recognition technology would match a traveler's voice to the pre-recorded digital voice samples stored in the traveler's profile.

The traveler would provide biographic and biometric data (facial image and finger scans) during enrollment along with a voice sample created by repeating a pre-determined phrase. The enrollment Officer would assign the traveler a PIN number and password, and provide the traveler with instructions and the phone number to call after exiting the United States.

On re-entry, the traveler would be prompted to say a pre-determined phrase into a microphone (or other voice collection device) located prior to Primary. Supporting software would be used to find a match against all registered US-VISIT travelers and the traveler's corresponding biographic and biometric information would be retrieved. This information would be queued for the time of presentation with the CBP Officer.

The exit process using voice recognition has also been referred to as the "Phone In" alternative. The traveler would exit at a land POE under the current land border exit process. Within 24 hours of departure, the traveler would be required to record the exit event by calling an

automated voice system and confirming their exit from the U.S. Existing technology would be used to verify that the call originated from outside of the United States. The traveler would dial a number, enter a PIN or a password provided by a CBP Officer at the time of enrollment, and confirm exit using an automated voice system. The traveler's voice data would be compared by voice recognition software to the voice samples stored in the traveler's travel profile. If a match is found, an exit record would be recorded.

### **3.2.3 Biometrics – Iris Scans**

This operational alternative relies on the use of Biometric Iris Scan technology to record and manage traveler entries and exits at land POEs. Iris scans analyze the features that exist in the colored tissue surrounding the pupil which has more than 200 points that can be used for comparison, including rings, furrows and freckles. The scans use a regular video camera style.

The traveler would provide biographic and biometric data (facial image and finger scans) during enrollment along with an iris scan. On re-entry, the traveler would be required to place his or her eye up to a camera that would scan the iris of the eye. This camera could be located prior to Primary. Supporting software would compare and match the iris signature against all registered US-VISIT travelers and retrieve the traveler's corresponding biographic and biometric information. This information would be queued for the time of presentation with the CBP Officer.

An iris scan camera would be placed in the exit area of the POE just before the exit. Travelers would be required to stop and have their iris scanned before proceeding thru vehicle or pedestrian exit. The scanned iris signature would be compared to US-VISIT registered travelers and if a match is found the exit would be recorded.

### **3.2.4 Biometrics – Retinal Scans**

This operational alternative relies on the use of Biometric Retinal Scan technology to record and manage traveler entries and exits at land POEs. Retinal scanning analyzes the layer of blood vessels at the back of the eye. Scanning involves using a low-intensity light source and an optical coupler and can read the patterns at a great level of accuracy. It is also among the most difficult to use, and is perceived as being moderately to highly intrusive. Film portrayals of retina scan devices reading at an arm's length, with a non-stationary subject, are false.

The traveler would provide biographic and biometric data (facial image and finger scans) during enrollment along with a retinal scan. On re-entry, the traveler would be required to place his or her eye up to a device that would scan the retina of the eye. This device could be located prior to Primary. Supporting software would compare and match the retinal signature against all registered US-VISIT travelers and retrieve the traveler's corresponding biographic and biometric information. This information would be queued for the time of presentation with the CBP Officer.

A retinal scan capture device would be placed in the exit area of the POE just before the exit. Travelers would be required to stop and have their retina scanned before proceeding thru vehicle or pedestrian exit. The scanned retinal signature would be compared to US-VISIT registered travelers and if a match is found the exit would be recorded.

### **3.2.5 Biometrics – Hand Geometry**

This operational alternative relies on the use of Biometric Hand Geometry technology to record and manage traveler entries and exits at land POEs. This approach uses the geometric shape and dimensions of a traveler’s hand for authenticating identity.

The traveler would provide biographic and biometric data (facial image and finger scans) during enrollment along with a hand scan. On re-entry, the traveler would be required to place his or her hand scanning device. This device could be located prior to Primary. Supporting software would compare and match the hand geometry against all registered US-VISIT travelers and retrieve the traveler’s corresponding biographic and biometric information. This information would be queued for the time of presentation with the CBP Officer.

On vehicle or pedestrian exit, the traveler would be required to place his or her hand on a device that would scan the hand’s geometry. This device could be located in the exit area of the POE just before the exit. Supporting software would compare and match the hand geometry scan against all registered US-VISIT travelers and if a match is found the exit would be recorded.

### **3.2.6 Biometrics – Finger Scans**

This operational alternative relies on the use of Biometric Finger Scan technology to record and manage traveler entries and exits at land POEs. Finger scan technology takes an image (either using ink or a digital scan) of a person's fingertips and records its characteristics. Whorls, arches, and loops are recorded along with the patterns of ridges, furrows, and minutiae. This information may then be processed or stored as an image or as an encoded computer algorithm to be compared with other fingerprint records.

The traveler would provide biographic and biometric data (facial image and finger scans) during enrollment. On re-entry, the traveler would be required to place his or her finger on a device that would obtain a finger scan. This device could be located prior to Primary. Supporting software would compare and match the finger scan against all registered US-VISIT travelers and retrieve the traveler’s corresponding biographic and biometric information. This information would be queued for the time of presentation with the CBP Officer.

On vehicle or pedestrian exit, the traveler would be required to place his or her finger on a device that would scan the fingerprint. This device could be located in the exit area of the POE just before the exit. Supporting software would compare and match the finger scan against all registered US-VISIT travelers and if a match is found the exit would be recorded.

### **3.2.7 Active Radio Frequency Identification**

This operational alternative relies on the use of Active Radio Frequency Identification (RFID) technology to record and manage traveler entries and exits at land POEs. In Active RFID technology, the Active RFID tag includes a power source along with an antenna and microchip. Active RFID tags constantly beacons their signal. The RFID reader listens for the Active RFID tag’s beaconing and receives the information stored on the Active RFID tag when it is within range of the reader. In the context of Increment 2C, the RFID tag would store a unique identification number for each in-scope traveler.

The traveler would provide biographic and biometric data (facial image and finger scans) during enrollment and would be issued an Active RFID tag. Upon re-entry, the traveler would pass in



the vicinity of antennas and readers located prior to Primary that would read the RFID tag. The tag would send a signal that contains a unique identification code. The traveler's information would be retrieved from US-VISIT databases using the ID code as a key. This information would be queued for the time of presentation with the CBP Officer.

The Active RFID tag previously issued to the in-scope traveler would be used to capture an exit event at the time of exit. When the traveler enters a vehicle or pedestrian exit lane, the Active RFID tag would be read, a match for the tag's unique ID would be conducted, and the traveler's exit recorded.

### **3.2.8 Passive Radio Frequency Identification**

This operational alternative relies on the use of Passive Radio Frequency Identification (RFID) technology to record and monitor traveler entries and exits at land POEs. In Passive RFID technology, the Passive RFID tag element consists of an antenna integrated with a microchip. The RFID reader and antenna transmit an electromagnetic RF signal. This signal is received by the RFID tag via the tag's antenna. The energy in the received signal provides the power to the tag that allows the microchip to operate. The tag would then send its stored information back to the reader. In the context of Increment 2C, the RFID tag would store a unique identification number for each in-scope traveler.

The traveler would provide biographic and biometric data (facial image and finger scans) during enrollment and would be provided a travel document or other object containing a Passive RFID tag. Upon re-entry, the traveler would pass in the vicinity of antennas that would illuminate the Passive RFID tag. The tag would return a signal that contains a unique identification code. The traveler's information would be retrieved from US-VISIT databases using the ID code as a key. This information would be queued for the time of presentation with the CBP Officer.

The Passive RFID token previously issued to the in-scope traveler would be used to capture an exit event at the time of exit. When the traveler enters a vehicle or pedestrian exit lane, the Passive RFID token would be read, a match for the tag's unique ID would be conducted, and the traveler's exit recorded.

### **3.2.9 Ultra Wide Band Radio Frequency Identification**

This operational alternative relies on the use of Ultra Wide Band (UWB) Radio Frequency Identification (RFID) technology to record and monitor traveler entries and exits at land POEs. In UWB RFID technology, the UWB RFID tag includes a power source along with an antenna and microchip. UWB RFID tags send out short pulses and operate in all frequencies, including FCC restricted bands. The RFID reader listens for the UWB RFID tag's pulse and receives the information stored on the UWB RFID tag when it is within range of the reader. In the context of Increment 2C, RFID tag could store a unique identification number for each in-scope traveler. The traveler would provide biographic and biometric data (facial image and finger scans) during enrollment and would be issued a UWB RFID tag. Upon re-entry, the traveler would pass in the vicinity of antennas and readers located prior to Primary that would read the RFID tag. The tag would send a signal that contains a unique identification code. The traveler's information would be retrieved from US-VISIT databases using the ID code as a key. This information would be queued for the time of presentation with the CBP Officer.

The UWB RFID tag previously issued to the in-scope traveler would be used to capture an exit event at the time of exit. When the traveler enters a vehicle or pedestrian exit lane, the UWB RFID tag would be read, a match for the tag's unique ID would be conducted, and the traveler's exit recorded.

### **3.2.10 Global Positioning System**

This operational alternative relies on the use of Global Positioning System (GPS) technology to record and monitor traveler entries and exits at land POEs. A GPS-based technique would include a GPS receiver coupled with a communications device such as a cell phone or other wireless communications device. Additionally, this device would need to store internally digital maps of the regions in the vicinity of the U.S. POEs. As the traveler approached a POE, the location of the traveler as determined by the GPS would be compared to the digital maps. When the traveler was within the region of the POE, the device would transmit identity information to the POE indicating that it was arriving. However, the location determination for a commercially available GPS device is only accurate to approximately 30 meters. The GPS signal would not be available indoors at all. It would not be possible to locate the traveler down to an individual lane or indoor pedestrian entry point. With respect to the Increment 2C Concept of Operations, the traveler would be identified as "pending" but not associated to any one lane or pedestrian primary point. The traveler would not be confirmed to a particular lane until travel documents were presented to the CBP Officer.

The traveler would provide biographic and biometric data (facial image and finger scans) during enrollment and would then be issued a GPS device. On traveler re-entry, the GPS device would autonomously determine that the traveler was approaching the POE area based upon stored maps of border regions. At that point, a traveler identity notification would be sent automatically via the wireless communications device to retrieve traveler biometric and biographic information. This information would be queued for the time of presentation with the CBP Officer.

On exit as the traveler approaches the POE, the device would compare its location with the digital maps stored internally. The device using this information would determine that it was crossing the border from the U.S. to foreign side. The device would then send a message via the communications device that the border had been crossed and to retrieve traveler information. If a match is found the traveler's exit would be recorded.

### **3.2.11 Self Service Kiosks**

This operational alternative relies on the use of Self Service Kiosks to record and manage traveler entries and exits at land POEs. .

The traveler would provide biographic and biometric data (facial image and finger scans) during enrollment. As the in-scope traveler approaches the self-service kiosk on re-entry, the traveler would swipe their travel documents, provide a finger scan or another biometric technique, or enter their biographic information which would be used to retrieve the complete traveler biographic and biometric information. This information would be queued for the time of presentation with the CBP Officer.

On exit, this operational alternative would use self-service kiosks located in Mexico and Canada where travelers can record their exit from the United States. Because self-service kiosks would



be located outside of the United States, CBP Officer involvement is not necessary. The traveler would exit at a land POE under the current land border exit process. As the in-scope traveler approaches the self-service kiosk, the traveler would swipe their travel documents, enter their biographic information (name and date of birth), or provide biometric information (finger scan, voice sample, hand geometry, retinal scan, or iris scan). If a match is found for the traveler's identifier within US-VISIT databases, the exit would be recorded.

### **3.2.12 Facilitated Border Crossing**

This operational alternative would introduce mandatory Secondary processing for each entry of the in-scope traveler at a land POE. This alternative modifies the entry process for in-scope travelers, but does not require any changes to existing technology infrastructures.

Every time the in-scope traveler enters a land POE, the traveler would automatically be referred to Secondary by the Primary CBP Officer. In Secondary, the CBP Officer would verify existing biographic and biometric information previously captured from the in-scope traveler under the Increment 2B process. A watchlist check would be run for the in-scope traveler when their previous US-VISIT enrollment information is retrieved. If no prior biographic and biometric data exists, the CBP Officer at Secondary would collect it. Each traveler's admittance to the U.S. would be determined by the Secondary Officer.

This operational alternative would introduce facilitated exit operations similar to those currently employed at Primary on entry at all vehicle and pedestrian exit lanes. Facilitated exit processing may be implemented in several ways, such as:

- Exit booths at all vehicle and pedestrian lanes;
- Mobile (handheld) devices; or
- Parking or vehicle pull-out lanes.

As the in-scope traveler arrives at an exit lane, the traveler would stop at a designated location. This example scenario of the exit process describes the use of a mobile device for exit processing. The CBP Officer with a mobile device would swipe the traveler's travel documents, enter the traveler's biographic information (name and date of birth), or provide biometric information (finger scan, voice sample, hand geometry, retinal scan, or iris scan). After the traveler's information is entered, a query to find a traveler match would be executed. If a match is found, the exit would be recorded and the traveler would exit the U.S.

## 4.0 Assessment Criteria

The Increment 2C Statement of Objectives served as the primary source of criteria used to assess each potential alternative. Additional criteria were developed to provide a comprehensive assessment of the alternatives. The assessment criteria were applied in a three-phased approach:

1. Core Capability Criteria – Criteria used to limit the assessment of alternatives to only those that could support the capabilities required for Increment 2C.
2. US-VISIT Directed Criteria – Criteria in the form of constraints when evaluating solution alternatives, as directed by US-VISIT.
3. Guiding Criteria – Criteria that examines the availability, impacts to travelers, and privacy impacts of an alternative.

### 4.1 Core Capability Criteria

At the highest level, Increment 2C must provide a means to passively and remotely read a unique identifier for each traveler, as stated by the US-VISIT Increment 2C Statement of Objectives. These criteria are driven by the US-VISIT objective to facilitate legitimate trade and travel by not increasing the entry or exit processing time at Primary or Secondary inspections. As a result, the criteria of passive and remote operation were used as the first level of criteria applied to the potential Increment 2C alternatives and are further defined as:

- **Passive** – The chosen technology should require little to no direct action or cooperation on the part of the traveler, driven by the need to not impede traveler movement across the border while facilitating legitimate trade and travel.
- **Remote** – The chosen technology should allow the system to manage traveler crossings from a distance. This is driven, in particular, by the need to detect traveler departures while minimally impacting the unconstrained setting that is typically the case at POE exit. In addition, the technology should expedite traveler arrival by identifying travelers before they reach the U.S. CBP Officer's station for admission (i.e., allow time to pre-fetch traveler records, perform watchlist checks, and allow for enforcement actions).

### 4.2 US-VISIT Directed Criteria

There are several constraints imposed on the solution's design, development, and operation by the US-VISIT Program Office as defined in the Increment 2C Statement of Objectives. These criteria are driven by the need to consider facility impacts with respect to each alternative, to prevent degradation of current operations at the border, and to facilitate legitimate trade and travel. The US-VISIT Directed Criteria were used as a second filter applied to the alternatives which met the Core Capability Criteria in full. These constraints are as follows:

- No increase in wait times as a result of implementation.
- No degradation in level of service (LOS) for exit lanes.
- No significant degradation in traffic patterns.

### 4.3 Guiding Criteria

The following is a list of the Guiding criteria applied to the remaining alternatives:

- **Commercial Availability** – The chosen technology should be commercially available and not require significant time or levels of research and development for deployment.
- **Impacts to Traveler** – The chosen technology should support ease of use and not require the traveler to ensure its operability.
- **Privacy Impacts** – The chosen technology should minimize the ability to monitor travelers outside the Ports of Entry.

## 5.0 Assessment

This section evaluates the alternatives against the identified criteria. The approach employs a three-phased evaluation that first considers the core capabilities required for Increment 2C: Passive and Remote. In order for an alternative to progress to the next phase of evaluation, it must meet both the Passive and Remote criteria. Phase 2 examines the remaining alternatives against US-VISIT directed criteria. Phase 3 assesses the availability, impacts to the traveler, and privacy impacts of the remaining alternatives.

### 5.1 Phase 1 – Core Capability Criteria

The first level of assessment for the identified Increment 2C alternatives was to apply the initial criteria which measured whether or not each alternative supports the fundamental capabilities required for Increment 2C.

#### 5.1.1 Phase 1 Evaluation

Table 5-1 summarizes the evaluation of alternatives against the ‘Passive’ and ‘Remote’ criteria. In the paragraphs below, the details of each evaluation are provided.

CORE CAPABILITIES ASSESSMENT SUMMARY		
Alternative Solution	Criteria	
	Passive	Remote
Biometric Facial Recognition	-	+
Biometric Voice Recognition	-	+
Biometric Iris Scans	-	+
Biometric Retinal Scans	-	+
Biometric Finger Scans	-	+
Active RFID	+	+
Passive RFID	+	+
Ultra Wide Band RFID	+	+
Global Positioning System	+	+
Self Service Kiosk	-	+
Facilitated Border Crossing	-	-
+ Supports criteria		
- Does not support criteria		

*Table 5-1: Phase 1 Core Capabilities - Assessment Table*

### Biometric Facial Recognition

Biometric Facial Recognition may require greater direct cooperation from the traveler by having them slow to a near or complete stop on entry and exit in order to collect a useable image. As a result this does not meet the Passive criteria. A digital camera could be placed prior to Primary, as well as prior to exit, for collecting Traveler images and thereby satisfying the Remote criteria.

Other challenging factors to consider with respect to the use of Biometric Facial Recognition:

- Affect of insufficient lighting on image quality.
- Affect of skin tone, eyeglasses, facial hair, or expression on image and accuracy of match.
- Vehicles with multiple travelers could significantly increase processing time and could require more direct interaction with CBP Officers as their facial image is captured.
- Tinted vehicle windows.
- Ability to capture useable image from a vehicle traveling at speed.
- Climatic and environmental affects on equipment (heat, cold, rain, snow, ice, dust, etc).

Since this alternative does not meet both the Passive and Remote criteria, it will not be considered further.

### Biometric Voice Recognition

Biometric Voice Recognition would require greater direct cooperation from the traveler by having them completely stop on entry in order to collect a voice sample. On exit, Biometric Voice Recognition would require greater direct cooperation from the traveler by having them call an issued phone number after exiting the U.S., enter the issued PIN number, and say a predetermined phrase to confirm their exit. As a result this does not meet the Passive criteria. A microphone or other recording device could be placed prior to Primary for collecting voice samples on entry. Since this alternative employs the method of phoning in after exiting the U.S., it would not slow movement at the borders on exit. As a result, this alternative satisfies the Remote criteria.

Other challenging factors to consider with respect to the use of Biometric Voice Recognition are:

- Affect of background noise levels on collecting a satisfactory voice sample (other people talking, wind, etc).
- No assurance that the traveler will actually call in to confirm the exit after leaving the U.S.
- No real time data captured at the time of exit.
- Increased potential for fraud.
- Health related issues that may affect the sound of a Traveler's voice when collecting voice samples (head colds, sore throats, etc).

Since this alternative does not meet both the Passive and Remote criteria, it will not be considered further.

### Biometric Iris Scans

Biometric Iris Scans would require greater direct cooperation from the traveler by having them

completely stop on entry and exit in order to collect the iris scan. As a result this does not meet the Passive criteria. A scanner could be placed prior to Primary, as well as prior to exit, for collecting the iris scan. As a result, this alternative satisfies the Remote criteria.

Other challenging factors to consider with respect to the use of Biometric Iris Scans are:

- Climatic and environmental affects on equipment (heat, cold, rain, snow, ice, dust, etc).

Since this alternative does not meet both the Passive and Remote criteria, it will not be considered further.

### Biometric Retinal Scans

In its current incarnation, retinal scan biometrics require a cooperative, well-trained, patient audience, or else performance will fall dramatically. The user looks through a small opening in the device at a small green light. The user must keep their head still and eye focused on the light for several seconds during which time the device will verify identity. This process takes about 10 to 15 seconds total. It requires the user to remove glasses, place their eye close to the device, and focus on a certain point. Biometric Retinal Scans would require greater direct cooperation from the traveler by having them completely stop on entry and exit in order to collect the retinal scan. As a result this does not meet the Passive criteria. A scanner could be placed prior to Primary, as well as exit, for collecting the retinal scan. As a result, this alternative satisfies the Remote criteria. It is also perceived by many to be intrusive or harmful to a user's eye. Whether the accuracy can outweigh the public discomfort is yet to be seen.

Other challenging factors to consider with respect to the use of Biometric Iris Scans are:

- Climatic and environmental affects on equipment (heat, cold, rain, snow, ice, dust, etc).

Since this alternative does not meet both the Passive and Remote criteria, it will not be considered further.

### Biometric Hand Geometry

Biometric Hand Geometry would require greater direct cooperation from the traveler by having them completely stop on entry and exit in order to collect the hand geometry scan. As a result, this does not meet the Passive criteria. A scanner could be placed prior to Primary, as well as prior to exit, for collecting the retinal scan used in Traveler identity matching and record retrieval. As a result, this alternative satisfies the Remote criteria.

Other challenging factors to consider with respect to the use of Biometric Hand Geometry are:

- Climatic and environmental affects on equipment (heat, cold, rain, snow, ice, dust, etc).

Since this alternative does not meet both the Passive and Remote criteria, it will not be considered further.

### Biometric Finger Scans

Biometric Finger Scans would require greater direct cooperation from the traveler by having them completely stop on entry and exit in order to collect the finger scan. As a result this does not meet the Passive criteria. A scanner could be placed prior to Primary, as well as prior to exit, for collecting the finger scan used in Traveler identity matching and record retrieval. As a result,

this alternative satisfies the Remote criteria.

Other challenging factors to consider with respect to the use of Biometric Finger Scans are:

- Climatic and environmental affects on equipment (heat, cold, rain, snow, ice, dust, etc).

Since this alternative does not meet both the Passive and Remote criteria, it will not be considered further.

#### Active RFID

Active RFID technology meets the Passive criteria in that minimal traveler involvement would be required to get a read, such as the traveler simply holding up an RFID token while moving through the read zone. It also meets the Remote criteria as the RFID reader could be placed prior to Primary and exit, not requiring the traveler to stop in order to collect the read used for Traveler identity matching and record retrieval.

#### Passive RFID

Passive RFID technology meets the Passive criteria in that minimal traveler involvement would be required to get a read, such as the traveler simply holding up an RFID token while moving through the read zone. It also meets the Remote criteria as the RFID reader could be placed prior to Primary and exit, not requiring the traveler to stop in order to collect the read used for Traveler identity matching and record retrieval.

#### Ultra Wide Band (UWB) RFID

UWB RFID technology meets the Passive criteria in that minimal traveler involvement would be required to get a read, such as the traveler simply holding up an RFID token while moving through the read zone. The RFID reader could be placed prior to Primary and exit, not requiring the traveler to stop in order to collect the read used for Traveler identity matching and record retrieval.

#### Global Positioning System

GPS technology meets the Passive and Remote criteria in that the GPS device could be detected automatically without the need for traveler participation in proximity to the land POE and prior to Primary and exit.

#### Self Service Kiosk

The Self Service Kiosk entry alternative and the Canadian/Mexican Kiosk exit alternative could employ any biographic information entry or any one of the biometric techniques described above to capture a traveler entry and exit event. All of the biometric techniques as well as biographic information entry into a kiosk would require the traveler to completely stop to collect an image, scan, voice sample or biographic information. As a result, this does not satisfy the Passive criteria. The Self Service kiosk at entry could be placed prior to Primary to collect the information used in traveler identity matching and record retrieval. The kiosks being placed in Canada and Mexico would not slow movement of travelers on exit since travelers would confirm their exit after leaving the U.S. As a result, this alternative satisfies the Remote criteria.

Other challenging factors to consider with respect to the use of Kiosks in Canada/Mexico are:

- No real time data capture on exit.
- Political coordination between governments.
- Foreign construction permitting for construction of infrastructure to support kiosks.
- Construction to provide connectivity from kiosk to DHS infrastructure.
- No assurance that traveler will use kiosk after exiting the U.S.

Since this alternative does not meet both the Passive and Remote criteria, it will not be considered further.

### Facilitated Border Crossing

A person-by-person accounting of every in-scope visitor who enters and exits the country is not a practical alternative for Increment 2C. Forcing each traveler to stop on exit, as well as report to Secondary for processing on entry, would significantly delay movement at the land borders and thereby negatively impact legitimate trade and travel. This alternative is neither Passive nor Remote and will not be considered further.

#### 5.1.2 Phase 1 Assessment Results

As the Passive and Remote criteria are fundamental in providing a viable solution for Increment 2C, only alternatives that meet both were evaluated further. Of all the alternatives identified for entry and exit, only four met both the Passive and Remote criteria:

- Active RFID
- Passive RFID
- Ultra Wide Band RFID
- Global Positioning System (GPS)

### 5.2 Phase 2 – US-VISIT Directed Criteria

The second level of assessment for the Increment 2C alternatives was to carry the alternatives that met the Core Capability criteria in full and apply the US-VISIT constraint criteria against them. A detailed description of US-VISIT Directed Criteria can be found in section 4.2.

#### 5.2.1 Phase 2 Evaluation

Table 5-2 summarizes the evaluation of alternatives against the US-VISIT Directed Criteria. In the paragraphs below, the details of each evaluation are provided.

US-VISIT Directed Criteria Assessment Summary				
CRITERIA	Remaining Alternatives			
	Active RFID	Passive RFID	UWB RFID	GPS
No increase in wait times as a result of implementation	+	+	+	+



US-VISIT Directed Criteria Assessment Summary				
CRITERIA	Remaining Alternatives			
	Active RFID	Passive RFID	UWB RFID	GPS
No degradation in level of service (LOS) for exit lanes	+	+	+	+
No significant degradation in traffic patterns	+	+	+	+
+ Supports criteria - Does not support criteria				

Table 5-2: Phase 2 US-VISIT Directed Constraint Criteria - Assessment Table

### Active RFID

A solution incorporating Active RFID technology would not increase wait times, degrade the level of service at exit, or degrade traffic patterns since the Active RFID tag could be read automatically with minimal need for traveler participation, with the exception of being in possession of the tag and perhaps to hold the tag in view while traveling through the read zone. Active RFID supports all three US-VISIT directed constraints applied in Phase 2 favorably.

### Passive RFID

A solution incorporating Passive RFID technology would not increase wait times, degrade the level of service at exit, or degrade traffic patterns since the Passive RFID tag could be read automatically with minimal need for traveler participation, with the exception of being in possession of the tag and perhaps to hold the tag in view while traveling through the read zone. Passive RFID supports all three US-VISIT directed constraints applied in Phase 2 favorably.

### Ultra Wide Band RFID

A solution incorporating UWB RFID technology would not increase wait times, degrade the level of service at exit, or degrade traffic patterns since the UWB RFID tag could be read automatically with minimal need for traveler participation, with the exception of being in possession of the tag and perhaps to hold the tag unobstructed while traveling through the read zone. UWB RFID supports all three US-VISIT directed constraints applied in Phase 2 favorably.

### Global Positioning System

A solution incorporating GPS technology would not increase wait times, degrade the level of service at exit, or degrade traffic patterns since the GPS device could be read automatically with minimal need for traveler participation, with the exception of being in possession of the device while traveling through the POE. GPS supports all three US-VISIT directed constraints applied

in Phase 2 favorably.

**5.2.2 Phase 2 Assessment Results**

All 3 remaining alternatives measured similarly and favorably against the US-VISIT directed constraints. Therefore, Active RFID, Passive RFID, UWB RFID, and GPS were evaluated further in Phase 3.

**5.3 Phase 3 – Guiding Criteria**

The Guiding criteria assessed the remaining alternatives feasibility and impact to travelers. A detailed description of Guiding Criteria can be found in section 4.2.

**5.3.1 Phase 3 Evaluation**

Table 5-3 summarizes the evaluation of the alternatives against the Guiding criteria. In the paragraphs below, the details of each evaluation are given.

Guiding Criteria Assessment Summary				
CRITERIA	Remaining Alternatives			
	Active RFID	Passive RFID	UWB RFID	GPS
Commercial Availability	+	+	+	+
Impacts to Traveler	-	+	-	-
Privacy Impacts	-	+	-	-
+ Supports criteria - Does not support criteria				

*Table 5-3: Phase 3 Guiding Criteria - Assessment Table*

**Active RFID**

Active RFID is a technology that is commercially available and would not require extraordinary research and development efforts to implement.

Active RFID tags require batteries to operate. If an Active tag’s battery life expires, the traveler would need to be referred to Secondary and issued a new tag, imposing an additional burden on Secondary processing. This would constitute a referral to Secondary that may not have been required, thus creating an additional burden on the traveler and CBP Officers. The size of an average Active RFID tag is on the order of the size and dimensions of a deck of cards. While

this is not large, it is not conducive to carrying in a wallet or pocket. A parent carrying a family's collection of Active RFID tags would not perceive this as convenient. When considering impacts to the traveler, Active RFID does not completely satisfy the criteria.

By the nature of the technology, Active RFID tags are always beaconing. This beaconing would make it easier to track a traveler at a greater distance than other forms of RFID. When considering privacy impacts, Active RFID does not completely satisfy the criteria.

Other challenging factors to consider with respect to the use of Active RFID are:

- Federal Aviation Administration regulations<sup>5</sup> currently prohibit Active RFID devices on airplanes.
- Disposal of an Active RFID tag is inconvenient since tags contain batteries and circuitry which are hazardous to the environment.
- Storage space required for multiple tags at POEs.

### Passive RFID

Passive RFID is a technology that is commercially available and would not require extraordinary research and development efforts to implement.

The size of a Passive RFID tag could be the size and dimensions of a credit card or smaller. This small, compact size is conducive to handling, carrying, and storing the Passive RFID tag. The Passive RFID tag also requires no maintenance by the traveler. It does not require batteries or activation for use. When considering the impacts of the alternative to the traveler, Passive RFID measures favorably. Lastly, the Passive RFID alternative supports the minimization of privacy impacts due to the fact that it does not constantly transmit information or beacon a signal.

### Ultra Wide Band RFID

UWB RFID is a technology that is commercially available and would not require extraordinary research and development efforts to implement.

UWB RFID tags require batteries to operate. If an UWB tag's battery life expires, the traveler would need to be referred to Secondary and issued a new tag. This would constitute a referral to Secondary that may not have been required, thus creating an additional burden on the traveler and CBP Officers. The size of an average UWB RFID tag is relative to the size and dimensions of a golf ball. While this is not large, it is less conducive to carrying in a wallet or pocket. A parent carrying a family's collection of UWB RFID tags could perceive the tags as space consuming and inconvenient.

Similar to Active RFID technology, UWB RFID tags are always beaconing. This beaconing would make it easier to track a traveler at a greater distance than other forms of RFID. When considering privacy impacts, UWB RFID does not completely satisfy the criteria.

There are also concerns using UWB technology as the potential for interference with other RF systems is high.

Other challenging factors to consider with respect to the use of UWB RFID are:

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<sup>5</sup> "Portable Electronic Devices." *Code of Federal Regulations*. Title 14, Pt. 91.21.

- Federal Communications Commission regulations currently require site specific licenses for the use of UWB RFID technology.
- Federal Aviation Administration regulations<sup>6</sup> currently prohibit UWB RFID devices on airplanes.
- Disposal of an UWB RFID tag is inconvenient since tags contain batteries and circuitry, which are hazardous to the environment.
- Storage space required for multiple tags at POEs.

### Global Positioning System

GPS is a technology that is commercially available. However, a device such as that discussed earlier in the document does not exist as a system and would require some development. Digital maps would be needed of the border regions with adequate resolution. A processor with associated memory would be needed to receive the location information from the GPS device, compare that information against the stored digital maps to determine location and direction of travel. When the appropriate conditions had been satisfied, the device would initiate a call and transmit the message that it had arrived at entry or was departing through exit. Finally, this type of device would present a privacy concern because it would be transmitting a cell phone type signal whenever it was in the vicinity of a POE.

GPS devices require batteries to operate. There is a potential imposition on the traveler to maintain the device's operability by ensuring the battery life has not run out. It would impose a further cost and inconvenience on the traveler should he or she need to replace the device's battery prior to an attempted entry to or exit from the U.S. If a GPS solution employed a device with non-replaceable batteries, the traveler would need to be referred to Secondary and issued a new device in the event that the device's battery life has been exceeded. This would constitute a referral to Secondary that may not have been required, thus creating an additional burden on the traveler and CBP Officers. The size of an average GPS device is relative to the size and dimensions of a cell phone. While this is not large, it is not conducive to carrying in a wallet or pocket. A parent carrying a families worth of GPS devices could be perceived by travelers as space consuming and inconvenient. When considering impacts to the traveler, GPS does not completely satisfy the criteria.

GPS is designed and used for tracking the position of objects. The location of a traveler possessing a GPS device could theoretically be tracked throughout the world. The possibility of tracking travelers outside of the POEs creates a major privacy issue. When considering privacy impacts, GPS does not completely satisfy the criteria.

Other challenging factors to consider with respect to the use of GPS are:

- Disposal of a GPS device is inconvenient since tags contain batteries and circuitry which are hazardous to the environment.
- Federal Aviation Administration regulations<sup>7</sup> currently prohibit GPS devices on airplanes.
- Storage space required for multiple GPS devices at POEs.

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<sup>6</sup> "Portable Electronic Devices." *Code of Federal Regulations*. Title 14, Pt. 91.21.

<sup>7</sup> "Portable Electronic Devices." *Code of Federal Regulations*. Title 14, Pt. 91.21.

- Cannot be read indoors.
- Require line of sight to satellites in order to function properly.

### 5.3.2 Phase 3 Assessment Results

Active RFID, Passive RFID, and GPS technologies are commercially available and widely used in industry today. UWB RFID is in its beginning stages of industry applications and the use of UWB RFID technology requires a site specific use license from the Federal Communications Commission. The form factors of Active RFID tags, UWB tags, and GPS devices create an inconvenience or burden on the traveler that Passive RFID tags do not. The relative size alone could cause issues with storage and handling of Active RFID tags and GPS devices. Further, Active RFID tags, UWB tags, and GPS devices are not permitted on planes. This could cause an issue for travelers that utilize different modes of transportation when entering and exiting the U.S. Considering that none of the remaining solutions would store the biographic or biometric data on the token, location privacy is the distinguishing difference of concern. Relative to Active RFID, UWB, and GPS, which could allow for long range monitoring of a travelers whenever the traveler is in possession of the device, the use of Passive RFID minimizes this threat.

Of the four remaining alternatives, Passive RFID best satisfies the Guiding criteria utilized in this assessment.

## 6.0 Consideration of Existing Trusted Traveler Programs

The Department of Homeland Security currently utilizes RFID technology in Trusted Traveler Programs designed to facilitate the movement of low-risk visitors through land POEs. Such Trusted Traveler Programs for non-commercial vehicles include currently existing on the land border include:

- Canadian Border Dedicated Commuter Lane (NEXUS)
- Secure Electronic Network for Traveler's Rapid Inspection (SENTRI)

Given that the NEXUS and SENTRI solutions require vehicles to come to a full stop, only apply to vehicle entry and do not support pedestrian entry, and would need to convert from being voluntary programs to mandatory programs encompassing all in-scope travelers, an alternative RFID approach for the Increment 2C solution should be considered.

## 7.0 Conclusion

Though biometric identification of travelers moving at speed would be the ideal solution for the Increment 2C capability, limitations in technology preclude the viability of such a solution at this time. Passive RFID offers the greatest potential for supporting Increment 2C and the long-term vision of US-VISIT. Passive RFID provides a unique identifier capable of being read automatically, passively, and remotely during the exit and reentry by US-VISIT enrolled travelers. It satisfies the Increment 2C criteria as well as the guiding criteria used in the assessment.

Other sources of concept definition input such as the Concept of Operations, RFID Feasibility Study, Cost Benefit Analysis, Environment Assessment, and the Privacy Impact Assessment should be used to make the final determination as to the use of Passive RFID in the context of Increment 2C.

## Attachment A: Legislative Mandates

Requirement	Source
By October, 26, 2004, all POEs must have equipment and software installed to allow biometric comparison and authentication of U.S. visas and other travel and entry documents issued to aliens and also machine readable, biometric passports required to be issued to their nationals by VWP countries.	EBSVRA, §303(b)(2)(A-B)
The systems employed must use the technology standard established in the PATRIOT Act, § 403(c)(as amended)	EBSVRA, § 303(b)(3)
Must make interoperable all security databases relevant to determinations of admissibility under INA, § 212.	EBSVRA, § 302(a)(3)
Not later than December 31, 2004, DHS shall implement the integrated entry and exit data system using available alien arrival and departure data pertaining to aliens arriving in, or departing from, the United States at the 50 land border ports of entry determined by DHS to serve the highest numbers of arriving and departing aliens. Such implementation shall include ensuring that such data, when collected or created by an immigration officer at such a port of entry, are entered into the system and can be accessed by immigration officers at airports, seaports, and other such land border ports of entry.	DMIA, § 2(a)
Entry/Exit system must have database containing alien arrival/departure data from machine-readable visas, passports, and other travel and entry documents.	EBSVRA, § 302(a)(2)
Entry/Exit system uses “available data” to match an alien’s arrival and departure.	DMIA, § 2(a)
Entry/Exit System integrates all authorized or required alien arrival/departure data that are in electronic format in DOJ and DOS databases. (Note: Provision is focused on integration of existing arr/dep data)	DMIA, § 2(a)(codified, as amended, at 8 U.S.C. § 1365a
Entry/Exit system assists the Attorney General and the Secretary of State to identify lawfully admitted non-immigrants who have overstayed periods of admission.	DMIA, § 2(a)
Cannot impose new documentary or data collection requirements on any alien for purposes of implementing DMIA, including imposing document or data collection requirements on aliens who have received document waivers under INA, § 212(d)(4)(B) or any requirements inconsistent with North America Free Trade Act (NAFTA). Section 604 of the EBSVRA also states that nothing in that Act shall be construed to impose requirements inconsistent with NAFTA or to require additional documents for aliens possessing such documentary waivers.	DMIA, § 2(a)(codified, as amended, at 8 U.S.C. § 1365a

Requirement	Source
The Entry/Exit system shall utilize technologies that facilitate lawful and efficient cross-border movement of commerce and persons without compromising safety and security of the U.S.; and shall consider implementing the North American National Security Program described in § 401 of EBSVRA.	EBSVRA, § 302(b)
Entry/Exit System must be able to interface with law enforcement databases for use by federal law enforcement to identify and detain individuals who are threats to U.S. national security.	PATRIOT Act, § 414(c)
Entry/Exit system will need to be integrated into a broader Immigration and Naturalization Data System that fully integrates all INS databases and data systems that process or contain alien information.	See EBSVRA, § 202(a)
Documentary requirements for non-immigrants. A valid unexpired visa and an unexpired passport, valid for the period set forth in section 212(a)(7) of the Act, shall be presented by each arriving nonimmigrant alien except that the passport validity period for an applicant for admission who is a member of a class described in section 102 of the Act is not required to extend beyond the date of his application for admission if so admitted, and except as otherwise provided in the Act, this chapter, and for the following classes: (a) Citizens of Canada or Bermuda, Bahamian nationals or British subjects resident in certain islands. (Paragraph (a) revised effective 3/17/03;	8 CFR Part 212.1



Requirement	Source
<p>(1) A visa and a passport are not required of a Mexican national who:</p> <p>(i) Is in possession of a Form DSP-150, B-1/B-2 Visa and Border Crossing Card, containing a machine-readable biometric identifier, issued by the DOS and is applying for admission as a temporary traveler for business or pleasure from contiguous territory.</p> <p>(ii) Is a Mexican national entering solely for the purpose of applying for a Mexican passport or other official Mexican document at a Mexican consular office on the United States side of the border.</p> <p>(2) A visa shall not be required of a Mexican national who:</p> <p>(i) Is in possession of a Form DSP-150, with a biometric identifier, issued by the DOS, and a passport, and is applying for admission as a temporary traveler for business or pleasure from other than contiguous territory;</p> <p>(ii) Is a crew member employed on an aircraft belonging to a Mexican company owned carrier authorized to engage in commercial transportation into the United States; or</p> <p>(iii) Bears a Mexican diplomatic or official passport and who is a military or civilian official of the Federal Government of Mexico entering the United States for 6 months or less for a purpose other than on assignment as a permanent employee to an office of the Mexican Federal Government in the United States, and the official's spouse or any of the official's dependent family members under 19 years of age, bearing diplomatic or official passports, who are in the actual company of such official at the time of admission into the United States. This provision does not apply to the spouse or any of the official's family members classifiable under section 101(a)(15)(F) or (M) of the Act.</p>	8 CFR Part 212.1.(c) 2
<p>(3) A Mexican national who presents a BCC at a POE must present the DOS-issued DSP-150 containing a machine-readable biometric identifier. The alien will not be permitted to cross the border into the United States unless the biometric identifier contained on the card matches the appropriate biometric characteristic of the alien.</p>	8 CFR Part 212.1.(c) 3
<p>(4) Mexican nationals presenting a combination B-1/B-2 nonimmigrant visa and border crossing card (or similar stamp in a passport), issued by DOS prior to April 1, 1998, that does not contain a machine-readable biometric identifier, may be admitted on the basis of the nonimmigrant visa only, provided it has not expired and the alien remains admissible. A passport is also required.</p>	8 CFR Part 212.1.(c) 4
<p>(a) No alien shall depart, or attempt to depart, from the United States if his departure would be prejudicial to the interests of the United States under the provisions of Sec. 215.3. Any departure-control officer who knows or has reason to believe that the case of an alien in the United States comes within the provisions of Sec. 215.3 shall temporarily prevent the departure of such alien from the United States and shall serve him with a written temporary order directing him not to depart, or attempt to depart, from the United States until notified of the revocation of the order.</p>	8 CFR Part 215.2

Requirement	Source
<p>2) Applicants arriving at land border ports-of-entry. Any Visa Waiver Pilot Program applicant arriving at a land border port-of-entry must provide evidence to the immigration officer of financial solvency and a domicile abroad to which the applicant intends to return. An applicant arriving at a land-border port-of-entry will be charged a fee as prescribed in § 103.7(b)(1) of this chapter for issuance of Form I-94W, Nonimmigrant Visa Waiver Arrival/Departure Form. A round-trip transportation ticket is not required of applicants at land border ports-of-entry.</p>	<p>8 CFR Part 217.2</p>
<p>(f) Form I-94, Arrival Departure Record. (1) Unless otherwise exempted, each arriving nonimmigrant who is admitted to the United States shall be issued, upon payment of a fee prescribed in §103.7(b)(1) of this chapter for land border admissions, a Form I-94 as evidence of the terms of admission. A Form I-94 issued at a land border port-of-entry shall be considered issued for multiple entries unless specifically annotated for a limited number of entries. A Form I-94 issued at other than a land border port-of-entry, unless issued for multiple entries, must be surrendered upon departure from the United States in accordance with the instructions on the form. Form I-94 is not required by:</p> <p>(i) Any nonimmigrant alien described in § 212.1(a) of this chapter and 22 CFR 41.33 who is admitted as a traveler for business or pleasure or admitted to proceed in direct transit through the United States;</p> <p>(ii) Any nonimmigrant alien residing in the British Virgin Islands who was admitted only to the U.S. Virgin Islands as a traveler for business or pleasure under § 212.1(b) of this chapter;</p> <p>(iii) Except as provided in paragraph (f)(1)(v) of this section, any Mexican national who is exempt from a visa and passport pursuant to §212.1(c)(1) of this chapter, or who is in possession of a passport and valid visa who is admitted as a nonimmigrant traveler for a period not to exceed 72 hours to visit within 25 miles of the border; (Revised 12/8/99; 64 FR 68616)</p> <p>(iv) Bearers of Mexican diplomatic or official passports described in §212.1(c) of this chapter; or (Amended effective 10/1/02; 67 FR 71443)</p> <p>(Amended 12/8/99; 64 FR 68616)</p> <p>(v) Any Mexican national who is exempt from a visa and passport pursuant to § 212.1(c)(1) of this chapter, or is in possession of a passport and valid visa who is admitted as a nonimmigrant traveler at the Mexican border POEs in the State of Arizona at Sasabe, Nogales, Mariposa, Naco, or Douglas for a period not to exceed 72 hours to visit within the State of Arizona and within 75 miles of the border. (Added 12/8/99; 64 FR 68616)</p>	<p>8 CFR Part 235.1 (f )</p>
<p>Uses “available data” to produce a report of arriving and departing aliens by nationality, classification as immigrant or nonimmigrant, and dates of arrival in and departure from the U.S.</p>	<p>DMIA, § 2(a)</p>

Requirement	Source
<p>Uses available data to produce detailed, annual report to Congress by December 31 each year containing the specific information on arriving and departing aliens requested in DMIA, § 2(a) and the information on VWP aliens and program countries requested in INA, § 217(h)(1)(C), including numbers of departing aliens with their nationalities; successful arrival/departure matches; classifications by immigrant or nonimmigrant, VWP and other non-immigrants for whom no departure data is available at end of these aliens' authorized period of stay, among other specific information required for the report.</p>	<p>DMIA, § 2(a); INA, §217(h)(1)(C)(from VWPPA)</p>

## Attachment B: Increment 2B Implementation at the Busiest 50 U.S. Land Border Ports of Entry (POEs) by December 31, 2004

LAND BORDER POE	STATE	LAND BORDER POE	STATE
Douglas	AZ	Peace Bridge	NY
Port Huron - Blue Water	MI	Lewiston-Queenston Bridge	NY
Lincoln - Juarez Bridge	TX	Rainbow Bridge	NY
Convent Street	TX	Presidio	TX
Columbia Solidarity Bridge	TX	Ysleta	TX
World Trade Bridge	TX	Paso Del Norte (PDN)	TX
Nogales West (Mariposa)	AZ	Bridge of the Americas (BOTA)	TX
Nogales East	AZ	Thousand Island	NY
Calexico East	CA	Champlain	NY
Calexico West	CA	Massena	NY
Andrade	CA	Ferry Point	ME
San Luis	AZ	Sault Ste. Marie	MI
Lukeville	AZ	Pharr	TX
Tecate	CA	Brownsville and Matamoros	TX
Lynden	WA	Hidalgo	TX
Pacific Highway	WA	Brownsville - Gateway International	TX
Point Roberts	WA	Los Tomates - Veterans International Bridge	TX
Otay Mesa	CA	International Falls	MN
San Ysidro	CA	Eagle Pass I - Piedras Negras Bridge	TX
Sumas	WA	Eagle Pass II	TX
Peace Arch - Blaine	WA	Del Rio International Bridge	TX
Detroit Ambassador Bridge	MI	Rio Grande City	TX
Detroit - Windsor Tunnel	MI	Los Indios Free Trade Bridge	TX
Whirlpool Rapids	NY	Progreso	TX
Fabens	TX	Roma	TX
Santa Teresa	NM	Derby Line (I-91)	VT

## Attachment C: Glossary

## Increment 2C Glossary of Terms

Term	Definition
<b>A</b>	
ADIS	Arrival / Departure Information System. The system that serves as a central repository for storing, reconciling, and reporting on immigrant and non-immigrant traveler arrivals and departures across air, sea and land ports of entry. ADIS matches arrivals with departures to identify illegal overstays and provides a wide range of ad-hoc queries and reporting capabilities for arrival and departure information.
a-ID	Automatic Identification. An identification tag that stores a unique serial. This number can be linked to a traveler profile, including biometric and biographic data.
<b>B</b>	
BCC	Border Crossing Card: I-186(oldest form) and (I-586 (old form). Laser Visa (Form DPS-150) has replaced the BCC. A travel document Mexican citizens to travel within the “border zone” (defined as 25 miles from the border in Texas, California, or New Mexico and 75 miles of the border in some parts of Arizona), and planning to stay for up to 30 days.
Biographics	In the context of US-VISIT: biographical information of a traveler, such as name and date of birth.
Biometrics	Are automated methods of recognizing a person based on a physiological or behavioral characteristic that are unique to an individual. Physical biometrics includes fingerprints, hand geometry, facial patterns, and iris and retinal scans. Behavioral biometrics includes voice patterns, written signatures, and keyboard typing techniques.
<b>C</b>	
CBP	U.S. Customs and Border Protection. The unified border agency within the Department of Homeland Security (DHS). CBP combined the inspectional workforces and broad border authorities of U.S. Customs, U.S. Immigration, Animal and Plant Health Inspection Service and the U.S. Border Patrol. Source: DHS website.
<b>D</b>	
DHS	Department of Homeland Security. In January of 2003, the United States government established the Department of Homeland Security to focus America’s efforts to thwart those who seek to do us harm. Department has an overriding and urgent mission: secure the American homeland and protect the American people.
<b>I</b>	
I-94/I-94W	Unless otherwise exempted, each arriving nonimmigrant that is admitted to the U.S. shall be issued a Form I-94 as evidence of the terms of admission. Eligible applicants seeking admission under the Visa Waiver Program (VWP) are issued a Form I-94W.

## Increment 2C Glossary of Terms

Term	Definition
ICE	Immigration and Customs Enforcement. The investigative bureau of DHS. ICE consolidated the investigative and intelligence resources of the United States Customs Service, the Immigration and Naturalization Service, the Federal Protective Service and the Federal Air Marshals Service.
IDENT	Automated Biometric Identification System. The IDENT system is a biometric (two index-finger scans and front facial photograph) identity management system utilized by US-VISIT and ENFORCE to support biometric identity authentication and biometric lookout list identification of eligible aliens.
<b>L</b>	
Laser Visa	See BCC definition.
Land Border Port of Entry	Facility at a land border that provides for the controlled entry into or departure from the United States for persons and materials arriving as commercial, non-commercial, pedestrian, or rail traffic.
<b>M</b>	
MRTD	Machine Readable Travel Document – a travel document that contains encoded, machine readable traveler information, such as biographic and biometric data.
<b>N</b>	
NEXUS	Canadian Border Dedicated Commuter Lane. The project of the Canada-United States Shared Border Accord, designed to facilitate pre-enrolled, low risk, vehicular traffic across the Canadian and United States border.
<b>P</b>	
Pedestrian Entry	A Primary inspection lane dedicated to pedestrians at certain land POEs
Pedestrian Exit	An exit lane dedicated to pedestrians at certain land POEs.
Pedestrian Primary	The turnstile and counter area where the initial inspection of pedestrians is performed.
POE	Port of Entry. The facility that provides for the controlled entry into or departure from the United States for persons and materials
Primary	The initial inspection area at a POE, either of noncommercial (vehicular primary), pedestrians, or bus traffic.
<b>R</b>	
RFID	Radio Frequency Identification. A method of identifying unique items using radio waves. Typically, a reader communicates with a tag, which holds digital information in a microchip.
RFID Reader	The device that communicates with the RFID tag via radio waves and (Interrogator) passes the information in digital form to a computer system.

## Increment 2C Glossary of Terms

Term	Definition
RFID Tag	A microchip attached to an antenna that is packaged in a way that it can be applied to an object. The tag picks up signals from and sends signals to a reader. The tag contains information ranging from serial numbers to more complex data such as detailed parts information.
<b>S</b>	
SBA	Smart Border Alliance. Accenture LLP serves as the Prime Contractor for US-VISIT to help strengthen security at America's borders and modernize the border management process. Source: DHS News Release June 1, 2004.
Secondary	Area where detailed inspections are performed (Passport Control and Baggage Control ).
SENTRI	Secure Electronic Network for Traveler's Rapid Inspection. The system that provides an electronic, dedicated commuter lane that expedites the flow of low-risk, frequent border crossers across the southern border. Sensory system is based on RFID technology.
<b>T</b>	
TECS	Treasury Enforcement Communication System. The system supporting key business processes across DHS including investigations, enforcement and US-VISIT. TECS maintains databases on biographic terrorist lookout lists, vehicle lookout lists, alien addresses, Secondary inspection results and alien crossing histories.
<b>U</b>	
US-ARRIVAL	The system being deployed as part of Increment 2B. The system provides an integrated process for issuing the I-94/I-94W and collecting US-VISIT biometric data for in-scope travelers.
US-VISIT	United States Visitor and Immigrant Status Indicator Technology. US-VISIT is a top priority for the U.S. Department of Homeland Security because it enhances security for our citizens and travelers while facilitating legitimate travel and trade across our borders. US-VISIT helps to secure our borders, facilitates the entry and exit process, and enhances the integrity of our immigration system while respecting the privacy of our travelers. US-VISIT is part of a continuum of security measures that begins overseas and continues through a traveler's arrival and departure from the United States. It incorporates eligibility determinations made by both the Departments of Homeland Security and State.
<b>V</b>	
Vehicle Entry	An entry lane dedicated to non-commercial vehicles at land POEs.
Vehicle Exit	An exit lane dedicated to non-commercial vehicles at land POEs.
Vehicle Primary	Booth where the initial inspection of non-commercial vehicle traffic entering the US is performed.
VWP	The Visa Waiver Program permits nationals from designated countries (listed in 8CFR 217.2(a)) to apply for admission to the U.S. for ninety days or less as non-immigrant travelers for business or pleasure without first obtaining a U.S. non-immigrant visa.

